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THE
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ZOOLOGICAL LITERATURE.

1866.



VOLUME THIRD.

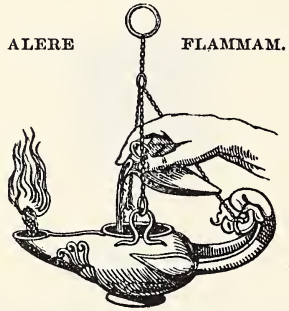
EDITED BY
ALBERT C. L. G. GÜNTHER,
M.A., M.D., PH.D., F.R.S., F.Z.S., ETC. ETC.



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P R E F A C E.

THE third volume of the 'Record' forms a systematic guide-book to about 30,000 pages* of the zoological literature published (with the exception of a comparatively small part) within the year 1866.

Compared with the literature of the preceding years, that of 1866 is distinguished by the production of a great number of important separate works in nearly all classes of the animal kingdom, whilst the number of shorter communications, papers, and memoirs is considerably below the average of previous years.

The publication of this volume has been somewhat delayed in consequence of the illness of one of the Recorders. An undertaking of this kind must, of necessity, be occasionally exposed to the danger of such a delay without the Editor having it in his power to guard against it.

ALBERT GÜNTHER.

London, November 1867.

* This number is divided between the various classes thus:—Mammals 3000, Birds 4500, Reptiles 1000, Fishes 2400, Mollusks and Molluscoids 2000, Crustaceans 900, Arachnids and Myriopods 1000, Insects 11,000 (viz. Coleoptera 5000, Hymenoptera 1300, Lepidoptera 2100, Diptera 730, Neuroptera and Orthoptera 430, Rhynchota 900), Annelids 1000, Scolecides 900, Echinoderms 170, Coelenterates 860, Protozoa 900.

[Communications, papers, and memoirs intended for this work should be addressed *solely* to "The Editor of the Zoological Record, care of Mr. Van Voerst, 1 Paternoster Row, London." All publications sent will be distributed among the several Recorders.]

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ERRATA.

- Page 96. Transfer the paragraph beginning "*Siphia innexa*" to page 93
after that beginning "*Siphia hyperythra*."
Page 104, line 18, for some read none.

RECORD
OF
ZOOLOGICAL LITERATURE.

MAMMALIA

BY

ALBERT GÜNTHER, M.A., M.D., PH.D.

A. Separate Publications.

OWEN, R. On the Anatomy of Vertebrates. London, 1866.
8vo. Vol. I. Fishes and Reptiles, pp. xxii & 650. Vol. II.
Birds and Mammals, pp. 586.

It is with sincere pleasure that we commence this year's Record by noticing a work which, being the first of its kind in English literature, will be received by all the more advanced students of science as a welcome guide, and will be studied and consulted far beyond the boundaries of the language and time in which it is written. To produce the first standard English work on Comparative Anatomy was a task which naturally devolved on Professor Owen, who effectually domiciled this branch of science on English soil, and whose previous life and labours may be regarded as preparatory to it. It will be welcomed particularly by those cultivators of zoology who, by combining the study of external and internal organization, endeavour to rescue zoology from the imputation that it is a pursuit which may be "called, euphonistically, science."

The present work treats of the Vertebrates only, completing the outline of the organization of the animal kingdom, which was begun in the author's 'Lectures on the Comparative Anatomy and Physiology of the Invertebrate Animals.' As regards the general plan, it is more comprehensive than any of the exhaustive treatises of the anatomists of the Continent. 1866. [VOL. III.]

ment, inasmuch as the author treats of extinct as well as recent forms, devotes separate chapters to histological and developmental anatomy, constantly referring to physiological facts, which we commonly find are entirely neglected in general works on comparative anatomy; We need scarcely mention that the author's philosophical turn of thought and expression is one of the most noticeable and peculiar features of the work; it is apparent on almost every page—in his tracing the relations of homology.

Two volumes appeared in the course of last year. The first commences with a description of the characters of Vertebrates generally, and contains a complete account of the anatomy of *Hæmatocrya*. In the second the anatomy of Birds and the osteology of Mammals are completed. The third and last volume will appear shortly, and conclude the anatomy of the latter class. The text is profusely illustrated by a series of woodcuts, partly original, partly reprinted from other special works or the author's own previous publications.

- 7 GRAY, J. E. Catalogue of Seals and Whales in the British Museum. Second edition. London, 1866. 8vo. pp. 402, with numerous woodcuts.

Although this work is entitled a second edition of the catalogue published in 1850, its contents are so much enlarged by the author's own researches, and by numerous references to, and abstracts from, other memoirs, that its whole appearance has been altered. As it contains descriptions not only of the species in the British Museum, but also of those known to exist in other collections, it forms a handbook indispensable to the student of these animals, and, indeed, to every one who is desirous of acquainting himself with the extent of the progress made during the last fifteen years in this branch of zoology. Of course, in groups so difficult of access to the zoologist as the Seals and the Cetacea, many points must be left doubtful, and others, with better materials, will be able to correct errors; but having witnessed the amount of labour bestowed by the author on this work during many years, the Recorder has come to the conviction that these groups of Mammalia can be treated successfully only by men who, like the author, have prepared themselves for so difficult a task by long previous study, whilst the premature publications of beginners merely contribute to increase the labour of others.

- 7 ESCHRICHT, REINHARDT, and LILLJEBORG. Recent Memoirs on the Cetacea. Edited by W. H. FLOWER. Ray Society, 1866. 4to. pp. 309, with six plates and numerous woodcuts. The Council of the Ray Society have published an English translation of most important Memoirs on Cetaceans, the details of which, being written in Swedish and Danish, have re-

mained more or less inaccessible to the majority of European and American naturalists. The translations have been made or revised by Professors Reinhardt and Lilljeborg and Mr. Flower. The Memoirs being originally published in the years 1861 and 1862, we may presume that zoologists are acquainted with their contents generally; so that a notice of the several memoirs will suffice:—

1. On the Greenland Right Whale (*Balena mysticetus*, L.), with especial reference to its geographical distribution and migrations in times past and present, and to its external and internal characteristics. By D. F. ESCHRICHT and J. REINHARDT. Originally published in Danske Vidensk. Selsk. Skrift. 1861, v.

The translation of this memoir occupies pp. 1–143; the plates and woodcuts are copies from the originals.

In an appendix to this memoir Mr. Flower has given notes on a skeleton in the Collection of the Royal College of Surgeons, obtained from the same source as those described in the preceding memoir (Holsteinsborg, South Greenland) (pp. 145–150).

2. On the species of the genus *Orca* inhabiting the Northern Seas. By D. F. ESCHRICHT. Originally published in Dansk. Vidensk. Selsk. Forhandl. 1862 (translation from p. 151 to p. 188).

3. *Pseudorca crassidens*, a Cetacean hitherto unknown in the Danish fauna. By J. REINHARDT. Published in the same journal and year as the preceding memoir (translation from p. 189 to p. 218).

4. Synopsis of the Cetaceous Mammalia of Scandinavia (Sweden and Norway). By W. LILLJEBORG. Originally published in Upsala Universitet's Arsskrift, 1861 & 1862. The translation of this memoir occupies pp. 219–309, and is illustrated by woodcuts not in the original, but supplied by the author, who also has made some few alterations and additional notes.

BRANDT, ED. *Izsljedovaniya o zubnoi sistemye kutor i zemlerook*. St. Petersburg, 1865. 8vo. pp. 117, with six plates.

[Researches on the dental system of the Shrews (*Sorex*, Cuv.)]

This most valuable memoir being written in the Russian language, and therefore inaccessible to most naturalists, I shall subsequently (p. 24) give a full abstract of it, for which the materials have been kindly supplied by the author himself.

MURRAY, A. *The Geographical Distribution of Mammals*. London, 1866. 4to. pp. 420, with a plate and 101 maps.

The author has diligently collected from numerous works all the facts relating to the geographical distribution of Mammalia.

He devotes two chapters to preliminary inquiries concerning the "Origin of species," "Specific centres," and "Modes of dispersal of species." He accepts the theory that species are not produced by independent creation, but that, under the operation of a general law, the germs of organisms produce new forms different from themselves when particular circumstances call the law into action. This theory appears to him to furnish a satisfactory explanation of the homologies in structure and of the relationships between species. He thinks that species are not continuously, unintermittingly changing, that there is a law of *inertia* securing their stability, but that a change in the conditions under which species live is always followed by a modification of specific characters. These ideas of the author may be illustrated by the way in which he accounts for the existence of three marine Mammalia in rivers, viz. *Platanista gangetica* in the Ganges, *Pl. indi* in the Indus, and *Inia amazonica* in the Amazons (pp. 213-215). He says that the two Indian species are so closely allied that they must have taken their origin from a common and not very distant ancestor; and as an animal never seeks a change producing the development of a new species (*inertia* being strong to keep it where it is), we must argue that here the change from salt to fresh water must have been forced upon the Dolphins:—

1. In geological time the desert country through which the Indus flows was covered by a sea inhabited by truly marine genera of Dolphins.

2. As the land rose, a salt-lake remained, shut off from the sea by the elevation of the coast between Bombay and Kurrachee.

3 & 4. Into this lake flowed the waters supplying the Indus and other rivers, as well as the sources of the Ganges, changing the salt into fresh water.

5. This change was not so rapid as to destroy the Dolphins, but sufficiently so to induce a change in the species.

6. The dividing watershed which now separates the sources of the Ganges from the sources of the Indus had not yet been sufficiently elevated to divide the two, and as soon as the lake was full to overflowing it overflowed, and the waters escaped into the line of the Ganges. There would then only be one great river in the north of India, and that the Ganges. By the time this happened, the transformation of the Dolphin into the *Platanista* had been completed: it may have been either *Platanista indi* or *P. gangetica* that was produced, or it may have been a common ancestor of both. When this happened, the *Platanista*, whatever its species, would inhabit both the lake and the Ganges; but they could not go back to the sea, *viâ* the Ganges, for by this time they had been changed into fresh-water species.

7. But the land continued to rise, and the Himalayahs, in their rise, also raised that portion of land lying between the sources of the Ganges and this great lake. Of course, this cut off the exit by the lake into the Ganges. Those individuals of *Platanista* which were out in the waters of the river would find themselves cut off from their natural home, and restricted to a river-life in the Ganges—a new condition, perhaps, of sufficient importance to induce a second change into *Platanista gangetica*.

8. The lake, cut off from its exit by the Ganges, continues to rise until it again overflows elsewhere, and this time finds an exit where the mouth of the Indus now is, and the Indus flows through the midst of it: old channels show that the Indus once so flowed, and not, as now, to the west of it. The surviving shoals of *Platanista*, in their turn, would find their lake-life turned into a river one, and *Platanista indi* is the result.

The author has no doubt that *Inia amazonica* was produced by a similar concurrence of circumstances, with the exception that there it was not a double event, but only a "single-barrelled" phenomenon, at least so far as species is concerned.

The author holds that the transformation of old species into new is usually (if not always) effected through the medium of large numbers of individuals; chance colonists, being of course solitary or few in number, would not undergo this change until their numbers had sufficiently multiplied. He would therefore infer, wherever individuals belonging to the same identical species occur in different lands (always excepting polar districts and those where the physical condition is uniform), that their presence is probably due to colonization; and where the species are representative, that there is a presumption that the land in which they occur must at some former period have been connected with that of the typical species.

The author treats then of the geographical changes of the globe since the secondary epoch, and commences a series of chapters on what has been styled by Van der Hoeven "Geographical Zoology," taking the different families and genera in systematic order, and giving an account of their geographical range. This forms the greater part of the work, viz. from p. 56 to p. 296. Two chapters are devoted to the distribution of Man, whom he divides into two races only, the white and the black. This part contains also remarks on the affinities of certain genera, which must be regarded as expressing merely the individual views of the author, whose original researches into their structure are evidently very limited.

"Zoological Geography" (or that part in which we might have expected interesting results by generalizing the numerous facts so diligently collected by the author in the preceding chapters) comes in for a very small share (pp. 304-314). He

divides "the whole mammalian fauna into four great primary provinces of nearly equal value," viz. :—

1. The Europæo-Asiatic, embracing 1. the Scandinavian district; 2. the Mediterranean district; 3. the Mongolian district.

2. The Africano-Indian, including 1. Africa, south of the Sahara; 2. the Indo-Malayan district.

3. The Australian, including 1. Australia; 2. New Guinea; 3. Polynesia.

4. The American, including 1. North America; 2. South America.

In combining the whole of the North-American Fauna, associating it with that of South America, and widely separating it from the Palearctic region of Selater, the author appears to have been particularly unfortunate, and we have no doubt he will come to a different conclusion as his knowledge increases with the progress of his work.

An appendix contains the "Systems of Classification of Mammals proposed by different authors of eminence," a "Synonymic list of species of Mammals and their localities," and a number of lists of the Mammalia of more or less extensive districts, &c. Most of the lists last named are merely abstracts of original works, and given without any attempt at unity of plan or critical examination.

The book is very well got up by the publishers, and liberally illustrated by most useful maps, showing at a glance the distribution of a family or group of Mammals. Mr. Murray intends to treat the other classes of animals in a similar manner.

Systematisches Verzeichniss der naturhistorischen Sammlung der Gesellschaft Museum. Zweite Abtheilung: Säugthiere. Bremen, 1866. 16mo. pp. 34.

This is a nominal list of the specimens of Mammalia in the Bremen Collection, determined by the Curator, Hr. O. FINSCH. It contains 443 objects, including skulls, horns, and teeth, which are referred to 268 species. Worthy of special notice are:—a skeleton of *Balanoptera rostrata*; a stuffed example of what has been determined as *Delphinus chamissonis*; foetus of *Rosmarus trichechus*, of *Monodon monoceros*, and of several dolphins.

LORD, J. K. The Naturalist in Vancouver Island and British Columbia. London, 1866. 8vo. Vol. i. pp. 358; vol. ii. pp. 375.

The author was attached to the British Boundary Commission, and made very good use of his opportunity of collecting and observing the animals of Vancouver Island and British Columbia. Without entering into a continuous and complete account of the progress of that expedition, he gives us a pleasing narrative of his own personal experiences and of his observations on the habits of various animals. He has brought home a very fine collection of

extremely well-preserved examples, which have been deposited in the British Museum; so that the author's determinations can be verified by other naturalists.

In an appendix at the end of the second volume he gives a list of 76 Mammalia observed by himself, including two which he has regarded as new, and of which descriptions were given previously in the 'Proceedings of the Zoological Society,' viz. *Fiber osoyoosensis* and *Lagomys minimus*. In the body of the work the habits of *Urotrichus*, *Aplodontia*, *Tamias quadrivittatus*, of various Deer, &c. are described.

B. *Zoological Papers published in Journals.*

ALIX, E. Sur les organes de la parturition chez les Kangourous. Compt. Rend. 1866, Jan. 15, pp. 146-148. (Ann. & Mag. Nat. Hist. xvii. pp. 316-317.)

ALLEN, H. Notes on the *Vespertilionidæ* of Tropical America. Proc. Ac. Nat. Se. Philad. 1866, pp. 279-288.

ALLMAN, G. J. On the characters and affinities of *Potamogale*, a genus of Insectivorous Mammals. Trans. Zool. Soc. vi. 1866, pp. 1-16, with numerous woodcuts and two plates.

BARTLETT, A. D. See MURIE, J.

BELKE, G. Notice sur l'histoire naturelle du district de Radomysl (Gouvernement de Kief). Bull. Soc. Nat. Mosc. 1866, xxxix. pp. 214-251, 491-526.

BLYTH, E. A Note on African Buffalos. Proc. Zool. Soc. 1866, pp. 371-373, with woodcuts.

BRANDT, F. VON. Ueber den vermeintlichen Unterschied des Caucasischen Bison, *Zubr* oder sogenannten Auerochsen, vom Lithauischen (*Bos Bison* s. *bonasus*). Bull. Soc. Nat. Mosc. 1866, xxxix. pp. 252-259.

[On the supposed difference between the Caucasian Bison, *Zubr* or Auerochs, and the Lithuanian.]

———. Noch einige Worte über die Vertilgung der *Rhytina*. Bull. Ac. Sc. St. Pétersb. ix. (1865) 1866, pp. 279-282.

[A few additional remarks on the extinction of *Rhytina*.]

———. Nochmaliger Nachweis der Vertilgung der nordischen oder Steller'schen Seekuh (*Rhytina borealis*): Bull. Soc. Nat. Mosc. 1866, xxxix. pp. 572-597.

[The fact of the extinction of *Rhytina borealis* once more demonstrated.]

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- [The Mammals contained in the Museum of the University of Halle.]
- This is a nominal list of the specimens of recent and fossil Mammals in the collection named. They are referred to 190 genera and 548 species, and consist of 742 skins, 146 specimens in spirits, 244 skeletons, 470 skulls, and numerous other portions.
- . Ueber einige Beutelthier-Schädel der Halle'schen Sammlung. *Ibid.* pp. 391-397.
- [On the skulls of some Marsupials in the Halle Collection.]
- . Eine antidarwinistische Vergleichung des Menschen- und der Orang-Schädel. *Ibid.* pp. 401-419.
- [An anti-Darwinian comparison of the skull of Man and of the Orang.]

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- . A revision of the genera of Pteropine Bats (*Pteropidæ*), and the descriptions of some apparently undescribed species. Proc. Zool. Soc. 1866, pp. 62-67, with two woodcuts.
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MIVART, ST. G. On the structure and affinities of *Microrhynchus laniger*. Proc. Zool. Soc. 1866, pp. 151-167, with a plate and woodcuts.

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MURRAY, A. On *Galago murinus* (Murr.). Proc. Zool. Soc. 1866, December 13, pp. 560-562.

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PETERS, W. Ueber die Säugethier-Gattung *Chiromys* (Aye-Aye). Abhandl. Ak. Wiss. Berlin, 1866, pp. 79-100, with four plates.

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[On some new or little-known Bats and Rodents.]

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[On the *Otaria*, especially on the species in the collections at Berlin.]

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[Addenda to the preceding paper.]

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+ SARS, G. O. Beskrivelse af en ved Lofoten indbjærgget Rörvhal (*Balanoptera musculus*). Vid. Selsk. Forhandl. Christ. for 1865, pp. 32, with three plates*.

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SCHMIDT, M. Zoologisches aus der Frankfurter Chronik. Zoolog. Garten, 1866, pp. 357-364.

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* We have not yet been able to obtain this paper in the original, but are indebted to the author for a separate copy, in which, unfortunately, the original pagination is not marked.

tained in the Chronicles of Frankfort on the Main. The first elephant was brought to that town in 1443.

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[On the change of the horns in *Cervus*.]

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[On the structure of the Liver of Vertebrates.]

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[On the direction of the fibres in the *Commissura cerebri anterior*, and their signification.]
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- TURNER, W. Notes more especially on the bridging Convolutions in the Brain of the Chimpanzee. Proc. Roy. Soc. Edinb. v. 1865-1866, pp. 578-587, with woodcuts.

GENERAL NOTES AND FAUNÆ.

† Prof. OWEN'S 'Anatomy of Vertebrates' has been noticed above. The second volume contains the osteology of Mammalia. The classification adopted is the same as that proposed in his treatise 'On the Classification and Geographical Distribution of the Mammalia:' London, 1859.

† Prof. LILLJEBORG states, in his memoir on the Rodents (p. 1), that about 2300 species of Mammalia are known, viz. about 700 Rodents, 500 Chiroptera, 250 Fere (incl. Insectivora), 200 *Quadrumana*, and about as many *Artiodactyla*.

M. PUCHERAN has continued his treatise on the capability of evidence furnished, or to be furnished, by geology to explain the differences between the present faunas, in Rev. et Mag. Zool. 1866, and has not yet brought it to its conclusion (see Zool. Record, ii. pp. 10 & 58). As regards North America, he distinguishes between an eastern and western fauna, both having been, perhaps, separated by the formerly deluged country of the Mississippi River. He maintains that the three continents of the Old

World are inhabited by one and the same fauna of Mammals and Birds, and that, with the exception of the Edentata and Quadrumana, the Old-World genera are nearly always represented by specific types in the different regions constituting the Old World. Particular attention is paid to the fauna of Algeria. Reminding his readers that it once was connected with Europe, and separated from the rest of Africa by a sea, he proceeds to demonstrate that (like the Mexican Mammalia) those species which Algeria has in common with Europe have a shorter and thinner pelage than their European representatives, but, on the other hand, that the pelage is longer in such of the Algerian species as have their "homologues" in Africa proper. He states it as a fact, that all the European types in Algeria are of smaller size than the original races in Europe (that, indeed, the other characters used to distinguish Algerian from European species are not of very great importance), and that there is a "harmonie postétablie" between this fact and the circumstance of their having been confined to a very narrow and limited territory after the separation of Algeria from Europe had taken place.

† *Island of Lewis.* Prof. Duns enumerates 13 species as occurring in or on the shores of this island: it would appear to be inhabited by eight Land-Mammals only, viz. *Vespertilio pipistrellus*, *Lutra vulgaris*, *Martes foina* [quere abietum], *Mus musculus* and *decumanus*, *Lepus timidus* and *variabilis*, and *Cervus elaphus*. Proc. Roy. Soc. Edinb. v. p. 616.

† *Russia.* G. Belke enumerates 31 species of Mammals as inhabiting the district of Radomysl, in the Gouvernement of Kief. The list includes *Gulo* and *Castor*. Bull. Soc. Nat. Mosc. 1866, xxxix. p. 491.

† *Palestine.* The Rev. H. B. TRISTRAM has given a report on the Mammals in Proc. Zool. Soc. 1866, pp. 84-93. The list contains 80 species, most of which were collected during his most successful expedition in 1864. He observes that the Mammalian fauna contains a much larger proportion of African species than any other branch of the fauna of the country. Twenty-three species may be considered strictly African or Arabian; all the others belong to the types of the Mediterranean basin, though several species are peculiar. There is scarcely any trace of Indian forms. The list includes 2 Pachyderms, 16 Ruminants (*Cervus elaphus*, *tarandus* et *alces* being extinct), 3 Solidungulates, 29 Rodents, 19 Carnivores (including the Lion and Leopard), 4 Insectivores, 9 Bats. The name of each species is accompanied by notes on its distribution over the country.

† *East Africa.* Prof. Peters enumerates 29 species of Mammals collected by the late Baron von der Decken on the coasts of Eastern Africa. A species of *Miniopterus* and one of *Crocilura* are new. Monatsber. Ak. Wiss. Berlin, 1866, pp. 884-887.

Madagascar. Prof. Schlegel, in a list of Mammals collected by Messrs.

F. Pollen and D. C. van Dam in Madagascar, enumerates 17 species, Proc. Zool. Soc. 1866, pp. 419-420.

√ *Burma*. Prof. Peters enumerates and describes two Bats and three Squirrels from a collection made by Capt. Beavan at Moulmein, in Proc. Zool. Soc. 1866, pp. 426-429, and three Mice collected at Maubhoun, *ibid*, p. 558.

Formosa. Mr. Swinhoe has translated from the Chinese that part of the 18th chapter of the *Tai-wan-foo-che* (statistics of Taiwan) which treats of the birds and beasts of this island (Journ. North-China Branch R. As. Soc. no. ii. 1866, pp. 39-52). Its contents are very similar to those which we find in some of the natural-history compilations of the middle ages. The translator also observes that the list is not only very incomplete, but the accounts of the several kinds of animals are most imperfect. Still he has learned from it that there are several animals in the island with which he is unacquainted.

√ *Aru Islands*. A collection made by the late Von Bernstein in the Aru Islands contained six Mammals, which are described by Prof. Schlegel in Nederl. Tydschr. Dierk. iii. 1866, pp. 350-358, and will be mentioned subsequently.

√ *Labrador*. A list of Vertebrates observed at Okak in Northern Labrador by the Rev. S. Weiz, during a seventeen years' residence, has been published by Dr. Packard, with annotations, in Proc. Bost. Soc. Nat. Hist. x. p. 264. About 48 Mammalia are enumerated, with the addition of the Esquimaux names.

Trinidad. Prof. Peters enumerates nine species of Bats from a collection made by Dr. W. Huggins at San Fernando. Proc. Zool. Soc. 1866, p. 430.

√ *Vancouver Islands*. A list of species given by Mr. Lord has been mentioned above (p. 6).

QUADRUMANA.

√ M. GRATIOLET's monograph of *Troglodytes aubryi*, which was mentioned in the 'Record' of the preceding year (vol. ii. p. 22), has appeared in Nouv. Arch. Mus. d'Hist. Nat. 1866, ii. pp. 1-264, illustrated by seven plates. The manuscript was left in a finished state by the author, and is edited by M. ALIX, who assisted Gratiolet in his researches into the anatomy of this Ape. It contains a most detailed description of the osteology and myology, and of most of the soft parts; the brain was unfortunately not preserved in the specimen. M. Alix has added an introductory chapter on the history of previous labours on the anatomy of Anthropoid Apes, and a concluding chapter, in which he states that *T. aubryi* must be referred to the Chimpanzees and not to the Gorilla, that its distinction from man is evident even in minute, apparently unimportant details, and that there is a manifest relation between its external organization and mode of life.

√ *Simia*. Prof. Giebel has compared the skulls of Man and Orang; and after having gone through the well-known details of the differential characters, he arrives at the conclusion that

the skulls of the so-called Anthropoid Apes agree completely with those of other mammalia in all the essential points of form and structure, in the general configuration as well as in particular respects, and that they are widely and absolutely different from the human skull in every point of importance. The second part of the paper is directed chiefly against views expressed by Prof. Huxley, and would have been not the less convincing if written in less popular and vehement language. *Zeitschr. ges. Ntrwiss.* 1866, pp. 401-419.

Trogodytes gorilla. Mr. R. B. N. Walker has addressed the Literary and Philosophical Society of Liverpool, noticing some of his observations regarding this ape. *Proc. Lit. & Philos. Soc. Liverpool*, 1866, p. 224.

Some observations on a young live Gorilla by M. Fleuriot de Lângle in *Compt. Rend.* 1866, Oct. 29, lxiii. p. 739.

✓ *Trogodytes niger.* Prof. Turner's notes on the brain of the Chimpanzee, more especially on its bridging convolutions, in *Proc. Roy. Soc. Edinb. v.* pp. 578-587.

Hylobates syndactylus and *H. leuciscus.* Notes on the skulls by Giebel, *Zeitschr. ges. Ntrwiss.* 1866, p. 186.

Colobus cristatus, sp. n., and *Colobus* ?? *chrysurus*, sp. n., from West Africa. Gray, *Ann. & Mag. Nat. Hist.* xvii. p. 77.

Cercopithecus erythrogaster, sp. n., Gray, *Proc. Zool. Soc.* 1866, p. 168, pl. 16, from West Africa. After the death of the typical example, Dr. Murie added supplementary notes to Dr. Gray's description, especially with regard to the internal parts. *Ibid.* pp. 380-382.

Cercopithecus callitrichus (Geoffr.) occurs in abundance in the island of St. Kitts, West Indies, and must have been introduced from Western Africa. Sclater, *Proc. Zool. Soc.* 1866, p. 79.

Macacus inornatus, sp. n., Gray, *Proc. Zool. Soc.* 1866, p. 202, pl. 19, from Borneo (?). May be formed into a section of the genus under the name of *Gymnoppyga*.

Inuus sancti-johannis, sp. n., Swinhoe, *Proc. Zool. Soc.* 1866, Dec. 13, p. 556, from the island of North Lena, near Hong Kong.

Ateles. Prof. Giebel describes the skulls of *A. hypoxanthus* and *A. arachnoides.* *Zeitschr. ges. Ntrwiss.* 1866, p. 512-513.

▲ *Callithrix.* Dr. Gray (*Ann. & Mag. Nat. Hist.* xvii. p. 57-58) has examined the specimens in the British Museum. He arranges the species in two sections, with or without elongate stiff hairs, and distinguishes them by the colour of the hands and feet. Two species are described as new, viz. *C. ornata*, from New Granada (p. 57), and *C. castaneoventris*, from Brazil (p. 58).

▲ *Microrhynchus.* Mr. St. G. Mivart has published, as a supplement to his memoir on the skulls and dentition of the *Lemuridae* (see *Zool. Record*, i. p. 13), a very elaborate account of the cranial and dental characters of *Microrhynchus*, of which no skull was formerly available for examination. Its position with *Propithecus* and *Iulris* in the group *Indrisinae* is fully confirmed, and there is even some difficulty to find distinctive characters sufficient to justify even its generic separation from the latter genus. The paper

contains also a complete history of our knowledge of this animal, and is illustrated by a coloured plate. Proc. Zool. Soc. 1866, pp. 151-167.

Lemur leucomystax (Bartlett) = *L. macaco*, fem., confirmed by Selater, Proc. Zool. Soc. 1866, p. 1 (see Zool. Record, ii. p. 24).

↓ *Galago murinus*. Mr. A. Murray adduces testimony in favour of his opinion that this is a distinct species, and not the young of *G. demidoffii*, as believed by Dr. Gray and Mr. Mivart. Proc. Zool. Soc. 1866, pp. 560-562.

↓ *Chiromys*. Prof. Peters has completed the researches of Owen, himself (see Zool. Record, i. p. 16), and others into the structure of this animal. His materials consisted of an old female and two young males, one of which was new-born, and only Om. 30 (Om. 105 without tail) long. He was enabled thereby to describe the female sexual organs, and to confirm the formula of the milk-dentition as given previously. For the details of the anatomical structure we must refer to the paper, adding only that the author decidedly adopts the view of the animal being a Lemuroid in all its essential characters, although he is inclined to regard *Tarsius* as a lower type of this family than *Chiromys*. Abhandl. Ak. Wiss. Berlin, 1866, pp. 79-100, with four plates.

↓ He subsequently states that the structure of the auditory organ of the Aye-Aye indicates its affinity with the Lemurs, and is different from that of the Rodents. Sitzgsber. Ges. ntrf. Freunde, Berlin, 1866, June 19th.

FERÆ.

CHIROPTERA.

↓ Dr. GRAY has published a revision of the genera of Pteropine Bats, which he arranges thus (Proc. Zool. Soc. 1866, pp. 62-65):—

I. Teeth 34.

A. Incisors $\frac{4}{4}$; lower in a regular series. Tail none. Glans penis bony. *Pteropina*.

1. *Pteropus* (*P. medius*). 2. *Eumycteris* (*E. phæops*).

B. Incisors $\frac{4}{4}$; lower in a regular series. Tail-end free. Glans penis soft. *Macroglossina*.

3. *Notopterus* (*N. macdonaldii*). 4. *Macroglossus* (*M. minimus*).
5. *Xantharpyia* (*X. straminea*). 6. *Eleutherura* (*E. marginata*).

C. Incisors $\frac{2}{2}$; lower crowded before the base of the canines. Tail-end free. Index finger not clawed. *Cephalotina*.

7. *Cephalotes* (*C. peronii*).

II. Teeth 28.

D. Incisors $\frac{2}{2}$ or $\frac{2}{0}$, crowded between the canines. Nostrils tubular, diverging. *Harpyiana*.

8. *Harpyia* (*H. pallasii*).

E. Incisors $\frac{4}{4}$; lower in a regular series. Nostrils rather prominent. Glands on shoulder with hair like back. *Cynopterina*.

9. *Cynopterus* (*C. brevicaudatus*). 10. *Megæra* (*M. ecaudata*).

F. Incisors $\frac{4}{4}$; lower in a regular series. Glands on shoulder with a tuft of white hairs. *Epomophorina*.

11. *Epomops* (E. franqueti). 12. *Epomophorus* (E. whitii), 13. *Hypsognathus* (H. monstrosus).

Of each genus a diagnosis is given.

√ *Pteropus*. Dr. Gray describes three new species in Proc. Zool. Soc. 1866: *Pt. wallacei*, from Macassar, p. 65, with woodcut of head (a similar woodcut of *Pt. personatus* is added for comparison); *Pt. livingstonii*, from the Island of Johanna, p. 66; and *Pt. elseyii*, from the north-east coast of Australia, p. 67.

Prof. Giebel has published some notes on the skulls of *Pteropus edwardsi* and *Pt. poliocephalus*. Zeitschr. ges. Ntrwiss. 1866, p. 251.

∨ *Cephalotes peronii*. Dr. Gray states that this Bat appears under the name of *Xantharpyia amplexicaudata* in the 'Voyage of the Sulphur;' and its teeth are described under the name of *Pteropus amplexicaudatus* in the observations on *Notopteris* (Proc. Zool. Soc. 1859, p. 30). Proc. Zool. Soc. 1866, p. 64.

∨ Dr. GRAY has published a revision of the genera of Horseshoe Bats (*Rhinolophidæ*), which he arranges thus (Proc. Zool. Soc. 1866, pp. 81-83):—

I. Nose-leaf broad, expanded, horseshoe-shaped in front, with the nostril near the centre; the hinder portion erect, triangular, acute, with cells on the side of its front surface. Tragus none.

A. The hinder, erect part of the nose-leaf with three cells on each side in front, and a compressed central process; front portion simple, without any pits. Tail and heel-bone distinct. Teeth 32; molars 3/3, premolars 2/3. *Rhinolophina*.

1. *Aquias* (A. luctus and A. trifolius). 2. *Phyllotis* (Ph. philippensis). 3. *Rhinolophus* (R. hastatus).

B. The hinder, erect part of the nose-leaf with one cell on each side, and one in the centre of the front, and with a compressed longitudinal process; the front, horseshoe-shaped portion fringed with a longitudinal crest, ending in a pit between the nostrils. *Rhinonycterina*.

4. *Rhinonycteris* (Rh. aurantius).

II. The hinder portion of the nose-leaf convex, with a transverse ridge in front below, with the broad apex bent down over the ridge, and divided by longitudinal folds into cells beneath; without any central longitudinal ridge in front.

C. The upper edge of the upper part of the nose-leaf entire. Tail and heel-bone distinct. Teeth 30; molars 3/3, premolars 1/2.

5. *Macronycteris* (M. gigas). 6. *Gloionycteris* (G. armigera). 7. *Rhinophylla* (Rh. labuanensis). 8. *Speorifera* (Sp. vulgaris). 9. *Chrysonycteris* (Ch. fulva). 10. *Phyllorhina* (Ph. nobilis and Ph. pygmaea).

D. Upper edge of the upper part of the nose-leaf two- or three-toothed. Teeth 28; molars $\frac{3}{3}$, premolars $\frac{1}{2}$. 11. *Asellia* (A. tridens and A. tricuspida). 12. *Cælops* (C. frithii).

III. Nose-leaf simple, coriaceous; the hinder, upper portion erect, leaf-like, without any cells in front. Tragus distinct.

E. The nose-leaf flat, with the nostril simply pierced in its front part. Forehead concave. Tail elongate, free, longer than the short interfemoral membrane. Teeth 28; molars 3/3, premolars 1/2. *Rhinopomina*,

13. *Rhinopoma* (Rh. microphyllum).

F. Nose-leaf with a central midrib, the sides of which are extended downwards between and covering the nostrils. Tail none; interfemoral membrane very large. *Megadermina*.

14^a. *Megaderma* (M. lyra). 14^b. *Spasma* (M. spasma). 15. *Lavia* (L. frons).

IV. The nostrils in the front of a deep longitudinal cavity on the nose, with two pairs of laminae on each side of it; the front pair with a subspiral fold in front. Tail elongate; terminal joint with a transverse process on each side, edging the membrane. *Nycterina*.

16. *Nycteris* (N. thebaica). 17. *Nycterops* (N. pilosa). 18. *Pelatia* (P. javanica).

All the genera are diagnosed.

∨ *Rhinolophus clivosus* (Rüpp.) and *Rh. fumigatus* (Rüpp.) are described by Prof. Peters from the typical examples. Monatsber. Ak. Wiss. Berlin, 1866, pp. 16 and 17.

∨ *Rhinolophus caelophyllus*, sp. n., Peters, Proc. Zool. Soc. 1866, p. 426, pl. 35, from Salween, Burmah.

∨ *Hipposiderus albanensis*, sp. n., Gray, Proc. Zool. Soc. 1866, p. 220, from Port Albany, Cape York Peninsula.

∨ *Nycteris grandis* (Ptrs.). Prof. Peters gives the measurements of a large example, named *N. baikii*, in the British Museum. Monatsber. Ak. Wiss. Berlin, 1866, p. 672.

∨ Dr. GRAY has published a revision of the genera of *Phyllostomidae*, which he arranges thus (Proc. Zool. Soc. 1866, pp. 111-118):—

I. Nostrils in the front of a disk which is expanded behind into an erect, free, lanceolate leaf.

A. Head elongate; margin of the lips entire. True grinders 3/3, the hinder well developed, short, transverse (except in *Carollia*); premolars 2/2 or 1/2.

a. Tongue moderate, flat, smooth on the sides, and with a group of recurved spines in the middle of the front part; lower cutting-teeth in a continuous series.

α. Nose-leaf produced behind, entire; interfemoral membrane well developed. Tail distinct (except in *Rhinops*).

aa. Front plate of the nose-leaf with an elevated edge and a central process in front; lower lip with two small triangular warts.

Tribe 1. *Lonchorhinina*, with *Lonchorhina*.

bb. Front of the nose-leaf simple, with a thin flat front margin more or less closely applied to the surface of the nose.

Tribe 2. *Macrophyllina*, with *Macrophyllum*.

Tribe 3. *Vampyrina*, with *Vampyrus*, *Chrotopterus*, *Lophostoma*, *Micronycteris* (M. megalotis), *Mimon*, *Macrotus* (M. waterhousii).

Tribe 4. *Phyllostomina*, with *Tylostoma*, *Guandira* (G. cayanensis), *Phyllostoma*, *Aleclops* (A. ater), *Carollia*, *Schizostoma*, *Rhinops* (R. minor), *Rhinophylla*.

Tribe 5. *Trachyopina*, with *Trachyops*.

β. Nose-leaf scarcely raised behind, and bifid, separated from the

nose by a deep groove behind and on the sides; end of nose hairy. Interfemoral membrane small, margining the legs. Tail very short, or none. The third upper grinder long and broad.

Tribe 6. *Brachyphyllina*, with *Brachyphylla*.

b. Tongue elongate, slender, exerted, with a band on each side formed of many series of recurved spines. Lower lip with a narrow deep notch in front. Lower cutting-teeth in two groups, divided by a space in the middle.

Tribe 7. *Glossophagina*, with *Glossophaga*, *Monophyllus*. *Anoura* (A. Geoffroyi).

B. Head short, broad; margin of the lip crenated, inner edge bearded. Interfemoral membrane small, angularly cut out, or only margining the legs. Tail none. True grinders $3/3$; the hinder small, circular, early deciduous or entirely wanting in one or both jaws.

Tribe 8. *Stenodermina*, with *Artibeus*, *Vampyrops*, *Uroderma*, *Chiroderma*, *Ariteus* (A. flavescens), *Pygoderma*, *Ametrida*, *Sturnira*.

C. The head short, broad; lips entire. Nose-leaf small, bifid behind. The grinders small, rudimentary; true grinders $1/2$, compressed. Upper cutting-teeth 2, large, conical; lower separated into two groups, trifid. Cardiac end of the stomach assuming the form of an elongated cæcum.

Tribe 9. *Desmodina*, with *Desmodus* and *Diphylla*.

II. Nostrils in the concavities of a small disk, with prominent side edges. The surface with symmetrical erect cartilaginous ridges. Interfemoral membrane marginal. Tail none. Ears with an expanded lobe on each side hooding the face.

Tribe 10. *Centurionina*, with *Centurio* and *Trichocorytes*.

All the genera are diagnosed.

↓ *Mimon bennettii* (Gray) described by Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 676.

↓ *Phylloderma stenops* (Ptrs.) is redescribed by Peters, l. c. p. 675; it is = *Guandira cayanensis* (Gray, see above p. 19).

↓ *Tylostoma*. *Phyllostoma longifolium* (Wagn.) is described from the typical example by Prof. Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 393; it is not identical with *Phyllostoma crenulatum* (Geoffr.).

↓ *Tylostoma childreni* (Gray) = *Loph. bidens* (Spix). Peters, l. c. p. 674.

↓ *Lophostoma*. *Tylostoma brasiliense* (Gray). Some notes by Peters, l. c. p. 674.

↓ *Schizostoma*. *Micronycteris megalotis* (Gray) = *Schizostoma elongatum* (Gray, not Geoffr.). Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 674.

↓ *Rhinops minor* (Gray, see above p. 19). Prof. Peters says that it is a very young example, perfectly agreeing with *Carollia brevicauda*. L. c. p. 678.

↓ *Lonchorhina aurita* (Tomes). Notes on the typical specimen by Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 673.

↓ *Vampyrops helleri*, sp. n., Peters, l. c. p. 392, from Mexico.

↓ *Uroderma bilobatum*, sp. n., Peters, l. c. p. 394, from Brazil and Cayenne.

↓ *Ametridu centurio* (Gray) is described by Peters, l. c. p. 396; it has $\frac{5}{5}$ molars, and not $\frac{4}{4}$ as *Pygoderma*.

↓ *Chiroderma*. *Phyllostoma pusillum* (Wagn.) is described by Prof. Peters from the typical specimen. Monatsber. Ak. Wiss. Berlin, 1866, p. 395.

Desmodus. Prof. Reinhardt's examination of the intestinal tract fully confirms Prof. Huxley's observation (*Zool. Record*, ii. p. 30). *Diphylla* agrees also in this respect with *Desmodus* (according to Peters's researches). The author asserts on this occasion that these bats are blood-suckers, but denies this entirely of the Stenodermatous and Glossophagous species, the stomach of the former containing fruits, and that of the latter insects. *Vidensk. Meddel. fra d. naturhist. Foren. i Kjöbenh. for 1865-66*, pp. 241-244.

√ *Chilonycteris osburni* (Tomes) = *Phyllodia parnellii* (Gray). Peters, *l. c.* p. 678.

Aëlo cuvieri (Leach). Dr. Gray states that he has found the typical specimen, that the genus is identical with his *Chilonycteris* = *Lobostoma* of Gundlach, and that the species agrees in coloration with *Lobostoma cinnamomeum* (Gundlach), which he believes to be only a variety of *Ch. macleayii*. *Proc. Zool. Soc. 1866*, p. 148. √ Prof. Peters states that the supposed typical example is Leach's *Mormops blainvillii*, and, therefore, that some confusion must have taken place. *Monatsb. Ak. Wiss. Berlin, 1866*, p. 678.

√ Dr. GRAY has published a synopsis of the genera and subgenera of the Insectivorous Bats without nose-leaf, which he divides into two families (*Vespertilionidæ* and *Noctilionidæ*), arranging them thus (*Anni. & Mag. Nat. Hist. xvii. pp. 89-93*):—

Fam. VESPERTILIONIDÆ. Face simple. Nostrils on the front of the nose, simple. The cutting-teeth separated in the middle by a space, and placed near the canines. Grinders acutely tubercular, three on each side in each jaw, the hinder one short and broad; with one, two, or three false grinders in front of them. Intermaxillaries separate from one another in the front of the palate, leaving a notch between the cutting-teeth.

I. Tail elongate, enclosed, and extended to the end of the elongated and produced interfemoral membrane.

A. Ears separate, lateral; the face short, broad, nearly bald; forehead flat; skull thick; brain-case oblong, scarcely raised above the face.

a. *Scotophilina*. The nostrils simple, pierced in the front of the nose, with a very short groove behind them.

1. *Scotophilus* (*Scotophilus*, *Vesperugo*, *Philocryptus*).

2. *Atalapha* (*Lasiurus*, *Atalapha*).

3. *Vesperus* (*Vesperus*, *Pipistrellus*, *Nycticejus*).

4. *Pachyomus* (*Scotophilus pachyomus*, *Tomes*).

b. *Romiciana*. Nostrils in front of long, simple-edged grooves, which converge and unite behind on the centre of the nose between the swollen cheeks.

5. *Romicia*.

B. Ears separate, lateral; face elongate, narrow, hairy; forehead convex, hairy; skull with a swollen brain-case and narrow face.

c. *Vespertilionina*. Cutting-teeth close to the canines.

6. *Tralatitius* (*Tralatitius*, *Capaccinus*). 7. *Vespertilio*. 8. *Harpyiocephalus*. 9. *Kerivoula*. 10. *Mwina*.

d. *Natalinia*. Upper cutting-teeth in pairs, separated from the canines by a space. Palate of skull not reaching beyond the last molar.

11. *Natalus*. 12. *Miniopterus*. 13. *Furiella*. 14. *Thyroptera* = *Hyonycteris* (*Tomes*).

e. ? *Nycticellina*.

15. *Nycticellus*.

C. Ears close together, in front, elongate, often united; face elongate, narrow, hairy; forehead convex; nose with a naked space; skull with a swollen brain-case, and narrow face.

f. *Plecotina*. Nostrils with a short lunato groove behind them; the forehead with a bald longitudinal line.

16. *Barbastellus*. 17. *Plecotus* (*Plecotus*, *Histiotus*, *Otonycteris*).

g. *Nyctophilina*.

18. *Nyctophilus*.

h. *Nyctericina*.

19. *Nycteris*. 20. *Petalia*.

II. Tail short, enclosed in the base of the large interfemoral membrane, with the tip on the upper surface.

i. *Furipterina*.

21. *Furipterus* (Bonap. & Gervais, not Tomes) = *Mosia* (Gray), *Furia* (F. Cuv.).

k. *Emballonurina*. Face conical, hairy; forehead convex; skull solid; forehead flattish; face short, broad, swollen at the sides, with a prominent postorbital process.

22. *Centronycteris*. 23. *Emballonura*. 24. *Saccopteryx*. 25. *Proboscidea*. 26. *Urocryptus*. 27. *Taphozous*. 28. *Saccolaimus*.

l. *Diclidurina*.

29. *Diclidurus*.

Fam. NOCTILIONIDÆ. The nostrils on the sides of the nose. The cutting-teeth in the middle of the interspace between the canine teeth. Canines wide apart in front. The grinders acutely tubercular, three in each jaw on each side, the hinder upper short and broad, with one or two small false grinders in front of them. Skull thick; forehead flat; internaxillaries small, close in front.

I. Tail short, enclosed in the large truncated interfemoral membrane, with the tip in the upper surface.

a. *Noctilionina*. Face simple. Tail simple.

1. *Noctilio*. 2. *Mystacina*.

b. *Mormopsina*.

3. *Mormops*.

II. Tail elongate to the edge of the large truncated interfemoral membrane; heel-bone elongate.

c. *Phyllodiana*. Interfemoral membrane truncated; nose crested; chin with one or two membranaceous ridges.

4. *Phyllodia*. 5. *Chilonycteris*. 6. *Pteronotus*.

d. ? *Spectrellina*.

7. *Spectrellum*.

III. Tail elongate, thick, enclosed in and produced beyond the transversely folded interfemoral membrane.

e. *Molossina*.

8. *Myopterus*. 9. *Cheiromeles*. 10. *Nyctinomus* (*Nyctinomus*, *Tadarida*). 11. *Molossus* (*Molossus*, *Mormopterus*, *Promops*).

The genera and subgenera are characterized.

- ↓ *Synotus leucomelas* (Rüpp.) is perhaps identical with *S. barbastellus* Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 18.
- ↓ *Plecotus auritus* occurs also in Egypt (*Pl. christii*, Mus. Brit.) and Persia. Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 18.
- ↓ *Miniopterus minor*, sp. n., Peters, *l. c.* p. 885, from Zanzibar.
- ↓ *Vespertilio*. Dr. Allen describes the following new species from California and Central America in Proc. Ac. Nat. Sc. Philad. 1866:—*V. mundus* and *V. concinnus*, p. 280; *V. exiguus* and *V. obscurus*, p. 281; *V. agilis* and *V. volans*, p. 282; *V. exilis* and *V. tenuidorsalis* (and *V. yumanensis*), p. 283; *V. macropus*, p. 288.
- ↓ *Vespertilio ater* (Bernstein), from Ternate, is most closely allied to *V. tralatitoides* (Gray). Peters, Monatsber. Berl. Ak. 1866, p. 18.
- ↓ *Vespertilio adversus* (Horsf.) = *V. trilatitius* (Temm.) = *V. trilatitoides* (Gray). Peters, *ibid.* p. 400. A variety, *amboinensis*, is described.
- ↓ *Vespertilio hasseltii* (Temm.) is not a *Vesperugo*, but belongs to the subgenus *Leuconoë*. Peters, *ibid.* p. 19.
- ↓ *Vespertilio leucogaster* (Wied) = *V. albescens* (Temm.) = *V. nubilus* (Wagn.). Peters, *ibid.*
- Vespertilio oxyotus*, sp. n., Peters, *ibid.*, from the Chimborazo.
- Vespertilio caliginosus* (Tomes), described by Peters, *l. c.* p. 401.
- Vespertilio macellus* (Temm.). Notes by Peters, *l. c.* p. 680.
- Vespertilio oreias* (Temm.) = *V. ciliatus* (Blas.) = *V. emarginatus* (Geoffr.). Peters, *l. c.* p. 681.
- Vespertilio macrodactylus* (Temm.), from Japan, most probably *V. capaccinii* (Europe). Peters, *l. c.* p. 681.
- Vespertilio anobarbus* (Temm.) = *Nycticejus crepuscularis* (Leconte). Peters, *l. c.* p. 681.
- Vespertilio (Kerivoula) jagourii*, sp. n., Peters, *l. c.* p. 399, from the Island of Samar.
- ↓ *Vespertilio magellanicus*, sp. n., Philippi, Wieg. Arch. 1866, p. 113, from the Straits of Magellan.—*Vespertilio capucinus*, sp. n., Philippi, *l. c.* p. 114, from Chili.
- ↓ *Chalinolobus*, g. n., established by Prof. Peters for *Vespertilio tuberculatus* (Forst.), distinguished by the cutaneous lobes of the angles of the mouth; [molars $\frac{3.2}{3.2}$ — $\frac{2.3}{2.3}$, Peters, MS.]. Monatsber. Ak. Wiss. Berl. 1866, p. 680.
- ↓ *Rhogocssa* is a new genus connecting the *Vespertilionidæ* with the *Noctilionidæ*, described by Dr. Allen (*l. c.* p. 285). *Rh. parvula*, sp. n., and *Rh. tumida*, sp. n., from Mexico.
- ↓ *Vesperugo leisleri* (Kuhl) is found in the Azores. Peters, Proc. Zool. Soc. 1866, p. 558.
- ↓ *Vesperugo kuhlii*. Prof. Peters confirms Mr. Tomes's statement that *Romicia calcavata* (Gray) is identical with this species. Monatsber. Ak. Wiss. Berlin, 1866, p. 680.
- ↓ *Vesperugo mordax*, sp. n., Peters, *l. c.* p. 402, from Java.
- Scotophilus* (Leach). This name was originally given to a young *Nycticejus temminckii*, and, therefore, ought to be reserved for the Old-World *Nycticeji*. Peters, Proc. Zool. Soc. 1866, p. 558; and Monatsber. Ak. Wiss. Berl. 1866, p. 679.
- Scotophilus wehvietschii*, sp. n., Gray, Proc. Zool. Soc. 1866, p. 211, pl. 24, from Angola.

³ *Scotophilus*. Dr. Allen regards *Sc. carolinensis* and *Sc. fuscus* as specifically identical, and describes *Sc. miradorensis*, sp. n., from Mexico. *E. c.* p. 287.

Nycticejus rüppellii, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 21, from Sydney.

Dysopes. Prof. Peters has examined the typical examples of Wagner's *D. holosericeus*, *albus*, *glauvicius*, and *olivaceo-fuscus*. *L. c.* pp. 22 and 23.

Nyctinomus planiceps, sp. n., Peters, *l. c.* p. 23, from Sydney.

Taphozous flaviventris, sp. n. (Gould), Peters, Proc. Zool. Soc. 1866, Nov. p. 430, from Australia.

Emballonura. Prof. Peters (Monatsber. Ak. Wiss. Berlin, 1866, p. 678) states that *E. lineata* (Temm.) = *E. naso* (Wied), and *E. monticola* (Temm.) = *E. alecto* (Gervais) = *E. discolor* (Ptrs.) = *E. (Moiria) nigrescens* (Gray), is from the East-Indian archipelago, and not from Central America (p. 679).

INSECTIVORA.

Dr. EDUARD BRANDT has published his researches on the dentition of the Shrews in the pamphlet mentioned above (p. 3). We give a detailed abstract of it:—

The author commences his treatise with an historical sketch of the different views entertained by various authors with regard to the nature of the small teeth intercalated between the large front teeth and the true molars. He shows that these views were arrived at in the most arbitrary manner, and that only W. Peters (Monatsber. Ak. Wiss. Berlin, 1852, p. 174) really observed an intermaxillary suture between the second and third of these small teeth in *Crocidura sacralis* (Ptrs.), whence he concluded that this subgenus is provided with two anterior and four lateral incisors above, two incisors below, and two canines above, lower canines being absent; the molars would be $\frac{8-8}{6-6}$. He attempted also the determination of the dentition of *Pachyura* and *Diplomesodon*, without, however, having observed the sutura maxillo-intermaxillaris in these subgenera. Moreover his observation regarding *Crocidura* was not in accordance with that of Geoffroy St. Hilaire, who says that the intermaxillary suture is behind the last small lateral tooth in *Crocidura aranea* (Mém. Mus. d'Hist. Nat. i. p. 307, tab. 15. fig. 8). This latter view was confirmed by Max Gemminger and Joh. Fahrer, who state in their work, 'Fauna Boica,' 1851, i. p. 60, "We have not only convinced ourselves of the correctness of Geoffroy St. Hilaire's and Duvernoy's opinion (viz. that all those small lateral teeth belong to the intermaxillary in *Croc. aranea*), but we were enabled to trace with certainty the extent of the intermaxillary in fullgrown specimens of *Sorex vulgaris* and *G. fodiens*. In *Sorex fodiens* the fifth lateral tooth, and in *G. vulgaris* the fifth and sixth do not belong to the intermaxillary; and therefore these teeth only are really pre-molars.

The genus *Sorex* of Cuvier has been divided into the sub-

genera *Sorex* (Wagl.), *Crossopus* (Wagl.), *Brachysorex* (Duv.), *Crocidura* (Wagl.), *Pachyura* (Sélys-Longch.), *Diplomesodon* (Brdt.)*. Types of all these subgenera † have been examined; and the dentitions of the following species are described in detail:—*S. vulgaris*, *S. pygmaeus*, *Crossopus fodiens*, *Crocidura leucodon*, *Croc. aranea*, *Croc. suaveolens*, *Pachyura etrusca*, *P. indica*, *Diplomesodon pulchellus*.

It was, of course, a point of the greatest importance to trace the sutura maxillo-intermaxillaris, which, in fullgrown examples, generally entirely disappears. The author had the good fortune to find a nest with young shrews (*S. vulgaris*), which were still naked and blind. All the bones of the skull, and especially the intermaxillaries, were easily separated. The teeth were complete in number, though but little developed and still covered by the gingiva; of the five small lateral teeth, three belong to the intermaxillary, and two to the maxillary, so that the dental formula of the subgenus *Sorex* ‡ may be given thus: $\frac{2+6}{2} + \frac{2}{2} + \frac{2+8}{2+6} = 32$. That is, eight incisors above and two below—the two upper front incisors being large, the six others lateral, gradually decreasing in size; two canines above and below; taking the first tooth behind the intermaxillary suture as a canine tooth, notwithstanding its very small size, the second must be regarded as lower canine tooth on account of its form (it is conical, unicuspid) and position; then follows in the maxillary a very small tooth, a premolar, to which corresponds in the lower jaw a premolar which is strongly developed and provided with two cusps and two roots; then follow four true molars above, and three below. All the lower molars are two-rooted. The first upper molar has three roots, like the last; the two others are four-rooted. The first upper molar is the strongest of all, as in Carnivora, and may be designated as flesh-tooth. The author examined thirty-seven adult examples of *Sorex vulgaris* from St. Petersburg, the Amur-countries, Caucasus, Ural, Sitcha, Kamtschatka, Bessarabia, and Unalashka, and five specimens of *Sorex pygmaeus* from Kamtschatka, Amur-countries, and the Ural.

The differences in the dentition between these two species are very small; and the following characteristics of the dentition of *Sorex* may be given:—Lower incisor with four prominences (corresponding to the number of upper incisors), upper front incisors with an exceedingly strong tooth-like lateral tubercle.

* Gray has separated *Crocidura varia* under the name of *Myosorex*; the third tooth of the lower jaw is provided with three tubercles.

† The author has had the opportunity of examining *Brachysorex* during a visit to the London and Paris Museums in 1866, subsequently to the publication of this treatise. His observations on this subgenus are embodied in this abstract, although not contained in the original memoir.

‡ In the subgenera of *Sorex* only the small lateral teeth vary in number, the number of all the other teeth being constantly the same. The mandible has always twelve teeth.

Of *Crossopus fodiens** thirteen examples from Russia, Siberia, and Belgium were examined. It has only four small lateral teeth on each side. The teeth are white, with brownish-red tips, as in *Sorex*, but less dark. The upper front incisor is arched and provided with a short and rounded tubercle; the lower incisor has one or two prominences, which are but little developed. The upper front incisor is, besides, provided with a hook-like process on its inner edge; this process may be seen also in *Sorex* (as observed by Jenyns), but it is very slightly developed in that genus, whilst it is very distinct in *Crossopus*. The observation made by Geoffroy St. Hilaire, Gemminger and Fahrner, mentioned above, is not confirmed by Dr. Brandt; he found, in five young examples, the intermaxillary suture between the second and third small lateral tooth, and he convinced himself that what the latter gentlemen regarded as a suture, was nothing but the sulcus of a blood-vessel. Consequently the dental formula for *Crossopus* is $\frac{2+4}{2} + \frac{2}{2} + \frac{2+8}{2+6} = 30$. The upper flesh-tooth is four-rooted.

Crocidura (sensu latiori, comprising *Crocidura*, *Pachyura*, *Diplomesodon*) is distinguished by its entirely white teeth; the number of small lateral teeth varies between four and two; the lower incisor is either entirely smooth or provided with a single very small tubercle. The tubercle of the upper incisor is but little developed, and obtuse; this tooth has no process on its inner edge. Thus *Crocidura* differs much in its dentition from *Sorex*, but *Crossopus* forms an intermediate form. In the author's opinion, these three subgenera only ought to be retained.

Of *Crocidura* (sensu strictiori) five examples of *C. leucodon* (Russia), six of *C. aranea* (Russia), and four of *C. suaveolens* (Crimea) were examined. One specimen of each of these species showed distinctly the intermaxillary suture between the second and third small lateral tooth; so that the formula for this group would be $\frac{2+4}{2} + \frac{2}{2} + \frac{8}{2+6} = 28$ (eight true molars above, two premolars and six molars below). This formula was subsequently confirmed by an examination of *C. sacralis* (Ptrs.) in the Berlin Museum.

Of *Pachyura* one example of *P. etrusca* (Italy) and three of *P. indica* (Bengal) were examined. They have four small lateral teeth, and traces of the suture could be observed between the second and third teeth. Subsequently, on examining the skulls in the Paris Museum, the suture was seen quite distinctly at the same place in a young *Pachyura myosurus* (no. 676); so that the dental formula would be (as in *Crossopus*) $\frac{2+4}{2} + \frac{2}{2} + \frac{2+8}{2+6} = 30$.

As regards *Diplomesodon*, which has two small lateral teeth

* *Sorex remifer* is merely a variety of *Cr. fodiens*.

only, traces of the suture were observed in one of the two examples examined; it is between the first and second. Dental formula $\frac{2+2}{2} + \frac{2}{2} + \frac{8}{2+6} = 26$.

Finally, *Brachysorex*, the dentition of which could not be treated by the author in his memoir, has been lately examined by him in the Paris Muscum. In none of the specimens could a sutura maxillo-intermaxillaris be observed. In *B. mephitis* and *B. brevicaudatus*, which have five small lateral teeth, the second lower (canine) tooth corresponds to the space between the third and fourth upper small lateral teeth, as in *Sorex*; consequently the fourth upper small lateral tooth is to be regarded as the upper canine, and the fifth as a premolar. In *B. palustris* and *B. flavescens*, which have four small lateral teeth, the lower canine corresponds to the space between the second and third upper small lateral teeth; consequently the third is the upper canine, and the fourth a premolar, as in *Crossopus fodiens*.

As it has been indicated above, the author recognizes three types of dentition in *Sorex*, viz. 1, the type with white teeth, the points being brownish-red (*S. vulgaris*); 2, the type with white teeth (*Croc. aranea*); 3, the type with white teeth, the points being of a more or less light brownish-red colour (*Cross. fodiens*). Finally he collects the facts mentioned and others of minor importance, by which these three types are characterized, in a synoptical table. The treatise is accompanied by six plates illustrating the dentition; to facilitate a complete understanding, we may add a few of the explanations of the plates:—

Plate I. fig. 9. Skull of young *S. vulgaris*.

10. Foramina incisiva.

12. A. Molars from above. B. Side view.

Plate II. fig. 12. A. Upper incisor with hook-like process.

14. Views of the variations of the foramina incisiva in different examples of *Cross. fodiens*.

Potamogale. Prof. Allman's memoir has been published in Trans. Zool. Soc. vi. 1866, pp. 1-16. He gives a detailed description of the external and osteological characters, and of a part of the anatomy of the soft parts. He comes to the same conclusions as Dr. Bocage as regards the systematic position of this animal (see Zool. Record, ii. p. 32), giving a somewhat different formula of the dentition, viz. i. $\frac{3-3}{3-3}$, c. $\frac{0-0}{0-0}$, p. $\frac{3-3}{3-3}$, m. $\frac{3-3}{3-3} = 36^*$. The memoir is accompanied by a series of accurate woodcuts and two excellent plates, representing the entire animal and the skeleton.

Potamogale. Dr. Gray censures the Recorder for the remarks made in

* On reexamining the specimen, the author found that the dentition was not perfectly developed, the last molar being still hidden in the alveola.

Zool. Record, ii. p. 33, with regard to the priority of this name (Ann. & Mag. Nat. Hist. xviii. p. 426), to which Dr. Günther replies (ibid. p. 498).

Crocidura ferruginea and *Cr. fusco-nurina*, sp. n., Heuglin, Nov. Act. Acad. Leop. Carol. Nat. Cur. 1865, p. 36, from North-eastern Africa.

▷ *Crocidura albicauda*, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 885, from Angasilia, Comores.

↓ *Talpa europæa*. Observations on the natural history of the mole and its supposed utility, by C. L. Brehm, are translated into French by M. L. Olph-Galliard, and published in Rev. et Mag. Zool. 1866, pp. 49-54, and 140-147.

FELIDÆ.

Felis lynx. An attractive account of a tame lynx is given by O. von Loewis in Zoolog. Garten, 1866, pp. 121-127.

CANIDÆ.

Canis. M. Guyon mentions that a domestic race of dog has become extinct in the islands of Martinique and Guadeloupe. Compt. Rend. 1866, lxiii. p. 589.

Canis vulpes. A. Müller has published some very interesting observations on the natural history of the fox. He proves that the male lives in polygamy, and does not assist in rearing his offspring. Zoolog. Garten, 1866, pp. 249-262.

A fox with white hind limbs has been observed by Prof. Krauss. Würt. ntrw. Jahresh. 1866, p. 43.

↓ *Canis patagonicus*, an sp. n.?, Philippi, Wiegman. Arch. 1866, p. 116, from the Straits of Magellan.

↓ *Ilyæna*. Mr. Busk has published a very elaborate paper on the cranial and dental characters of the existing species, equally important to the zoologist and palæontologist. He shows especially that skulls of *I. crocuta* have been determined and described as those of *I. brunnea*, the dentition of which is now figured for the first time. He has collected in four tables the various cranial and dental measurements taken from skulls of the different species and varieties. On a plate, views of the cranium of *I. brunnea* and *striata* are given. Journ. Linn. Soc. 1866, ix. pp. 59-70.

MUSTELIDÆ.

Martes chrysoptila, sp. n., Swinhoe, Ann. & Mag. Nat. Hist. 1866, xviii. p. 286, from Formosa.

URSIDÆ.

Ursus formosanus (Swinhoe) is externally quite identical with *U. tibetanus*. Sclater, Proc. Zool. Soc. 1866, p. 418.

Nusua dorsalis, sp. n., Gray, Proc. Zool. Soc. 1866, p. 169, pl. 17, from South America.

PHOCIDÆ.

▷ The arrangement of the Seals proposed by Dr. GRAY in 'Catalogue of Seals and Whales' is the following:—

I. STENORHYNCHINA:—1. *Lobodon (carcinophagus)*. 2. *Leptonyx (weddellii)*. 3. *Ommatophoca (rossii)*. 4. *Stenorhynchus (leptonyx)*. 5. *Monachus (albiventer et tropicalis)*.

II. PHOCINA:—6. *Callocephalus (vitulinus, caspicus et dimidiatus)*. 7. *Pa-*

gomys (*foetidus* et *largha*). 8. *Pagophilus* (*grœnlandicus*). 9. *Halicyon* (*richardi* et *californicus*=*Phoca jubata*, Hutching). 10. *Phoca* (*barbata*).

III. TRICHECHINA:—11. *Halichærus* (*grypus*). 12. *Trichechus* (*rosmarus*).

IV. CYSTOPHORINA:—13. *Morunga* (*elephantina*). 14. *Cystophora* (*cris-tata* et *antillarum*).

V. ARCTOCEPHALINA:—15. *Callorhinus* (*ursinus*). 16. *Arctocephalus* (with ten species, one, *californianus*, being new). 17. *Otaria* (*leonina* et *stelleri*).

Mr. GILL intends to publish a 'Monograph of the Pinnipedes,' and has given a Prodrôme of it in Proc. Essex Instit. vol. v. pp. 1-13. He proposes a classification in which the divisions and groups are characterized, and the genera tabulated; of species only the type of each genus is mentioned. He adds also a list of North American Seals; it comprises 13 species. The following is the arrangement proposed:—

First family. PHOCIDÆ.

Subfamily I. PHOCINÆ:—1. *Phoca* (L.)=*Callocephalus* (F. Cuv. & Gray) =*Halicyon* (Gray). 2. *Pagomys* (Gray). 3. *Pagophilus* (Gray). 4. *Eri-gmathus* (Gill)=*Phoca* (Gray). 5. *Halichærus* (Nilss.). 6. *Monachus* (Flem. & Gray)=*Heliophoca* (Gray)—*Phoca monachus*.

Subfamily II. CYSTOPHORINÆ (Gray).

Subfamily III. STENORHYNCHINÆ: adopted from Gray's system after removal of *Monachus*.

Second family. OTARIIDÆ (Brookes, Gervais).

1. *Otaria* (Péron)—*Ph. jubata*. 2. *Arctocephalus* (F. Cuv.)=*Callorhinus* (Gray)—*Ph. ursina*. 3. *Eumetopias* (Gill)—*Otaria californiana*=*Arctocephalus monteriensis* (Gray). 4. *Zalophus* (Gill)—*Otaria gilliespii*. 5. *Hal-arctus* (Gill)—*Arctocephalus delalandii*.

Third family. ROSMARIDÆ.

Dr. GRAY has published critical remarks on this "Prodrôme of a Monograph," in Ann. & Mag. Nat. Hist. xvii. pp. 444-446. The *Halichærus antarcticus* of Peale will probably prove to be the type of a distinct genus, for which Dr. Gray proposes the name of *Halophilus*.

Prof. PETERS, having examined the specimens of *Otariæ* in the Berlin Museum, and at a later period also those in the London and Leyden Museums, has published the results of his observations in Monatsber. Ak. Wiss. Berlin, 1866, pp. 261-281, and 665-672. He remarks that, although at present it must appear useful and necessary to divide the species into groups, he does not regard them as genera, and that the generic names proposed may be dropped as soon as the species are better known. He arranges them thus (pp. 670-672):—

a. *Otaria* (s. s.). Hair short, without under-fur; ears very short (15-20 mm. long); osseous palate very concave, reaching to, or nearly to, the hamuli pterygoidei.

1. *O. jubata* (Forst.), from Juan Fernandez, Peru. The author was at first (pp. 264-269) inclined to regard *O. leonina* (F. Cuv.) from the eastern coast of South America and Falkland Islands, *O. byronia* from the Marian Islands, and *O. godeffroyi* (sp. n., p. 266, taf. 1) from the Chincha Islands as distinct species; but having examined the typical example of *O. byronia* (a skull in the Collection of the Royal College of Surgeons, badly figured by Blainville) and other specimens, he entertains doubts on this point, referring to an observation of Prof. Reinhardt, who himself obtained two skulls of old seals on the Chincha Islands, one of which agrees with *O. godeffroyi*, whilst the other, much older (with a third of young age), differs much in the structure of the palate.

2. *O. ulloa* (Tschudi). The author has examined and figures the skull of the typical specimen (p. 667, with plate); it does not belong to *Phocarcetos*, as he believed previously, p. 270.

b. *Zalophus* (Gill). Like *Otaria*, but with the osseous palate slightly concave in front, and deeply emarginate posteriorly.

3. *O. lobata*, Gray, from New Holland.

4. *O. gilliespii* = *O. stelleri* (Schleg.), from California and Japan.—The latter is not identical with *O. lobata*, as believed formerly.

c. *Phocarcetos* (Ptrs.). No under-fur; ears longish (3 cm.); palate concave, with its hind margin distant from the hamuli pterygoidei; molars distinctly lobed.

5. *O. hookeri* (Gray), from the Falkland Islands and Antarctic Ocean.

d. *Eumetopias* (Gill). No under-fur; ears longish (3 cm.); palate concave behind, and terminating at a great distance from the hamuli pterygoidei.

6. *O. stelleri* (Less.) = *O. californiana* (Less.) = *Arctocephalus monteriensis* (Gray). Behring's Straits, California.

e. *Arctocephalus* (F. Cuv.). Hairs with under-fur; ears longish (3 or 4 cm.); palate slightly concave, deeply emarginate behind; mandible with distinct posterior angle.

7. *O. pusilla* (Schreb.) = *Arctoc. ursinus* (F. Cuv.) = *O. delalandii* (F. Cuv.) = *O. ursina*, part. (Nilss.) = *O. lamarii*, part. (Müll.) = *Arctoc. delalandii* (Gray), from South Africa.

8. *O. cinerea* (Péron and Les.) = *O. ursina*, part. (Nilss.) = *O. lamarii*, part. (Müll.), from New Holland.

f. *Arctophaga* (Ptrs.). Hairs with a dense under-fur; ears longish (3 or 4 cm.); palate slightly concave, deeply emarginate behind; mandible without posterior angle; molars distinctly lobed.

9. *O. falklandica* (Shaw, Burmeister) = *Arctoceph. nigrescens* (Gray). From the Falkland Islands and east coast of South America.

9^a. *Otaria philippii* is described as a new species (p. 276, taf. 2. A, B, C); from Juan Fernandez.

g. *Callorhinus* (Gray). Hair with dense under-fur; ears longish (3 or 4 cm.); palate moderately concave in front, flat behind, and deeply emarginate; mandible with distinct lower posterior angle; mandibular process directed outwards; molars not lobed.

10. *O. ursina* (L.); Behring's Straits, Washington Territory.

The author has worked out the synonymy of the species mentioned. He shows that the materials at present existing in col-

lections are quite insufficient for the determination of the species, and consequently for a satisfactory systematic arrangement, and that no real advance in our knowledge can be made unless complete series of the various seals inhabiting a certain locality are obtained. He admitted at first, like his predecessors, the number of molar teeth as a character of his generic divisions; but subsequently (p. 669) it was found to be much subject to variation, and entirely useless even for specific definition.

Finally, Dr. GRAY, induced by Mr. Gill's and Prof. Peters's publications, reexamined the skulls and skeletons of the *Otaria* in the British Museum. He says that the "*Otariadæ* must be considered a distinct family from the Earless Seals," and divides them thus (Ann. & Mag. Nat. Hist. xviii. September, pp. 228-237):—

I. The palate produced behind to a line with the condyles; it is deeply concave behind, and becomes deeper as the animal increases in age. The hinder nostril is short, with a truncated front edge.

1. *Otaria*, with *O. jubata* (Forst.); the author is not inclined to regard *O. byronia* and *O. godeffroyi* (misprinted "Geoffroyia") as distinct.

II. The palate rather produced behind. The front edge of the hinder nasal opening in a line with the middle of the zygomatic arch.

A. The grinders $\frac{5}{5}$, the fourth upper (in adult) under the front edge of the orbit, and the last in front of the back edge of the zygomatic arch. *Zalophina*.

2. *Zalophus* (Gill). Palate concave, narrow in front, wider at the line of the last grinder, and then contracted behind. The hinder nares narrow, elongate, twice as long as wide, acutely arched in front, front edge in a line with the front edge of the orbital process of the malar bone. With *Z. gilliespii*.

3. *Neophoca* (Gray). Palate concave, broad, as broad before as at the hinder part of the tooth-line, then rather suddenly contracted. The hinder nares broad, rather longer than broad, with the front edge broadly arched, which is further back than the front edge of the orbital process of the zygomatic arch or malar bone, which is thick and flat. With *N. lobata*.

4. *Arctophoca* (Ptrs.), with *Otaria philippii* (Ptrs.).

B. The grinders $\frac{5}{5}$, the third upper being under the front edge of the orbit, the last or fifth separated from the rest by a broad space and placed far behind the back edge of the zygomatic arch; the hinder grinders two-rooted.

5. *Eumetopias* (Gill).

C. The grinders $\frac{6}{5}$, the third upper under the front edge of the orbit, the fifth and sixth behind the back edge of the zygomatic arch; the upper hinder grinders two-rooted.

6. *Phocartos* (Ptrs.). 7. *Callorhinus* (Gray). *

D. Grinders $\frac{6}{6}$, the third upper grinder under the front edge of the orbit; the hinder ones far back behind the back edge of the zygoma. *Arctocephalina*.

8. *Arctocephalus* (F. Cuv., Ptrs.) = *Halartos* (Gill).

* The fifth and sixth upper grinders with two roots (P); the sixth upper partly behind the hinder edge of the zygomatic arch. *Arctocephalus*—*A. delalandii*.

** The fourth, fifth, and sixth upper grinders with two distinct diverging roots; the fifth in a line with the hinder edge of the zygomatic arch. *Euotaria*—*A. nigrescens*. The author remarks that *Phoca falklandica* of Shaw and Hamilton is at present indeterminable, and cannot be referred as a synonym to *A. nigrescens*.

*** Fourth, fifth, and sixth upper grinders with two diverging roots; the fifth upper grinder entirely behind the hinder edge of the zygomatic arch. The palate narrow. *Gypsophoca*—*O. cinerea*.

↓ *Arctocephalus falklandicus*. Prof. Burmeister describes and figures a skull in Ann. & Mag. Nat. Hist. xviii. p. 99, pl. 9. figs. 1–4, which, according to Dr. Gray (ibid. p. 234), is probably the young of *A. hookeri*, and according to Professor Peters *Otaria falklandica* (Shaw). Monatsber. Ak. Wiss. Berlin, 1866, p. 670.

ROSORES.

Prof. LILLJEBORG (*l. c.*) has studied the literature on the animals of this order with the view of arranging the genera, groups, and families systematically. He gives full descriptions of the characters of genera and higher divisions, adding synoptic tables of the genera of each group. The distinction of species is not within the scope of this memoir. The arrangement proposed is the following:—

First suborder SIMPLICIDENTATI.

I. Family MURIDÆ (Gray).

A. Subfamily Murini.

a. Section *Mures*:—First tribus, *Mures proprii*: 1. Mus, 2. Acanthomys, 3. Cricetomys, 4. Saccostomus, 5. Cricetus, 6. Pseudomys, 7. Hapalotis, 8. Phloeomys, 9. Dendromys, 10. Steatomys, 11. Pelomys.—Second tribus *Sigmodontes*: 12. Reithrodon, 13. Acodon, 14. Hesperomys, 15. Holochilus, 16. Oxymycterus, 17. Neotoma, 18. Sigmodon, 19. Drymomys, 20. Nectomys.—Third tribus *Merionides*: 21. Otomys, 22. Meriones, 23. Rhombomys, 24. Malacothrix, 25. Mystromys, 26. Psammomys, 27. Spalacomys.

b. Section *Sminthi*:—28. Sminthus.

c. Section *Hydromys*:—29. Hydromys.

B. Subfamily *Arvicolini*:—1. Fiber, 2. Arvicola, 3. Cuniculus (Wagl.), 4. Myodes.

II. Family SPALACIDÆ (Brandt).

A. Subfamily *Myospalacini* (= *Prismatodontes*, Brandt):—1. Ellobius, 2. Myospalax.

B. Subfamily *Spalacini* (= *Rhizodontes*, Brandt):—3. Spalax, 4. Rhizomys, 5. Heterocephalus, 6. Bathyergus, 7. Georhynchus, 8. Heliophobius.

III. Family DIPODIDÆ (Jäger).

A. Subfamily *Dipodini* (Brandt):—1. Dipus, 2. Alactaga.

B. Subfamily *Jaculini* (Brandt):—3. Jaculus.

C. Subfamily *Pedetini* (Brandt):—4. Pedetes.

IV. Family MYOXIDÆ (Waterh.).

Myoxus.

V. Family SACCOMYIDÆ (Baird).

- A. Subfamily *Sacomyni*:—1. *Dipodomys*, 2. *Perognathus*.
 B. Subfamily *Geomyini*:—3. *Thomomys*, 4. *Geomys*.

VI. Family CASTORIDÆ (Gray).

Castor.

VII. Family SCIURIDÆ (Waterh.).

- A. Subfamily *Sciurini*:—1. *Sciurus*, 2. *Sciuropterus*, 3. *Pteromys*, 4. *Tamias*, 5. *Spermophilus*, 6. *Arctomys*, 7. *Cynomys*.
 B. Subfamily *Anomalurini*:—8. *Anomalurus*.

VIII. Family HAPLODONTIDÆ.

Haplodon.

IX. Family CHINCHILLIDÆ (Benn.).

1. *Lagostomus*, 2. *Lagidium*, 3. *Chinchilla*.

X. Family SPALACOPODIDÆ (Brandt).

- A. Subfamily *Octodontini* (Waterh.):—1. *Habrocomus*, 2. *Capromys*, 3. *Plagiodon* (tia, F. Cuv.), 4. *Spalacopus*, 5. *Octodon*, 6. *Ctenomys*, 7. *Ctenodactylus*, 8. *Pectinator* (Heuglin).

- B. Subfamily *Echinomyini* (Waterh.):—9. *Dactylomys*, 10. *Cercomys*, 11. *Lasiuromys*, 12. *Petromys*, 13. *Myopotomus*, 14. *Carterodon*, 15. *Aulacodes*, 16. *Mesomys*, 17. *Echinomys*, 18. *Loncheres*.

- C. Subfamily *Cercolabini* (J. Gray):—19. *Chætomys*, 20. *Cercolabes*, 21. *Erethizon*.

XI. Family HYSTRICIDÆ (Gray).

- A. Subfamily *Hystriini* (Waterh.):—1. *Atherura*, 2. *Acanthion*, 3. *Hystrix*.

- B. Subfamily *Cavini* (Gray):—4. *Dasyprocta*, 5. *Cœlogenys*, 6. *Hydrochoerus*, 7. *Cavia*, 8. *Cerodon*, 9. *Dolichotis*.

Second suborder DUPLICIDENTATI (Ill.).

XII. Family LAGOMYIDÆ.

Lagomys.

XIII. Family LEPORIDÆ (Gray).

Lepus.

Prof. PETERS has read before the Academy of Sciences of Berlin a paper containing a systematic synopsis of the groups and genera of *Murini*. In the abstract published (Monatsber. Ak. Wiss. Berlin, 1866, Jan. 11, pp. 13–14) no characters of the divisions are given.

√ *Mus macropus*, sp. n., Gray, Proc. Zool. Soc. 1866, p. 221, from the Cape York Peninsula. √ *Mus beavani*, sp. n., Peters, Proc. Zool. Soc. 1866, p. 559, from Maubhoun, Burmah.

√ *Lasiomys* is a new genus described by Prof. Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 409. It is referred to a group, *Dendromyces* (containing *Dendromyces* and *Steatomys*), distinguished from the *Mures* proper by incisors rounded anteriorly, prolonged fore claws, absence of supraorbital crests, and by foramina infraorbitalia equally wide above and below. It differs from the other two genera in having incisors without longitudinal groove; hairs modified into stiff flat bristles.—*L. afer*, sp. n., fig. 2 (skull), from Guinea.

√ *Hesperomys nudicaudus*, sp. n., Peters, l. c. p. 404. fig. 1 (skull), from Guatemala. It is the type of a new subgenus, *Tylomys*.

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↓ *Lemmus norvegicus*. M. Guyon has described his observations of an example kept for some time in captivity. Compt. Rend. 1866, Sept. 7 (Rev. et Mag. Zool. 1866, pp. 425-432).

↓ *Sciurus atrodorsalis* (Gray). Capt. Beavan and Prof. Peters point out that *Sc. hyperythrus* (Blyth) is identical with this species. Proc. Zool. Soc. 1866, p. 428.—*Sciurus chrysonotus* (Blyth). Notes on this species by Capt. Beavan. Ibid. p. 429.—*Sciurus picus*, sp. n., Peters, *ibid.* p. 429, from Tennasserim.

↓ *Arctomys* et *Spermophilus*. Hr. E. Schauer has written on the species of these genera which occur in Poland and Galicia, Wieg. Arch. 1866, pp. 93-112. He gives an account of his observations on *Sp. guttatus* (Temm.), and shows by a plan (pl. 4) the complicated structure of its subterranean burrow. *Sp. citillus* has not been found. Neither the Marmot nor the Bobak (if they be two distinct species) occurs in Poland and Galicia Proper; they appear to be very scarce and nearly extinct in the Tatra and Carpathian Mountains. The Bobak is provided with cheek-pouches.

Arctomys marmota. Prof. O. Schmidt reports that in the immediate vicinity of Graz, on the Rainerkogel, about 200 feet above the Mur, an old Marmot-dwelling has been discovered, with the skeletons of four individuals, belonging to three generations. This discovery, the first and only one of the kind in Styria, leads directly to that diluvial period when, by the extension of the glaciers in the higher regions of the Alps, the Upper Alpine animals and the Alpine flora were driven down into the low grounds, the evidences of which have hitherto been detected chiefly in Switzerland.—Sitzgsber. Ak. Wiss. Wien, 1866, iii. March 8, pp. 256-259. (Ann. & Mag. Nat. Hist. 1866, xvii. p. 392.)

↖ *Hystrix*. Dr. Gray has examined the specimens of Porcupines in the Collections of the Zoological Society and of the British Museum (Proc. Zool. Soc. 1886, pp. 306-311). The results of his researches refer chiefly to the species formerly united in the genus *Acanthion*, which is now divided into three groups:—

a. *Edocephalus*, with *Acanthion cuvieri* (Gray) = *Hystrix africa australis* (Pters.). This species cannot be externally distinguished from *Hystrix cristata*.

b. *Acanthochærus*, with *A. bartlettii*, sp. n., p. 310, formerly believed to be a hybrid between *Acanthion javanicum* and *Hystrix cristata*; and *A. grotei*, sp. n., p. 310, pl. 31, from the jungles behind Malacca (*ibid.* p. 417).

c. *Acanthion*, with *A. (Acanthion) hodgsonii*, *A. (Acantherium) javanicum*, and *A. (Acantherium) flemingii*.

The author adds the synonymy of each species, and remarks that *Erethizon*, *Sphiggurus*, and *Chatomys* have a well-developed clavicle.

↖ *Dasyprocta cristata*. Messrs. Mivart and Murie have given an account of the anatomy of this animal, paying particular attention to the myological part. Proc. Zool. Soc. 1866, pp. 383-417.

Lepus. Dr. Hilgendorf has communicated a preliminary notice on the distribution of the enamel on the teeth of the Leporine Rodents. Monatsber. Ak. Wiss. Berl. 1865, p. 673.

Dr. Pigeaux states that the hybrids between hare and rabbit are not fertile, and that so-called fertile hybrids were merely a variety of the rabbit. Bull. Soc. Zool. d'Acclim. 1866, p. 334.

EDENTATA.

↓ *Dasyppus gigas*. Prof. Krauss describes the skin and skeleton from seven examples collected by Hr. Kappler. Wieg. Arch. 1866, pp. 271-280.

PACHYDERMATA.

↓ *Sus scrofa, domest.* M. A. Sanson states that the domestic pig cannot be the descendant of the Wild Boar, the former having six, the latter five lumbar vertebræ (Compt. Rend. 1866, Nov. 12, pp. 843-845); and much less of *Sus indicus*, which has only four lumbar vertebræ (ibid. Nov. 26).

Sus taivanus (Swinhoe) has the appearance of being a domesticated animal. Sclater, Proc. Zool. Soc. 1866, p. 419.

Hippopotamus amphibius. Dr. F. Schlegel reports on the successful rearing of a young Hippopotamus born in the Zoolog. Gardens in Amsterdam (July 31). It had been separated from the mother, which was in the habit of killing her offspring on two previous occasions. Zoolog. Garten, 1866, p. 34.

Equus caballus. M. A. Sanson mentions that the Horse in the East has five lumbar vertebræ, whilst those bred in Western countries have six. Compt. Rend. 1866, lxiii. p. 484.

Equus burchelli. Notes on the period of gestation and birth of a young by Dr. M. Schmidt. Zoolog. Garten, 1866, p. 267.

RUMINANTIA.

↓ Mr. SCLATER, in his paper on *Antilocapra* (Ann. & Mag. Nat. Hist. xviii. p. 403), proposes the following arrangement of the Ruminants:—

I. RUMINANTIA PHALANGIGRADA.

1. *Camelidæ*.

II. RUMINANTIA UNGULIGRADA.

a. Placenta polycotyledonaria. Stomachus, etc.

a'. Pedes didactyli, unguis succenturiatis nullis.

2. *Camelopardalidæ*. 3. *Antilocapridæ*.

b'. Pedes tetradactyli, unguis succenturiatis duabus.

4. *Bovidæ*. 5. *Cervidæ*. 6. *Moschidæ*.

b. Placenta diffusa. Stomachus, etc. (See A. Milne-Edwards, Zool. Record, i. p. 29.)

7. *Tragulidæ*.

The paper is concluded with a table showing the geographical distribution of these Mammals, in which the geographical divisions employed are the same as those used by the author in his paper on the distribution of birds, and prove to be equally applicable to the class of Mammals.

↓ Dr. GRAY, referring to the preceding paper (ibid. p. 408), regrets that the author, adopting Sundevall's division, changed Sundevall's term *Digitigrada* into *Phalangigrada*. He doubts the applicability of the form of the placenta to zoological classification, reminding us of the scanty information we possess at present on this subject; and points out several instances of *Bovidæ* without false hoofs. (To which Mr. Sclater replies, ibid. 1867, xix. January, p. 53.)

↓ *Auchenia*. Dr. Murie describes and figures the Llama and Alpacas, in the

Menagerie of the Zoological Society of London, as they appear in their summer dress, after being shorn. Proc. Zool. Soc. 1866, pp. 530-531, pl. 44.

↘ *Camelopardalis*. Dr. Crisp has made some further observations on the anatomy of the intestinal tract of the Giraffe. Proc. Zool. Soc. 1866, p. 563.

↘ *Antilocapra*. Dr. Canfield's most interesting observations on the habits of the Prongbuck are published in Proc. Zool. Soc. 1866, pp. 105-110. With regard to the periodical shedding of its horns (see Zool. Record, ii. p. 45), he proves beyond a doubt that they are shed and renewed every year until they attain to the full size, and shows it to be very probable that they are renewed annually after that time (perhaps from the fourth or fifth year). The author's observations with regard to the progress of growth of the horny sheath are the following:—A male born in the commencement of the year dropped the horns in December; "within a day or two, or a week at most, the protuberances began to be tipped with a point of horn once more, that grew from the base, and increased in size for a year." The anterior prongs made their appearance in the third year. "Each of the basal anterior protuberances at length became tipped also with horn;" they "were not as yet connected with main horn, but" "very soon became consolidated."

↘ Dr. GRAY (Ann. & Mag. Nat. Hist. 1866, xviii. pp. 323-326) refers to various authors who have either mentioned or denied the fact of the annual shedding of the horns. He points out the difference of the horns of the Prongbuck from those of the *Cervidæ*, and their identity with those of the true hollow-horned Ruminants. "It only differs from them in the outer case of the horn being porous, and formed of loosely agglutinated, or rather felted hairs; and in the case being deciduous and renewed annually, instead of being permanent and strengthened by internal laminæ so as to form a hard horn." The author regards this peculiarity as a very good character to separate the Prongbuck into a distinct family, *Antilocapridæ*, between *Bovidæ* and *Giraffidæ*.

↘ Mr. SCLATER read a paper on the same subject before the British Association, an abstract of which is given in Ann. & Mag. Nat. Hist. 1866, xviii. pp. 401-404. He explains the mode in which he supposed the shedding to be effected, thus:—"After the old horn was cast off, the horny matter, which was at first entirely confined to the upper end of the new horn, gradually spread itself down to its base, enveloping the numerous hairs with which the new horn was clothed when first appearing, and ultimately checking their growth and destroying their vitality. After the horn was perfected and hardened, new hairs developed themselves beneath the epidermis, and, not being able to force their way through the horny covering, became, as the author believed, the chief agent in causing the shedding of the horn. As regards the general structure of the horns of the Pronghorn, it was quite evident that they had little or nothing in common with those of the Deer. They consisted of true horn (like those of the ordinary *Bovidæ*) gradually developed from the epidermis, the skin remaining complete underneath them." This peculiarity, the furcation of the horns, and the absence of the "false hoofs" induce the author to raise this genus to the rank of a family.

↘ *Bos bison*. Prof. v. Brandt shows that there is no specific difference between specimens from the Caucasus and Lithuania. Bull. Soc. Nat. Mosc. 1866, xxxix. pp. 252-259.

↘ *Bos frontalis* fig. by Sclater, Proc. Zool. Soc. 1866, p. 1, pl. 1.

↓ *Bubalus*. Mr. Blyth shows that the horns of the Buffalo of North-eastern Africa differ from those of the Cape Buffalo sufficiently in size and form to distinguish the former at least as *B. caffer*, var. *equinoctialis*. Proc. Zool. Soc. 1866, pp. 371-372, figs. 1, 2. He also adds a full figure of *B. brachyceros*, p. 373.

↓ *Cephalophus breviceps*, sp. n., Gray, Proc. Zool. Soc. 1866, p. 202, pl. 20, from West Africa (?).

↓ *Cervus*. Dr. W. Sæmmering has published a description of the change and development of the horns of a stag (*C. elaphus*) in the Zoological Gardens in Frankfurt, and illustrated it with very accurate drawings (Zoolog. Garten, 1866, pp. 41-47, pls. 1-6). Dr. Max Schmidt (ibid. pp. 47-61) has added his observations on the change of the horns of various other species kept in those gardens, viz. *C. tarandus*, *dama*, *elaphus*, *canadensis*, *aristotelis*, *hippelaphus*, *porcinus*, *axis*, *virginianus*, and *muntjac*.

Cervus capreolus. Prof. Kölliker describes skulls with canine teeth. Würzb. ntwiss. Zeitschr. vi. 1866, pp. 82-83.

↓ *Cervus macrotis* et *C. columbianus*. Dr. Gray has formed of these deer a distinct genus, which he calls *Eucervus*. Ann. & Mag. Nat. Hist. xviii. p. 338.

Cervus pudu. Mr. Sclater figures the head of a male specimen with a pair of small straight horns. Proc. Zool. Soc. 1866, p. 104.

Cervus mariannus (Desm.). The antlers are figured by Fraser, Proc. Zool. Soc. 1866, p. 367.

↓ *Elaphurus* is a most interesting new genus of Deer, discovered by M. David at Pekin, and described by M. A. Milne-Edwards in Compt. Rend. 1866, pp. 1090-1092 (Ann. & Mag. Nat. Hist. xviii. pp. 71-72), and more fully in Nouv. Arch. du Muséum, Bulletin, ii. pp. 27-40, pls. 4-6. It is distinguished by a long tail furnished with long hairs towards the end—and by very peculiar horns, which have no anterior basal antler, but a very long posterior branch, the end of which is subpalmated, being divided into several short points. *Elaphurus davidianus*, sp. n., is of the size of a large stag, and kept in an imperial park near Pekin.

CETACEA.

↓ Dr. J. E. GRAY'S 'Catalogue of Seals and Whales' contains, as I have stated above, an account of all the species known, and a complete systematic arrangement of these animals. A part of the researches of the author were published in the Proc. Zool. Soc. 1864 and 1865; and abstracts of these publications were given in the two preceding volumes of the 'Record.' The two suborders *Cete* and *Sirenia* are, of course, retained, the former being divided into *Mysticete* and *Denticete*. The further subdivision of the *Mysticete* is essentially the same as given in one of the former papers (see Zool. Record, i. pp. 32-35); however, the genus *Macleayius*, founded on the character of a separate atlas, proves to have this vertebra soldered to the others,

but may be retained as a generic group, on account of the peculiar form of this vertebra. Further, *Physalus latirostris* of Flower proves to be identical with *Ph. sibbaldii* of Gray, and is regarded as the type of a distinct genus, *Cuvierius*. The arrangement of the *Denticete* is the following:—

Fam. 1. CATODONTIDÆ: a. *Catodontina*, with *Catodon* and *Meganeuron* (see Zool. Rec. 1865, p. 49). b. *Physeterina*, with *Physeter*, *Kogia*, and *Euphysetes*.

Fam. 2. PLATANISTIDÆ.

Fam. 3. INIDÆ.

Fam. 4. DELPHINIDÆ.

a. Delphinina: *Pontoporia*; *Steno* with 15 spec.; *Delphinus* with 24 spec., two of which are new, viz. *D. stenorhynchus* (p. 396), *D. major* (p. 396), habitat unknown; *Tursio* with 22 spec., of which *T. dorcides* (p. 400) is new, habitat unknown; *Sotalia*, g. n. (p. 401), type *Delphinus guianensis* (Van Bened.); *Lagenorhynchus* with 12 spec.; *Delphinapterus* with 2 spec.

b. —: *Orca* with 4 spec.; *Pseudorca* with 2 spec.; *Grampus* with 5 spec.—*Phocæna* with two or three spec.; *Neomeris* (*phocænoides*).—*Beluga*; *Monodon*.

Fam. 5. GLOBIOCEPHALIDÆ: *Globiocephalus* with 8 spec.; *Sphærocephalus* (*incrassatus*).

Fam. 6. ZIPHIIDÆ: see Zool. Record, ii. p. 47.

Dr. GRAY has reexamined the skulls of *Delphinina*, and proposes the following improved arrangement of the genera and species, the characters being taken solely from the skull (Proc. Zool. Soc. 1866, May, pp. 211–216):—

I. Beak of the skull elongate, compressed. Nasal triangle short. Symphysis of the lower jaw elongate.

1. *Pontoporia*.

2. *Steno*: α (*St. frontatus* et *compressus*). β . *Sousa* (*St. capensis* et *lenti-ginosus*). γ . *Tucuxa* (*St. tucuxi*). δ . *Stenella* (*St. attenuatus*).

II. Beak of the skull elongate, depressed, broad, shelving on the sides. Nasal triangle short. Symphysis of the lower jaw short, sloping.

* Palate with a deep groove on each side behind.

3. *Delphinus*: α (*D. longirostris*). β (*D. delphis*, *moorii*, *major*, *walkeri*, *junra*).

** Palate flat behind, without any lateral grooves.

4. *Clymene*: α (*Cl. stenorhyncha*). β . *Euphrosyne* (*Cl. microps*, *alope*, *euphrosyne*). γ . *Clymene* (*Cl. normalis* = *D. clymene*, *doris*, *dorides*, *obscura*).

5. *Delphinapterus*.

6. *Tursio* (*T. metis*, *cymodoce*, *truncatus*, *eurynome*, *catalania*; these skulls are all so much alike that they may be only varieties).

7. *Eutropia* (*Eu. dickiei* = *Tursio eutropia*, *Eu. heavisidii*).

III. Beak of the skull broad, flat above, edges slightly reflexed and bent up in front of the notch. Nasal triangle elongate. Symphysis of the lower jaw short.

8. *Lagenorhynchus*: α . *Electra* (*L. electra*, *asia*, et *acutus*) (*L. clanculus* et *thicola*). β . *Leucopleurus* (*L. leucopleurus*). γ . *Lagenorhynchus* (*L. albirostris*).

† Prof. OWEN (Trans. Zool. Soc. 1866, pp. 17-47, pls. 3-14) has published an account of Indian Cetaceans observed and collected by Sir Walter Elliot in the vicinity of Vizagapatam. This gentleman, who never lost an opportunity of advancing our knowledge of the natural history of India, had drawings made of the fresh animals, preserving the skulls. The species examined by Prof. Owen will be mentioned subsequently, but here appears to be the place to refer to some general remarks with which the author concludes his memoir :—

All the cetacean characters are gradational, exemplifying steps by which are gained the extreme modifications, especially in the skull and dentition. The formation of germs of teeth in jaws of fœtal or young individuals of species which are edentulous in the full-grown individuals is amongst the most significant of the gradational modifications, being due to deviations in offspring from the characters of parents. Such departures or variations may have been slight in the first instance, few and far between in the members of a contemporary generation; but, occurring in the course of many generations, through long lapse of time, they might lead to "long-snouted" and "short-snouted" breeds. In such conjectural mutations of specific characters may be discerned a fore-ordained law of deviation from primitive type . . . and they seem to be independent of external influences. The ocean has none of those diversities of condition which the dry land shows . . . So far the species may be held as evidences of orderly succession and progression due to inherent organic force, operating according to a natural law or "secondary cause" of the precise nature of which we are yet in ignorance. But we may feel assured that the Power which called into being the first cetacean type foreknew and planned, by predetermined degrees and kinds of departure from that type, all its subsequent modifications.

† The collection of Scandinavian Memoirs by ESCHRICHT, REINHARDT, and LILLJEBORG, translated into English for the Ray Society, and edited by Mr. FLOWER, has been noticed above (p. 2). † Hr. G. O. SARS enumerates, in his paper on *Balænoptera musculus* (see above, p. 11), the following Cetacea from the Lofoten Islands :—*Balænoptera musculus*, "Hushvalen," a species not yet determined; *Bal. gigas, rostrata, laticeps*; *Megaptera longimana, physetes, macrocephalus*; *Grampus gladiator* and *melas*; *Hyperoodon rostratus*; *Delph. tursio* and *Phocæna communis*. At the conclusion of his paper he refers to the contradictory statements of naturalists with regard to the ejection of water from the blowholes of these animals. He states that if the head with the blowhole is raised above the surface of the water, nothing but air is expelled; but if, at the moment of expiration, the head is still below the surface of the water, the force of the air expelled carries a portion of the water with it, causing a more or less perceptible spray.

† *Rhytina borealis*. Prof. v. Brandt again directs attention to the almost undeniable fact that *Rhytina* is extinct. Bull. Ac. Sc. St. Pétersb. ix. pp. 279-282 (Mél. Biol. v. p. 363). Dr. v. Eichwald, in a reply to Prof. v. Brandt,

thinks it possible that *Rhytina* may yet be found alive. Bull. Soc. Nat. Mosc. 1866, xxxix. pp. 138-146. Prof. v. Brandt enters into a repeated detailed argument, demonstrating that the researches for a living example are quite sufficient to show the complete extinction of this creature. Ibid. pp. 572-597.

∨ *Sibbaldius laticeps* (Gray). Mr. Cope describes the capture and skeleton of an example killed off the coast of Mobjack Bay, U. S. Proc. Ac. Nat. Sc. Philad. 1866, p. 298.

∨ *Balenoptera musculus*. Hr. G. O. Sars (see above, p. 11) has given a detailed description of an example 40½ feet long, found drifting at Lofoten. Unfortunately only some parts of the skeleton could be saved, which, together with the skull of a much larger individual in the Christiania Museum, are described. The paper is illustrated by three plates, on which views of the entire animal, of the skull, several bones, &c. are given.

∨ *Rorqualus cortesii*. The great affinity observed between fossil and recent Cetaceans may justify the Recorder in directing attention to a memoir by Prof. Capellini, in which the fossil remains of a skeleton are described in Mem. Accad. Sc. Istit. Bologna, 1865, iv. pp. 315-336, pls. 1-3.

∨ *Physeter (Euphysetes) simus* is a new species from the eastern coast of the Indian peninsula, with a very short snout and high dorsal fin, in which the blowhole is not terminal, but near the forehead, and in which the mandibular rami are united by a symphysis of less than half the length of the "rami." Owen, *l. c.* p. 30, pls. 10-14*.

∨ *Delphinus*. Prof. Owen (*l. c.*) has described the following new species from Vizagapatam:—*D. (Steno) gadamu*, p. 17, pl. 3. figs. 1, 2; *D. (? Steno) lentiginosus*, p. 20, pl. 5. figs. 2, 3; *D. (? Steno) maculiventer*, p. 21, pl. 6. figs. 1, 2; *D. (Lagenorhynchus) fusiformis*, p. 22, pl. 5. fig. 1; *D. pomeogra*, p. 23, pl. 6. fig. 3.

∨ *Delphinus longidens*, sp. n., and *D. plagiodon*, sp. n., Cope, *l. c.* pp. 295 and 296, hab. — ?

∨ *Delphinus microps*. Notes on the skull by Burmeister, Ann. & Mag. Nat. Hist. xviii. p. 101. *Delphinus walkeri* (Gray) may be identical with it.

∨ *Delphinus eurynome*. Prof. Burmeister states that this species is in the Buenos Ayres Museum, and not *D. euphrosyne*, as he formerly informed Dr. Gray (see Catal. Seals and Whales, p. 352); its occurrence on the Buenos Ayres coast is problematical. Ann. & Mag. Nat. Hist. xviii. p. 100.

Lagenorhynchus albirostris. Dr. Gray records its occurrence on the coast of Cromer, in Ann. & Mag. Nat. Hist. 1866, xvii. p. 312.

∨ *Delphinapterus molagan*, sp. dub., Owen, *l. c.* p. 24.—Madras.

∨ *Orca magellanica*, sp. n., Burmeister, Ann. & Mag. Nat. Hist. xviii. p. 101, pl. 9. fig. 5, from the coast of Buenos Ayres.—*Orca destructor*, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1866, p. 293, from the coast of Peru.

∨ *Phocena*. Mr. Cope makes some remarks on the skulls of the species described by himself and Mr. Gill, *l. c.* p. 294.

* We may remark that figures pl. 11 and pl. 10. fig. 1 were taken from one and the same individual; the former being incorrect ought to have been cancelled before Sir W. Elliot's notes were communicated to Prof. Owen, who, from an examination of the drawings and accompanying notes, could not come to any other conclusion than that a pair of this Cetacean had been captured. Ann. & Mag. Nat. Hist. 1867, xix. pp. 263, 372, 373.

Phocæna tuberculifera may prove to be a synonym of *Ph. communis*, the fine denticulation of the front edge of the dorsal fin being the rule, and specimens without the tubercles being very rare. Gray, Ann. & Mag. Nat. Hist. 1866, xviii. p. 495.

↓ *Phocæna brevisrostris*, sp. n., Owen, l. c. p. 24, pl. 9. figs. 1-3.—Vizagapatam.

↓ *Sagmatias*, g. n., Cope, l. c. 294. Supraorbital expansions of the ossa maxillaria obliquely descending and diminishing to a thin edge. No triangular pre-narial depression; gonys short; teeth very short, obtuse, numerous. *S. ambledon*, sp. n., hab. —?

↓ *Behuga angustata*, sp. n., Cope, l. c.

↓ *Monodon monoceros*. Prof. Lilljeborg corrects an error in the work on Cetaceans published by the Ray Society and mentioned above (p. 2), with regard to the occurrence of the Narwhal in the Baltic Sea (p. 245 of that work). The specimen referred to was not a Narwhal, but a *Hyperoodon*. Proc. Zool. Soc. 1866, p. 559.

↓ [*Ziphiidæ*.] Dr. E. Deslongchamps has given descriptions of skeletons of three Cetaceans in the Museum at Caen, viz. of a *Hyperoodon*, *Mesoplodon sowerbyensis*, and *Dioplodon gervaisi* (E. E.-D.), from the British Channel. Bull. Soc. Linn. Normand. 1866, x. pp. 168-180.

↓ *Ziphius*. The skull of a species, at present not determined, was found at Arcachon (Gironde), and is described by P. Fischer in Compt. Rend. 1866, August, pp. 271-272 (translated in Ann. & Mag. Nat. Hist. xviii. pp. 255-257).

↓ *Epiodon cryptodon*, sp. n., Burmeister, Ann. & Mag. Nat. Hist. xvii. pp. 94-98, 303-305, pls. 3 & 6, from Buenos Ayres. The author regarded it at first as the type of a distinct genus, for which he intended the name of *Ziphiorrhynchus*.

MARSUPIALIA.

↓ *Petaurus*. Prof. Giebel describes the skulls and dentition of various species in Zeitschr. ges. Ntrwiss. 1866, pp. 394-396.

↓ *Dactylopsila trivirgata* (Gray) occurs also in the Cape York Peninsula, North Australia. Gray, Proc. Zool. Soc. 1866, p. 220.

↓ *Cuscus maculatus*. A variety (*ochropus*) from the Cape York Peninsula is described by Gray, Proc. Zool. Soc. 1866, p. 220.

↓ *Phalangista*. Prof. Giebel describes the skulls and dentition of various species, Zeitschr. ges. Ntrwiss. 1866, pp. 391-394, and thinks that the separation of the subgenera *Pseudochirus*, *Trichosurus*, and *Cuscus* is justified by craniological characters. He describes also the dentition of a young *Ph. orientalis* (Waterh.) = *Ph. cavifrons* (Temm.), which was on the point of changing its teeth. In the intermaxillary appear the two permanent middle incisors; at their side is a thick second milk-incisor much worn, whilst the crowns of the minute, compressed third incisor, and of the slender, acute, permanent canine, are not entirely visible. The first molar is half as large as the canine; the second is small, subcylindrical; the third is the bicuspid milk-tooth on the right side, whilst on the right the permanent was just cutting the gum. Then follow two with two sharp transverse ridges; the last is just protruding from the alveolus. In the mandible there are behind the incisors three premolars, then a compressed, sharp, conical molar with a posterior cusp, fol-

lowed by two others, as figured by Temminck; the last was cutting the gum.

↳ *Phalangista bernsteini*, sp. n., Schlegel, *l. c.* p. 357, from the Aru Islands.
 ↳ *Halmaturus*. M. E. Alix has written on the organs of parturition in Kangaroos, *Compt. Rend.* 1866, January 15, pp. 146-148 (translated in *Ann. & Mag. Nat. Hist.* 1866, xvii. pp. 316-317). Having observed the existence of an aperture of the median vagina into the urethro-genitale vestibule, he comes to the conclusion that this is the "embryophorous vagina," whilst the lateral pair are merely "spermatophorous vaginae." He also describes the process of parturition of these animals from observations of M. Jules Verreaux, whom he regards as the discoverer of it.—Prof. OWEN sent a reply to this paper to the Academy of Sciences in Paris, which appeared in *Compt. Rend.* 1866, April, pp. 592-596 (translated in *Ann. & Mag. Nat. Hist.* xvii. pp. 382-384). He shows, by a comparison of the structure of the organs of parturition of other Marsupials, that such a distinction between embryophorous and spermatophorous vaginae is inadmissible, and that, if M. Alix had properly studied the literature on the subject, he would have found that the pretended discoveries had been made long before him.—Also M. POELMAN has addressed a note to the same Academy, stating that he had described and figured the aperture of the median vagina in 1851. *Compt. Rend.* 1866, Feb. 19 (*Rev. et Mag. Zool.* 1866, pp. 121 & 122).

↳ MESSRS. BARTLETT and MURIE have observed the moveability of the symphysis of the lower jaw in Kangaroos, by which the incisors can be separated from each other in a similar manner as in *Ghires*. The inner edge of the incisors being sharp, grass can be grasped by these teeth, and cut through. The authors describe the muscular arrangement by which these movements are effected. *Proc. Zool. Soc.* 1866, pp. 28-34.

↳ *Macropus brunii* (Fisch., not Waterh.), from the Aru Islands, is described by Prof. Schlegel in *Nederl. Tydschr. Dierk.* iii. pp. 350-353.

↳ *Halmaturus coxeni*, sp. n., Gray, *Proc. Zool. Soc.* 1866, p. 220, pl. 25, from the Cape York Peninsula; it is compared with allied species.

Halmaturus wilcoxi, sp. n., M'Coy, *Ann. & Mag. Nat. Hist.* xviii. p. 322, from Richmond River, New South Wales.

↳ *Perameles doreyanus* (Quoy & Gaim.) is described by Prof. Schlegel, *l. c.* p. 353, from a specimen from the Aru Islands.

↳ Mr. KREFFT has given a systematic synopsis of the Insectivorous Marsupials of Australia, in which he characterizes the genera, enumerates the species, and describes some new forms (*Proc. Zool. Soc.* 1866, pp. 431-435):—

1. *Phascogale* (Temm.), with two species.
2. *Antechinus* (MacLeay), with nine species; however, the author is inclined to regard Gould's *A. leucogaster*, *unicolor*, and *ferruginifrons* merely as varieties of *A. flavipes*.
3. *Podabrus* (Gould), with seven species, of which *P. mitchelli* is new (p. 433).
4. *Antechinomys*, a new genus founded on *Phascogale lanigera* (Gould), p. 434.
5. *Chatocercus* (g. n., p. 434) *cristicauda* (sp. n., p. 435, pl. 36), from South Australia.

√ *Phascogale*. Prof. Schlegel has received from the Aru Islands two species, which he describes (*l. c.*), viz. *Ph. wallacei* (Gray), p. 355, and *Ph. longicaudata*, sp. n., p. 356.

√ *Phascogalea thorbeckiana*, sp. n., Schlegel, Nederl. Tydschr. Dierk. iii. 1866, p. 257, from the island of Salawattie.

Didelphys. Dr. Engelmann has made some remarks on the young (twelve in number) found attached to the teats of an Opossum; they may have been eight or ten days old; the body measured 9 lines, the crooked tail 3 lines; the weight was 21 or 23 grains. Trans. Ac. Sc. St. Louis, ii. 1866, p. 224.

√ *Didelphys crassicaudata*. Prof. Giebel describes the skull, *l. c.* p. 396.

MONOTREMATA.

Ornithorhynchus. Prof. Gegenbaur denies that the structure of its heart indicates a transition of the heart of Mammalia to that of Birds. Jena Zeitschr. Medic. ii. pp. 375-383.

√ *Echidna hystrix*. Mr. St. G. Mivart has examined its myology, Trans. Linn. Soc. xxv. 1866, pp. 379-403, tab. 52, 53. In the concluding chapter he shows that these researches throw additional light on the serial homology of the limbs, especially that, if the radial (greater) tuberosity be considered to be the homotype of the tibial (smaller) trochanter, and the ulnar (lesser) tuberosity that of the peroneal (greater) trochanter, the *mm. supra-* and *infraspinatus* with the *teres major* may be expected to correspond with the *iliacus* and *psoas*, and the *subscapularis* and *teres major* with the *glutei*. He finally considers the bearing of these muscular relations on the question as to what parts of the ilium answer to the several parts of the scapula.

A V E S

BY

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THE extent of the literature of Ornithology for the year 1866 appears to have been fully as great as for its two immediate predecessors. The number of really valuable treatises is very considerable, though we have not to record the publication of any works likely to be followed by the same important effects on the progress of the science as those of Dr. Jerdon and Mr. Gould on the Birds of India and Australia respectively. But the year will be for ever memorable in the annals of Ornithology as being that in which Mr. Clark's discovery of the Dodo's remains bore fruit. The new systematic classification set forth by Professor Lilljeborg has attracted no small attention from some high authorities; but, unfortunately for us, we are unable to appreciate its advantages. A pleasing feature of the year also is the increasing punctuality of appearance on the part of different journals, and on this score we have now scarcely any complaint to make. Our thanks, however, are not the less due to many of our fellow labourers who have supplied us with separately printed copies of, we believe, nearly all the more important communications; and we trust that few works of real merit have escaped our notice.

BIBLIOGRAPHY.

HARTLAUB, GUSTAV. Bericht über die Leistungen in der Naturgeschichte der Vögel während des Jahres 1865. Archiv für Naturg. Jahrg. xxxii. Band ii. pp. 34. Berlin: 1866.

With his accustomed skill Dr. Hartlaub has executed his *Twentieth Annual Report* on the progress of Ornithology, delineating in a concise manner the general features of this branch of science as exhibited during 1865. Of the principal works published in that year we are glad to find our own opinion corroborated by that of a judge with so much experience, though it is to be observed that he does not think so highly of Mr. Gould's 'Handbook' as we did (*Zool. Record*, ii. p. 74). Dr. Hartlaub has abandoned his former classification in favour of that of Prof. Lilljeborg (*vide infra*), a change which, we would humbly submit, is not an improvement.

BEAUMONT, J. ÉLIE DE. Notice sur les travaux scientifiques de son Altesse le Prince Charles-Lucien Bonaparte. Paris: 1866. 8vo, pp. 22.

The ornithological publications noticed are forty-seven in number. (*Cf.* Richard, Bull. Soc. Imp. d'Acclimat. 1866, pp. 404-438.)

BLYTH, E. The Ornithology of India. A Commentary on Dr. Jerdon's 'Birds of India.' [See "INDIAN REGION."]

CASSIN, JOHN. Fasti Ornithologiæ, No. 2.—'Der Naturforscher.' Proc. Acad. Philad. 1866*, pp. 35-38.

The author gives a list of the ornithological papers (several of which, he says, are highly interesting) contained in 'Der Naturforscher,' a journal published at Halle from 1774 to 1804, and edited first by Walch and afterwards by Schreber. (*Cf.* Ibis, 1866, p. 417.)

HARTING, J. E. The Birds of Shakespeare. Zoologist, Second Series, pp. 353-360, 393-424, 465-472.

A very laudable attempt to identify scientifically the species mentioned by the poet. The series of papers is still being continued in the same journal for the present year.

SUNDEVALL, C. J. Les Oiseaux d'Afrique de Levaillant, critique de cet ouvrage. Rev. et Mag. de Zool. 1865, pp. 408-414, 1866, pp. 42-46, 189-197, 227-233.

A continuation of M. Olf-Galliard's translation of this paper (*cf.* Zool. Record, ii. p. 55).

THE GENERAL SUBJECT.

DES MURS, O. Un mot sur les Oiseaux fossiles en général, et en particulier sur l'*Archæopteryx lithographica*. Rev. et Mag. de Zoologie, 1866, pp. 256-260.

The study of the class of birds, to be complete, must not be limited by an examination merely of existing species. This opinion is beginning to be fully recognized by ornithologists; and acting upon it, the author proceeds to give his idea of the possible affinities of the celebrated Solenhofen fossil, which he thinks must have belonged to the swimming birds, as its long tail would have been a great inconvenience to it had it been of arboreal or terrestrial habits. The author, however, pronounces this judgment in anticipation of Prof. Owen's memoir on the species.

ESTERNO, M. C. Indication des sept lois du vol ramé et des huit lois du vol à voile. 2^{me} édition. Paris (?): 1865.

An abstract of this work, which we ourselves have not seen, appears in 'Der Zoologische Garten' for 1866 (pp. 159, 160).

* We owe the possession of a separately printed copy of this paper to the kindness of the author, but the 'Proceedings' of the Philadelphia Academy for 1866 have not been received in England. May 29, 1867.

[The first copies of this Journal (1866) reached England in the first week of June 1867, which appears the more singular as it is issued in parts. The author of this Record having gone abroad at that time, the references have been added by the Editor.]

HITCHCOCK, C. Description of a new Reptilian Bird [*Tarso-dactylus expansus*] from the Trias of Massachusetts. Ann. Lyc. New York, 1866, pp. 301-302.

LILLJEBORG, W. Outlines of a Systematic Review of the Class of Birds. Proc. Zool. Soc. 1866, pp. 5-20.

The author first gives a concise sketch of the "Literature" of the subject, and then passes to the "Principles." "Irritability" seems to him to be the most distinguishing character for birds, and to be possessed in the highest degree by the *Passeres*. He does not mean by irritability muscular strength alone, but vivacity and activity generally. The birds of prey, though generally placed highest, are in reality far behind the *Passeres*. The former also correspond with the lower groups of Columbine and Gallinaceous birds, outwardly as regards the nature of their wing-coverts, and inwardly as regards their *carotides communes*. "A system that places the dirty Vultures highest does not seem to us to indicate a correct idea of the nature of birds."

[We have here indicated, so far as we are able to understand them, what the author terms his "Principles" of Classification. Of the rest of his remarks on the subject we must confess our inability to see the drift. The character of "Irritability" is not again invoked, being perhaps left for a critic to show; nor is any hint given how it may be measured or its different degrees defined. We must therefore beg our readers who are curious in the matter of systematic classification to consult Prof. Lilljeborg's paper and judge for themselves; we can here only append a brief outline of its results.]

Prof. Lilljeborg divides the class *Aves* into three subclasses: (I.) *Natatores*, (II.) *Cursores*, and (III.) *Insessores*. The first of these forms two sections:—(i.) *Simplicirostres*, containing three orders, (1) *Pygopodes*, (2) *Longipennes*, and (3) *Steganopodes*, and (ii.) *Lamellirostres*, consisting of a single order (4) of the same name. The second subclass is composed of three orders:—(5) *Grallæ*, (6) *Brevipennes*, and (7) *Gallinæ*. The third contains five orders:—(8) *Pullastra*, (9) *Accipitres*, (10) *Strisores*, (11) *Zygodactyli*, and (12) *Passeres*. These twelve orders are subdivided into fifty-nine families and 144 sub-families.

Reprinted (in Report of Smithsonian Institution?) at Washington, with the characters translated from Latin into English by Professor Gill. 8vo, pp. 436-450.

MILLET, C. Études sur les oiseaux voyageurs et migrants et sur les moyens de les protéger. Bull. Soc. Imp. d'Acclimat. 1866, pp. 272-282.

A scheme is proposed for marking migrant birds by differently coloured threads, whereby their movements may be more certainly determined; and international protection of these species is recommended.

MILNE-EDWARDS, A. Recherches Anatomiques et Paléontologiques pour servir à l'histoire des Oiseaux fossiles de la France. Compt. Rend. lxii. (5 Mars 1866) pp. 506-515. Reprinted Ann. Sci. Nat. Zoologie, 5^{me} sér. v. pp. 229-240.

This is a report by MM. D'Archiac, Élie de Beaumont, Daubrée, De Verneuil, and De Quatrefages on the essay which obtained the great Prize of the Physical Sciences for 1865. As the work is now in course of publication, we hope to speak of it at greater length next year. The opinion of the reporters is most favourable to it; and those portions (bearing date 1867) which we have seen entirely justify their praise. All the fossil birds of the tertiary epoch can be included in the natural groups which still exist, though none of the species are identical with living forms, and some are types of new genera. Of the "quaternary" period twenty-three species have been determined, only one of which, a very large *Grus*, is extinct, though, as regards France, two species, *Lagopus albus* and *Nyctea nivea*, no longer exist there. (Cf. Ibis, 1866, pp. 413, 414.)

PUCHERAN, —. Sur les indications qui peut fournir la Géologie, pour l'explication des différences que présentent les Faunes actuelles. Rev. et Mag. de Zoologie, 1866, pp. 3-6, 81-88, 129-139, 241-255.

A continuation of the series of papers we noticed last year (Zool. Record, ii. pp. 58, 59). It is still unfinished. The first two portions contain no ornithological illustrations. From evidence afforded by the existing Mammalia, the author considers he has proved the intimate resemblance between the Faunas of Southern Asia and Southern Africa, and he then proceeds to inquire whether the ornithofauna of each of these regions does not exhibit the same resemblance; but here, though the families are the same, the genera, however closely allied, are not. Dr. Pucheran, after giving long lists of genera, arrives at the conclusion that the three large continents of the Old World present one single fauna only, due allowance being made for the differences existing between northern and southern forms, which appear to meet in a zone corresponding with the "Equateur de contraction" of M. Reynaud; and this may therefore be regarded as the veritable "Equateur zoologique." The author then treats of the Algerian fauna, and finds that the birds belonging to it are smaller than their European representatives, which he considers to be in harmony with the smaller extent of their range, and to be post-established. He finally dwells on the slight importance of the different characters of the allied species of the two countries, as tending to the inference that they must have had a common origin. [See also Record on Mammalia, p. 13.]

SALVIN, O. (See SCLATER, P. L.)

SCHLEGEL, H. Observations Zoologiques, III. Nederlandsch Tijdschrift voor de Dierkunde, iii. pp. 325-350.

The character of this paper is the same as of the two preceding articles of the series on which we commented last year (Zool. Record, ii. pp. 59-60). The following appear to be new species:—*Baza rufa*, *Noctua aruensis*, *Psittacula melanogenia*, *Caprimulgus papuensis*, *Carpophaga neglecta*; but of the crowd of facts concerning other species we can unfortunately here take no notice.

SCLATER, P. L., and SALVIN, OSBERT. Exotic Ornithology. Part I. London: 1866. Imp. 4to, pp. 1-20, pls. i.-viii.

This work is intended to form a sequel to the 'Planches Coloriées' and 'Iconographie Ornithologique,' and well fulfils the expectations held out by its authors, who announced that, to the description of each species figured, they would add a synopsis of the other species of the genus, so that the letterpress will finally consist of a series of separate monographic essays. This is already done; in the only part of the work which now comes under our notice, with the genera *Lipaugus*, *Furnarius*, *Xipholena*, and *Vireolanius*. The species figured are *Lipaugus univirufus*, *L. subalaris*, *L. rufescens*, *Furnarius torridus*, *Xipholena atropurpurea*, *Ptilogonys caudatus*, *Vireolanius melitophrys*, and *V. pulchellus*. (Cf. Ibis, 1867, p. 123.)

SEELEY, HARRY. An Epitome of the Evidence that Pterodactyles are not Reptiles, but a new subclass of Vertebrate Animals allied to Birds (*Saurornia*). Ann. & Mag. Nat. Hist. 1866, xvii. pp. 321-331.

As the principle of organization in the Pterodactyles was Avian, and the bones are nearly all Avian in their modifications, these animals must have been Avian. The author thus determines their place in nature:—

Mammalia.		Aves.
Saurornia.		Reptilia.

——. Note on some new Genera of Fossil Birds in the Woodwardian Museum. Ann. & Mag. Nat. Hist. 1866, xviii. pp. 109, 110.

Ptenornis and *Macrornis* are two new genera from the Tertiary epoch; and *Lithornis emuiamus* (!) is referred to a genus *Megalornis*. *Pelagornis* is the name proposed for a group of fossil birds from the Cambridge Greensand, with *P. barretti* as its type.

VIAN, JULES. Causeries Ornithologiques. Rev. et Mag. de Zool. 1866, pp. 401-410.

These relate to several species of *Anatidæ*.

VINCELOT, —. Études Ornithologiques. Ann. Soc. Linn. de Maine et Loire, 1865, pp. 55-78.

The subjects of these studies are *Alcedo ispida* and the four common species of European *Columbidæ*. The author's remarks are not distinguished by much novelty.

PALÆARCTIC REGION.

ALTUM, B. Auf Borkum im September 1865. Journ. für Orn. 1866, pp. 105-107.

Remarks only of no very general interest.

BELKE, GUSTAVE. Notice sur l'histoire naturelle de Radomysl, Gouvernement de Kieff. Bull. Soc. Imp. Nat. Moscou, 1866, xxxix. pp. 214-251, 490-527.

The only ornithological matter in the first of these articles is at pp. 218, 219, where the dates of migration of several birds of passage are given. The second furnishes (pp. 492-496) a list of the birds of the district (under 120 in number), to which some very meagre notes are added.

BLAKE-KNOX, H. Ornithological Notes from the County Dublin. Zoologist, S. S. pp. 93, 94, 295.

— The Migratory and Wandering Birds of the County Dublin, with the times of their Arrivals and Departures. Zoologist, S. S. pp. 220-227, 300-307, 479-483.

COLLETT, ROBERT. Zoologisk botaniske Observationer fra Hvaløerne. Christiania: 1866. 8vo, pp. 83.

These observations refer to 195 species which occur in the Whale-Islands, situated on the east side of the entrance to the Christiania Fjord.

DROSTE, FERDINAND VON. Ergänzungen der Vögel Borkum's. Journ. für Orn. 1866, pp. 389-391.

A supplement to the paper noticed last year (Zool. Record, ii. p. 62). One more species is added to the list of birds breeding on the island, and twenty-one to those visiting it.

DUBOIS, C. F. Catalogue systématique des Oiseaux d'Europe. Bruxelles: 1866. 8vo, pp. 16.

This publication we have not seen. We quote its title from the 'Revue et Magasin de Zoologie' for 1866 (p. 350), where it is noticed.

FAUVEL, OCTAVE. Observations ornithologiques pour servir à la faune Normande. Bull. Soc. Linn. de Normandie, 1866, pp. 76-80.

Of local interest only.

FINGER, F. A. Einige Bemerkungen über Säugethiere und Vögel in Algerien. Zoolog. Garten, 1866, pp. 161-167:

A very few species only of birds mentioned, and these of the commonest.

FONTAINE, A. DE LA. Faune du Pays de Luxembourg, &c.— Deuxième Partie. Luxembourg: 1866, pp. 153-326.

The concluding portion of the work noticed last year (Zool. Record, ii. p. 64). The whole number of species noticed is 276; but this number includes poultry and pigeons, besides some whose claims to rank as such are very doubtful. *Sylvia rubecula*, having been accidentally omitted in its proper place, is inserted in the 'Additions,' which also contain notes of several others. (Cf. Ibis, 1867, p. 244.)

GERMAIN, R. Catalogue raisonné des oiseaux observés dans la 1866. [VOL. III.]

subdivision de Milianah (Algérie). *Nouv. Arch. du Muséum*, Bull. i. pp. 51-74.

One hundred and sixty-three species are enumerated, and a few notes from the author's personal observation are added.

GODMAN, FREDERICK DU CANE. *Notes on the Birds of the Azores*. *Ibis*, 1866, pp. 88-109, pl. iii.

The author stayed about three months in the archipelago on purpose to collect their birds and insects. After describing his movements among the islands, he enumerates the different species, 52 in number, which occur there. Of these, two, both belonging to *Fringillidæ*, are peculiar to the Azores, and one of them is now correctly described for the first time; but of several others local forms exist almost entitled to specific recognition. The ornithology of the archipelago, and the distribution of the species in it, seem to furnish strong evidence against the theory that they are the descendants of those which inhabited a continent now submerged. The author believes that all the species found in it have been introduced (some of them, may be, at a remote period) by storms, and that this process of introduction is being continued at present. There is a decided tendency among Azorean forms to acquire a darker plumage, together with stronger bills and legs than are possessed by their continental representatives. The islands which lie most to the eastward have the most species, and the number diminishes gradually towards the west. A compendious table, showing the geographical distribution of Azorean birds, is included in the paper, which is elaborated with much care, and is of an eminently suggestive character.

GOULD, JOHN. *The Birds of Great Britain*. Parts ix. and x. London: 1866. Imp. folio.

The two parts of this work published last year fully maintain the author's reputation.

GRANT, WILLIAM. *Birds found in Malta and Gozo, with their English, Maltese, and Latin Names*. La Valletta: 1866. 12mo, pp. 80.

A mere list of the names of 308 species, with marks to indicate their comparative abundance or rarity.

HARTING, JAMES EDMUND. *The Birds of Middlesex. A contribution to the Natural History of the County*. London: 1866. Post 8vo, pp. 284.

Two hundred and twenty-five species are stated to have been observed in the county; and remarks on their habits, times, and localities of occurrences are given, as well as the musical expression of their call-notes. Without containing any very novel information, this little work possesses considerable interest, and is most conscientiously executed. (*Cf. Ibis*, 1867, pp. 123-125.)

HINTZ I., W. Ornithologischer Jahresbericht u. s. w. in der Umgegend von Schlosskämpfen bei Cöslin in Pommern. Journ. für Orn. 1866, pp. 91-105, 145-158.

In continuation of the reports before noticed (Zool. Record, i. p. 43, ii. p. 64). No species hitherto not observed to breed in the district is mentioned.

HOLTZ, LUDWIG. Die Beutvögel der Insel Gottland. Journ. für Orn. 1866, pp. 289-304, 361-385. [See "Oology."]

HOMMEYER, A. VON. Ueber das Vorkommen einiger, zum Theil seltener Vögel, bei Glogau in Nieder-Schlesien. Journ. für Orn. 1866, pp. 32-36.

The observations seem to be only of local interest.

LILFORD, [THOMAS LITTLETON POWYS] Lord. Notes on the Ornithology of Spain. Ibis, 1866, pp. 173-187, 377-392, pl. x.

These articles contain much information on the little-known *ornis* of Spain, from the author's personal observation, he having revisited that country in the spring of 1865, though being obliged through illness to confine his researches on this occasion to the provinces of Old and New Castile. Having enjoyed unusual facilities for exploring some of the royal domains, he was able to investigate the breeding-habits of many very interesting species, among them *Cyanopica cookii*, *Oxylophus glandarius*, and *Aquila pennata*. One of the most important facts he records is the existence of *Tetrao urogallus* in Northern Spain.

MALMGREN, A. J. Zur Vogelfauna Spitzbergens. Journ. für Orn. 1865, pp. 385-400*.

This paper is a criticism on our own "Notes on the Birds of Spitsbergen" (Zool. Record, ii. p. 66), and it consequently would be very difficult for us to give an impartial abstract of it. We think, however, we may fairly say that most of the points on which the author differs from us are of minor importance; but we should prefer our readers judging for themselves to running the risk of unintentionally misrepresenting Dr. Malmgren, whose labours deserve the most careful consideration. The Spitzbergen *Stercorarius*, hitherto accounted *S. parasiticus*, is now considered specifically distinct and receives the name of *S. tephros*; and the common *Somateria* of the same region in like manner is called *S. thulensis*.

NEWMAN, EDWARD. A Dictionary of British Birds. Reprinted from Montagu's Ornithological Dictionary, and incorporating the additional species described by Selby; Yarrell, in all three editions; and in Natural-History Journals. London; 1866. 8vo, pp. 400.

The scope of this book is best explained by its title. As the

* Not published till 1866.

whole of Montagu's work is reprinted, the present volume naturally reproduces very much that is now known not to be true, and the corrections of such misstatements are not numerous. The additions, too, are of a somewhat arbitrary character, several species being left out which have as good a claim to admission as many that are included (*cf.* Zoologist, S. S. pp. 495-497), while the editor has omitted any reference to very many of the latest observations on the subject (*cf.* Zoologist, S. S. pp. 372-384; Ibis, 410-412).

NEWTON, ALFRED. Notes on the Zoology of Spitsbergen. Zoologist, S. S. pp. 196-206.

A reprint of the paper before noticed (Zool. Record, i. p. 44).

PROTEAU, —. Catalogue des Oiseaux observés dans l'arrondissement d'Autun pendant le cours des années 1814 à 1860. Mémoires d'Histoire Naturelle, tome i. pp. 251-277. Autun: 1865. (Publication de la Société Éduenne.) 8vo.

The list contains 179 species, but scarcely any information respecting them of more than local interest.

RIMROD, —. Reihenfolge der Rückkehr des grössten Theils unserer Sommervögel im Frühling nach zwanzigjähriger Beobachtung zu Quenstedt in der Grafschaft Mansfeld. Journ. für Orn. 1866, pp. 354-360.

Lists showing the dates of arrival of thirty-six species at the place above named. The observations extend from 1833 to 1852, both inclusive.

SALVADORI, TOMMASO. Katalog der Vögel Sardiniens, u. s. w. Journ. für Orn. 1865, p. 415*.

The conclusion of Dr. Bolle's translation, which we last year noticed (Zool. Record, ii. p. 67).

SAXBY, H. L. Ornithological Notes from Shetland. Zoologist, S. S. pp. 16-20, 61-67, 211-215, 288-293, 473-479.

A continuation of the series of papers before noticed (Zool. Record, i. p. 45, ii. p. 67), and of the same character.

SMITH, CECIL. List of Birds observed during a Six Weeks' Summer Visit to the Channel Islands, exclusive of Jersey. Zoologist, S. S. pp. 447-453.

Sixty-eight species are noticed.

SNELL, D. H. Eine Parallele zwischen der Vogelfauna des Taunus und der Wetterau. Zoolog. Garten, 1866, pp. 201-206.

This paper treats of the influence on the *ornis* of the two districts of the soil and flora.

STEVENSON, HENRY. The Birds of Norfolk, with remarks on their Habits, Migration, and Local Distribution. Vol. I. London: 1866. 8vo, pp. lxxii and 446.

* Not published till 1866.]

A most carefully elaborated work on that part of England which has probably the richest *ornis* (Zool. Record, i. p. 45). The introduction describes at some length the general features of the county, and the changes which have been produced in its avifauna of late years, chiefly through improved agricultural practice. This volume (extending to the end of *Gallinæ*) contains an account of 142 species, which, in their relation to the district, are very fully dwelt upon.

SUNDEVALL, C. J. Svenska Foglarna. Part XVIII. Stockholm : 1866. Oblong 4to.

We have only received one part of this work during the past twelvemonth. It contains half-sheets 53 to 56, and plates lxi. to lxxi. and lxxix.

TRISTRAM, H. B. On the Ornithology of Palestine. Part III., Ibis, 1866, pp. 59-88, pl. ii.; Part IV., *op. cit.* pp. 280-292.

In continuation of the articles noticed last year (Zool. Record, ii. pp. 67, 68). Part III. treats of the *Corvidæ* and so-called "*Fissirostres*" of the country; Part IV. of the "*Scansores*" and some of the denti-rostral *Passeres*, into which are introduced the *Alaudidæ*. The most remarkable fact mentioned, perhaps, is the identification of *Motacilla lugubris*, Temm. (nec *M. lugens* seu *lugubris*, Temm. & Schleg.), with *M. vidua*, Sundevall. *Caprimulgus tamaricis* forms the subject of the plate.

WILLEMOES-SUHM, W. VON. Die Raubvögel der Umgegend von Hamburg-Altona. Zoolog. Garten, 1866, pp. 182-186, 219-221.

Twenty-nine species occur in the district, of which seven are resident, five come to breed, eleven are winter visitants, and six are met with occasionally. The remarks upon them seem to contain no very novel information.

ETHIOPIAN REGION.

ANTINORI, ORAZIO. Beschreibung und Verzeichniss, u. s. w. Journ. für Orn. 1866, pp. 112-129, 191-208, 235-244.

A continuation of Dr. Hartmann's translation mentioned by us last year (Zool. Record, ii. p. 69), which is still incomplete.

BULGER, G. E. [See SCLATER, P. L.]

DOHRN, H. Synopsis of the Birds of Ilha do Principe, with some Remarks on their Habits, and Descriptions of New Species. Proc. Zool. Soc. 1866, pp. 324-332, pl. xxxiv.*

The *ornis* of this island, which is an intermediate link between Fernando Po and San Thomé, does not seem to have been previously examined, and proves to be interesting. Not a single bird of prey exists upon it, though they are abundant on the other two islands in the Bight of Benin. Of the thirty-four species noticed six are new. These are described by Dr. Hart-

* Cf. *infra* "KEULEMANS, J. G."

laub, and belong to the families *Meliphagidae*, *Hirundinidae*, *Timaliidae* (?) (*Cuphopterus*, g. n.), *Fringillidae*, and *Columbidae*.

HARTLAUB, G. Zwei neue afrikanische Vögel. Journ. für Orn. 1866, pp. 36, 37. [See "TURBIDÆ."]

—. On a New Genus of African Birds. Ibis, 1866, pp. 139, 140, pl. vi. [See "MALURIDÆ."]

—. On a new genus and species of Birds from Madagascar. Proc. Zool. Soc. 1866, pp. 218, 219. [See "SYLVIIDÆ."]

KEULEMANS, J. G. Opmerkingen over de Vogels van de Kaapverdische eilanden en van Prins-eiland (Ilha do Principe) in de Bocht van Guinea gelegen. Nederlandsch Tijdschrift voor de Dierkunde, iii. pp. 363-401.

Of the Birds of the Cape Verde Islands twenty-five species are enumerated, and of those of Ilha do Principe thirty-nine, but some are not named with precision. The new species from the last locality, discovered by Dr. Dohrn [*vide supra*], are nearly all mentioned, and some further details of their habits are given.

POLLEN, FRANÇOIS. Description d'une espèce d'Épervier de Madagascar inconnue aux naturalistes. *Nisusoides* [lege *Nisoides*] *moreli*. Bull. Soc. Sc. et Arts de la Réunion, 13 avril, 1866. *Idem*, Mém. Scient. pp. 59-63.

SCHLEGEL, H. List of the most remarkable species of Mammals and Birds collected by Messrs. Fr. Pollen and D. C. van Dam in Madagascar. Proc. Zool. Soc. 1866, pp. 419-426.

This title is hardly correct; for several of the species peculiar to one or other of the Mascarene islands are also mentioned. It is the forerunner of a more extensive work on the subject. One hundred and thirty-four species seem to have been obtained, of which three, belonging to the families *Cypselidae*, *Pittidae*, and *Ploceidae*, are here named or described for the first time. A new generic division in *Muscicapidae* is also indicated, but not characterized. A considerable number of supposed species are identified with others, the more important of which determinations are noticed in our special part. The whole paper is a valuable commentary on Dr. Hartlaub's well-known work, as well as on the other papers relating to the subject.

—. On some extinct Gigantic Birds of the Mascarene Islands. Ibis, 1866, pp. 146-168. Remarques sur quelques espèces éteintes d'oiseaux gigantesques des îles Mascareignes. Ann. des Sci. Nat. Zoologie, 5^e sér. 1866, vi. pp. 25-49, pl. 1. figs. 1-3.

These papers are English and French translations of an article

in the 'Verstlagen en Mededeelingen der K. Akademie van Wetenschappen' of Amsterdam for 1857, in which the author, on the evidence of Leguat and Du Bois, endeavours to prove the former existence of two large species of Birds, which he considers to have belonged to the *Rallidæ*, and named *Gallinula (Leguata) gigantea* and *Porphyrio (Notornis?) carulescens*. The French translator adds (p. 42, note) the interesting information that the journal kept in Réunion from 1669 to 1672, which had hitherto been only known by a MS. copy in the possession of the Zoological Society of London, without the author's name, was the work of one Du Bois, and was published in Paris in 1674.

SCLATER, P. L. Report on Birds collected at Windvogelberg, South Africa, by Captain G. E. BULGER. Proc. Zool. Soc. 1866, pp. 21-23.

The species, forty-four in number, were determined by Dr. Hartlaub: only one of them has proved to be new, *Hemipteryx immaculata*. To the list is prefixed Capt. Bulger's account of the locality where his specimens were collected.

INDIAN REGION.

BEAVAN, R. C. Extracts from a letter. Proc. Zool. Soc. 1866, pp. 2-4.

This paper contains a few zoological observations made on a trip from Moulmein to Zwagaban, of which most are ornithological.

——. Letter on the animals introduced into the Andaman Islands. Ibis, 1866, pp. 419, 420.

——*. Notes on some Birds of Ross Island. Ibis, 1866, pp. 220-222.

The island is one of the Andaman cluster, many of the species introduced are indicated.

BLYTH, E. The Ornithology of India.—A Commentary on Dr. Jerdon's 'Birds of India.' Ibis, 1866, pp. 225-258, 336-376.

The first of these articles contains a few generalizations, and then proceeds to consider the birds of prey mentioned in Dr. Jerdon's work, on which the author of the paper (himself one of the highest authorities on Indian Ornithology) remarks that little seems to be needed in the way of emendation. The second article treats of the remainder of the species noticed in the first volume of the 'Birds of India.' It would be utterly impossible to give, within any reasonable space, an abstract of Mr. Blyth's "Commentary;" for his extraordinary powers of reference and illustration are indulged without limit. No species appear to be described as absolutely new; but several are added

* *Errore typographico*, "Blair."

to the Indian fauna, to the students of which this series of articles (continued in 'The Ibis' for 1867) must necessarily prove a most valuable aid.

BULGER, G. E. List of Birds observed at Wellington, Neilgherry Hills, about 6000 feet above the level of the sea, during the months of April and May 1866. Proc. Zool. Soc. 1866, pp. 568-571.

Forty species are noticed.

GOULD, JOHN. The Birds of Asia. Part xviii. London: 1866. Imp. folio.

Many of the species here figured are, of course, not "Indian," but, in accordance with our former practice (Zool. Record, i. p. 50, and ii. p. 73), we here record the progress made in this magnificent work.

MARTENS, EDUARD VON. Zusammenstellung der bekannten philippinischen Vögel. Journ. für Orn. 1866, pp. 5-31.

A very useful compilation on the little-known ornithology of this group of islands. Though the Philippines have been visited by so many naturalists, including the author himself, no list of their birds has ever been published; consequently the only information respecting them has to be collected from the accounts of various voyages, and an examination of the specimens brought thence, which are to be found in sundry museums. The want of a list of Philippine birds is one that has long been felt, and Dr. von Marten's paper has laid an admirable foundation for future investigators. One hundred and ninety-two species are given by our learned colleague; but there can be little doubt many more remain to be discovered or identified with the descriptions of old writers. Five undescribed species are named, all of which were collected by a recent traveller, Herr F. Jagor of Berlin, and are now in the museum of that capital. They are called *Strix amaurota*, *Gerygone modesta*, *Cisticola semirufa*, *Munia jagori*, and *Uroloncha jagori*; and it is to be hoped that any other ornithologist describing them will retain these specific appellations.

NORGATE, W. A List of Birds observed at Sealkote in the Punjab. Zoologist, S. S. pp. 285-288.

A nominal list of 139 species observed by the author, most of which are distinguished by scientific names. No notes on their habits are appended.

STOLICZKA, F. Einige Betrachtungen über den Charakter der Flora und Fauna in der Umgebung von Chini, Provinz Bisahir, im nordwestlichen Himalaya-Gebirge. Verhandl. k.-k. zool.-bot. Gesellsch. Wien, 1866, pp. 848-878.

The ornithological portion of this paper is at pp. 869-874. No new species are described, but several little-known ones are mentioned. (Cf. Ibis, 1866, pp. 412, 413.)

SWINHOE, R. Letter on Formosan Ornithology. *Ibis*, 1866, pp. 121-123.

———. A voice on Ornithology from Formosa. *Op. cit.* pp. 129-138, pl. v.

This contains comments on a paper of Mr. Blyth's (*Zool. Record*, ii. pp. 72, 73), and a very great variety of observations on different Formosan or Chinese birds. *Turdus albiceps*, Swinh., forms the subject of the plate.

———. Ornithological Notes from Formosa. *Op. cit.* pp. 292-316, 392-406, pls. ix., xi.

After a few comments on various statements in preceding numbers of 'The Ibis,' the author in the first of these articles proceeds to notice a collection of Birds from the Tamsuy Mountains, which contained a few species he had not hitherto met with in the island, and then describes in great detail six apparently new ones. (See *Fringillidæ*, *Falconidæ*, *Paridæ*, *Timaliidæ*, and *Columbidæ*.) The plates represent *Suthora bulomachus*, sp. n., and *Cyornis vivida*. In the second article Mr. Swinhoe continues his multifarious notes, in the course of which he describes four more new species (see *Sylviidæ*, *Strigidæ*, and *Anatidæ*).

WALDEN, ARTHUR [HAY] Viscount. Notes on Birds collected in Tenasserim and in the Andaman Islands. *Proc. Zool. Soc.* 1866, pp. 537-556.

Of the former, thirty-five species (one of which, belonging to *Sylviidæ*, is new), and of the latter, six species are noticed at considerable length, great attention being paid to their synonymy and bibliography. The collections were formed by Capt. Beavan.

AUSTRALIAN REGION.

BULLER, WALTER. Essay on the Ornithology of New Zealand. Dunedin: 1865. 8vo, pp. 20.

This is one of the prize-essays of the New Zealand Exhibition of 1865, and is printed by the Commissioners. Its chief object seems to be that of giving unscientific persons a general idea of the peculiarities of the New Zealand *ornis*, and in this it succeeds well. Nine species from some one or other of the group of islands are indicated as new; and of these *Anthornis auriocula*, *Gerygone assimilis*, *Mimus* [?] *carunculatus*, *Creadion cinereum*, *Nestor superbus*, *Rallus featherstonii*, and *Podiceps hectori* are described. *Strix haasti* and an unnamed *Lestris* are also mentioned, but not described. The number of New Zealand birds is put at 133: besides the flightless species, several others seem to be vanishing; among these *Coturnix novæ-zealandiæ* is especially mentioned. (*Cf.* *Ibis*, 1867, pp. 131-133.)

DIGGLES, SYLVESTER. The Ornithology of Australia. Queensland. Imp. 4to. Parts I.-X., pls.

We do not know when the publication of this work was com-

menced ; but ten parts, which are said to appear monthly, have reached England. Each contains six plates, very fairly executed, and a small portion of accompanying letterpress. The species figured will be found named in the special part.

GOULD, JOHN. Additions to the List of the Avifauna of Australia, with descriptions of Three New Species. Proc. Zool. Soc. 1866, pp. 217, 218.

The new species belong to *Meliphagidæ*, *Muscicapidæ*, and *Sylviidæ*; the additions are *Rallina tricolor* and *Hydrochelidon leucoptera*.

GRÆFFE, ED. Notizen über die Fauna der Viti-Inseln. Verhandl. k.-k. zool.-bot. Gesellsch. Wien, 1866, pp. 585-596.

A list of 46 species of birds found in the (Feejee) Islands is given at pp. 595, 596. No remarks are made upon them.

HARTLAUB, G. On Five New Species of Birds from the Feejee Islands. Ibis, 1866, pp. 171-173. [See "CUCULIDÆ," "AMPELIDÆ," "LANIIDÆ," and "RALLIDÆ."]

RAMSAY, EDWARD P. Notes on the most frequent Foster-parents of the Cuckoos of Australia. Proc. Zool. Soc. 1866, pp. 571-577.

This paper contains an account of the breeding of three species of *Acanthiza*, two of *Geobasileus*, and one of *Gerygone*.

———. Additional List of Birds from Port Denison. Ibis, 1866, pp. 325-336.

The number of species is raised from 45 (Zool. Record, ii. p. 76) to 138. The locality appears to be situated at about the southern limit of the North Australian birds and the northern limit of those of New South Wales.

———. On Australian Oology. [See "OOLOGY."]

SCHLEGEL, H. De Vogels van Nederlandsch Indië, beschreven en afgebeeld. Monographie 3, Valkvogels (*Accipitres*). Haarlem: 1866. 4to, pp. 84, tabb. xxviii. figg. 109.

This monograph of the *Accipitres* of the Dutch Indies is in continuation of the series we noticed last year (Zool. Record, ii. p. 76) and is on exactly the same plan. The figures, of which a list will be found in the special part, are beautifully drawn.

WALLACE, A. R. Ueber die Tauben des malayischen Archipels. Journ. für Orn. 1866, pp. 269-285.

A German translation, by Dr. E. von Martens, of the paper (Ibis, 1865, pp. 365-400) noticed last year (Zool. Record, ii. pp. 76-78), with the omissions, however, of nearly all the bibliographical references, the author's field-notes, and the geographical tables.

NEARCTIC REGION.

BAIRD, S. F. Review of American Birds in the Museum of the Smithsonian Institution. Part I. (continued). North

and Middle America. Washington: 1866. Royal 8vo, pp. 321-450.

The portion of this work which appeared in 1866 comprises the *Vireonidæ*, *Ampelidæ*, and *Laniidæ*. These families are treated in the same minute manner as the others, of which we have spoken in our two preceding volumes (Zool. Record, i. p. 55, ii. p. 79); but a new and very remarkable feature is introduced by the author's giving outline figures of the bills, feet, wings, and tails of many of the species; and as these illustrations are printed with the text, after the manner of woodcuts, they are most convenient for reference. The new species described (five in number) are noticed in the special part of this 'Record,' under the names of the families above mentioned.

— The Distribution and Migrations of North American Birds. Am. Journ. Sc. and Arts, xli. (Jan., March, and May, 1866).

A very admirable paper, but one of which it is not easy to give an abstract in a small space. To the six great regions originally traced out by Mr. Sclater, and adopted in this 'Record,' the author adds a seventh, the West-Indian, which he separates from the Neotropical, on account of the large proportion of genera peculiar to that Archipelago. The ornithological provinces of North America consist of two great divisions meeting about long. 100° W., the western of which, divisible again into two, are more closely related to each other than to the eastern. These three great provinces he terms the Western, Middle, and Eastern, and they are those (1) of the Pacific slope, (2) of the Rocky Mountains and the adjacent plains, and (3) of the fertile plains and country generally east of the Missouri. A northern, or sub-arctic, fauna mixes with and melts into the three, extending far to the south (even into Mexico) along the Rocky Mountains. The Middle and Eastern provinces have each a southern subdivision. Northward the Eastern province extends more and more westward across the Rocky Mountains towards the Yukon.—The winter quarters of the North-American birds are next considered. Comparatively few species visit the West Indies; a much larger proportion reach Mexico and Guatemala; but the greatest number seem to crowd into Florida, Georgia, and other southern States. The variation of species according to locality is then noticed. This is especially to be remarked in their size—the more northern individuals being the larger, the more southern the smaller. This difference is as strongly marked in species constantly resident as in those which migrate over great distances; and the development extends to all parts of the body. Lat. 40° N. may be assumed as an average line on either side of which this variation is very evident. Several of the birds also of the Middle and Western provinces have longer tails than the same

or allied species in the Eastern. Again, specimens from the Pacific coast are apt to be darker in colour than those from the interior. Birds of any two representative species from the frontiers of their respective ranges present a combination of characters explicable only on the supposition of hybridity. Notable instances of this are found in the genera *Colaptes*, *Cyanura*, *Junco*, and *Helminthophaga*.—Prof. Baird then proceeds to treat of the eastward movement of American birds, and its influence on the *ornis* of Greenland and Europe, and *vice versâ*. European land-birds reach Greenland by way of Iceland and the Færoes; those found on the continent of North America reach it by autumnal movement from Greenland in company with strictly North American species. Most American birds which reach Europe have occurred in England, which they make, not by way of Iceland, but by direct voyage, aided by the winds. The migrations of birds are generally more or less in a north and south direction, influenced materially by rivers, mountains, forests, and the like. While in spring they usually proceed to the very spot of their birth by a direct line, their return in autumn is often by a different route. The vernal movement, too, is performed much more rapidly and with fewer halts by the way than the autumnal. The nature of the migratory impulse is not discussed.—It must be observed that the results which we have here set down as arrived at by the author are reached only after a close examination of the very large and carefully collected series of specimens in the Smithsonian Institution and the collation of numerous recorded facts. Many comparative lists of species throwing light on the subject are also introduced. Some extracts from this paper are given in *Ann. & Mag. N. H.* 1866, xviii. pp. 141–144; and the whole is reprinted, 'Ibis,' 1867, pp. 257–293; while a German translation is contained 'Journ. für Orn.' 1866, pp. 244–269, 338–352.

COUES, ELLIOTT. From Arizona to the Pacific. *Ibis*, 1866, pp. 259–275.

Fort Whipple in Arizona possesses much in common with the coast of Southern California, though the two are in many points strikingly contrasted. The author had a fine opportunity of comparing the *ornis* of these districts in passing from one to the other, a distance of 500 miles. Hardly any change was noticed until the Colorado was nearly reached; here the author had the opportunity of determining many of the water-birds found in the district. Further westward lies the Colorado Desert, where hardly a bird was seen until the "sink" of the Mojave was attained, which seems to be a meeting-point of several eastern and western species. Beyond this lie the San Bernardino Mountains, whence to the coast the country is an open and flat plain, the resort of a very distinct set of birds. The paper,

which is one of much interest, concludes with an account of the species seen in the Bay of San Pedro.

COUES, ELLIOTT. List of the Birds of Fort Whipple, Arizona, &c. Proc. Acad. Philad. 1866, pp. 39-100*. (Separately published as 'Prodrome of a work on the Ornithology of Arizona.' Philadelphia: 1866. 8vo, pp. 64.)

The list is preceded by a brief sketch of the physical features of the territory and of the amount of information respecting its ornithology published prior to the author's sojourn there. The number of birds noticed as belonging to the district is 244 (one, *Certhiola flaveola*, having been introduced in a MS. note, as our copy informs us, by mistake), of which 155 occurred at Fort Whipple. The details appended are not very numerous, such being reserved for future elaboration; but, as in all Dr. Coues's papers, they are always to the point. Three new genera are established—*Micrathene* (*Strigidae*), *Asyndesmus* (*Picidae*), and *Podasocys* (*Charadriidae*); and four species are described as new—one belonging to the family *Tyrannidae*, the remainder to *Vireonidae*. (Cf. 'Ibis,' 1867, pp. 130, 131.)

DOWNES, A. On the Land-Birds of Nova Scotia. Proc. & Trans. Nova Scotian Inst. Nat. Sci. vol. i. part iv. pp. 130-136.

A continuation of the paper before noticed (Zool. Record, ii. p. 80), but, like that, containing information only of local interest.

DRESSER, H. E. Notes on the Birds of Southern Texas. Ibis, 1866, pp. 23-46.

The concluding portion of the paper noticed last year (Zool. Record, ii. p. 80). Altogether the author enumerates 272 species as occurring in the district, and of nearly all of them records his personal observations. One of the most curious facts recorded is the domestication of *Ortalia maccalli* and its interbreeding with domestic poultry.

ELLIOT, D. G. The Birds of North America. Parts I. and II. New York: 1866. Imp. fol.

This work is to contain life-sized figures of all the Birds of North America not figured by Audubon. The species figured in the first part are *Haliaetus albicilla* (Greenland), *Campylorhynchus affinis*, *Colymbus adamsi*, *Cardinalis igneus*, and *Ombria psittacula*. In the second appear *Cathartes burrovianus*, *Sphyrapicus thyroideus*, *Bucephala islandica*, *Podasocys montanus*, and *Chen albatu*s. (Cf. Ibis, 1866, p. 417.)

KING, W. ROSS. The Sportsman and Naturalist in Canada. With coloured plates. London: 1866. Royal 8vo, pp. 334.

* The 'Proceedings' of the Philadelphia Academy for 1866 have not been received in England. We are therefore unable to furnish the particulars of the pagination of this paper, for a separately printed copy of which we are indebted to the author's kind consideration. [See footnote, p. 45.]

This volume contains notices of such birds of the country as are of most interest to the sportsman, but written with more attention to scientific accuracy than is usual in works of this character, though no information of any great value to the naturalist is given. Those of the plates represent species of *Gallina*. (Cf. *Ibis*, 1867, pp. 125, 126.)

LAWRENCE, G. N. Catalogue of Birds observed on New York, Long and Staten Islands, and the adjacent parts of New Jersey. *Ann. Lyc. N. H. New York*, 1866, pp. 279-300.

Three hundred and twenty-seven species are mentioned, among them the European *Passer domesticus* and *Scolopax rusticola*. The first has been introduced purposely.

LORD, JOHN KEAST. The Naturalist in Vancouver Island and British Columbia. London: 1866. 2 vols. small 8vo, pp. 358 and 375.

The author was Naturalist to the British North-American Boundary Commission, and therefore had good opportunities of studying the habits of various animals about which little has hitherto been known. Not much that is new, however, respecting ornithology is recorded in the work. The 'Appendix' contains (ii. pp. 291-301) a list of the 226 species of birds collected by Mr. Lord, in which none of any remarkable interest occur. *Pediocætes phasianellus* and *Selasphorus rufus* form the subjects of two bad woodcuts. The work is very carelessly printed, and has no index. (Cf. *Ibis*, 1867, p. 126.)

MÜLLER, J. W. VON. Reisen in den Vereinigten Staaten, Canada und Mexico. 3 vols.* Leipzig: 1864, 1865. 3 vols. Royal 8vo.

We last year noticed (*Zool. Record*, ii. p. 80) a separately printed copy of a list of Mexican Birds. This copy seems to have been only a proof; for several alterations appear to have been made in the list as now published (*op. cit.* iii. pp. 551-594). Six hundred and eleven species only are included, of which four, *Trogon erythronotus*, *Tachyphonus schlagintweiti*, *Melospiza pectoralis*, and *Aimophila* (lege *Hæmophila*) *tolteca* are described as new.

WEIZ, SAMUEL. List of Vertebrates observed at Okkak, Labrador. *Proc. Boston Soc. N.H.* x. pp. 264-277.

The birds enumerated (pp. 267-269) are about eighty-five in number, of which twenty-five are said to breed in the district. Their Eskimaux names are added, but no further remarks are made on them.

NEOTROPICAL REGION.

BRYANT, HENRY. A List of Birds from Porto Rico, presented to the Smithsonian Institution. *Proc. Boston Soc. N. H.* x. pp. 248-257. *Journ. für Orn.* 1866, pp. 181-191.

The birds were presented by Messrs. Swift and Latimer. Three appear to be described as new, belonging to the genera *Tyrannus*, *Todus*, and *Tanagra* (*Spindalis*). Local varieties of species of *Mimus*, *Certhiola*, *Fringilla* (*Phonipara*), *Icterus*, and

* The third volume is also published separately as 'Beiträge zur Geschichte, Statistik und Zoologie von Mexico.'

Saurothera are also characterized. Upwards of forty species are noticed, but some only mentioned by name. (Cf. Ibis, 1867, pp. 129, 130.)

GUNDLACH, JUAN. Revista y Catálogo de las Aves cubanas. Repert. fisico-nat. de Cuba, i. pp. 165-180 (Oct. '65); 221-242 (Nov., Dec. '65), 281-302 (Jan., Feb. '66), 347-363 (Apr., June '66), 386-403 (Aug., Sept. '66).

This series of papers is very important, containing as it does a complete list of the Birds of Cuba critically drawn up by so trustworthy an authority. The first article treats chiefly of the general features of the Cuban ornithology. Of 257 species found in a wild state in the island, 40 are peculiar to it; and 119, or more than half the remainder, are common to North America, but the greater number of them are autumnal visitants. These and other similar details relating to geographical distribution are very clearly set forth in a tabular form. The rest of the series consists of a catalogue, with a few synonyms, the local names, and short particulars of habits and the like. To the last article are appended four shorter lists, showing the species naturalized, escaped from confinement, doubtfully and erroneously enrolled as Cuban. No new species are described in these papers. Extracts from a letter of Dr. Gundlach relating to Cuban ornithology are also printed in Journ. f. Orn. 1866, pp. 352-354.

GUYON, —. Des animaux disparus de la Martinique et de la Guadeloupe depuis notre établissement dans ces îles. Comptes Rendus, lxxiii. (8 Oct. 1866), pp. 589-593.

The birds mentioned as extinct are two "Aras," two "Perroquets," and two "Perruches;" but no scientific names are assigned to them.

LANDBECK, L. (See PHILIPPI, R.A.)

LAWRENCE, G. N. Characters of seven new species of Birds from Central and South America. Ann. Lye. N. II. New York, 1866, pp.

They belong to the families *Trochilidae*, *Formicariidae*, *Dendrocolaptidae*, *Troglodytidae*, and *Columbidae*.

LÉOTAUD, A. Oiseaux de l'île de la Trinidad (Antilles). Port d'Espagne [Trinidad]: 1866. 8vo, pp. xx, 560, iv.

A very complete account of the ornithology of the island above named, when the difficulties with which the author (working without access to good libraries or museums) had to contend are taken into consideration. Two hundred and ninety-seven species are included, three of which are added in an Appendix. Each species is fully described, and a few observations made on its habits. Four are described as new, *Cymindis pucherani*, *Dendrocolaptes altirostris*, *Empidonax cabanisi*, and *Tachyphonus albispecularis*. The avifauna of Trinidad is purely South-American, as distinguished from that of the West-Indian

islands proper, 274 species being peculiar to Trinidad and South America. (Cf. *Ibis*, 1867, pp. 104-108.)

LEYBOLD, FRIEDRICH. Beschreibung von vier neuen Vogelarten aus der Argentinischen Provinz Mendoza. *Journ. für Orn.* 1865, pp. 401-406.

The birds were obtained on a journey to Mendoza over the Cordillera, and belong to the families *Formicariidæ*, *Fringillidæ*, and *Tyrannidæ*. They are described by Herr L. Landbeck.

PHILIPPI, R. A., and LANDBECK, L. Beiträge zur Fauna Chiles. *Archiv für Naturgeschichte*, 1866, ii. pp. 121-132.

Four species are described as new—one, *Pteroptochus castaneus*, having been previously described by the same authors (*Zool. Record*, ii. p. 81). The others are a *Synallaxis*, *Numenius*, and a *Sterna*.

SALVIN, OSBERT. Descriptions of Eight Species of Birds from Veragua. *Proc. Zool. Soc.* 1866, pp. 67-76, pls. vii., viii.

The species belong to the families *Trogonidæ*, *Formicariidæ*, *Dendrocolaptidæ*, *Turdidæ*, *Troglodytidæ*, and *Tanagridæ*. In most cases careful diagnoses of the other species of the same genus, drawn up with Mr. Sclater's assistance, are added. The plates represent *Formicarius rufpectus* and *Euphonia rufivertex*.

SALVIN, OSBERT. A further Contribution to the Ornithology of Guatemala. *Ibis*, 1866, pp. 188-206.

This contains a list of species not included in the papers published by the author and Mr. Sclater in former volumes of 'The *Ibis*,' together with a series of corrections; both as to nomenclature and distribution. Six hundred and twelve species, of which eighty-one are added in the present paper, are now known from the district included in the limits originally laid down by these two accomplished naturalists (*Ibis*, 1859, p. 1); and Mr. Salvin enters into a few particulars of the various journeys of exploration made by himself, his collectors, or friends. The corrections chiefly refer to the papers contained in 'The *Ibis*' for 1859 and 1860. *Chamaospiza torquata*, Scl. & Salv. (*Ibis*, 1860, p. 274), is *Pyrgisoma leucote*.

SALVIN, O. (See SCLATER, P. L.)

SCLATER, P. L. On the Birds of the vicinity of Lima, Peru. With Notes on their Habits, by Professor W. NATION. Part I. *Proc. Zool. Soc.* 1866, pp. 96-100, pl. xi.

In this Part twenty-three species are noticed, of which two, belonging to the families *Dendrocolaptidæ* and *Tyrannidæ*, are new. Prof. Nation's notes are very brief.

——. On a New Species of the Genus *Accipiter* from New Granada. *Ibid.* pp. 302-304. [*A. ventralis*.]

——. Descriptions of Six New Species of American *Oscines*. *Proc. Zool. Soc.* 1866, pp. 320-324.

They are all from localities in the Neotropical Region, and belong to the families *Cærebidae* (genus novum *Spodiornis*), *Vireonidae*, *Turdidae*, and *Troglodytidae*.

SCLATER, P. L., and SALVIN, O. Catalogue of Birds collected by Mr. E. Bartlett on the River Ucayali, Eastern Peru, with Notes and Descriptions. *Ibid.* pp. 175-201.

The specimens contained in the collection amounted to about 700, representing 252 species, and were procured on the river named between Nauta and Cashaboya; and, as the only work giving any connected account of the ornithology of this district is Tschudi's 'Fauna Peruana,' a great addition to our knowledge of its avifauna is made by Mr. Bartlett's labours, which are clearly set forth by the authors. Eleven species prove to be new, belonging to the families *Trochilidae*, *Formicariidae*, *Dendrocolaptidae*, *Cotingidae* (genus novum), *Tyrannidae*, and *Fringillidae*, which will all be found noticed in our special part.

—, —. On some additions to the Catalogue of Birds collected by Mr. E. Bartlett on the River Ucayali. *Tom. cit.* pp. 566, 567.

Twenty species in addition to those noticed in the former list are noticed. None are described as new.

ANATOMY AND PHYSIOLOGY.

ALTUM, B. Ueber späte Brutten. *Journ. für Orn.* 1866, pp. 107-111.

The number of eggs in late broods is almost always less than in the first, and the nests are more slightly built; parental affection likewise diminishes, and the old birds feed the young less frequently. These last also are weaker, and the proportion of females among them is greater.

COQUEREL, C. (See GERVAIS, P.)

DIECK, R. De Sterno Avium. *Halis Saxonum*: [1865]. 8vo, pp. 31.

An inaugural dissertation at the author's graduating in the University of Halle. One of the theses he lays down is, that the sternum is the best character for defining the genus. His researches are based upon the examination of this part in 115 species, chiefly *Accipitres* and *Passeres*. His use of anatomical terms is in several respects very different from that which commonly obtains. (*Cf.* *Ibis*, 1867, pp. 246, 247.)

DROSIER, W. H. On the Functions of Air-Cells and the Mode of Respiration in Birds. *Ann. & Mag. Nat. Hist.* 3rd ser. 1866, xvii. pp. 313-316.

This is the abstract of a paper read before the Cambridge Philosophical Society, 12th Feb. 1866. After mentioning the facts and theories which have been brought forward to account for the air-cells, the author proceeds to show that it is impossible for birds to gain any real advantage from the rarification
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of the air in those cavities, as the lessening of weight from that cause is almost inappreciable; nor are these organs supplementary lungs, as is proved by the paucity of the capillaries on their walls. The lungs of birds being comparatively small in size, and possessing little elasticity, the cells act, in the author's opinion, the part of air-reservoirs, and by the alternate contraction and expansion of their walls a current of air is kept playing continually over the pulmonary capillaries, so that the act of respiration is principally performed by these cells, while the lungs only take the passive function of arterialization. The common inspiratory muscles are regarded as free to act whether the pectorals are in action or not—a fact thought by Hunter to be impossible. This was explained by a model, and also treated of mathematically. Air is passed through the bones of birds to prevent the moisture secreted by the endosteum from collecting and causing increase of weight.

GERVAIS, P., et COQUEREL, C. Mémoire sur le Droute, à propos d'os de cet oiseau récemment découverts à l'île Maurice.

(See special part, under DIDIDÆ.)

GIEBEL, C. Zur Anatomie der Spechte. Zeitschr. gesamt. Naturwiss. xxvii. pp. 477-485.

The manuscript observations of Nitzsch on *Picus major*, *P. medius*, *P. minor*, *P. martius*, and *P. viridis*.

——. Die Wirbelzahlen am Vogelskelet. *Op. cit.* xxviii. pp. 20-29.

This paper contains a list showing the number of vertebræ in 451 species, and noticing when this is inconstant, as occasionally is the case so far as observed.

——. Ueber einige Nebenknöchen am Vogelskelet. *Tom. cit.* pp. 29-39.

——. Zur Anatomie des Lämmergeiers. *Tom. cit.* pp. 149-158.

From a manuscript of Nitzsch's, descriptive of the wing-muscles.

GOULD, J. Exhibition of Specimens of the trachea of *Manucodia gouldi*, which is of very remarkable form and structure. Proc. Zool. Soc. 1866, p. 201.

JÄCKEL, A. J. Ueber Schnabel-Missbildungen. Zoolog. Garten, 1866, pp. 335-339.

The bearings which the form of the bill in *Loxia* has upon the question are considered.

KOSTER, W. Remarque sur la signification du jaune de l'œuf des oiseaux comparé avec l'ovule des mammifères. Archives Néerlandaises, 1866, pp. 472-474.

MEYER, R. Ein Haushuhn mit Hahnengefeder. Zoolog. Garten, 1866, pp. 167-170.

A woodcut of this not uncommon abnormality is given.

MILNE-EDWARDS, A. Remarques sur les ossements de Droue (*Didus ineptus*) nouvellement recueillis à l'isle Maurice.

(See special part, under DIDIDÆ.)

——. Observations sur les caractères ostéologiques des principaux groupes de Psittacidéés pour servir à la détermination des affinités naturelles du *Psittacus mauritianus*.

(See special part, under PSITTACI.)

NEUBERT, W. Ueber Schnabelmissbildungen. Zoolog. Garten, 1866, pp. 247–249.

A curious case of malformation of the mandible in *Melopsittacus undulatus* is illustrated by a figure.

OWEN, RICHARD. On the Anatomy of Vertebrates. Vol. II. Birds and Mammals. London: 1866. 8vo, pp. 1–265.

The part of this volume which we have here to notice is founded almost entirely upon the article "Aves" which the author wrote for Todd's 'Cyclopædia of Anatomy,' published in 1833, with, of course, many additions, which the advance of knowledge has rendered necessary. This long-expected work supplies a very great void, and, without doubt, has no rival. It must, however, be confessed that the systematic ornithologist will not receive as much help from it as he might be disposed to anticipate. The class *Aves* is divided into seven orders; but these are not defined anatomically, nor, indeed, are the characters drawn from external features always very precise: thus the definition of *Natatores* would include the Avocet, and that of *Grallatores* the Flamingo. Prof. Owen's classification is as follows:—

Order I. NATATORES. Sample families: (1) *Brevipennatæ*, (2) *Longipennatæ*, (3) *Totipalmatæ*, (4) *Lamellirostratæ*.

Order II. GRALLATORES. Sample families: (1) *Macroductyli*, (2) *Cultriostres*, (3) *Longirostres*, (4) *Pressirostres*.

Order III. RASORES { Suborder Gallinacei or Clamatores.
" " Columbacei or Genitores.

Order IV. CANTORES. Sample families: (1) *Dentirostres*, (2) *Conirostres*, (3) *Tenuirostres*, (4) *Fissirostres*.

Order V. VOLITORES. Sample families: (1) *Cypselidæ*, (2) *Trochilidæ*, (3) *Caprimulgidæ*, (4) *Trogonidæ*, (5) *Prionitidæ*, (6) *Meropidæ*, (7) *Galbulidæ*, (8) *Coraciadæ*, (9) *Capitonidæ*, (10) *Alcedinidæ*, (11) *Bucerotidæ*.

Order VI. SCANSORES. Sample families: (1) *Rhamphastidæ*, (2) *Bucconidæ*, (3) *Cuculidæ*, (4) *Picidæ*, (5) *Musophagidæ*, (6) *Coliidæ*, (7) *Psittacidæ*.

Order VII. RAPTORES. Sample families: (1) *Nocturnes*, (2) *Diurnes*.

The order CURSORES, which was formerly adopted by the

author (and from its frequent mention in the present work appears to a certain extent still to be recognized) is stated not to be a natural order; and the forms previously assigned to it are variously relegated—*Notornis* to the Coots, *Struthio* to the Bustards, *Didus* to the Doves, while *Apteryx*, *Dinornis*, and *Palapteryx* are said to bear affinity to the Megapodes. Nevertheless some of these genera find places in the author's systematic list; nor is any suggestion made as to the position of *Archæopteryx*.

But it is in the descriptive portion of this treatise that Prof. Owen's powers are manifested. The Osseous, Muscular, Nervous, and other systems have each a chapter devoted to them, and are treated as fully as the limits allow. Respecting this (the most important) portion of the book, however, we are precluded from entering into details. The illustrations, which are mostly the old woodcuts of the 'Cyclopædia' introduced into the letterpress, are very numerous and judiciously chosen, but not particularly well executed.

(*Cf.* Ibis, 1866, pp. 408, 409; Journ. Anat. and Physiol. no. 1. pp. 139, 140.)

OWEN, RICHARD. Memoir on the Dodo (*Didus ineptus*, Linn.). With an Historical Introduction by the late WILLIAM JOHN BRODERIP.

(See special part, under DIDIDÆ.)

— Evidence of a Species, perhaps extinct, of large Parrot (*Psittacus mauritianus*, Owen), contemporary with the Dodo in the Island of Mauritius.

(See special part, under PSITTACI.)

PARKER, W. K. On the Structure and Development of the Skull in the Ostrich Tribe. Phil. Trans. 1866, pp. 113–183, pls. vii.–xv.

This is the first of a series of papers on the morphology of the vertebrate skull; and the Ostrich tribe is chosen partly because of the mid position held by those birds among Vertebrates, and partly because of their generalized character. The development of the various bones composing the skull is most carefully traced in *Struthio*, *Rhea*, *Dromæus*, and *Casuarius*, from examinations of very young examples; and some valuable remarks are made on the skull of the adult *Dinornis*. *D. casuarinus*, Owen, is said to be a *Notornis*. *Casuarius* is shown to present most unmistakable mammalian characters, especially in its inferior turbinals and post-temporals. The structure of the skull in *Tinamus* and *Psophia* is also described; and that of the first is considered by the author to be not only perfectly Struthious (Zool. Record, i. p. 59), but also more nearly related to the Lacertian Reptiles than are the *Struthiones* and higher groups of birds. Mr. Parker is convinced of the entire distinctness of the

splint-system and the true endoskeleton, as well as of the great importance of embryological researches.

SCLATER, P. L. Notes on the American *Caprimulgidae*. Proc. Zool. Soc. 1866, pp. 123-145.

In illustration of the arrangement of the group proposed by the author in this valuable paper, which is fully treated of in the special part of our Record, the phalangeal series in *Antrostomus*, *Nyctidromus*, *Steatornis*, *Nyctibius*, and *Podargus* are figured (pp. 124, 125), as well as the sterna of *Caprimulgus*, *Nyctibius*, and *Podargus* (p. 126).

TEGETMEIER, W. B. The Poultry Book. London: 1866. Imp. 4to. [In course of publication.]

No. VI. (for June) of this work contains (pp. 131-133) a very curious account of the assumption of female plumage by a Game Cock, whose reproductive powers were in no degree affected thereby. A woodcut of this rare abnormality is given.

WILLEMOES-SUHM, R. VON. Brütende Elsteralbinos. Zoolog. Garten, 1866, pp. 76, 77.

The circumstance of a pair of albino *Pica europæa* breeding and bringing up their young is recorded, but at third-hand evidence.

PTERYLOLOGY.

FATIO, VICTOR. Des diverses modifications dans les formes et la coloration des plumes. Mém. Soc. de Phys. & d'Hist. Nat. de Genève, xviii. pp. 249-308, pls. i.-iii. Bull. Soc. Orn. Suisse, 1866, pp. 94-98. (Translated from Biblioth. Univers. March 25, 1866, pp. 244-254). Ann. & Mag. Nat. Hist. 1866, xvii. pp. 361-367.

This paper gives only the results of the author's investigations into this difficult subject. He defines a feather as consisting (1) of a stalk or primary axis, on the sides of which are arranged (2) barbs or secondary axes, having implanted upon them (3) numerous barbules or tertiary axes, beset by (4) small lateral hooklets or "quaternary" axes. Feathers are divided into two groups, in accordance with differences in their pigmentation,—the "optical," which furnish a brown pigment, and the "ordinary," containing variously coloured pigments; to these, as laid down by Bogdanow (Rev. Zool. 1858, pp. 180, 181), M. Fatio adds two subdivisions,—"mixed" feathers dependent on the "ordinary" ones, and "enamelled," on the "optical;" their chief distinctive characters are furnished by the comparative distribution of the cortical substance, combined with the different pigmentation. On the observation of these four divisions are founded the following general laws:—

- (1) Of two successive axes, one is always developed at the expense of the other.

- (2) In ordinary feathers the secondary axis predominates over the tertiary.
- (3) In optical feathers the tertiary axis predominates over the secondary.
- a. Mixed feathers present a mean condition.
- b. Enamelled feathers are optical in their pigmentation and ordinary in their development.

FRAUENFELD, GEORG VON. Ueber Farbenänderungen von Vögeln in der Sammlung des Herrn Jul. Finger. Verhandl. k.-k. zool.-bot. Gesellsch. Wien, 1866, pp. 417-420.

An enumeration of a considerable number of albino or albescent birds, with a few remarks upon them.

TSCHUSI, VICTOR VON. Beiträge zur Farbenveränderung der Vögel in Weiss und Schwarz. Verhandl. k.-k. zool.-bot. Gesellsch. Wien, 1866, pp. 223, 224.

Some not very important additions to the instances recounted by Herr von Pelzeln which we noticed last year (Zool. Record, ii. p. 88).

NEOSSOLOGY.

BARTLETT, A. D. Notes on the Breeding of several Species of Birds in the Society's Gardens during the year 1865. Proc. Zool. Soc. 1866, pp. 76-79.

The species noticed are *Eurypyga helias* and *Pterocles alchata*, the young of both being figured, besides *Calenas nicobarica*, *Guira piririgua*, and *Ibis rubra*. Thirteen other birds which hatched or laid eggs in the Gardens are also mentioned.

GOULD, J. The Birds of Great Britain. London: 1866.

Part IX. of this work contains figures of the young of *Lobipes hyperboreus*, and Part X. of those of *Bubo maximus*, *Scolopax rusticola*, and *Alca torda*.

MARCHAND, ALB. Poussins des oiseaux d'Europe couverts de duvet à la sortie de l'œuf. Rev. et Mag. de Zool. 1866.

The species represented during the past year are:—

Porphyrion hyacinthinus .. pl. 1	Anas tadorna .. pl. 8
Fulica cristata .. " 2	— rutila .. " 9
Phasianus colchicus .. " 3	Tetrao scoticus .. " 10
— pictus .. " 4	— saliceti .. " 11
Vanellus cristatus .. " 5	Uria grylle .. " 12
Totanus hypoleucus .. " 6	Vultur fulvus .. " 16
Perdix petrosa .. " 7	Cygnus olor .. " 17

In noticing the series for 1864 (Zool. Record, i. p. 62) we accidentally omitted to mention that figures of the nestling *Tetrao bonasia* and *Anas fusca* are given in plates 9 and 10. No letterpress accompanies these illustrations.

OOLOGY.

BARTLETT, A. D. Notes on the Breeding of several Species of Birds, &c. [See "NEOSSOLOGY,"]

The eggs of *Eurypyga helias*, *Calænas nicobarica*, *Guira piririgua*, and *Ibis rubra* are described.

DRESSER, H. E. Notes on the Breeding of the Booted Eagle (*Aquila pennata*). Proc. Zool. Soc. 1866, pp. 377-380.

This paper, giving an account of two nests of the species found in Spain, contains a few interesting particulars, in addition to those furnished by Lord Lilford (*Ibis*, 1866, pp. 389, 390).

HOLTZ, LUDWIG. Die Beutvögel der Insel Gottland. Journ. für Orn. 1866, pp. 289-304, 361-385.

Sixty-six species observed breeding, none of which have not been mentioned in that character by previous observers (*e.g.* Wallengren, 'Naumannia,' 1853, pp. 78-79, 1854, p. 264), or might not have been expected to appear in it, except, perhaps, *Loxia pityopsittacus*; and of this the evidence is incomplete. The observations as to the size and weight of eggs are very precise and numerous.

HUMBERT, ALOIS. Note sur la nidification de l'*Orthotomus longicauda*, Gm. Bull. Soc. Orn. Suisse, 1866, pp. 55-66, pl. v.

A collation of the various accounts given by original observers, which in some respects differ rather remarkably.

LILFORD, Lord. Notes on the Ornithology of Spain. *Ibis*, 1866, pp. 173-187, 377-392, pl. x.

Contains many observations on the breeding-habits of Spanish birds, and descriptions of their nests and eggs. Of *Cyanopica cooki* and *Aquila pennata* the latter are figured.

NORDMANN, ALEX. VON. Oologische Notiz. Bull. Soc. Imp. Nat. Moscou, 1865, xxxviii. pp. 448, 449.

On the colouring of the eggs of the Common Fowl and its allied species (?).

RAMSAY, E. P. On Australian Oology. Proc. Phil. Soc. Sydney (read 5th July, 1865), pp. 313-329, pl. ii.

After a few introductory remarks on the generalities of the subject, the author proceeds to describe minutely the nidificatory and oological peculiarities of species of *Pomatorhinus*, *Xanthomyza*, *Ptilotis*, *Sisura*, *Eopsaltria*, and *Micræca*. This plate contains beautiful figures of their eggs.

ACCIPITRES.

VULTURIDÆ.

Sarcorhamphus papa. Birds possibly of this species were seen near San Francisco Mountains. E. Coues, Proc. Acad. Philad. 1866, p.

Cathartes californianus, living in the Zoological Gardens, is figured P. Z. S. 1866, p. 366.

Cathartes burrovianus is figured. D. G. Elliot, B. N. Am. part ii.

Vultur monachus, note on. R. C. Tytler, Proc. As. Soc. Beng. 1866, pp. 74-76.

Gypæetus barbatus, Nitzsch's description of the wing-muscles. C. Giebel, Zeitschr. gesam. Naturw. xiii. pp. 149-158,

FALCONIDÆ.

BREHM, A. E. Die Raubvögel der deutschen Thiergärten. Journ. für Orn. 1866, pp. 217-231.

Various notes on five species of *Falco* and four of *Tinnunculus*.

KRATZSCH, H. Vortrag über die Raubvögel. Mittheil. aus dem Osterlande, xvii. pp. 204-210.

Contains a few general observations on the birds of prey, but nothing apparently of any great novelty or importance.

SCHLEGEL, H. De Vogels van Nederlandsh Indië, &c. Monographie 3. Valkvogels (Accipitres). Haarlem: 1866. 4to, pp. 84, tabb. xxviii. figg. 109.

This companion Monograph to that of the *Alcedines* noticed last year (Zool. Record, ii. pp. 97, 98) contains descriptions of thirty-nine species, all of which, except *Astur approximans*, are figured, as follows:—

Falco communis, tab. i. figg. 1, 2.
 — *moluccensis*, tab. i. figg. 3-5.
 — *cærulescens*, tab. ii. fig. 1.
 — *severus*, tab. ii. figg. 2, 3.
 — *frontatus*, tab. ii. figg. 4-6.
Aquila malayensis, tab. iii. figg. 1, 2.
Pandion haliaetus, tab. iii. fig. 3.
 — *ichthyaetus*, tab. v. figg. 1, 2.
 — *humilis*, tab. v. fig. 3.
Haliaetus leucogaster, tab. iv. figg. 1, 2.
 — *indus*, tab. iv. figg. 3-5.
Spizaetus cirratus, tabb. vi.-viii. 9 figg.
 — *gurneyi*, tab. ix. 2 figg.
Astur trivirgatus, tab. x. 4 figg.
 — *griseiceps*, tab. xi. figg. 1, 2.
 — *novæ-hollandiæ*, tab. xi. fig. 3.
Nisus virgatus, tab. xii. figg. 1-4.
 — *rhodogaster*, tab. xii. figg. 5, 6.
 — *erythrauchen*, tab. xiii. 4 figg.
 — *cruentus*, tabb. xiv. xv. 7 figg., tab. xvi. figg. 1, 2.

Nisus sulaensis, tab. xvi. figg. 3, 4.
 — *torquatus*, tab. xvii. 5 figg.
 — *iogaster*, tab. xviii. 3 figg.
 — *trinotatus*, tab. xix. figg. 1-3.
 — *soloensis*, tab. xix. figg. 4-6.
Milvus affinis, tab. xx. fig. 1.
Circus assimilis, tab. xx. figg. 2, 3.
Buteo liventer, tab. xxi. fig. 1.
 — *poliogenys*, tab. xxi. figg. 2, 3.
Circaetus bacha, tab. xxii. 3 figg.
 — *rufipectus*, tab. xxiii. figg. 1-3.
 — *sulaensis*, tab. xxiii. figg. 4-6.
 — *gallicus*, tab. xxiv. fig. 1.
Elanus intermedius, tab. xxv. figg. 2, 3.
Pernis cristatus, tabb. xxv. xxvi. 7 figg.
Baza reinwardti, tab. xxvii. figg. 1-3.
 — *rufa*, *sp. nov.*, tab. xxvii. fig. 4, tab. xxviii. figg. 1-3.
 — *magnirostris*, tab. xxviii. figg. 4, 5.

Haliaetus albicilla is figured, D. G. Elliot, B. N. Am. part i.

Ichthyaetus leucogaster, head figured, S. Diggles, Orn. Austral. part v.

Aquila mogilnik (S. G. Gmelin): notes on this species, tending to show its specific distinctness from *A. heliaca*. A. Alléon, R. Z. pp. 273-277, pl. 20. Further remarks upon it, identifying it with *A. clanga* (Pallas) and this with *A. naevioides* (Cuvier). J. Vian, *tom. cit.* pp. 356-359.

Aquila barthelemyi, Mr. Gurney's notes on the species (Zool. Record, i. p. 66) translated. G. Lunel, Bull. Soc. Orn. 1866, pp. 102-104.

Aquila pennata, its eggs figured and a notice of its breeding in Spain. Lord Lilford, Ibis, 1866, pp. 185, 186, 389, 390, pl. x. figs. 1, 2. Further particulars, H. E. Dresser, P. Z. S. 1866, pp. 377-380.

Spizaetus andamanensis is a new species from the Andaman Islands, having a strong resemblance to *S. limnaetus*, but being much smaller. R. C. Tytler, Proc. As. Soc. Beng. 1865, p. 112.

Spilornis hoyi is described as a new species from Formosa. R. Swinhoe, Ibis, 1866, pp. 304-307, 399. It is *S. orientalis* from Formosa (*tom. cit.* p. 242, note). J. H. Gurney, *tom. cit.* p. 421.

Baza rufa is a new species from Halmahera; it has the bars beneath much less broad than they are in *B. magnirostris*, and they are of a more or less deep rufous on a reddish ground, which tint is also commonly present on the throat. H. Schlegel, Ois. Indes Néerl. *Falcones*, p. . *Idem*, N. T. D. iii. p. 328.

Buteo auguralis is a supposed new species from Eastern Africa, which may be *B. augur* ♂ in immature plumage. T. Salvadori, Atti Soc. Ital. Sc. Nat. viii. 1866.

Buteo vulgaris from the Azores much resembles *B. desertorum* (Daudin) from Barbary in plumage. F. D. C. Godman, Ibis, 1866, p. 94.

Buteo zonocercus, Sclater (P. Z. S. 1858, p. 130), first described from Guatemala, has occurred in Arizona. E. Coues, Proc. Acad. Philad. 1866, p. 46.

Stringonyx anderssoni, identified with *Machærhamphus alcinus*. A. D. Bartlett, P. Z. S. 1866, p. 324. (*Cf.* Zool. Record, ii. p. 92.)

Pernis apivorus is figured, J. Gould, B. Grt. Br. part ix.

Milvus affinis, head figured, S. Diggles, Orn. Austral. part i.

Cymindis pucherani is described as a new species from Trinidad, but differing in some respects from the characters supposed to be possessed by the genus, the bill being slightly festooned, the tail less rounded, and the region of the eyes less naked. A. Léotaud, Ois. Trinid. pp. 40, 41. (Possibly *Urubitinga anthracina* or *U. schistacea*? P. L. Sclater, Ibis, 1867, p. 107.)

Elanus axillaris, head figured, S. Diggles, Orn. Austral. part iii.

Fulco radama from Madagascar is nothing but the common dark variety of *F. communis* [*sc. peregrinus*]. H. Schlegel, P. Z. S. 1866, p. 420.

Fulco babylonicus occurs in the Punjab. T. C. Jerdon, Ibis, 1866, p. 221.

Falco subniger has lately been obtained in South Australia and near Brisbane. It is figured, S. Diggles, Orn. Austral. part ix.

Falco vespertinus (♂ and ♀) is figured. C. J. Sundevall, Sv. Fogl. pl. lxxi. figs. 3, 4.

Hypotriorchis concolor occurs in Zambesia. J. H. Gurney, Ibis, 1860, pp. 127, 128.

Hieracidea berigora, head figured, S. Diggles, Orn. Austral. part vi.

Tinnunculus cenchroides is figured, *Idem*, *op. cit.* part viii.

Accipiter ventralis is a new species from Bogota, readily distinguishable from all other American birds of the group (of which a synonymic and geographical list is given) by its chestnut belly and plumbeous thorax. P. L. Sclater, P. Z. S. 1866, pp. 302-304.

Accipiter lantzi is a new species from the west coast of Madagascar, having in its immature plumage some resemblance to *A. approximans*. J. Verreaux, R. Z. Oct. 1866, pp. 353-355, pl. 18. Closely allied to *A. (Nisus) fringillarius*, but having the colours, in the adult, darker and ten bands on the tail. H. Schlegel, P. Z. S. 1866, p. 420.

Nisuoidea [lege *Nisoides*] is proposed as a genus differing from *Nisus* in the form of the bill and colour of the iris, the latter being white, and the former large and stout, somewhat resembling that of *Polyboroides*, and having the maxilla straight, and without a decided edge. The type is

N. moreli, a new species from Madagascar. F. Pollen, Bull. Soc. Sc. et

Arts de la Réunion, 13 Avril, 1866. *Idem*, Mém. Scient. pp. 59-63. Referred to *Nisus* [sc. *Accipiter*]. H. Schlegel, P. Z. S. 1866, p. 420. Possibly identical with *Accipiter lantzi* (*vide supra*). F. E. Guérin-Méneville, R. Z. 1867, p. 160.

Nisus [sc. *Accipiter*] *madagascariensis* is the female or young of *N. francesi*. Schlegel, P. Z. S. 1866, p. 420, and N. T. D. lii. p. 362.

Nisus [sc. *Accipiter*] *unduliventer* and *N. [A.] tachiro* are only local races of the same species, as also are *N. sphenurus* (of which *N. guttatus*, Heugl., is the young), *A. brachydactylus*, *A. polyzonoides*, and *A. badius*. *Idem*, *op. cit.* pp. 359-362.

Climacocercus [s. *Micraster*] *zonothorax* is described as a new species from the coast-region of New Granada. It is somewhat larger and has a thicker bill than *Sparvius ruficollis*, Vieill. The red-brown above is darker; and beneath, the throats only are alike. The rest of the under parts, except the breast, are waved transversely with black on a whitish ground, these dark cross markings being much broader in the new species. J. Cabanis, J. f. O. 1865, pp. 406, 407*.

Strigiceps cineraceus, observations on its different plumages, habits, and mode of breeding: ♂ et ♀ juv. figured. F. B. de Montessus, R. Z. 1865, pp. 369-389, pls. 25, 26.

STRIGIDÆ.

NIEMEYER, W. Ueber die Nahrung unserer Eulen. Zoolog. Garten, 1866, pp. 366-369.

The author records his own observations on this question, which has already attracted the notice of Dr. Altum and others (Zool. Rec. ii. p. 92).

Scops rutilus, Pucheran, is the red variety of *S. menadensis*. H. Schlegel, P. Z. S. 1866, p. 421.

Bubo maximus, with young, is figured, J. Gould, B. Gr. Br. part x.

Strix haasti is mentioned as a new species seen in Canterbury, New Zealand, but apparently not yet captured. It is as large as *Circus gouldi* and of dark-brown plumage. W. Buller, Ess. Orn. N. Zeal. p. 7.

Strix flammea, its economic value, B. Altum, Zoolog. Garten, 1866, pp. 410-413. Observations on its food, A. J. Jäckel, *ibid.* pp. 456-464. Occurrences of the dark-coloured variety in England, H. Doubleday, Zoologist, S. S. p. 522. Figured, C. J. Sundevall, Sv. Fogl. pl. lxxi. fig. 1.

Strix pithecops is described as a new species from Formosa, nearly allied to *S. candida*, but differing from Dr. Jerdon's description of that bird by having a white ruff and other peculiarities. R. Swinhoe, Ibis, 1866, pp. 396, 397.

Strix valleri is described and figured as a new species from Brisbane, Queensland, much larger than *S. delicatula*. S. Diggles, Orn. Austral. part vii.

Strix noctua is figured. C. J. Sundevall, Sv. Fogl. pl. lxxi. fig. 2.

Noctua aruensis appears to be described as a new species from the Aru Islands, and the first member of the family found there. It resembles *N. franzenii* (Zool. Record, ii. p. 94), but is much larger. H. Schlegel, N. T. D. iii. p. 329.

Athene boobook, the head is figured, S. Diggles, Orn. Austral. part ii.

* Not published till 1866.

Microthene is a new genus established for the reception of *Athene whitneyi* (Cooper), having the middle toe and claw fully as long as the tarsus, and the wing not so much pointed, besides other peculiarities not so easily differentiated. E. Coues, Proc. Acad. Philad. 1866, p. 51.

PSITTACI.

FINSCH, OTTO. Die geographische Verbreitung der Papageien. Ptermann's Geographische Mittheilungen, 1867*, pp. 3-7, taf. i.

The general results of the author's studies (which will be more specially given in a Monograph, of which the first volume has since appeared) are here contained. He divides the group, which he looks upon as forming one family only, into five sub-families—*Stringopinae*, *Plectolophinae*, *Sittacinae*, *Psittacinae*, and *Trichoglossinae*. The species known to him are, from America, 142, Africa 23, Asia and the Sunda Islands 18, Moluccas and New Guinea 83, Australia 59, and Polynesia 29. Five excellent maps on one plate serve materially to elucidate the subject.

OWEN, R. Evidence of a species, perhaps extinct, of large Parrot (*Psittacus mauritianus*), contemporary with the Dodo in the Island of Mauritius. Ibis, 1866, pp. 168-171, figs. (Translated) Ann. Sci. Nat. Zoologie, 5^{me} sér. 1866, vi. pp. 88-90, pl. 3. figs. 4, 5.

Among the Dodos' bones found by Mr. Clark (*vide infra* DIDIX) was part of the lower mandible of a large Psittacine bird, quite new to science, and named by the author as above. The specimen seems to show that the species equalled the largest of the group in size, and had nearer affinities to African and Australian than to New-World forms; the particular section of the group to which it belongs will probably be in time determined (*vide infra* MILNE-EDWARDS, A.). Prof. Schlegel (N. T. D. iii. p. 318, note) considers *P. mauritianus* to be founded upon a bone of *Microglossa aterrima*, which had been introduced by the Portuguese into the island.

MILNE-EDWARDS, ALPHONSE. Observations sur les caractères ostéologiques des principaux groupes de Psittacidés, pour servir à la détermination des affinités naturelles du *Psittacus mauritianus*. Ann. Sci. Nat. Zoologie, 5^{me} sér. 1866, vi. pp. 91-111, pls. 2, 3.

The author, led by Prof. Owen's suggestion, has examined the lower jaws of a large number of *Psittaci*, which are described at great length, figures of no less than eleven of the principal genera being given in illustration of his remarks, and considers that *P. mauritianus* cannot be placed in any of the small genera

* Copies received in England Dec. 1866.

or subgenera established by authors, but that it represented in the Mascarene Islands the South-American *Ara*, just as *Microglossa* and *Calyptorhynchus* do in the Australian region, that there is more analogy between the forms of the South-African and South-American faunas than between those of the first and those of Australia, and, finally, that *P. mauritianus* differs from the other *Psittaci* by osteological characters of the same value as those which separate *Ara*, *Calyptorhynchus*, *Microglossa*, and so forth from each other, having, however, a greater resemblance to *Ara* and *Microglossa* than to any other form. The author has been unable to discover any allusion in the records of old travellers to this new discovery.

PLYCTOLOPHIDÆ.

SCHLEGEL, H. Notice sur les Cacatous blancs à huppe jaune. Nederl. Tijdschr. Dierk. iii. pp. 318-321.

The author divides this group of birds into two sections, one with pendant, the other with erect crests. The first section may be again subdivided into:—those species having the crest large, as *Cacatua moluccensis* and *C. cristata*; and those having it small, among which are *C. sanguinea*, *C. philippinarum*, *C. roseicapilla*, and *C. citrinicristata* with red or orange, and three with sulphur crests, *C. galerita*, from Australia, *C. triton*, from New Guinea, the Aru Archipelago, and Goram, as far as the Solomon Islands, and *C. sulphurea*, from Timor, Flores, Lombok, and Celebes.

Microglossa aterrima is figured, S. Diggles, Orn. Austral. part ii., as also *Cacatua sanguinea*, *op. cit.* part viii., with the heads of *Calyptorhynchus leachi*, part v., and *C. funereus*, part ix.

STRIGOPIDÆ.

Nestor superbus is described as a new species from the alpine heights of the South Island of New Zealand. W. Buller, Ess. Orn. N. Zeal. p. 11. Probably *N. meridionalis* ♂. R. Taylor, Ann. & Mag. Nat. Hist. 3rd ser. xviii. p. 140.

Strigops habroptilus. A French translation of Dr. Haast's observations on this species (Zool. Record, i. p. 63, ii. p. 95) from 'The Ibis.' A. Humbert, Bull. Soc. Orn. Suisse, 1866, pp. 69-80.

PLATYCERCIDÆ.

Psephotus pulcherrimus and *P. multicolor* are figured, S. Diggles, Orn. Austral. part i.

Platycercus flaviventris and *P. barnardi*, their heads figured, S. Diggles, Orn. Austral. part iii., and *P. palliceps* and *P. flavicohis*, *Idem*, *op. cit.* part x.

PSITTACIDÆ.

Psittacula melanogenia is a new species from the Aru Islands, resembling *P. guillemi* III. (Zool. Record, ii. p. 95), but not of so strong a build, with all the tints less bright and some other differences. Von Rosenberg, Tijdschr. Nederl. Indië, 1866; II. Schlegel, N. T. D. iii. p. 330.

Gnathosittaca heinii (Zool. Record, ii. p. 95) is identical with *Comurus icterotis*, Souancé. G. Hartlaub, Bericht u. s. w. p. 27.

Nymphicus novæ-hollandiæ (♂ and ♀) is figured, S. Diggles, Orn. Austral. part iv., as also *Euphema aurantia*, *E. elegans*, and *Melopsittacus undulatus*, *op. cit.* part vii.

PICARLÆ.

PICIDÆ.

SUNDEVALL, C. J. *Conspetus Avium*. Stockholmia: 1866.

Royal 8vo, pp. 116.

This useful publication consists of a masterly digest of M. Malherbe's great 'Monographie des Pucidés,' published at Metz between 1859 and 1862. Each species is fully described, references being made to the works in which it is figured (when such is the case), and its habitat stated. Excellent indices are also added. The *Picidæ* are divided into three genera only—*Picus*, *Picumus*, and *Jynx*. *Picus* is made to contain four series (further separable into tribes which are unnamed):—(1) *Angusticolles*, (2) *Securirostris*, (3) *Ligonirostris*, and (4) *Nudinæres*. The first of these series is composed of 4 tribes and 35 species, the second of 8 tribes and 103 species, the third of 14 tribes and 80 species, and the fourth of 4 tribes and 36 species. These tribes are further subdivided into sections and smaller groups. The effect of all this is to leave the genus *Picus* with 254 known species, besides 24 doubtful or spurious ones; *Picumus* with 28; all pretty well determined; and *Jynx* with 4,—a very different treatment of the family from that of most modern authors. We think it needless to indicate the precise limits of the smaller groups of species, or their relation to the too numerous so-called genera which have been lately instituted; for the work is one which must be consulted by any one working at the family, and in its last pages contains a concise synopsis of their contents. Several new species are described; and some others receive new names in consequence of the author's arrangement of them. The whole of this careful work is in Latin. (*Cf.* *Ibis*, 1866, pp. 415, 416.)

Picus canifrons is a new species from Northern China, belonging to the same group as *P. auritus*, Eyton, from Malacca, and *P. kalcensis*, Swinhoe, from Formosa, with the anterior part of the back white and the crown grey, broadly girt with black behind. *Cf.* Sundevall, *Consp. Av. Picin.* p. 26.

Picus hedenborgi is a new species from Kordofan and Senaar, belonging to the same group as *P. obsoletus*, Wagler, with which it was confounded by Malherbe, but from which it differs by having the gastræum slightly streaked with narrow dusky lines and by being larger. It is the *P. obsoletus* of Sundevall, *Öfvers. K. V.-Akad.* 1850, p. 131 (*nec* Malherbe, *nec* Cabanis et Heine). *Idem, op. cit.* pp. 31, 32.

Picus rubidus is a new species from Venezuela, belonging to the same group as *P. oleagineus*, Lichtenstein, from Mexico, *P. fumigatus*, Latr. & d'Orb., from Peru and Bolivia, and *P. caboti*, Mall., from Central America. It is the *Phlæonerpes reichenbachi* of Cabanis and Heine (*nec* *Celeopicus reichenbachi*, Malherbe). *Idem, op. cit.* p.

Picus albipes is a new species from Brazil, belonging to the same group as *P. affinis*, Swainson, *P. selysi*, Malherbe, and other species, but differing from them by having the bill white, blackish at the tip, the feet whitish, the claws dusky at the tip. The female only is known. *Idem, op. cit.* p. 37.

Gecinulus viridis, Blyth, from Burmah, is called *Picus scotochlorus*. *Idem, op. cit.* p. 48.

Chrysopicus malherbii, Cassin, is called *Picus imberbis*. *Idem, op. cit.* p. 68.

Colaptes mexicanoides, Lafresnaye, is called *Picus submexicanus*. *Idem, op. cit.* p. 72.

Picus flavilumbis is differentiated from *P. icteromelas*, Vieillot, but scarcely admitted to specific rank. It is the size of the species just named, but in colour is like *Chrysopicus chrysomelas*, Malherbe. It is from Brazil. *Idem, op. cit.* pp. 74, 75.

Picus squamigularis appears to be a new species from Malacca. It is perhaps *Picus badius*, Jerdon, from the same locality (*nec* Raffles, which is an inch longer). *Idem, op. cit.* pp. 89, 90.

Gecinus canus and *G. viridis*, observations on their habits. D. H. Snell, Zoolog. Garten, 1866, pp. 137-142.

Picus major and *P. viridis*, variations in their plumage. T. E. Gunn, Zoologist, S. S. p. 271.

Picus major, *P. medius*, *P. minor*, *P. martius*, and *P. viridis*, observations on their anatomy from Nitzsch's MSS. C. Giebel, Zeitschr. gesamt. Naturw. xvii. pp. 447-485.

Melanerpes formicivorus, in the autumn, selects, for storing away, acorns only which are infested by maggots, to serve as food for the young. The acorns are driven into the holes prepared for them, so as to prevent the escape of the maggot when it comes to maturity, and imprison it until wanted in the following spring. C. T. Jackson, Proc. Boston Soc. N. H. x. p. 227. Its provident habits doubted. J. K. Lord, Nat. Vancouver Isl. i. pp. 289-292.

Sphyrapicus thyroideus is figured, D. G. Elliot, B. N. Am. part ii.

Asyndesmus is a new genus established for the reception of *Picus torquatus*, Wils. Its most essential features are found in the unusual texture of the feathers of the under parts and nuchal collar, which have their fibres longer than usual and remarkably stiff, and the fibrillæ on their terminal portion of very peculiar character. E. Coues, Proc. Acad. Philad. 1866, p. 55.

Picumus micromegas is a new species from Brazil, of large size, "gigas inter nanos," and forms of itself the tribe of "*Picummi enormes*." C. J. Sundevall, Consp. Av. Picin. pp. 95, 96.

Picumus asterias is a new species from Brazil, dusky above, beneath black, thickly spotted with white. *Idem, op. cit.* p. 97.

Picumus spilogaster is a new species from Guiana, grey above, whitish beneath, regularly barred on the throat, and on the belly longitudinally spotted with black. It is *P. minutus*, Cabanis and Heine (*nec* Linn.). *Idem, op. cit.* pp. 100, 101.

Picumus guttifer, *P. squamifer*, and *P. sagittatus* are new species,—the first (which in markings resembles *P. orbignyianus*) from the interior of Brazil, the second from Surinam, and the third from Brazil. *Idem, op. cit.* pp. 101-103.

Picumus nebulosus is a new species from South America. *Idem, op. cit.* pp. 103, 104.

Picumus rufiventris, its characters more fully described. P. L. Sclater and O. Salvin, P. Z. S. 1866, p. 196.

TROGONIDÆ.

Trogon erythronotus is described as a new species from Mexico, ash-coloured with slaty-black quills, the vent and under tail-coverts red. J. W. von Müller, Reise in Mexico, i. p. 229, iii. p. 562.

Trogon clathratus is a new species from Veragua, at first sight having the appearance of *T. massena*, but considerably smaller, and with a tail barred as in *T. puella*. O. Salvin, P. Z. S. pp. 75, 76.

BUCCONIDÆ.

Malacoptila castanea is a new species from Bogota, in size approaching the largest species of *Monasa*. J. Verreaux, R. Z. 1866, pp. 355, 356, pl. 19.

CORACIIDÆ.

Eurystomus madagascariensis, notes on this species. F. Pollen, Album de l'île de la Réunion. *Idem*, Mém. Scient. pp. 13-19.

Eurystomus australis is figured, S. Diggles, Orn. Austral. part v.

Coracias garrula is figured, J. Gould, B. Grt. Br. part x.

MEROPIDÆ.

Merops apiaster is figured, C. J. Sundevall, Sv. Fogl. pl. lxx. fig. 1.

ALCEDINIDÆ.

Tanyseptera riedeli is a new species (from Celebes?), blue-green above, white beneath, the scapulars indigo, rump white, a coral bill, and red-brown feet. J. Verreaux, Nouv. Arch. Mus. ii. pp. 21, 22, pl. iii. fig. 1.

Halcyon sanctus and *H. macleayi* are figured, S. Diggles, Orn. Austral. part ii.

Dacelo tyro is distinct from *D. gaudichaudi*. H. Schlegel, N. T. D. iii. p. 339.

Dacelo gigantea, the head figured, S. Diggles, Orn. Austral. part i.

Ceryle rudis and *Halcyon smyrnensis*, their breeding-habits described. H. B. Tristram, Ibis, 1866, pp. 84-88.

Alcedo ispida is figured, C. J. Sundevall, Sv. Fogl. pl. lxx. fig. 2.

TODIDÆ.

Todus hypochondriacus appears to be described as a new species from Porto Rico, corresponding closely with Lesson's *T. mexicanus*, but wanting the yellow margin to the scarlet gular patch. H. Bryant, Proc. Bost. Soc. N. H. x. p. 250.

CAPITONIDÆ.

The *Megalemidæ* (or *Capitonidæ*), their affinities are nearer to the *Rhamphastidæ* than to the *Picidæ*. E. Blyth, Ibis, 1866, pp. 357, 358.

Xantholema indica, note on its habits. G. E. Bulger, Ibis, 1866, pp. 218-220.

RAMPHASTIDÆ.

Aulacorhamphus cyanolemus is a new species from Ecuador allied to *A. ceruleigularis* from Panama and *A. atrigularis* from Peru, but differing from

the former in the smaller extent of blue on the throat, and from the latter in having there no trace of black, and from both in the markings of the bill. J. Gould, P. Z. S. 1866, p. 24.

BUCEROTIDÆ.

The Hornbills of India and Burma are carefully enumerated. E. Blyth, Ibis, 1866, pp. 349-352.

UPUPIDÆ.

Upupa epops, note on its habits when breeding, with reference to its supposed affinity to the *Bucerotidæ*. D. Scott, Ibis, 1866, pp. 222, 223.

CUCULIDÆ.

ALTUM, B. Warum brütet der Kuckuk nicht selbst? Journ. für Orn. 1866, pp. 165-171.

The author answers this often-put question by alleging that Cuckoos require a great quantity of food, and accordingly individuals are necessarily widely dispersed during the greater part of the summer. Their function in the economy of nature is to check the increase of destructive caterpillars. As soon as these insects appear in any part of the country Cuckoos assemble there until the supply of food gets scarcer, when they return to their normal state of dispersal. Nature especially requires this service in May, June, and July (that is to say, the height of the breeding-season); and to enable Cuckoos to perform it she has discharged them from their parental duties.

ROWLEY, G. D. Thatsachen in der Haushaltung des Kuckuks. Journ. für Orn. 1866, pp. 172-181. Sur quelques faits relatifs aux mœurs du Coucou. Bull. Soc. Orn. Suisse, 1866, pp. 92, 93.

German and French translations of the paper from 'The Ibis' (1865, pp. 178-186) noticed by us last year (Zool. Record, ii. p. 99).

Cuculus canorus was seen by the author through a telescope to lay an egg on the grass, take it in its bill, and deposit it in the nest of *Motacilla alba*. Adolf Müller, Zoolog. Garten, 1866, pp. 374, 375. Remarks on the breeding of the species, G. Brucklacher, *ibid.* pp. 232, 233; V. Fatio, Bull. Soc. Orn. Suisse, 1866, pp. 107, 108.

Cuculus striatus and other Indian species of the family are considered at a great length. E. Blyth, Ibis, 1866, pp. 359-364.

Cuculus infuscatus is a new species from the Feejees, belonging to the subgenus *Cacomantis*, and certainly not the same as *C. sinus* (Peale), which, again, is different from *C. cineraceus*, Vigors. G. Hartlaub, Ibis, 1866, p. 172.

Oxylophus glandarius, notes on its breeding in Spain. Lord Lilford, Ibis, 1866, pp. 177, 178, 183, 184.

Centropus lafresnayanus is a new species, from Eastern Madagascar, much resembling *C. tolu*, but to be distinguished by its larger size and the blue reflexions on its head and body. J. Verreaux, Nouv. Arch. Mus. ii. pp. 23-25, pl. ii. Considered identical with *C. tolu*, as also *C. superciliosus* (Hartl., nec Rüpp.). G. Schlegel, P. Z. S. 1866, p. 424.

Scythrops nove-hollandiæ, the head figured, S. Diggles, Orn. Austral. part iv.

Chalcites lucidus and *Cuculus cineraceus* [sc. *flabelliformis*], the mode of

breeding of their most frequent fosterparents described. E. P. Ramsay, P. Z. S. 1866, pp. 571-577.

Chrysococcyx osculans, *C. lucidus*, and *C. basalis* are figured. S. Diggles, Orn. Austral. part vii.

Neomorphus salvini is a new species from Veragua, remarkable for its shorter and much more elevated bill and the uniformly rufous forehead. To this account are added descriptions of the other two species of the genus known to the author (Zool. Rec. i. p. 72), and the new one is figured. P. L. Sclater, P. Z. S. 1866, pp. 59, 60, pl. v.

Saurothera vieilloti, var. *rufescens*, is described from Porto Rico. H. Bryant, Proc. Bost. Soc. N. H. x. p. 256.

CAPRIMULGIDÆ.

SCLATER, P. L. Notes on the American *Caprimulgidæ*. Proc. Zool. Soc. 1866, pp. 123-145, pls. xiii., xiv.

This highly important and elaborate paper requires no small care to bring out its most interesting features. After briefly touching upon the chief authorities for the special subject in hand, the author offers some preliminary observations on the whole family and its geographical distribution. The *Caprimulgidæ* present two very different modes of structure in their feet, by which they are readily divided into two divisions. In the first of these, or *Caprimulginae* proper, the outer toe has four phalanges only, and the middle claw is pectinated; in the second the normal number of five phalanges obtains, and the middle claw is smooth. Again, the sternum offers important characters for classification, as was pointed out by M. Blanchard (Ann. du Mus. 1859, xi. pp. 104-108). These, as well as those afforded by the phalangeal series, are illustrated by woodcuts (pp. 124-126). *Podargus*, and the forms allied to it, such as *Nyctibius*, may probably have to be separated into a distinct family. The result of Mr. Sclater's investigations is that he divides the whole family into three subfamilies—(I.) *Podarginae*, with the genera *Podargus*, *Batrachostomus*, *Ægotheles*, and *Nyctibius*; (II.) *Steatornithinae*, composed of *Steatornis* only; and (III.) *Caprimulginae*, divided into two sections—(a.) *Glabrivirostres*, containing *Podager*, *Lurocalis*, *Chordiles*, *Lyncornis*, and *Eurystopodus*; and (b.) *Setirostres*, including *Caprimulgus*, *Scotornis*, *Macrodipteryx*, *Antrostomus*, *Stenopsis*, *Hydropsalis*, *Heleothreptus*, *Nyctidromus*, and *Siphonorhis*. Passing then to the American forms of these subfamilies, an excellent synonymatic and diagnostic list of the forty-two species (one of which is new) known with certainty to the author is given, with remarks on their habitats and the like, this valuable paper being concluded with a table showing their geographical distribution in the New World. It is only to be regretted that the plates illustrating it are so very inartistically executed.

———. Additional Notes on the *Caprimulgidæ*. Tom. cit. pp. 581-590, pls. xlv., xlvi.

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Podargus wants the oil-gland, and possesses powder-down patches on the rump. These and the tongue are figured. *Nyctibius* also probably has like patches, and the author's views as to the removal of the *Podarginae* from this family are thereby strengthened. Further remarks on, or descriptions of, some other species of *Caprimulgidae*, four more of which are described as new, complete this paper.

Podargus phlenoides is figured, S. Diggles, Orn. Austral. part x.

Batrachostomus, anatomical notes on. E. Blyth, Ibis, 1866, p. 357, note.

Antrostomus ornatus is a new species from Brazil, like *A. rutilus*, but very much blacker, and large oval spots on the second and third rectrices, one of which is figured in a woodcut. P. L. Sclater, P. Z. S. 1866, pp. 586, 587, pl. xlv. (*fig. mala*).

Antrostomus parvulus (Gould, P. Z. S. 1837, p. 22) and *A. maculicaudus* (Lawr. Ann. Lyc. N. York, vii. p. 459) are figured. *Idem*, *tom. cit.* pls. xiii., xlvj. (*figg. malee*).

Stenopsis ruficervix is a new species from New Granada and Ecuador, like *S. bifasciata*, but smaller and with a rufous-chestnut collar, and crown spotted with rufous. P. L. Sclater, P. Z. S. 1866, pp. 140, 141, pl. xiv. (*fig. mala*). (The outer rectrices in this and the two other species of *Stenopsis* are figured, *ibidem*, p. 139.)

Stenopsis leucura (Vieill.) is proposed to be called "*S. candicans*, Pelzeln," and is minutely described. *Idem*, *tom. cit.* pp. 588, 589.

"*Stenopsis langsdorfi* and *S. platara*, Pelzeln," are described as two new species,—the first from Eastern Brazil, much resembling *S. candicans* [*sc. leucura*], but having narrower, more pointed, and entirely banded wings, and differing also in the ochre-yellow of the under side and the banded tail. The second, from Southern Brazil, is near *S. ruficervix*, but is smaller, and has grey markings on the upper surface; it also wants the white wing-spot and tail-bands. Both species were found by Natterer. *Idem*, *tom. cit.* pp. 588-591.

Hydropsalis ypanemæ and *H. pallescens* (Zool. Rec. ii. p. 99), the descriptions reprinted. J. f. O. 1866, pp. 46-49.

Semiophorus vezillarius, Gould, is the freshly moulted *Caprimulgus longipennis*. H. Schlegel, P. Z. S. 1866, p. 421.

Caprimulgus papuensis is a new species from Salwatty and the coast of New Guinea, allied to *C. macrurus*, but less deep in colour, with the throat coppery-rufous, banded and barred with black, the feathers of the breast and belly terminated by a large rufous spot, and wanting the white tip to the tail. H. Schlegel, N. T. D. iii. p. 340.

Caprimulgus tamaricis (Zool. Record, i. p. 72) is beautifully figured and its habits are described. H. B. Tristram, Ibis, 1866, pp. 74-76, pl. ii.

Caprimulgus macrurus is figured. S. Diggles, Orn. Austral. part iv.

Cypselus melba, account of its habits. C. Bolle, J. f. O. 1866, pp. 62-70; H. B. Tristram, Ibis, 1866, pp. 77-79; V. Fatio, Bull. Soc. Orn. Suisse, 1866, pp. 47-54.

Cypselus affinis, a suggested explanation of its apparently varying mode of nidification. H. B. Tristram, Ibis, 1866, pp. 76, 77.

Cypselus acuticauda must be added to the Indian ornith. E. Blyth, Ibis, 1866, p. 339.

Cypselus australis and *Acanthylis caudacuta* are figured. S. Diggles, Orn. Austral. part vii.

"*Chetura grandidieri*, Verreaux," is named as a new (?) species from Madagascar, but no diagnosis is given. II. Schlegel, 1866, p. 421.

GRAY, G. R. A synopsis of the Genus *Collocalia*, with Descriptions of New Species. Ann. & Mag. Nat. Hist. 3rd ser. 1866, xvii. pp. 118-128.

The object of this paper is to exhibit the number of species known and to indicate their geographical distribution; but it is not so clearly arranged as most of the author's writings, and we are not sure that we entirely understand his views. It would appear that thirteen species are discriminated by him, of which three seem to be described as new, while one, *C. nidifica*, is separable into seven varieties or local races. Mr. Gray abstains from employing the specific name "*esculenta*," as he considers its typical representative to be still enveloped in much doubt.

Collocalia hypoleuca, *C. spilura*, and *C. neglecta* are separated from the *C. esculenta* of Mr. Wallace (P. Z. S. 1863, p. 384). The first was long ago described (P. Z. S. 1858, p. 170). The second is from Batchian, and has the spot on the first and fourth rectrices not so prominent as on the second and third; it is sometimes hardly visible on the first. The third is from Timor; in its upper surface it is totally different from those of the other localities; and it is of a more pure white beneath. G. R. Gray, *ut supra*, pp. 120, 121.

Collocalia uropygialis from Aneiteum is separated from *C. leucopygia* of Wallace (*loc. cit.*) from New Caledonia. It has the abdomen pure white, and shorter wings.—*Collocalia brevirostris*, *C. gelatinosa*, *C. malaisia*, *C. philippina*, and *C. ualensis*, as well as forms from Celebes, the Moluccas, Papua, Timor, and Marianne Islands, are all referred to local races of *C. nidifica*, *Idem*, *tom. cit.* p. 123.

TROCHILIDÆ.

BURMEISTER, H. Ueber die von Azara beschriebenen Kolibri-Arten. Nachtrag. Journ. für Orn. 1866, pp. 88-90.

An addition to the paper we noticed last year (Zool. Record, ii. p. 100). Some of the *Trochilidæ* have a double moult; and this fact accounts for doubts hitherto existing as to the identification of Azara's species.

MULSANT, E., et VERREAUX, J. et E. Essai d'une classification méthodique des Trochilidées ou Oiscaux-Mouches. Paris: 1866. 8vo, pp. 98. (Extrait des Mém. Soc. Sc. Nat. Cherbourg, t. xii. 1866, pp. 152-240.)

The object of this work is to supply the want of an analytical arrangement of this family, and to assign characters to the different groups composing it. Prof Mulsant starts by dividing the *Trochilidæ* into two tribes, "Trochiliens" and "Ornis-miens," distinguished by characters drawn from what he calls the "mandibule"—the *maxilla* of almost all other ornithologists, for he transposes this term and *mandibula*. Of the "Trochiliens" he makes two sections, left unnamed; the first

contains the branches "Grypaires," "Phætornaires," "Campyloptéaires," "Lampornaires," "Doryféaires," and "Leucoliaires," the last being further subdivided into the boughs "Leucoliales," "Amaziliaires," "Hylocharates," and "Chlorolampates." The second section is composed of the branches "Trochiliaires," "Florisugaires," "Petasophoraires," "Callipéridiaires," "Thaluraniaires," and "Avocettinaires." The "Ornismiens" contain two divisions, each subdivided into two sections, which, as before, are unnamed. Of the first division, the first section is composed of the branches "Patagonaires," "Chrysolampaires," "Clytolémaires," and "Diphlogéaires," and the second of the branches "Euclosiaires," "Eriocnémaires," "Aglæactaires," "Adélomiaires," and "Lophornaires," the last containing the boughs "Oxyogonates" and "Lophornates." Of the second division, the first section is composed of the branches "Mélisugaires," "Platuraires," and "Lesbiaires," and the second of the branches "Amathusiaires," "Zéphyritaires," "Sélasphoraires," and "Ornismiaires." The different branches and boughs, for so we translate the words "branches" and "rameaux," are further subdivided into 70 genera, including 29 subgenera; and, Mr. Gould having, in his 'Introduction to the Trochilidæ' (1861), recognized 123 genera, we should be inclined to look upon Prof. Mulsant's arrangement as an improvement, but for the belief that his reduction in their number seems to be obtained in some cases by totally ignoring certain of his predecessor's divisions, while, on the other hand, the use of so many groups larger than genera deprives the present work of a very desirable simplicity; but the fact, which is highly creditable to him, remains to be mentioned that characters which are more or less definite are assigned to each group of species, whether larger than a genus or less, named or unnamed. Eleven new genera and 13 new subgenera are proposed, not always perhaps with a good show of reason, while several others are employed in a sense very different from that attributed to them by Mr. Gould. Prof. Mulsant also takes a good many liberties with the spelling of scientific names, his object being to facilitate their pronunciation, regardless of orthography. Three hundred and seventy species are enumerated; but we regret to add that four new ones are mentioned by name without any description—a practice which is deserving of the strongest reprobation. The authors announce, we are glad to say, that this essay is intended as the precursor of a larger work on the subject, of which they hope soon to begin the publication. (Cf. Ibis, 1867, pp. 126-129.)

Leucolia is a new genus, to which thirteen species are assigned, the first mentioned being *Dolerisea fallax* (Bourc.), Gould, Mon. Troch. pl. lvi. E. Mulsant et Verreaux, Class. Méth. Troch. p. 31.

Ariana [qu. *Ariadne*?] is a new genus containing ten species, the first men-

tioned being *Erythronota niveiventris*, Gould, Mon. Troch. pl. cccxix. *Idem*, *op. cit.* p. 36.

Euclosia is a new genus of two species, the first being *Lafresnaya flavicaulata* (Fraser), Gould, Mon. Troch. pl. lxxxv. *Idem*, *op. cit.* p. 63.

Callidice is a new genus established for *Panoplites flavescens* (Lodd.), Gould, Mon. Troch. pl. cxi. *Idem*, *op. cit.* p. 65.

Erebeina is a new genus proposed for *Eriocnemis derbyi* (Delatt.), Gould, Mon. Troch. pl. cclxxix. *Idem*, *op. cit.* p. 66.

Bellona is a new genus, to which five species are assigned, the first mentioned being *Cephalapis delalandi* (Vicill.), Gould, Mon. Troch. pl. ccviii. *Idem*, *op. cit.* p. 75.

Paphosia is a genus established for *Lophornis helenæ* (Delatt.), Gould, Mon. Troch. pl. ccxiii. *Idem*, *op. cit.* p. 75.

Telamon is a new genus containing three species, of which the first mentioned is *Lophornis delatrvii* (Less.), Gould, Mon. Troch. pl. cxxi. *Idem*, *op. cit.* p. 75.

Uralia is a new genus established for *Spathura cissiura*, Gould, Mon. Troch. pl. clxvi. *Idem*, *op. cit.* p. 81.

Amathusia is a new genus of eight species, of which the type seems to be *Doricha henicura* (Vicill.), Gould, Mon. Troch. pl. clvii. *Idem*, *op. cit.* p. 95.

Zephyritis is a new genus containing six species, the first one mentioned being *Myrtis fannia* (Less.), Gould, Mon. Troch. pl. cli. *Idem*, *op. cit.* p. 87.

Dyrinia, *Egolia*, *Elvira*, *Emilia*, *Eupogonus*, *Galenia*, *Halia*, *Manilia*, *Mesophila*, *Momus*, *Osalia*, *Philodoce*, and *Polymnia* are the names of new subgenera proposed by MM. Mulsant and Verreaux. *Op. cit.*

Amazilia pristina, Gould, Mon. Troch. pl. ccciii, is called *A. lessoni* (p. 35). *Lampropygia cceligena*, Gould, Mon. Troch. pl. cclv, and *L. boliviana*, *Id.*, Introd. Troch. p. 137, are combined to form *Diphlogenu* (*Helianthea*) *lessoni* (p. 61). *Orthorhynchus ornatus*, Gould, Mon. Troch. pl. ccvi, is called *Bellona Hectoris* (p. 75), and *Calypte helenæ*, Gould, *op. cit.* pl. cxxxvi, is called *Zephyritis* (*Calypte*) *elvira* (p. 88). *Idem*, *op. cit.*

Phaethornis cassini is described as a new species from New Granada, differing from all others of the genus in having the upper plumage reddish-bronze without a trace of green. G. N. Lawrence, Ann. Lyc. New York, 1866, pp. *.

Eustephanus stokesi is the female of *E. fernandensis*, E. L. Landbeck, P. Z. S. 1866, pp. 556, 557.

"*Leucippus chlorocercus*, Gould," is apparently a new species from the Ucayali, Eastern Peru, about the size of *L. chionogaster*. P. L. Sclater and O. Salvin, P. Z. S. 1866, p. 194.

"*Thaumantias bartletti*, Gould," is a new species from the Upper Ucayali, Eastern Peru, closely allied to *T. fluvialtilis*, but having a blue breast. P. L. Sclater and O. Salvin, P. Z. S. 1866, p. 194.

Eupherusa cupreiceps is described as a new species from Costa Rica, resembling *Thaumantias chionurus*, but half an inch less in length, coppery above and on the two middle rectrices, the rest being nearly all white. G. N. Lawrence, Ann. Lyc. New York, 1866, pp. *.

Eupherusa niveicauda (Zool. Rec. ii. pp. 100, 101) is identical with *Thaumantias chionurus*. *Idem, ut supra*, p. *.

* From a separately printed copy kindly forwarded by the author.

Chlorestes mentalis is a new species from the coast-region of New Granada [qu. Venezuela?]; it is *Eucephala cærulea* of Gould (Intr. Troch. p. 167), from the same locality, but not from Brazil. It has a longer bill and less blue on the chin. J. Cabanis, J. f. O. 1866, p. 159.

Heliodoxa henryi, *Thaumatias viridicaudus*, and *Amazilia graysoni* are described as new species. G. N. Lawrence, Ann. Lyc. New York, 1866, pp. 402-405. The first of these is said to be identical with *H. jacula*, the second to be the female of *Chrysoronia humboldti*, and the third, which comes from Mexico (Tres Marias Islands), to differ only from *A. cinnamomea* in being larger. J. Gould, Ibis, 1867, p. 247.

PASSERES.

PITTIDÆ.

"*Philepitta schlegeli*, Pollen," is a new species from Madagascar, the adults with the eye surrounded by large blue and green lobes, beneath and fore part of back yellow, head black, other upper parts yellowish-green; the young without lobes. H. Schlegel, P. Z. S. 1866, p. 422.

Philepitta sericea, Geoffr., and *Brissonia nigerrima* (Gmel.) are the adult males of *P. jala* (Bodd.), of which *P. geoffroyi* is the female or young. *Idem*, loc. cit.

FORMICARIIDÆ.

Thamnophilus leucopygus is described as a new species from Panama, to be distinguished from its allies by its white rump. G. N. Lawrence, Ann. Lyc. New York, 1866, pp. 401, 402.

Dysithamnus puncticeps is a new species from Veragua, allied to *D. stratiiceps*, but easily distinguished by its spotted head and cinereous back. They probably should both be referred to the genus *Thamnophilus*. O. Salvin, P. Z. S. 1866, pp. 72, 73.

Hypocnemis melanura and *H. hemileuca* are two new species,—the first, from the Upper Ucayali, allied to *H. melanopogon*, but with longer tarsi and entirely black head and tail, differing also from *H. schistacea* by its black head and white-bordered wing-coverts; the second, from the Lower Ucayali, is also allied to *H. melanopogon*, but distinguishable by being black above and white beneath. P. L. Sclater and O. Salvin, P. Z. S. 1866, pp. 186, 187.

Formicarius rufipectus is a new species from Veragua, allied to *F. analis*, but distinguishable at first sight by its castaneo-rufous breast. A diagnostic, synonymic, and geographical list of the seven known species is given. O. Salvin, P. Z. S. 1866, pp. 73-75, pl. viii.

Grallaria gigantea is a new species from Ecuador, the largest of the group known. It somewhat resembles *G. squamigera*, but has regular and more distinct transverse markings, which extend over the whole under surface. The bill and legs are also much stouter. G. N. Lawrence, Ann. Lyc. New York, 1866, pp.

Grallaricula costaricensis is described as a new species from Costa Rica, somewhat like *G. ferrugineipectus*, but with a dull orange-rufous throat, dark-brown wing-coverts, and the breast-feathers margined with black. *Idem*, ut *suprà*, pp.

MENURIDÆ.

Menura superba, notes on this bird in confinement. G. Bennett, P. Z. S. 1866, pp. 167, 168. Figured, S. Diggles, Orn. Austral. part ix.

Orthonyx spinicauda ♂ is figured, with the heads of ♀ and young. S. Diggles, *op. cit.* part viii.

PTEROPTOCHIDÆ.

Pteroptochus castaneus (Zool. Record, ii. p. 102) is redescribed as a new species, no notice being taken of its former mention by the same authors. R. A. Philippi and L. Landbeck, Arch. f. Naturgesch. 1866, ii. pp. 121-126.

DENDROCOLAPTIDÆ.

SCLATER, P. L. Note on the Genus *Geobates* of Swainson. Proc. Zool. Soc. 1866, pp. 204, 205, pl. xxi.

The author has only lately had an opportunity of seeing this remarkable form, which he considers to belong to the *Furnariinae* or terrestrial group of *Dendrocolaptidae*, close to *Geositta*. The only species of the genus known, *Anthus pœcilopterus*, Max. Beitr. ii. p. 633 (= *Geobates brevicauda*, Sw. An. in Menag. p. 322) is fully described and figured, and Nattercr's MS. notes concerning it printed. *Geobamon rufipennis*, Burm. (J. f. O. 1860, p. 465), seems somewhat allied to this form.

Geositta crassirostris is a new species from the coast-region of Peru, allied to *G. tenuirostris*, but with a shorter and thicker bill and shorter wings. P. L. Sclater, P. Z. S. 1866, p. 98.

Furnarius torridus is a new species from the Ucayali, to be distinguished from all others of the genus by the deep rusty-rufous back. P. L. Sclater and O. Salvin, P. Z. S. 1866, p. 183. Figured, and a synopsis of the six known species given. *Idem*, Exot. Orn. pp. 7, 8, pl. iv.

Synallaxis poliophrys is a new species from Cayenne, like *S. ruficapilla*, but with a narrow olive forehead, the tips of the feathers scarcely rufescent, cinereous superciliary streak, a whitish spot on the lores, each black feather of the throat tipped with white. J. Cabanis, J. f. O. 1866, p. 307.

"*Synallaxis crassirostris*, Landbeck," is a new species from Mendoza, with a strong bill, white underparts, red-brown chin, and reddish under wing- and tail-coverts. F. Leybold, J. f. O. 1865, pp. 401, 402*.

Synallaxis masafueræ is described as a new species from Chili, generally of a dirty greyish-green colour. R. A. Philippi and L. Landbeck, Arch. f. Naturgesch. 1866, ii. pp. 127-129.

Synallaxis terricolor and *S. vulpecula* are two new species from the Ucayali: the first whole-coloured above, and with its ten much graduated and pointed rectrices; the second allied to *S. vulpina*, but with a longer bill, entirely whole-coloured above and spotted obsoletely on the belly. P. L. Sclater and O. Salvin, P. Z. S. 1866, pp. 183, 184.

Automolus rufescens is described as a new species from Costa Rica. G. N. Lawrence, Ann. Lyc. New York, 1866, p.

Dendrocolaptes altirostris is described as a new species from Trinidad,

* Not published till 1866.

hardly distinguishable in plumage from *D. picus* (Gm.), but with a bill more curved, and as high as broad. A. L'Éotaud, Ois. Trinid. pp. 166, 167.

MELIPHAGIDÆ.

"*Zosterops ficedulina*, Hartl.," is a new species from Ilha do Principe, Bight of Benin. H. Dolrn, P. Z. S. 1866, p. 327; J. G. Keulemans, N. T. D. iii. p. 389.

Zosterops flavifrons, Pollen (*nec* Gray), is named "*Z. mayottensis*, Pollen." H. Schlegel, P. Z. S. 1866, p. 422. (Cf. Zool. Record, ii. p. 104.)

Zosterops, a species identified by Dr. Gray with *Z. dorsalis*, has lately appeared in New Zealand, and is now abundant at Wanganui. R. Taylor, Ann. & Mag. N. H. 3rd ser. xvii. p. 237, xviii. p. 140; Ibis, 1866, p. 208.

Xanthomyza phrygia, *Ptilotis fusca*, and *P. auricomis*, their mode of breeding described and eggs figured. E. P. Ramsay, Proc. Phil. Soc. Sydn. 1865, pp. 319-324, pl. ii. figs. 3-5.

Plectorhyncha lanceolata and *Xanthomyza phrygia* are figured. S. Diggles, Orn. Austral. part iii.

Ptilotis gracilis is a new species from Cape York, Queensland. J. Gould, P. Z. S. 1866, p. 217.—*Ptilotis cassidix*, a new species from Victoria, exhibited but not described. J. Gould and W. Jardine, *tom. cit.* p. 558.

Ptilotis plumulus, *P. ornatus*, *P. fasciocularis*, *P. fuscus*, and *P. auricomis* are figured. S. Diggles, Orn. Austral. part. iv.

Anthornis auricula is described as a new species from the Chatham Islands, closely resembling the New Zealand *A. melanura*, but larger and lighter in colour. W. Buller, Ess. Orn. N. Zeal. p. 8.

Anthochera mellivora and *A. carunculata* are figured. S. Diggles, Orn. Austral. part. ix.

NECTARINIIDÆ.

Nectarinia australis (♂ and ♀) is figured. S. Diggles, Orn. Austral. part i.

CEREBIDÆ.

Spodiornis is a new genus allied to *Conirostrum*, but with a much thicker bill, shorter wings and tail, and stronger feet, the first remex longer than the fifth, the second, third, and fourth nearly equal and longest. The type is

S. jardinii, a new species from Ecuador, wholly plumbeous or dark cinereous, the wings and tail blackish, and, except the primaries and outer rectrices, edged with cinereous, beneath paler with whitish striations, so as in general appearance to resemble *Phrygilus geospizopsis*, and showing a close connexion of the *Ceribidæ* through the *Tanagridæ* with the *Fringillidæ*. The bill, wing, and foot are figured. P. L. Selater, P. Z. S. 1866, pp. 323, 324.

Certhiola flaveola, var. *portoricensis*, differs from the Jamaican form by its smaller size, the lighter colour of the back and throat, and the absence of any red tinge from the breast. H. Bryant, Proc. Bost. Soc. N. H. x. p. 252. (Mr. Cassin considers that the true *C. flaveola* occurs in Porto Rico. Cf. Zool. Rec. i. p. 76.)

Certhiola bairdi, *C. columbiana*, *C. majuscula*, and *C. peruviana* are described as new species. The first, from Indian Key, is large, and with the tips of all the rectrices white. The second is from Bogota, and differs from *C. luteola* of Venezuela and the coast-region of New Granada in the paler back, brighter

yellow rump, smaller white tips to the tail, and a slightly developed white speculum. The third, from Monto Video and the southern districts of Brazil, is, next to *C. major* from Guyana, the largest of the genus.† It has no white speculum, and is otherwise like the Brazilian *C. chloropygia*, except that the colouring, especially above, is paler and duller. The fourth, from Peru, which is probably *C. flaveola*, Tschudi (*nec* L.), resembles *C. majuscula*, but is to be recognized by its remarkably white speculum. J. Cabanis, J. f. O. 1865, pp. 412-414*.

COTINGIDÆ.

Lipaugus unirufus, *L. subalaris*, and *L. rufescens* are figured, and a synopsis of the ten species known to the authors is given. P. L. Sclater & O. Salvin, Exot. Orn. pp. 1-6, pls. i.-iii.

Xipholena atropurpurea is figured, and a synopsis of the three known species given. P. L. Sclater & O. Salvin, Exot. Orn. pp. 9, 10, pl. v.

Metopöthrix is a new genus of the subfamily *Piprinæ*, with a long, much compressed, and slightly curved bill, having no notch; frontal feathers short, erect, and bristly; gape smooth; wings moderate, scarcely reaching to half the tail; the second to fourth remiges nearly equal and longest, the first equal to the sixth; long graduated tail; tarsi moderate, a little longer than the middle toe, the three anterior toes united at the base. The type and only species is *M. aurantiacus*, from Sarayacu in Eastern Peru. P. L. Sclater & O. Salvin, P. Z. S. 1866, pp. 190, 191, pl. xviii.

SCLATER, P. L. Note on the Distribution of the Species of *Chasmorhynchus* †. Ibis, 1866, pp. 406, 407.

C. variegatus most probably does not occur in Brazil, as had been supposed. The coast of Venezuela and Trinidad appear to be its localities. *C. nudicollis* is from the coast-region of South-east Brazil, *C. albus* from Guiana, and *C. carunculatus* from Central America. The areas occupied by each nearly, too, correspond with those of the four species of *Galbula* allied to *G. viridis*. *C. nudicollis* has been brought alive to England. (Cf. Intell. Observer, Jan. 1867, pp. 401-408.)

AMPELIDÆ.

The genera *Myiadestes*, *Cichlopsis*, and *Platycephala* probably belong to the *Turdidæ*. S. F. Baird, Rev. Am. B. pp. 408, 409, and 417.

Myiadestes solitarius is a name given to the *Muscicapa armillata* of Gosse (B. Jam. p. 198) and other authors except Vieillot. The first inhabits Jamaica, and has not the white chin, the rufous belly, and yellow legs of the last, which is supposed to be from Martinique. S. F. Baird, *op. cit.* p. 421.

Ptilogonys caudatus is figured, P. L. Sclater & O. Salvin, Exot. Orn. pp. 11, 12, pl. vi.

Pachycephala graffi and *P. (?) optata* are two new species from the Feejees. The first is a typical species easily to be distinguished from several nearly allied birds by the dark gamboge-yellow chin; the latter is described from the female only. G. Hartlaub, Ibis, 1866, pp. 172, 173.

* Not published till 1866.

† From some information lately brought to our knowledge by Dr. Murie, we are decidedly of opinion that *Chasmorhynchus*, whatever be its true affinities, must not be classed among the *Passeres* as restricted in this 'Record.'—A. N.

Paralotus affinis and other species of the genus, further notes (Zool. Record, ii. p. 105) on their plumage. E. P. Ramsay, Ibis, 1864, pp. 126, 127.

TIMALIIDÆ.

Stachyrhis præcognitus is a new species from Formosa [very like *S. ruficeps*, but with a darker head and striped throat]. To this bird belonged the nest and eggs attributed (Ibis, 1863, p. 306) to *Calamoherpe minuta*. R. Swinhoe, Ibis, 1866, pp. 309-311.

Pomatorhinus temporalis and *P. superciliosus*, their mode of breeding described and eggs figured. E. P. Ramsay, Proc. Phil. Soc. Sydn. 1865, pp. 316-319, pl. ii. figs. 1, 2.

Actinodura egertoni and *A. nipalensis* are figured. J. Gould, B. As. part xviii.

Alethe striaticollis is a new species from the Gaboon, typical in form, and indeed hardly to be distinguished generically from *Napothera*. G. Hartlaub, J. f. O. 1866, p. 37.

Cuphopterus is a new genus *, established by Dr. Hartlaub, of which the principal characters seem to be a moderate bill, somewhat rounded, keeled, and scarcely notched, the culmen deflexed towards the tip, the gonyx ascending, scarcely any bristles; wings short, extending a little beyond the base of the tail, the first remex spurious, the fourth longest, the fifth scarcely shorter; tail longish; feet stout; tarsus longish and scutellated; exterior and interior toes nearly equal; claws small and weak. The type is

"*C. dohrni*, Hartl.," a new species from Ilha do Principe, Bight of Benin. H. Dohrn, P. Z. S. 1866, pp. 326, 327, pl. xxxiv.; J. G. Keulemans, N. T. D. iii. pp. 386, 387.

HIRUNDINIDÆ.

Hirundo æquatorialis is described as a new species from Ecuador, resembling *H. albiventris* from Brazil, but of a lighter green, with scarcely any bluish shade; the wings and rump more conspicuously white. It also is smaller, and has a very much narrower bill. G. N. Lawrence, Ann. Lyc. New York, 1866, pp. 400, 401.

Hirundo riocouri has occurred in England. J. H. Gurney, Jun., Ibis, 1866, p. 423.

Hirundo filifera is figured. J. Gould, B. As. part xviii.

"*Cotyle eques*, Hartl.," is a new species from Ilha do Principe, Bight of Benin. H. Dohrn, P. Z. S. 1866, p. 325.

ORIOLIDÆ.

Sphæcotheres australis and *S. flaviventris* are figured. S. Diggles, Orn. Austral. part ii.

VIREONIDÆ.

Lanivireo is a proposed subgenus of *Vireosylvia* with *V. flavifrons* as its type. S. F. Baird, Rev. Am. B. pp. 326, 345-350.

* Dr. Hartlaub has kindly informed us by letter that in the Bremen Museum this singular form has been placed next to *Alethe*. No hint of its affinities is conveyed in the description. Dr. Dohrn's note states that its song is like that of *Sylvia cinerea*. The attitude and accessories of the figure might induce the opinion, doubtless an erroneous one, that it was allied to *Anthus*!

Vireosylvia propinqua is described as a new species from Guatemala, differing from *V. solitaria* by having the nape, sides of the neck, and upper tail-coverts plumbeous, the sides of the throat yellow, the flanks nearly, and the vent quite, white, and also by having the remiges differently proportioned. S. F. Baird, *op. cit.* pp. 348, 349.

Vireo plumbeus is a new species from the southern Rocky Mountains and Mexico, very like *V. solitarius*, but larger, and the olive-green and yellow of that bird replaced respectively by plumbeous and white. E. Coues, Proc. Acad. Philad. 1866, p. 74. It is *V. solitarius*, Coues (Ibis, 1865, p. 164). Referred to *Vireosylvia*. S. F. Baird, Rev. Am. B. pp. 349, 350.

Vireo carmioli, sp. n., from Costa Rica. S. F. Baird, *op. cit.* p. 356.

Vireo vicinior is described as a new species from Arizona, exactly similar to *Vireosylvia plumbea*, except that the white round the eye, the band on the wing, and the white edgings of the rectrices are faint or altogether wanting. The wing also is more rounded, and the proportions of the remiges different. E. Coues, Proc. Acad. Philad. p. 75; S. F. Baird, Rev. Am. B. p. 361.

Vireo pusillus is a new species from Cape St. Lucas and Arizona, in general appearance similar to *Vireosylvia gilva* and *V. swainsoni*, but smaller. E. Coues, Proc. Acad. Philad. 1866, p. 76; S. F. Baird, Rev. Am. B. p. 360.

Vireo latimeri is a new species from Porto Rico, having a grey head and neck as in *Vireosylvia josephæ*, but with the wings shorter and differently proportioned, the brown cap and postocular stripe are wanting, and the light line from the bill only goes to the eye. S. F. Baird, *op. cit.* pp. 364, 365; H. Bryant, Proc. Bost. Soc. N. H. x. p. 252.

Vireonella is a proposed subgenus of *Vireo*, with *V. gundlachi* as its type. S. F. Baird, *op. cit.* p. 326.

Vireolanus eximius is a new species from Bogota, in colour precisely like *V. pulchellus*, but with a bright yellow stripe from the nostrils above and beyond the eye, a yellow infraocular spot, and dusky lores. It is *V. icterophrys*, Sclater (P. Z. S. 1855, p. 151, pl. 103, and 1857, p. 4), *nee* Bp. (C. R. xxxviii. p. 380). S. F. Baird, *op. cit.* pp. 398, 399.

Vireolanus melitophrys and *V. pulchellus* are figured, and a synopsis of the five known species given. P. L. Sclater & O. Salvin, Exot. Orn. pp. 13-16, pls. vii., viii.

Hylophilus pectoralis and *H. brunneiceps* are two new species from Southern Brazil: the first like *H. thoracicus*, but with a cinereous forehead, deeper yellow breast, and paler feet; the second does not resemble nearly any species of the group. P. L. Sclater, P. Z. S. 1866, pp. 321, 322.

TYRANNIDÆ.

A list of the species of this family, ten in number, found near Buenos Ayres is given. H. Burmeister, P. Z. S. 1866, p. 2.

SCLATER, P. L. Note on the Species of the genus *Muscisaxicola*. Ibis, 1866, pp. 56-57.

As noticed last year (Zool. Record, ii. p. 107), this paper consists of remarks on one by Messrs Philippi & Landbeck. The diagnostic characters of the nine species known to the author are very concisely indicated.

Muscisaxicola fluviatilis is a new species from the Ucayali, Eastern Peru, allied to *M. maculirostris*, but with a shorter and thicker bill, shorter tarsi,

distinct alar bands, and a white belly. P. L. Sclater & O. Salvin, P. Z. S. 1866, p. 187.

Serpophaga hypoleuca is a new species from the Ucayali, Eastern Peru, allied to *S. subcristata* in form, but in colour nearer to *S. nigricans*. P. L. Sclater & O. Salvin, P. Z. S. 1866, p. 188.

Leptopogon pileatus is described as a new species from Guatemala. It is probably the *L. amaurocephala* of Sclater (Cat. Am. B. p. 213), but not of Cabanis (Orn. Not. i. p. 251), which comes from Brazil, and differs from that species in its longer wings, darker hood, and other points. J. Cabanis, J. f. O. 1865, p. 414*.

Rhynchocyclus mesorhynchus is a new species from Guatemala, where it has hitherto passed for the Mexican *R. brevirostris*, with which it agrees in its lively colouring; but as regards the bill it closely resembles the Brazilian *R. olivaceus*. J. Cabanis, J. f. O. 1865, p. 414*.

Megalophus [Muscivora] regius, with its nest and egg, is figured. C. F. Dubois, Archives Cosmologiques, 1867 [published in 1866], pp. 5, 6, pl. i.

Myiobius nationi is a new species from Peru, allied to *M. vieillotides*, but smaller, and body dusky above and tawny beneath. It is figured, as also *M. pulcher*, P. L. Sclater (P. Z. S. 1860, p. 464), from Ecuador. P. L. Sclater, P. Z. S. 1866, pp. 99, 100, pl. xi. figs. 1, 2.

Myiobius latirostris is a new species from New Granada, olive-brown above, rufescent beneath, with the throat paler and the rectrices edged with white. J. Verreaux, Nouv. Arch. Mus. ii. pp. 22, 23, pl. iii. fig. 2.

Empidonax cabanisi is described as a new species from Trinidad, but the way in which it differs from others of the genus is not precisely declared. A. Léotaud, Ois. Trinid. pp. 232, 233.

Empidonax pectoralis is described as a new species from Panama, closely allied to *E. minimus*, but with the pectoral band more strongly marked, the throat clearer grey, and the abdomen rather brighter yellow. G. N. Lawrence, Ann. Lyc. New York, 1866, p. 402.

"*Myiarchus fasciatus*, Landbeck," is a new species from Mendoza, with two white wing-bands and a black terminal band to the red tail. F. Leybold, J. f. O. 1865, pp. 402-404*.

Tyrannus antillarum appears to be described as a new species from Porto Rico; its most striking character is the almost total absence of rufous from the tail. It is probably the unnamed *Myiarchus* of E. C. Taylor (Ibis, 1864, p. 169). H. Bryant, Proc. Bost. Soc. N. H. x. p. 249.

LANIIDÆ.

Lanius collurio, its mouse-catching habits. A. v. Homeyer, J. f. O. 1866, p. 71; V. v. Tehusi, *ibidem*, p. 212.

Lanius dubius is the name given to an apparent hybrid between *L. collurio* and *L. rufus*. Depierre, Bull. Soc. Orn. Suisse, 1866, pp. 31-36, pl. iv.

Lanius senator (sc. *auricularis* vel *rufus*) and *L. minor* are figured. C. J. Sundevall, Sv. Fogl. pl. lxix. figs. 1, 2.

Myiolestes vitiensis is a new species from the Feejees. G. Hartlaub, Ibis, 1866, p. 173.

Platylophus malaccensis is a new species from Malacca, in colour interme-

* Not published till 1866.

diate between *P. galeficulatus*, from Java, and *P. ardesiacus*, from the Sunda Islands (?), which, together with *P. coronatus*, from Sumatra and Borneo, are carefully diagnosed. J. Cabanis, J. f. O. 1866, pp. 308-310.

CAMPEPHAGIDÆ.

Hemipus capitalis, McClell., considered by Dr. Jerdon to be identical with *H. picatus*, is a distinct species, and must be added to the Indian fauna. E. Blyth, Ibis, 1866, p. 368.

Graucalus mentalis and *G. hypoleucus* are figured. S. Diggles, Orn. Austral. part x.

POLLEN, F. On the genus *Oxynotus* of Mauritius and Réunion. Ibis, 1866, pp. 275-280, pls. vii., viii.

The author comes to a conclusion differing from that announced in his former paper (Zool. Record, ii. p. 109). Each of the islands has its peculiar species of the genus. That of Mauritius *O. ferrugineus*, Q. & G. (nec *Lanius ferrugineus*, Gmel.), is on the whole larger than the other, and the male is above of a dark smoke-grey, but the female is always bright ferruginous beneath. In the Réunion species, to which the author applies the name *O. newtoni*, the male is above of a clear bluish-grey, and the female white, slightly tinged with ochre beneath, and barred thickly with dark brown on the sides. Both sexes of each species are figured, as well as the young of *O. ferrugineus*, for which last an editorial note suggests that Swainson's name *O. rufiventer* should be adopted, if that commonly in use be not admissible.

Collariocincla harmonica and *C. rufigaster* are figured. S. Diggles, Orn. Austral. part vii.

MUSCICAPIDÆ.

Siphia hyperythra is described as a new species from Ceylon, differing from *S. strophicata* in the absence of the white forehead and superciliaries. [Qu. *Cyornis jerdoni* ♀ ?] The name *Menetica* is proposed in place of *Siphia* for the genus. J. Cabanis, J. f. O. 1866, pp. 391-393.

Cyornis vivida, Swinh. (Zool. Record, i. p. 78), other specimens described and the type figured. R. Swinhoe, Ibis, 1866, p. 323, pl. xi.

Arses kaupi, *Myiagra plumbea*, and *M. nitida* are figured. S. Diggles, Orn. Austral. part x.

Monarcha albiventris is a new species from Cape York, differing from the South Australian *M. trivirgata* by the pure-white axillaries, abdomen, and lower part of the flanks, the black on the forehead and throat being more extensive, and more white on the exterior rectrices. J. Gould, P. Z. S. 1866, pp. 217, 218.

Monarcha carinata, *M. trivirgata*, and *M. leucotis* are figured. S. Diggles, Orn. Austral. part vi.

Rhipidura rufifrons, *R. albiceps*, *R. picata*, and *R. notacilloides* are figured. S. Diggles, *op. cit.* part iii.

Sisura inquieta and *Eopsaltria australis*, their mode of breeding described and eggs figured. E. P. Ramsay, Proc. Phil. Soc. Syd. 1865, pp. 325-327, pl. ii. figs. 6-8.

Micræca macroptera, its mode of breeding described and eggs figured. E. P. Ramsay, Proc. Phil. Soc. Syd. 1865, pp. 328, 329, pl. ii. figs. 9, 10.

Muscicapa melanicteræ (Gmelin), its synonymy and bibliography most care-

fully given in detail. It is referred to the genus *Rubigula*, of the three other species of which a list is also given. Lord Walden, *Ibis*, 1866, pp. 316-323, 423, 424.

Muscicapula superciliaris, *M. æstigma*, *M. leucoschista*, and *M. ciliaris* differentiated. The second is plain blue above, white below, with no white on the tail. The third is like the first, but the white on the throat is broader, there is less blue on the sides of the breast, and no white on the rectrices. The fourth is of a darker and duller blue above, with white superciliaries, the greater wing-coverts and outer webs of the tertials white, as are also the entire under parts. The last two must be added to the Indian fauna, and there may possibly be a fifth species. E. Blyth, *Ibis*, 1866, p. 372.

"*Newtonia brunneicauda*, Pollen," is the name given to *Erythrosterna* (?) *brunneicauda*, A. Newton (P. Z. S. 1863, pp. 180, 181), but no generic characters are assigned. H. Schlegel, P. Z. S. 1866, p. 422.

TURDIDÆ.

Catharus griseiceps is a new species from Veragua allied to *C. melpomene*, but easily distinguishable, among other peculiarities, by its grey head. A list of the ten known species of the genus, showing their geographical distribution, is added. O. Salvin, P. Z. S. 1866, pp. 68, 69.

Turdus subcinereus is a new species probably from Chili, allied to *T. chiguanco*, but much smaller, with the breast faintly striated, and the under wing-coverts ashy-white, hardly tinged with fulvous. P. L. Selater, P. Z. S. 1866, p. 320.

Turdus atrigularis has occurred near Münster. B. Altum, J. f. O. 1866, pp. 423, 424.

Turdus albiceps, Swinhoe (*Zool. Record*, i. p. 79) (*nec* Cuvier, *cf.* Pucheran, *Arch. du Mus.* vii. p. 341), is figured and its immature plumage described. R. Swinhoe, *Ibis*, 1866, p. 135, pl. v.

Turdus musicus and *Merula vulgaris* are figured. J. Gould, B. Grt. Br. part x.

Platyicichla (*Zool. Record*, i. p. 79): the relations of this genus to *Myiadestes* and *Cichlopis* (both of which, though still retained among the *Ampelidæ*, should probably be referred to the *Turdidæ*) are considered. S. F. Baird, *Rev. Am. B.* pp. 408, 409, 417, and 436.

"*Kittacincla* [lege *Cittocincla*] *auricularis*, Swinhoe," (*cf.* *Zool. Record*, i. pp. 79, 80), is referred to the genus *Sibia*, and is figured. P. L. Selater, *Ibis*, 1866, pp. 109, 110, pl. iv. (*fig. mala*).

Crateropus melanops is a new species from Damaraland, allied to *C. jardini*. A geographical list of the twenty known species is appended. G. Hartlaub, P. Z. S. 1866, pp. 435, 436.

Cossypha heuglini is a new species from Keren, resembling in colour the much smaller *C. semirufa*, Rüpp. G. Hartlaub, J. f. O. 1866, pp. 36, 37.

Hypsipetes borbonica from Réunion is given as distinct from *H. ourovang*. [*Qu.* = *Turdus atricilla*, Puch. *Arch. du Mus.* vii. p. 340.] H. Schlegel, P. Z. S. 1866, p. 423.

Cinclocerthia macrorhyncha is a new species from St. Lucia, West Indies, to be distinguished from *C. ruficauda* of Nevis and Guadaloupe by the cinereous upper parts, and from *C. gutturalis* of Martinique by the paler colouring

beneath, and from both by the long, curved bill. P. L. Sclater, P. Z. S. 1866, pp. 320, 321.

Mimus [P] *carunculatus* is a new species from the north of New Zealand. It can scarcely belong to the genus to which it is assigned by the author. W. Buller, Ess. Orn. N. Zeal. p. 10.

Mimus polyglottus, var. *portoricensis*, differs from the normal form in the amount of white on the rectrices. H. Bryant, Proc. Bost. Soc. N. H. x. p. 251.

Pericrocotus, the species inhabiting the Indian Region are enumerated. E. Blyth, Ibis, 1866, p. 360, note.

Spizixus canifrons and *S. semitorques* are figured. J. Gould, B. Grt. Br. part xviii.

Ixus obscurus, its asserted occurrence in England. E. Newman, Zoologist, S. S. p. 228.

SYLVIIDÆ.

FATIO, VICTOR. Supplément au mémoire sur la distribution verticale des Sylviadées en Suisse. Bull. Soc. Orn. Suisse, 1866, p. 67.

An addition to the paper noticed last year (Zool. Record, ii. pp. 63 and 113), of two species to the number of those found in the Upper Engadine.

Saxicola [*Bessornis*] *albigularis*, v. Pelzeln (Sitzungsb. k.-k. Akad. Wissensch. 1863, description reprinted and remarks added. J. Cabanis, J. f. O. 1866, pp. 49-51.

Saxicola spectabilis, Hartl., P. Z. S. 1865, p. 428, pl. xxiii. (Zool. Rec. ii. p. 113), proves to be the same as *S. bifasciata*, Temm. Pl. Col. 472. P. L. Sclater, P. Z. S. 1866, p. 22, note.

Petræca fusca, *Drymodes superciliaris*, and *D. brunneopygia* are figured. S. Diggles, Orn. Austral. part. viii.

Motacilla sybilla, Linn., does not constantly differ from *M.* [*Pratincola*] *rubicola*; whether *Saxicola borbonica* should stand as a proper species is doubtful. H. Schlegel, P. Z. S. 1866, p. 422.

Pratincola leucura and *Rhodophila melanoleuca* are figured. J. Gould, B. As. part xviii.

Cyanecula suecica, the specimen noticed last year (Zool. Record, ii. p. 114) continues its residence in the Isle of Wight. H. Hadfield, Zoologist, S. S. p. 172. Joined by a second, *Idem*, tom. cit. pp. 218, 341, 342, 445.

Ruticilla cairii, remarks on this supposed species. V. Fatio, Bull. Soc. Orn. Suisse, 1866, pp. 105, 106.

Erythacus rubecula, from the Azores, has a light-coloured plumage exactly agreeing with specimens from North Africa and Southern Italy. F. D. C. Godman, Ibis, 1866, p. 95. It is figured. J. Gould, B. Grt. Br. part ix.

Gerygone assimilis is described as a new species from New Zealand, hardly distinguishable from *G. flaviventris*, although somewhat larger. The nests and eggs of the two, however, are quite different. W. Buller, Ess. Orn. N. Zeal. p. 9.

Gerygone personata is a new species from Cape York, Queensland. J. Gould, P. Z. S. 1866, p. 217.

Gerygone alboocularis, its mode of breeding described. E. P. Ramsay, tom. cit. pp. 576, 577.

Acanthiza lineata, *A. nana*, and *A. pusilla*, their mode of breeding described, and the nest of the first figured. E. P. Ramsay, P. Z. S. 1866, pp. 571-575.

Geobasiliscus chrysorrhous and *G. reguloides*, their mode of breeding described. *Idem*, *tom. cit.* pp. 575, 576.

Pycnoptilus floccosus, a second specimen of this rare bird obtained. E. P. Ramsay, *Ibis*, 1866, p. 419.

Prinia beavani is a new species from Tenasserim, most closely allied to the Indian *P. cinereocapilla*. Lord Walden, P. Z. S. 1866, p. 551.

"*Hemipteryx immaculata*, Hartlaub," is a new species from Windvogelberg, South Africa, differing in its unspotted surface from *H. tetrica*, the only known species. P. L. Selater, P. Z. S. 1866, p. 22.

Siphia innexa is described as a new species from Formosa, most nearly resembling *S. superciliaris*, but having the face and sides of the neck black, and most of the rectrices white at the base. R. Swinhoe, *Ibis*, 1866, pp. 394, 395.

Eroessa is a new genus from Madagascar, allied most nearly to *Camaroptera*, the curious structure of the wings and the proportionately large feet being the same in both. The type is

E. tenella; and woodcuts of the head, wing, and foot are given. G. Hartlaub, P. Z. S. 1866, pp. 218, 219; H. Schlegel, *tom. cit.* p. 422.

Orthotomus longicauda, note on its nidification, with a figure of the nest. A. Humbert, *Bull. Soc. Orn. Suisse*, 1866, pp. 55-66, pl. v.

Horeites robustipes is described as a new species from Formosa. R. Swinhoe, *Ibis*, 1866, p. 398.

Sylvia atricapilla, var. *heinekeni* (Jard.), seems to occur also in the Azores, where the same story of its origin is current as in Madeira. F. D. C. Godman, *Ibis*, 1866, pp. 95, 96.

Sylvia aquatica has occurred in England. A. Newton, P. Z. S. 1866, p. 210.

Calamoherpe palustris, observations on this species, especially with reference to the distinctions between it and *C. arundinacea* [sc. *strepera*]. V. Fatio, *Bull. Soc. Orn. Suisse*, 1866, pp. 37-46.

Hypolais salicaria is not only distinct from *H. polyglotta*, but is more nearly allied to the genus *Calamodyta*. [L. H. Jeitteles, *Verhandl. k.-k. zool.-bot. Gesellsch. Wien*, 1866, pp. 311, 314.

Locustella avicula (sc. *navia*) and *Lusciniopsis luscinioides* are figured. J. Gould, *B. Grt. Br. parts ix., x.*

Regulus cristatus, from the Azores, has a longer tail and stouter bill than British or South European examples, but agrees in all respects with a specimen from Eastern Asia. F. D. C. Godman, *Ibis*, 1866, p. 96.

MOTACILLIDÆ.

Emicurus (lege *Henicurus*) *maculatus*, *H. guttatus*, *H. chinensis* (lege *sinensis*), and *H. scouleri* are figured. J. Gould, *B. As. part xviii.* (*Cf. Zool. Record*, ii. p. 115.)

The different European races or species of *Motacilla* and *Budytes* are noticed. J. P. van Wickevoort Crommelin, *N. T. D.* iii. pp. 313-317.

Motacilla sulphurea from the Azores has a shorter tail than European specimens. F. D. C. Godman, *Ibis*, 1866, p. 96.

Budytes taiwana, Swinhoe (P. Z. S. 1863, p. 334, and *Ibis*, 1863, pp. 309,

310), an undescribed (?) species from Formosa, again mentioned. R. Swinhoe, Ibis, 1866, p. 138.

Anthus richardi said to occur in Ceylon. W. W. Boulton, Zoologist, S. S. p. 32. Obtained in England. W. Machin, *tom. cit.* p. 269.

Anthus campestris and *A. arborcus* are figured. J. Gould, B. Grt. Br. part x.

TROGLODYTIDÆ.

Campylorhynchus brevicaudus is described as a new species from Venezuela, having the bill as well as the wings proportionately short, the spots above large and conspicuous, those below very obscure. G. N. Lawrence, Ann. Lyc. New York, 1866, pp.

Campylorhynchus affinis is figured. D. G. Elliot, B. N. Am. part i.

Micrococcyzus lusciniæ is described as a new species from Veragua allied to *M. philomela* from Vera Paz, but with an unbande back, a whitish throat, the under parts not tinged with dusky, and a longer bill. It is the *M. philomela* of Lawrence (Ann. Lyc. New York, 1862, p. 467) and of Baird (Rev. Am. B. i. p. 114), but not of Salvin (P. Z. S. 1861, p. 202). A list giving the chief references to the seven known species of the genus is given. O. Salvin, P. Z. S. 1866, pp. 69-71.

Thryothorus martinicensis is a new species from Martinique resembling *Troglodytes furvus* in colour above, but with a longer bill and entirely rufescent below. P. L. Sclater, P. Z. S. 1866, p. 321.

SITTIDÆ.

Sitta krucperi, v. Pelzeln (Sitzungsb. k.-k. Akad. Wissensch. 1863), description reprinted and remarks added. J. Cabanis, J. f. O. 1866, pp. 49-51.

PARIDÆ.

Melaniparus semilarvatus is a new species from the Himalaya, much allied to the others of the genus, which are all African, but with the bill a little longer than in *M. leucomelas*. T. Salvadori, Atti Soc. Ital. Sc. Nat. viii. 1866.

Parus insperatus is a new species from Formosa, like *P. monticolus*, but smaller [and easily to be distinguished by its much blacker head]. R. Swinhoe, Ibis, 1866, pp. 308, 309.

Parus borealis, a few remarks additional to those in the paper noticed last year (Zool. Record, ii. p. 116). V. Fatio, Bull. Soc. Orn. Suisse, 1866, p. 68.

Pœcile palustris is figured. J. Gould, B. Grt. Br. part ix.

Pachycephala gutturalis and *P. pectoralis* are figured. S. Diggles, Orn. Austral. part ii.

MALURIDÆ.

Atrichia rufescens is a new species, from the Richmond River, Australia, to be distinguished from *A. clamosa* from the West Coast by its smaller size and its rufous tint; it has also proportionately larger legs and claws. E. P. Ramsay, P. Z. S. 1866, pp. 438-440.

Malurus splendens, *M. lamberti*, *M. cyaneus*, *M. melanonotus*, and *M. longicauda* are figured. S. Diggles, Orn. Austral. part v.

Phlæx is a new genus showing a remarkable affinity to *Drymodes*, and to be distinguished by the great comparative length of the strongly graduated

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tail, the very concave and weak wings, the scutellated tarsi and whole structure. The type is *Bradypterus victorini* of Sundevall (Zool. Anteckn. Victorin. p. 29, K. Svenska Vet.-Ak. Handl. 1860) from Knysna, in the Cape Colony; a second species is

Phlexis layardi from the George District of the Cape Colony (E. L. Layard, Ibis, 1866, p. 424), which is figured. G. Hartlaub, Ibis, 1866, pp. 139, 140, pl. vi.

TANAGRIDÆ.

Euphonia rufivertex is a new species from Veragua and Costa Rica, allied to *E. ruficeps*, but with the top of the head and the vent rufous-chestnut. O. Salvin, P. Z. S. 1866, pp. 71, 72, pl. vii. figs. 1, 2.

Calliste sclateri is a new species from Guatemala, belonging to the group of large species, but not very like any of them. The bill resembles that of *C. vitriolina*, and stronger than that of *C. brasiliensis*. In colour above it resembles *C. cyanescens*, and in the form of the feathers on the back and breast *C. cyanoptera* and *C. atricapilla*. J. Cabanis, J. f. O. 1866, pp. 163-165.

Pæcilothraupis atricrissa is a new species from Ecuador, very like the Peruvian *P. lunulata*, for which it has been mistaken, but to be distinguished by its entirely black vent. J. Cabanis, J. f. O. 1866, p. 165.

Compsocoma cyanoptera is a new species from Ecuador, very like *C. sumptuosa*, but with the edges of the quills blue. *Idem*, tom. cit. p. 235.

Acroleptes violaceicollis is a new species from Brazil, much larger than others of the same group, having the hind head to the back, sides of the neck, and throat shot with deep violet, the white on the inner vanes of the exterior rectrices as in *A. chloroticus*. *Idem*, op. cit. 1865, p. 409*.

Phonasea brachyptera is a new species from Venezuela, intermediate in structure and colouring between *P. hirundinacea* from Central America and the New-Granadian *P. crassirostris*. *Idem*, tom. cit. pp. 410, 411*.

Tanagra (Spindalis) portoricensis appears to be described as a new species from Porto Rico. H. Bryant, Proc. Bost. Soc. N. H. x. pp. 252, 253.

Thraupis s. *Tanagra sayaca* and *T. cyanoptera* are perfectly distinct. The latter has a shorter, broader, and thicker bill, not a compressed one like the former and all other allied species. J. Cabanis, J. f. O. 1866, pp. 305, 306.

Tachyphonus albispecularis is re-described as a new species from Trinidad†; very nearly resembling *T. luctuosus*, Lafr. & d'Orb., but differing by being larger. A. Leotaud, Ois. Trinid. pp. 303, 301. (Positively identified with the latter from examination of a type specimen. P. L. Sclater, Ibis, 1867, p. 108.)

Tachyphonus schlagintweiti is described as a new species from Mexico, very like "*Saltator rubicoides*, Vieill.," but smaller, with a longer and more compressed bill, shorter tarsi, and of a paler red colour. J. W. von Müller, Reise in Mexico, iii. p. 572.

Thlypsopsis: a synopsis of the species of this genus, to which *Pyrhocoma* is referred, is given. J. Cabanis, J. f. O. 1866, pp. 231-233.

Chlorospingus postocularis is a new species from Guatemala, very like *C.*

* Not published till 1866.

† The original description is in Rev. et Mag. de Zoologie, 1864, pp. 129, 130, and was accidentally omitted from our first volume.

ophthalmicus, but having the whole crown and sides of the head blackish, with only a white postocular spot. J. Cabanis, J. f. O. 1866, p. 163.

PLOCEIDÆ.

Ploceus spilonotus ♀, Sig. Bianconi's description (Zool. Record, ii. p. 118) reprinted. Guérin-Méneville, R. Z. 1866, p. 315.

"*Ploceus algondæ*, Pollen," is a new species from Mayotte, larger than *P. [Foudia] madagascariensis*, and its bill longer, head, breast, and upper tail-coverts orange, back olivaceous, beneath olive-grey, washed with yellow. H. Schlegel, P. Z. S. 1866, p. 423.

Textor galbula: notes on this species translated from Antinori's 'Catalogo' (Zool. Record, i. p. 48). G. Lunel, Bull. Soc. Orn. Suisse, 1866, pp. 98-100.

Emblema picta, a second specimen obtained and exhibited. J. Gould and W. Jardine, P. Z. S. 1866, p. 558.

FRINGILLIDÆ.

Cardinalis igneus is figured. D. G. Elliot, B. N. Am. part i.

"*Sporophila rufrostris*, Landböck," is a new species from Mendoza, with the bill, feet, and hind parts red. F. Leybold, J. f. O. 1865, p. 404*.

Spermophila ocellata is a new species from Nautia in Eastern Peru, allied to *S. bouvronoides*, but with an eyed breast. P. L. Sclater and O. Salvin, P. Z. S. 1866, p. 181.

Fringilla (Phonipara) zena, var. *portoricensis*, is intermediate between *P. omissa* from Tobago and the true *P. zena* from Bahama. H. Bryant, Proc. Bost. Soc. N. H. x. p. 254.

Amaurospiza cæruleatra is a new species from Brazil, the largest of the genus, to which *Oryzoborus unicolor* should also be referred. J. Cabanis, J. f. O. 1866, pp. 306, 307.

"*Phrygilus ornatus*, Landböck," is a new species from Mendoza, with two broad white and one black cross bands on the wings, and a white-spotted tail. F. Leybold, J. f. O. 1865, pp. 405, 406*.

Melospiza pectoralis is described as a new species from the highlands of Mexico. J. W. von Müller, Reise in Mexico, iii. pp. 583, 584.

Aimophila (Iege Hæmophila) tolteca is described as a new species from Mexico. J. von Müller, Reise in Mexico, iii. p. 584.

Chamæospiza torquata, Scl. & Salv. (Ibis, 1860, p. 274, *nec* Sclater *nec* Du Bus, is *Pyrgisoma leucote*. The former has not been found in Guatemala. O. Salvin, Ibis, 1866, p. 205.

Atlapetes rubricatus is referred to the genus *Melozone*, and further particulars of *M. biarcuata* are given. J. Cabanis, J. f. O. 1866, pp. 233-235.

Loxia curvirostra, its migration in Westphalia. B. Altum, J. f. O. 1866, pp. 286, 289.

Pyrrhula murina is a new species from St. Michael's in the Azores, large, mouse-coloured beneath, with a cinereous rump and very strong bill and feet. It is *P. coccinea* (!), Pucheran (R. Z. 1859, p. 413), *nec* De Selys-Longchamps. F. D. C. Godman, Ibis, 1866, pp. 97, 98, pl. iii. (*fig. opt.*).

Pyrrhula coccinea and *P. vulgaris*, remarks on. I. Demolle, Bull. Soc. Orn. Suisse, 1866, pp. 119-125.

* Not published till 1866.

Pyrrhula europæa, notes on its breeding. Karl Müller, Zoolog. Garten, 1866, pp. 397-403.

Procarduelis, a new species from the Parang Pass, is mentioned but left unnamed. F. Stoliczka, Proc. As. Soc. Beng. 1865, p. 39. (Cf. Ibis, 1866, p. 412.)

Ægiothus rufescens and *A. linaria* are figured. J. Gould, B. Grt. Br. part x.

Chrysomitris mexicanus, var. *arizonæ*, is discriminated as exhibiting, among other differences, a remarkable gradation towards the peculiar features of *C. psaltria*. E. Coues, Proc. Acad. Philad. 1866, p. 82.

Chrysomitris hypoxantha and *C. capitalis* are two new species, the first, from Bahia, very like *C. spinescens*, from Bogota, but smaller, with a stouter bill, the colours altogether brighter, and the speculum less; the second, from Ecuador, very like the Brazilian *C. icterica*, but has the head only black, the belly greyish, and the general colour lighter. J. Cabanis, J. f. O. 1866, pp. 160, 161.

Serinus hortulanus from the Azores is darker, stouter, and has stronger bill and legs than examples from North Africa and Sicily. F. D. C. Godman, Ibis, 1866, p. 98. It is again said to have occurred in England. G. D. Rowley, *tom. cit.* p. 215. Another reported instance of its occurrence. T. J. Monck, Zoologist, S. S. p. 229.

"*Buserinus rufilatus*, Hartl.," is a new species from Ilha do Principe, Bight of Benin. H. Dohrn, P. Z. S. 1866, p. 328; J. G. Koulemans, N. T. D. iii. pp. 303, 304.

Passer domesticus has been successfully established in the city of New York. G. N. Lawrence, Ann. Lyc. N. H. New York, 1866, pp. 287, 288. It also appears to thrive at Havanna. J. Gundlach, Rep. Fisico-Nat. de Cuba, i. p. 396.

Fringilla moreleti, Pucheran, peculiar to the Azores, its nest and eggs described. F. D. C. Godman, Ibis, 1866, p. 97.

Estrelda ruficauda, *E. temporalis*, and *E. phaelon*, with *Amadina castaneotis* and *A. lathamii*, are figured. S. Diggles, Orn. Austral. part i.

Suthora bulomachus is a new species from Formosa, where it is kept in captivity and used as a fighting-bird. R. Swinhoe, Ibis, 1866, 298-303, pl. ix.

EMBERIZIDÆ.

Emberiza hortulana has again occurred in England. Lord Clifton, Zoologist, S. S. p. 270. Figured. J. Gould, B. Grt. B. part ix.

Emberiza citrinella and *E. cirrus* are figured. J. Gould, *ut supra*.

ALAUDIDÆ.

Megalophonus ruficeps, Rüpp., is referred to the genus *Calandritis* (sc. *Calandrella*). J. Cabanis, J. f. O. 1866, pp. 307, 308.

Megalophonus rufocinnamomeus is a new species from Abyssinia. T. Salvadori, Atti Soc. Ital. Sc. Nat. viii. 1866.

Galerita cristatu and *Melanocorypha calandra*. Spanish specimens seem to differ from those from other parts of Southern Europe—the former [qu. *G. theclæ*, Brehm ?] by being smaller and more rufous, the latter by being less distinctly marked. Lord Lilford, Ibis, 1866, p. 380. Figured. J. Gould, B. Grt. Br. part x.; C. J. Sundevall, pl. lxix. fig. 4.

ICTERIDÆ.

CASSIN, JOHN. A study of the *Icteridæ*. Proc. Acad. Philad. 1866, pp. 10-25, and 403-417.

The first of these papers treats of the subfamily *Agelæinæ*, the second of *Quiscalinæ*. Of *Agelæus* the author makes twelve species, of *Leistes* eight, of *Dolichonyx* five, *Molothrus* thirteen, and of *Sturnella* nine. Of *Quiscalus* seventeen species are distinguished, of *Scolecophagus* five, of *Idiopsar* (gen. nov.) and *Potamopsar* one, and of *Cassidix* four. Mr. Cassin, apparently with very good reason, refuses to recognize more genera in these groups. The synonyms of each species are carefully given, and a few other brief details added. The second paper contains also descriptions.

Dolichonyx fuscipennis is a new species from North-Eastern Brazil, is distinguishable from *D. badius* by its lighter colour, and especially its light-brown quills, edged only with red. J. Cassin, *ut supra*, p. 16.

"*Oriolus melancholicus*, Linn.," probably belongs to the genus *Dolichonyx*. *Idem*, *ut supra*, p. 16, note.

Molothrus cabanisi is described as a new species from Guiana and New Granada. It is possibly the *Lampropsar dives* of Cabanis (Mus. Hein. i. 194), but not of Bonaparte (Consp. Av. i. p. 425). It is easily distinguished from *L. tanagrinus* and *L. guianensis* by its much larger size and the golden-violet lustre of its plumage. *Idem*, *ut supra*, p. 22.

Molothrus rufoaxillaris is a new species from Buenos Ayres to be recognized by the reddish-chestnut axillaries. *Idem*, *ut supra*, p. 14.

Quiscalus aglæus is described as a new species from Florida, allied to *Q. purpureus* (*Q. versicolor*, Vieill.), but smaller, with a more pointed and decurved bill, and remiges differently proportioned. It is *Q. baritus* of Baird (B. N. Am. p. 556, pl. xxxii.) *nee* Linn. S. F. Baird, Am. Journ. Sc. & Arts, 1866, p. 84; J. Cassin, Proc. Acad. Philad. 1866, p. 404.

Quiscalus gundlachi is described as a new species from Cuba, allied to *Q. baritus* (Linn.) from Jamaica, with which it has been confounded by D'Orbigny and Gundlach, but a little smaller, with a more slender bill, comparatively longer tail, and more lustrous plumage. J. Cassin, *ut supra*, p. 406.

Quiscalus brachypterus is described as a new species from Porto Rico, resembling the species from Jamaica and Cuba, but smaller, with a more slender bill and shorter tail and wings. It is the *Q. baritus* of E. C. Taylor (Ibis, 1864, p. 168) *nee* Linn. *Idem*, *ut supra*, pp. 406, 407.

Quiscalus mexicanus is a new species from Mexico, most resembling *Q. lugubris* from Trinidad, but rather larger, and has the bill much stronger and more curved. *Idem*, *ut supra*, pp. 408, 409.

Quiscalus rectirostris is described as a new species from an unknown locality, easily recognized by its straight slender bill. *Idem*, *ut supra*, p. 409.

Idiopsar is a new genus, allied to *Quiscalus* and *Scolecophagus*. The tail is short, nearly even at the end, and emarginate. The wings long. General form short and compact; bill about as long as the head, strong, slightly curved, with the commissure much inflexed, culmen distinct. Legs and feet moderate. The type species is *I. brachyurus* from Bolivia. *Idem*, *ut supra*, p. 414.

Icterus —. A specimen is described as resembling *I. spurius*, but differing sufficiently to induce the opinion that it is a distinct species, but no name is conferred upon it. H. Shimer, Trans. Acad. Sc. St. Louis, ii. 1866, pp. 260, 261.

Icterus dominicensis, var. *portoricensis*, is easily recognized from the St. Domingo bird by the absence of yellow on the flanks, and the greater proportion of black on the rump and vent. H. Bryant, Proc. Bost. Soc. N. H. x. p. 254.

Agelaius phoeniceus, asserted reoccurrence of it in England. T. J. Monck, Zoologist, S. S. p. 229. Its occurrence in Scotland. T. Edward, *tom. cit.* p. 310.

STURNIDÆ.

Sturnus vulgaris, its breeding in nest-boxes. Wiese, J. f. O. 1866, p. 420.

Sturnus roseus is figured. C. J. Sundevall, Sv. Fogl. pl. lxix. fig. 3.

Lamprocolius defilippii is a new species from Angola, belonging to that group of the genus containing *L. ignitus*, *L. splendidus*, and *L. lessoni* (cf. Hartlaub, J. f. O. 1859, pp. 13-16), from which it may be distinguished by its smaller size and somewhat differently distributed colours. T. Salvadori, Atti Soc. Ital. Sc. Nat. viii. 1866.

Creadion cinereus is a new species from New Zealand, of the size and form of *C. carunculatus*, but of a dark cinereous-brown, paler beneath, and tinted with umber on the wings, the quills being bright rufous. W. Buller, Ess. Orn. N. Zeal. p. 10.

Chlamydera maculata and *C. cerviniventris*, their heads figured. S. Diggles, Orn. Austral. part ix.

EPIMACHIDÆ.

Ptilorhis paradiseus (♂ and ♀) is figured. S. Diggles, Orn. Austral. part vi.

PARADISEIDÆ.

Paradisea papuana, notice of the examples lately living in London. F. Schlegel, Zoolog. Garten, 1866, pp. 99-101.

CORVIDÆ.

Caryocatactes guttatus [*Nucifraga caryocatactes*], observations on its habits. F. Boie, J. f. O. 1866, pp. 1-4.

Corvus corax, observations on its habits. G. Lunel, Bull. Soc. Orn. Suisse, 1866, pp. 5-29.

Corvus umbrinus and *C. affinis*, their specific validity maintained and illustrated by figures. H. B. Tristram, Ibis, 1866, pp. 70-73.

Corvus agricola, its habits described. *Idem*, *tom. cit.* pp. 66-68.

Corvus collaris, its history given. *Idem*, *tom. cit.* pp. 65, 66.

Corvus monedula is figured. J. Gould, B. Grt. Br. part ix.

Garrulus melanocephalus and *G. cervicalis*, their confused nomenclature explained. H. B. Tristram, Ibis, 1866, p. 62.

Cyanopica cooki, notes on its breeding in Spain, and its eggs figured. Lord Lilford, Ibis, 1866, pp. 174, 175, 382, 383, pl. x. figs. 3-8.

COLUMBÆ.

COLUMBIDÆ.

Mr. Wallace's paper (*Ibis*, 1865, pp. 365-400) noticed by us last year (*Zool. Record*, ii. pp. 121, 122) is partially translated into German by Dr. E. von Martens. *J. f. O.* 1866, pp. 269-285.

"*Columba chlorophæa*, Hartl.," is a new species from Ilha do Principe, Bight of Benin. H. Dohrn, *P. Z. S.* 1866, pp. 329, 330; J. G. Keulemans, *N. T. D.* iii. p. 395.

Columba ænas is figured. J. Gould, *B. Grt. Br.* part x.

Columba livia from the Azores has generally the plumage so dark that the band on the wings is invisible. F. D. C. Goodman, *Ibis*, 1866, p. 99.

Columba turtur (ad. & juv.) is figured. C. J. Sundevall, *Sv. Fogl. pl.* lxx. figs. 3, 4.

"*Peristera principalis*, Hartl.," is a new species from Ilha do Principe, Bight of Benin. H. Dohrn, *l. c.* p. 330; J. G. Keulemans, *l. c.* p. 396.

Phaps histrionica and *P. chalcoptera*, heads figured. S. Diggles, *Orn. Austral.* part iv.

Phlogœnas cruenta and *P. crinigera* are figured. J. Gould, *B. As.* part xviii.

Sphenocercus sororius and *Treron chæroboatis* are described as new species from Formosa. The first had previously (*Ibis*, 1866, p. 122) been taken for the male of *S. formosæ*. The last is subsequently (p. 406) considered identical with the first. R. Swinhoe, *Ibis*, pp. 311-313.

Sphenocercus formosæ ♂, description of a supposed one. R. Swinhoe, *Ibis*, 1866, p. 122.

Carpophaga perspicillata, Wallace, is proposed to be called *C. neglecta*, the true *C. perspicillata*, Temminck, being *C. temmincki*, Wallace (*Zool. Record*, ii. p. 123). H. Schlegel, *N. T. D.* iii. p. 344.

Carpophaga magnifica, head figured. S. Diggles, *Orn. Austral.* part x.

Ptilopus helviventris and *Rhynchaenas schlegeli*, von Rosenberg, *Tijdschr. Nederl. Indië*, 1866, are respectively identified with *Peristera rufigula*, Pucheran, and *Hemicophaps albifrons*, Gray. H. Schlegel, *N. T. D.* iii. p. 345.

Ptilopus superbus is figured. S. Diggles, *Orn. Austral.* part viii.

Geotrygon veraguensis is a new species from Veragua remarkable for its dark colours, which contrast strikingly with the white front and subocular stripe, and for its long and robust legs. G. N. Lawrence, *Ann. Lyc. New York*, 1866, pp.

DIDUNCULIDÆ.

FINSCH, OTTO. Ueber das Jugendkleid und die generischen Kennzeichen des Manu-mea (*Didunculus strigirostris*, Jardine). *Journ. für. Orn.* 1866, pp. 37-41.

The author has examined two specimens of this singular form, one of them preserved in spirit, and gives very minute descriptions and measurements. Its systematic place is next to *Treron*.

Didunculus strigirostris, according to Dr. Graefe, does not live on the ground, but on large trees, in company with *Ptilinopus mariæ* and *P. cesarinus*, and feeds on fresh fruit. A. E. Brehm, *J. f. O.* 1866, pp. 388, 389. Figured from the living bird lately in the Zoological Gardens (*Zool. Record*, i. p. 87), and skeleton described and figured. R. Owen, *Memoir on the Dodo*, pls. ii. (*figg. pessima*), iii. fig. 2.

DIDIDÆ.

CLARK, GEORGE. Account of the late discovery of Dodos' Remains in the Island of Mauritius. *Ibis*, 1866, pp. 141-146. (Translated in *Ann. Sci. Nat.* 1866, vi. pp. 19-24.)

This discovery was briefly mentioned by us last year (*Zool. Record*, ii. p. 124). The attention of the author was first directed to the spot in September 1865; and by sending men to wade in the marsh called "La Mare aux Songes," near Mahébourg, he obtained a very large number of bones. These, having been sent to England and Réunion, furnished the material of the researches of Prof. Owen, M. A. Milne-Edwards, and Messrs. Gervais and Coquerel, to be immediately mentioned. There was a larger proportion of tarso-metatarsi than of other bones; next in quantity were tibiæ and pelves, after which came femora. Sterna were fewer in number, but more numerous than humeri or coracoids, than which last also scapulæ were more plentiful. Vertebræ were in considerable abundance; crania were very rare, and some perfect, but mandibulæ in considerable numbers. Maxillæ were extremely rare; one coracoid was found entire with the furcula and scapula (all ankylosed together), and several to which the last was attached. Of ulnæ and radii only four were found, and one metacarpus; but this is not mentioned by Prof. Owen. With the Dodos' bones were discovered those of tortoises, deer, pigs, and monkeys, besides those of several species of birds (*vide supra*, PSITTACIDÆ). The Mare aux Songes is a marsh of four or five acres, situated at the bottom of a ravine which drains some 200 acres. It is cut off from the sea by low sandhills and basaltic rocks. It is overspread with a luxuriant growth of vegetation, and the lands around it were covered with thick forests at the beginning of the present century. (*Cf. Ibis*, 1867, p. 128; *Zoologist*, S. S. pp. 97, 99.)

OWEN, RICHARD. Memoir on the Dodo (*Didus ineptus*, Linn.), with an Historical Introduction by the late WILLIAM JOHN BRODERIP. London: 1866. 4to, pp. 55, pls. xii.

This work, which, we believe, has only been issued for private circulation, consists of three reprints (1) of the greater part of the article "Dodo" contributed by Broderip to the 'Penny Cyclopædia' (vol. ix. pp. 47-55), (2) of two supplementary papers by the same writer in the 'Transactions of the Zoological Society' (vol. iv. pp. 183-186, and pp. 197-199), and (3) of a paper read by Prof. Owen, 9th Jan. 1866, which has since (1867) appeared in the same 'Transactions' (vol. vi. pp. 49-85). No reference is made to the additional evidence adduced by Strickland in his well-known work ('The Dodo and its Kindred,' London: 1848) or elsewhere. The first and second portions of this memoir, having been originally published so long ago as 1837 and 1859, we do not propose to remark on here; but we

are glad to take the present opportunity of noticing the third portion (which would otherwise have to stand over until next year), so as to give an idea of the author's views, which may be compared with those of other writers on the same important subject during the last twelve months.

After referring to the determination by Prof. Reinhardt, in 1843, of the Columbine affinities of the Dodo, and stating the circumstances under which a fine series of its bones, discovered in 1865 by Mr. G. Clark (*Zool. Record*, ii. p. 124, and *suprà* p. 104), came into the possession of the British Museum, Prof. Owen proceeds to describe these in detail. As it would be obviously impossible to insert here an abstract of this part of the work, it must suffice to say that all the available portions of the skeleton, vertebræ, ribs, pelvis (imperfect), sternum (imperfect), scapular arch (furcula imperfect), bones of the wing (wanting the carpal portion), and of the legs and skull, are minutely described in the precise method for which the author is so justly celebrated. The small size of the brain-cavity, and especially of that which held the cerebrum, is particularly dwelt upon; and it is suggested, on Lamarek's principle, that the wings of this bird, exempt from enemies and with abundance of food, might in a long course of generations suffer atrophy, while the hind limbs through increased exercise might endure hypertrophy. In like manner, without any stimulus to the growth of cerebrum proportionate to the gradually accruing increase of body, the species might go on feeding and breeding in a lazy stupid fashion. The cerebellum, which has to do with muscular action, shows, as might be expected, some increased development.

A careful comparison of the skeleton of *Didus* with that of other genera, *Didunculus*, *Goura*, the *Struthionæ*, *Vulturidæ*, and many *Grallæ*, which occupies many pages, tends to render more instructive and convincing, in Prof. Owen's opinion, the affinities of the first to the *Columbæ*. The extinction of *Didus* is attributed to what he, in opposition to Strickland and Melville, considers its degenerate or imperfect structure. Such, then, is a necessarily brief, and, we fear, a very imperfect abstract of this remarkable work, especially remarkable because it furnishes us, in a more complete form than has hitherto appeared, with some of the author's views on the general question of the origin of species. Of the plates it contains, one gives copies of three pictures of *D. ineptus* by Roelandt Savory, which have before been engraved. A second contains representations of *Didunculus*; and the remainder illustrate the osteology of the former. One of these shows a tracing in outline of the *full-sized* picture of the Dodo in the British Museum *as large as the original*, and the skeleton restored contained in it. (*Cf.* P. Z. S. 1866, pp. 4, 5.)

GERVAIS, P., et COQUEREL, CH. Sur le Dronte, à propos d'os

de cet oiseau récemment découverts à l'île Maurice. Extrait in Compt. Rend. lxii. 23 Avril, 1866, pp. 924-928, 1017; Rev. et. Mag. de Zool. 1866, pp. 209-215.

The specimens forming the subject of this memoir were sent to the museum at Réunion by Mr. Clark (*vide supra*). The authors believe that the difference between *Didus* and *Pezophaps* was more than generic, and consequently much greater than is usually supposed. Though perceptibly different from that of the *Vulturidæ* or other *Accipitres*, the Dodo in its sternum approached these birds more than any others, *Ciconia* excepted; and they regard it as constituting a distinct family allied to the Vultures, as well as to certain *Gallinæ* and *Grallæ*. This assignment also is not contradicted by the characters of the pelvis, which, though it offers incontestable analogies with that bone in the *Columbidæ*, *Otididæ*, and *Ciconiidæ*, yet has an evident resemblance to that of the *Vulturidæ*.

MILNE-EDWARDS, ALPHONSE. Remarques sur les ossements de Dronthe (*Didus ineptus*) nouvellement recueillis à l'île Maurice. Extrait in Compt. Rend. lxii. (23 Avril, 1866) pp. 929-932, 1092; Ann. Sci. Nat. 1866, v. pp. 355-380, pls. 13-17*; Rev. et. Mag. de Zool. 1866, pp. 215-219; (translated in Ann. & Mag. Nat. Hist. 3rd ser. 1866, xvii. pp. 473-475).

After some introductory observations, the author describes in much detail some specimens of Dodos' bones, bought in London, the fruits of Mr. Clark's recent discovery, as already mentioned by us. In the author's opinion, the pelvis of this bird is one of the most remarkable parts of it: while in certain respects it resembles that of the *Columbidæ*, it is distinguished therefrom by important characteristics, which are not of the kind evinced by the terrestrial members of that family. The sternum also he considers very unpigeon-like, and concludes by saying that *Didus* must not be regarded as a walking pigeon, that it cannot enter the *Columbidæ*, but must be arranged alongside of them in a group of the same value. In some "Addenda" to the paper, as read before the Academy of Sciences, he combats the opinions expressed by Messrs. Gervais and Cocquerel as to the Dodo's affinities, and declares that it only presents few resemblances to the *Vulturidæ*, and these without anatomical or physiological importance. The specimens at M. A. Milne-Edwards's disposal are far inferior to those at Prof. Owen's, both in number and condition; but the plates representing them are executed in a manner as superior.

Didus ineptus: a notice of the bones recently discovered by Mr. G. Clark, and of the discussion in the French Academy consequent thereon. R. Meyer, Zoolog. Garten, 1866, pp. 352-354.

Didus ineptus [?]: a supposed original drawing representing this bird as

* Also published separately. Paris: 1866. 4to, pp. 28, pls. 5.

being nearly white was exhibited. W. B. Tegetmeier, P. Z. S. 1866, p. 201.

GALLINÆ.

CRACIDÆ.

AQUARONE, P. Notice complémentaire sur l'éducation des Hocos. Bull. Soc. Imp. d'Acclimat. 1866, pp. 25-28.

In addition to the paper by the same author noticed last year (Zool. Record, ii. p. 125).

Penelope greeyi is a new species from New Granada, most nearly allied to *P. nigricollis*. G. R. Gray, P. Z. S. 1866, p. 206, pl. xxii.

Ortalida maccalli breeds with the common fowl; and the hybrids are considered far superior to ordinary game-cocks for fighting-purposes. H. E. Dresser, Ibis, 1866, pp. 24, 25.

PHASIANIDÆ.

SAURIN, DUDLEY E. Notice on the Pheasants found in the Neighbourhood of Peking. Proc. Zool. Soc. 1866, pp. 436-438.

Phasianus torquatus, *P. reevesi*, *Pucrasia xanthospila*, and *Crossoptilon aurtum* are the species mentioned. *C. manchuricum*, Swinhoe, is considered identical with the last.

Lophophorus thuyi is a fine new species, sent from Hankow, larger and with a longer bill and stouter legs than *L. impeyanus*, the rectrices with blue reflexions, and the head crestless, but the feathers of the nape slightly elongated. A. Geoffroy St. Hilaire, Bull. Soc. Imp. d'Acclimat. 1866, pp. 222, 693.

Phasianus scintillans is supposed to be a new species from Japan, closely related to *P. sammeringi*, but differing therefrom in the feathers of the notæum being broadly margined with white, their crimson tips far more fiery, the ground-colour of the tail being cinnamon-brown, and its narrow bars greyish white. J. Gould, Ann. & Mag. N. H. 3rd ser. xvii. p. 150. Considered to be a variety, or the representative form of *P. sammeringi*, the first coming from Yokohama, and the last from Simoda. P. L. Sclater, P. Z. S. 1866, p. 210.

Phasianus pictus obscurus (Zool. Rec. i. p. 88) is supposed to come from Java. F. Schlegel, Zool. Garten, 1866, pp. 136, 137.

Thaumalia picta and *T. amherstiae* figured. J. Gould, B. As. part xviii.

Euplocamus prelatius, notes and observations upon. R. Germain, R. Z. 1866, pp. 260-262; Bull. Soc. Imp. d'Acclimat. 1866, pp. 623, 624.

Polyplectron germaini is a new species, from Cochin China, most like *P. chinquis*, but easily distinguished by its darker hue and very different coloration of its ocellations, which are far more brilliant and rich in the new bird. D. G. Elliot, Ibis, 1866, p. 56.

A supposed hybrid between *Numida meleagris* and *Gallus domesticus*, var. *cochin-chinensis*, noticed. R. von Willemoes-Suhm, J. f. O. 1865, p. 433.

Meleagris gallopavo is still met with in various localities in Canada and is figured. W. Ross King, Sportsm. and Nat. in Canada, p. 135.

TETRAONIDÆ.

Tetrao urogallus still exists in Northern Spain. Lord Lilford, Ibis, 1866, pp. 383, 384.

Perdix savatilis and *P. petrosa*. M. Olfh-Gaillard's paper on hybrids between these two species (Zool. Record, ii. p. 126) reprinted. R. Z. 1866, pp. 78-80. Further remarks on this paper, in which it is suggested that *P. syriaca* [cujus?], and not *P. savatilis*, was one of the parents. Barthélemy Lapommeraje, *tom. cit.* pp. 271, 272. Notice of other hybrids, G. Lunel, Bull. Soc. Orn. Suisse, 1866, p. 110.

Perdix montana: observations on this supposed species lead to the opinion that it is but a strongly marked variety of *P. cinerea*. W. Hartmann, Zoolog. Garten, 1866, pp. 332-335.

Perdix cinerea is said to occur in Northern Spain. Lord Lilford, Ibis, 1866, p. 384.

Coturnix fornasinii, Sig. Bianconi's description (Zool. Record, ii. p. 126) reprinted. Guérin-Ménéville, R. Z. 1866, p. 316.

Lophortyx gambeli, observations on its habits from field-notes. E. Coues, Ibis, 1866, pp. 46-55. The young described, *Idem*, Proc. Acad. Philad. 1866, p. 94. Its range inosculates with that of *L. californica* about the "sink" of the Mojave River. *Idem*, Ibis, 1866, p. 265.

PTEROCLIDÆ.

Syrhaptus paradoxus, a single example frequently observed in October 1865 (!) at Kalksburg in Lower Austria. Victor von Tschusi (*vide* Prof. Dichtl), Zoolog. Garten, 1866, p. 390. Not polygamous, — Quistorp, J. f. O. 1866, p. 144. Figured (♂ and ♀), H. Stevenson, B. Norf. pl. ii.

Pterocles alchata has bred in the Zoological Gardens, and the young is figured. A. D. Bartlett, P. Z. S. 1866, p. 78, pl. ix. fig. 2.

TURNICIDÆ.

Turnix sylvatica is supposed to have occurred again in England. J. Gould, P. Z. S. 1866, p. 210.

MEGAPODIIDÆ.

Megapodius tumulus, head figured. S. Diggles, Orn. Austral. part i.

TINAMIDÆ.

The entirely Struthious structure of the skull in this family is again (Zool. Record, i. p. 59) strongly insisted on. W. K. Parker, Phil. Trans. 1866, pp. 113-183. (See under the heading "ANATOMY AND PHYSIOLOGY.")

GRALLIÆ.

RALLIDÆ.

SCHLEGEL, H. Muséum d'Histoire Naturelle des Pays-Bas. 8^{me} Livraison. RALLI. Leyde: 1866. Royal 8vo, pp. 77-80.

Completes the portion noticed last year (Zool. Record, ii. p. 128), and contains an enumeration of about eighty specimens received since that was printed.

Rallina tricolor has occurred near Cape York, North Australia. J. Gould, P. Z. S. 1866, p. 218.

Rallina pœciloptera is a new species from the Feejees, to be distinguished at first sight by its ferruginous remiges, marked with narrow black bars, the first and second having the outer webs blackish. G. Hartlaub, Ibis, 1866, pp. 171, 172.

Rallus hoeveni, von Rosenberg, Tijdschr. Nederl. Indië, 1866, is identified with *Rallina plumbeiventris*, Gray. H. Schlegel, N. T. D. iii. p. 349.

Porzana pygmaea has again bred in England. J. Overend, Zoologist, S. S. pp. 389, 390.

Rallus featherstonii is described as a new species from New Zealand. W. Buller, Ess. Orn. N. Zeal. p. 18.

Gallinula (Leguaticia) gigantea, an extinct species, formerly inhabiting Mauritius, perhaps also Réunion, and once accidentally met with on Rodriguez, founded on "Le Géant" of Leguat, by whom it was observed in 1694. H. Schlegel, Ibis, 1866, pp. 146-168, figs.; Ann. Sc. Nat. 5^{me} sér. 1866, vi. pp. 25-49, pl. 1. figs. 1, 2.

Porphyrio (Notornis?) caeruleus, an extinct species, formerly inhabiting Réunion, and observed there between 1669 and 1672, founded on the "Oiseau bleu" of Du Bois. H. Schlegel, Ibis, 1866, pp. 146-168; Ann. Sci. Nat. 5^{me} sér. 1866, vi. pp. 25-49.

Porphyrio hyacinthinus, its occurrence in England. H. Reeks, Zoologist, S. S. p. 229.

Porphyrio bellus, head figured. S. Diggles, Orn. Austral. part iii.

Porphyriops leucopterus is a new species, from the Argentine Republic and (P) Buenos Ayres; it is very like *Crex femoralis*, Tschudi, but smaller, with the tertials next the back conspicuously edged with white both inside and out. A list of the synonyms of *P. femoralis* is also added. T. Salvadori, Atti Soc. Ital. Sc. Nat. viii. 1866.

Gallinula pyrrhorrhoa, A. Newton (P. Z. S. 1861, pp. 18, 19), is identified with *G. chloropus*. H. Schlegel, P. Z. S. 1866, p. 425.

SCOLOPACIDÆ.

Scolopax rusticola has occurred in New Jersey. G. N. Lawrence, Ann. Lyc. N. H. New York, 1866, p. 292. Is figured, with nestlings. J. Gould, B. Grt. Br. part x. Observations on its mode of carrying its young. R. von Bischofshausen, Zoolog. Garten, 1866, pp. 187-191.

Scolopax australis and *Rhynchæa australis* are figured. S. Diggles, Orn. Austral. part v.

Tringa maritima is supposed to breed in the Azores. F. D. C. Godman, Ibis, 1866, pp. 101, 102.

Tryngites rufescens has occurred in Ireland. H. Saunders, Zoologist, S. S. p. 389. H. Blake-Knox, *tom. cit.* p. 457.

Phalaropus fulicarius occurred in great numbers in England in September 1866. *Auctt. varr.* Zoologist, S. S. pp. 499-501, 525, 526. Is figured in both summer and winter plumage. J. Gould, B. Grt. Br. part ix.

Lobipes hyperboreus, with young, is figured. J. Gould, *ut supra*.

Tringoides hypoleuca stated to occur in Trinidad as well as *T. macularia*. The latter in winter plumage has probably been mistaken for it. A. Léotaud, Ois. Trinid. pp. 458-460 and 462, 463.

Numenius microrhynchus is described as a new species from Chili. It may, however, be identical with *N. brevirostris*, Cuvier. R. A. Philippi and L. Landbeck, Arch. f. Naturgesch. 1866, ii. pp. 129-132.

Actiturus bartramius has again occurred in England. W. K. Bullmore, Zoologist, S. S. pp. 37-40.

CHARADRIIDÆ.

HARTLAUB, G. Synopsis of the genus *Cursorius*. Proc. Zool. Soc. 1866, pp. 61, 62, pl. vi.

A synonymatic list of the nine species of the genus, two of which, however, have not been examined by him: *C. bisignatus* (Zool. Rec. ii. p. 132) is figured.

Cursorius gallicus is figured. J. Gould, B. Grt. Br. part x.

Ædicnemus indicus and *Æ. ornatus* are described as new species. The first is the *Æ. crepitans*, auctt., from India (*nec* Temm.); but it has longer tarsi, a longer and stronger bill, shorter wings than its European relative, besides the under tail-coverts of a pale fawn-colour. The second, which is from Abyssinia, Sennaar, and Kordofan, is very like *Æ. crepitans*, between which and *Æ. capensis* it is intermediate, but has no white alar band, and is marked above and on the breast with longitudinal umber streaks: the bill is long and strong. T. Salvadori, Atti Soc. Ital. Sc. Nat. viii. 1866.

Strepsilas interpres is figured. J. Gould, B. Grt. Br. part ix.

Chatusia leucura, observations on its natural history. A. E. Brehm, J. f. O. 1866, pp. 386-391.

Defilippia is a genus proposed for the reception of "*Chatusia crassirostris*, De Filippi," Hartlaub (J. f. O. 1855, p. 427). Its principal characters are:—a thick, strong, and straight bill, shorter than the head; wings as in *Chatusia*, but armed with a sharper spur; tail square, feet stout, toes very long, exceeding two-thirds of the tarsus, hallux reaching the ground, claws sharp and somewhat long. T. Salvadori, Atti Soc. Ital. Sc. Nat. viii. 1866.

Eudromias australis and *Erythrogonys cinctus* are figured. S. Diggles, Orn. Austral. part vi.

Podasocys is a new genus established for the reception of *Charadrius montanus*, Towns.; it differs from *Ægialites*, to which the species is generally referred, in its very short square tail, long bare tibiæ, very long tarsi, and short toes, and otherwise. E. Coues, Proc. Acad. Philad. 1866, p. 96.

Podasocys montanus is figured. G. D. Elliot, B. N. Am. part ii.

OTIDIDÆ.

Otis tarda, further particulars of its gular pouch. W. B. Tegetmeier, Zoologist, S. S. p. 144; W. H. Flower, *op. cit.* p. 189. Dr. Cullen's paper (Zool. Record, ii. p. 133) translated by A. Humbert, Bull. Soc. Orn. Suisse, 1866, pp. 90-92.

Sypheotides auritus is figured. J. Gould, B. As. part xviii.

ARDEIDÆ.

Ardea xanthopoda, Pelzeln, and *A. elegans*, J. Verreaux, are identified with *A. garzetta*; *A. ruficrista*, J. Verreaux, with *A. ibis*; and *A. idæ*, Hartlaub, with *A. leucoptera*. H. Schlegel, P. Z. S. 1866, p. 425.

Ardea: the species of the genus found in the Aru Islands enumerated and variously referred. H. Schlegel, N. T. D. iii. p. 348.

Ardetta flavicollis and *Herodias plumifera*, heads figured. S. Diggles, Orn. Austral. parts iii., iv.

Buphus comatus is figured. J. Gould, B. Grt. Br. part x.

Gorsachius goisaki, description of the young. R. Swinhoe, Ibis, 1866, pp. 122, 123.

CICONIIDÆ.

Mycteria australis is figured. S. Diggles, Orn. Austral. part v.

PALAMEDEIDÆ*.

Chauna nigricollis (cf. Zool. Record, i. p. 93) is identical with *C. derbiana*, P. L. Sclater, P. Z. S. 1866, pp. 369, 370. The locality for the original specimen of the latter was not Guatemala, but no doubt New Granada. T. J. Moore, *op. cit.* pp. 368, 369. Inhabits Trinidad, W. Huggins, *op. cit.* p. 417.

AVIS INCERTÆ SEDIS.

Eurypyga helias, its eggs and young described, and the latter, which much resembles those of Plovers or Snipes, figured. The nearest ally of the bird is *Rhinocetus* as previously (P. Z. S. 1862, p. 218) stated. A. D. Bartlett, P. Z. S. 1866, pp. 76-78, pl. ix. fig. 1.

ANSERES.

ANATIDÆ.

SCHLEGEL, H. Muséum d'Histoire Naturelle des Pays-Bas. 8^{me} Livraison. ANSERES. Leyde: 1866. Royal 8vo, pp. 108.

This portion of the work is to include the genera *Mergus*, *Biziurá*, *Fuligula*, *Anas*, *Cygnus*, *Dendrocygna*, *Anser*, and *Phœnicopterus*, the first six of which are completed. The *Anatidæ* having met with much more attention at the hands of authors than many of the other groups of which Prof. Schlegel has treated, their synonymy is in a less confused state. There is consequently less novelty in his determinations of their species, and we do not think it necessary here to go into further details respecting this conscientious performance.

SCLATER, P. L. Additional notes on the *Anatidæ* of the Genera *Dendrocygna* and *Tadorna*. Proc. Zool. Soc. 1866, pp. 148-150.

The papers to which these remarks are supplementary were noticed in our first volume (p. 94). *Dendrocygna vagans* and *D. fulva* have now been seen by the author, and, with *D. major*, their peculiar distribution in the tropics is pointed out. *Tadorna variegata* has bred in the Society's Gardens.

Leptotarsus eytoni captured at Port Macquarie, New South Wales. G. Bennett, P. Z. S. 1866, pp. 417, 418.

Cercopsis novæ-hollandiæ, observations on it in confinement. C. de St. Gerlach, Zoolog. Garten, 1866, pp. 170-173. Figured, S. Diggles, Orn. Austral. part ix.

Chen albatus is figured. D. G. Elliot, B. N. Am. part ii.

Sarcidornis africana is recommended for acclimatization in Réunion. F.

* We have become quite convinced of the truth of Mr. Parker's opinion (Zool. Record, i. p. 93) as to the systematic position of this family, and, should we have occasion to mention it next year, we shall place it next to *Anatidæ*.

Pollen, Bull. Soc. d'Accl. et d'Hist. Nat. de la Réunion. *Idem*, Mém. Scient. pp. 6-11, and N. T. D. iii. pp. 322-324.

Anseranas melanoleuca is figured. S. Diggles, Orn. Austral. part vii.

Tadorna radjah, head figured. S. Diggles, Orn. Austral. part ii.

Anas boschas and *A. acuta*: a hybrid presenting some characters of both of these species, and probably having its parentage from them, though differing from previously described examples, is noticed, as well as one bearing traces of a cross between the first and *A. clypeata*. J. P. van Wickevoort Crommelin, N. T. D. iii. pp. 309-312.

Anas zonorhynchus is the name proposed for a species from Formosa and China, hitherto confounded, both by the author (P. Z. S. 1863, p. 324) and Temm. & Schl. (Faun. Jap. p. 126, pl. 82), with *A. paccilorhyncha*, which it resembles in coloration, but has an ochreous band across the bill. R. Swinhoe, Ibis, 1866, p. 394. (Cf. Ibis, 1867, pp. 176, 207.)

Querquedula bernieri, J. Verreaux, is identified with *Anas assimilis*, Forster. II. Schlegel, P. Z. S. 1866, p. 426.

Anas glocitans and *A. falcata*: descriptions of, notes on, and synonymy of these species. J. Vian, R. Z. 1866, pp. 401-410.

Malacorhynchus membranaceus is figured. S. Diggles, *op. cit.* part vi.

Heteronetta is a genus proposed for the reception of *Anas melanocephala*, Vieillot (N. Dict. v. p. 163), having the characters of *Anas*, but with the tip of the bill greatly incurved and narrower, short wings, wanting the speculum, very short tail, narrow, somewhat stiff rectrices, tarsi and toes moderate, claws sharp, and the plumage much as in *Erismatura*. T. Salvadori, Atti Soc. Ital. Sc. Nat. viii. 1866.

Somateria thulensis is the name by which the Spitsbergen form of *S. mollissima* is distinguished. The characters by which it is discriminated were previously given (Oefvers. K. Vet.-Akad. Förh. 1864, pp. 399-401, and J. f. O. 1865, pp. 214-216), but the bird was then regarded only as a variety. A. J. Malmgren, J. f. O. 1865, p. 396*.

Bucephala islandica is figured. D. G. Elliot, B. N. Am. part ii.

Mergus castor and *M. albellus* are figured. J. Gould, B. Grt. Br. part ix.

LARIDÆ.

BLASIUS, J. H. Kritische Bemerkungen über Lariden. Journ. für Orn. 1865, pp. 369-384, and 1866, pp. 73-88.

The author admits eighty-four species as well established, a number considerably less than do either Bruch (J. f. O. 1853, pp. 96-108, 1855, pp. 273-292) or Dr. Coues (Proc. Acad. Philad. 1862, pp. 291-312, 535-559, and 1863, pp. 121-138), when the limits to which they restricted their labours are regarded. Nevertheless two species of *Sterna* seem to be described as new. Prof. Blasius also cuts down the number of genera with which the group has been loaded, only recognizing twenty-seven. He does not go very deeply into synonymy, only giving sufficient to bring together the species recognized as distinct by other authors but which he thinks identical. A table showing the geographical distribution of the members of the family is given, from which

* Not published till 1866.

it appears that Europe possesses 27, North Asia 28, Africa 26, India 23, Australia 22, North America 35, and South America 23 species, accidental stragglers not being counted.

*Stercorarius tephra*s is described as a new species from Spitsbergen. It is the *S. parasiticus* of former writers on the ornithology of that country, and was previously regarded as a variety of that species (Æfvers. K. Vet.-Akad. Förh. 1864, pp. 390, 391, and J. f. O. 1865, pp. 205, 206) when the differential characters were pointed out. A. J. Malmgren, J. f. O. 1865 pp. 391, 392*.

Stercorarius parasiticus observed swimming. II. Whitely, Ibis, 1866, p. 127; E. L. Layard, *op. cit.* p. 220.

Lestris catarrhactes is figured. C. J. Sundevall, Sv. Fogl. pl. lxxix. fig. 3.

Lestris. A species considerably larger than *L. antarcticus* has been found on the coast of Otago, New Zealand, but is not named. W. Buller, Ess. Orn. N. Zeal. p. 20.

Larus glaucus is figured. C. J. Sundevall, Sv. Fogl. pl. lxxix. fig. 2.

Pagophila eburnea is figured. C. J. Sundevall, Sv. Fogl. pl. lxxix. fig. 1. Discovery of its egg several years ago on one of the Polynia Islands by Sir L. M'Clintock (figure in Journ. R. Dublin Soc. 1856, i. pls. 1, 2). E. P. Wright, Ibis, 1866, pp. 216-218.

Larus tridactylus. Notes on its natural history and changes of plumage. H. Blake-Knox, Zoologist, S. S. pp. 518-522.

Larus sabinii has again occurred in England, F. H. Rodd, Zoologist, S. S. p. 501. Also in Ireland, H. Blake-Knox, *tom. cit.* p. 526. Figured, J. Gould, B. Grt. Br. part ix.

Larus ridibundus, notes on its natural history and changes of plumage. II. Blake-Knox, Zoologist, S. S. pp. 361-372.

Xema jamesonii is figured. S. Diggles, Orn. Austral. part viii.

Sterna macroractyla and *S. macroptera* appear to be described as new species, both from Africa. J. H. Blasius, J. f. O. 1866, pp. 79, 80, and 86.

Sterna luctuosa is described as a new species from Chili, having a white horseshoe on the forehead, but otherwise black above, and beneath white and silver-grey. R. A. Philippi and L. Landbeck, Arch. f. Naturgesch. 1866, ii. pp. 126, 127.

Hydrochelidon leucoptera has occurred near Cape York, North Australia. J. Gould, P. Z. S. 1866, p. 218.

PROCELLARIIDÆ.

COUES, ELLIOT. A critical Review of the family *Procellariidæ*:—Part iii., embracing the *Fulmaræ*. Proc. Acad. Philad. 1866, pp. 25-33.—Part iv., embracing the *Æstrelatæ* and the *Prionæ*. *Ibid.* pp. 134-172.—Part v., embracing the *Diomedeinæ* and the *Halodrominæ*. With a general supplement. *Ibid.* pp. 172-197.

The first and second parts of this paper were fully noticed in our first volume (pp. 95, 96). These, which conclude the subject, are elaborated similarly to their predecessors. The *Fulmaræ* are divided into three genera:—*Fulmarus*, with *Procellaria*

* Not published till 1866.

glacialis, Linn., as its type; *Thalassoica* (lege *Thalassæca*), with *P. glacialioides*, A. Smith; and *Ossifraga*, containing only *P. gigantea*, Gmel. The *Æstrelateæ* are composed of three genera:—*Æstrelata*, with *P. hasitata*, Kuhl, as its type; *Pagodroma*, containing only *P. nivea*, Gmel.; and *Daption*, restricted to *P. capensis*. The *Prioneæ* also are divided into three genera:—*Halobæna*, containing only *P. cærulea*, Gmel.; *Pseudoprion*, gen. nov., founded on *P. turtur*, Kuhl; and *Prion*, restricted to *P. vittata*, Gmel. The *Diomedeinæ* form a single genus, with *Diomedea exulans*, Linn., as its type, as do the *Halodrominæ*, the generic name used being *Pelecanoides*, with *P. urinatrix*, Gmel., for the typical species. To this disposition of the whole family follow first a supplement, with additions and corrections, and next a bibliographical appendix.

Pterodroma caribbæa is the name given to the "Blue-Mountain Duck" of Jamaica, first mentioned by Mr. Gosse (B. Jam. p. 437), but now first described. A. Carte, P. Z. S. 1866, pp. 93, 94, pl. x. (*fig. mala*). Referred to the genus *Æstrelata*. E. Coues, Proc. Acad. Philad. 1866, pp. 159, 171.

Diomedea leptorhyncha is doubtfully described as a species, from a skull in the Smithsonian Museum, which is considerably narrower and smaller in all its dimensions than that of *D. brachyura*. E. Coues, *ut supra*, pp. 178–187.

Diomedea gilliana is described as a new species from an unknown locality, belonging to the same group as *D. melanophrys*, and like that species in colour except on the under surface, but with the bill more nearly approaching that of *D. culminata*. *Idem, ut supra*, pp. 181, 182.

Diomedea exulans and *D. fuliginosa*, notes on them, with reference to Captain Hutton's observations (Zool. Record, ii. pp. 56, 136). Howard Saunders, Ibis, 1866, pp. 124–126. Notes on their means of flight and habits. B. T. Lowne, Zoologist, S. S. pp. 114–118. Suggestion as to the manner in which the young are supported while deserted by their parents. C. J. Andersson, Ibis, 1866, p. 324.

Procellaria glacialis is figured. C. J. Sundevall, Sv. Fogl. pl. lxxix, fig. 4.

Nectris brevicaudus, an account of its habits reprinted from Mr. Gould's 'Handbook of the Birds of Australia' (ii. pp. 459–464), which was partly extracted from Mr. Elwes's paper in 'The Ibis' (1859, pp. 397–399), though the bird is there called *Puffinus obscurus*. Zoologist, S. S. pp. 208–211.

PELICANIDÆ.

CUNNINGHAM, R. O. On the Solan Goose or Gannet (*Sula bassana*, Linn.). Ibis, 1866, pp. 1–23, pl. i.

A very carefully executed monograph of this species, the bibliography of which is given at a great length. The nestling is figured.

Phalacrocorax graculus, notes on its natural history, changes of plumage, and habits in confinement. II. Blake-Knox, Zoologist, S. S. pp. 243–257, 328+333.

Phalacrocorax sulcirostris, head figured. S. Diggles, Orn. Austral. part ix.

Plotus melanogaster is the Madagascar species (Ibis, 1863, p. 461). H. Schlegel, P. Z. S. 1866, p. 426.

Plotus novæ-hollandiæ, head figured. S. Diggles, Orn. Austral. part vi.

COLYMBIDÆ.

Colymbus adamsi is figured. D. G. Elliot, B. N. Am. part i.

PODICIPIDÆ.

Podiceps hectori is a new species from Otago, New Zealand, readily distinguished from *P. australis* by the total absence of white on the scapulars and secondaries. W. Buller, Ess. Orn. N. Zeal. p. 19.

Colymbus [sc. *Podiceps*] *cristatus*, description of a nearly white specimen. C. Gloger, J. f. O. 1866, pp. 285, 286.

Podiceps affinis is a supposed new species, from North America, very like *P. cooperi* in the form of the bill, but differing from it in colour, being blackish above, the upper part of the cheeks ashy-grey, and the lower, as also the throat, white. T. Salvadori, Atti Soc. Ital. Sc. Nat. viii. 1866.

ALCIDÆ.

NEWTON, ALFRED. Auszug aus Herrn J. Wolley's Untersuchungen in Island betreffend den Geier-Vogel oder grossen Alk. Journ. für Orn. 1866, pp. 310-338.

A German translation of a paper which appeared in 'The Ibis' for 1861 (pp. 374-399).

Alca impennis: a German translation of the paper from the 'Natural History Review' (1865, pp. 467-488) noticed by us last year (Zool. Record, ii. p. 137) is given. J. f. O. 1866, pp. 304-419. Extracts from old authors mentioning it. S. F. Baird, Ibis, 1866, pp. 223; 224. Discovery of a nearly perfect skeleton in the Museum of the College of Surgeons. W. II. Flower, loc. cit. Note on specimens. Vouga, Bull. Soc. Orn. Suisse, 1866, pp. 113, 114. Notes on its supposed occurrence on the Norwegian coast of late years. R. Collett, J. f. O. 1866, pp. 70, 71. Supposed to have bred on Lundy Island in 1838 or 1839. M. A. Mathew, Zoologist, S. S. pp. 100, 101.

Alca torda with nestling is figured. J. Gould, B. Grt. Br. part x.

Uria craveri is a supposed new species from the Gulf of California, about the size of *Mergulus alle*, above dusky-black, the back and wings somewhat tinged with grey, the bill very long, awl-shaped, and, with the back of the tarsi (which are greenish-yellow in front), black. T. Salvadori, Atti Soc. Ital. Sc. Nat. viii. 1866.

Ombria psittacula is figured. D. G. Elliot, B. N. Am. part i.

STRUTHIONES.

STRUTHIONIDÆ.

PARKER, W. K. On the Structure and Development of the Skull in the Ostrich Tribe. Phil. Trans. 1866, pp. 113-183, pls. vii.-xv. (See under "ANATOMY AND PHYSIOLOGY.")

Rhea americana, observations on it in confinement. M. Schmidt, Zoolog. Garten, 1866, pp. 8-14; J. L. Fitzinger, op. cit. pp. 131-133.

Dromæus novæ-hollandiæ, observations on its breeding. W. Hartmann, Zoolog. Garten, 1866, pp. 69-72.

Casuarus galeatus and others of the genus, observations on them. F. Schlegel, Zoolog. Garten, 1866, pp. 177-180.

Casuarus kaupi, Rosenberg, J. f. O. 1861, pp. 44, 45, pl. ii. figs. 12, 13, is identical with *C. uniappendiculatus*, Blyth, J. A. S. B. 1860, p. 27. II. Schlegel, P. Z. S. 1866, p. 168; N. T. D. iii. p. 347. Its eggs, laid at Amsterdam, described. P. L. Sclater, P. Z. S. 1866, p. 34. A list of the five good species of the genus, showing their geographical distribution, is given. *Idem*, *tom. cit.* p. 168.

Casuarus australis, feathers supposed to belong to this species exhibited, and remarks from Mr. W. J. Scott respecting it. *Idem*, *tom. cit.* pp. 557, 558.

Casuarus bicarunculatus, notes on this species. H. Schlegel, N. T. D. iii. pp. 347, 348.

Dinornis, particulars of the discovery of the egg mentioned last year (Zool. Record, ii. p. 138). Zoologist, S. S. p. 34.

Dinornis (?), discovery of fossil remains of a gigantic bird in New Zealand, the head 3 ft. 4 in. by 1 ft. 10 in., the tail long, wings well defined, large, and close to the body (!). Zoologist, S. S. p. 97. [Qu. a Saurian?]

APTERYGIDÆ.

Apteryx. Several bits of new information respecting the different existing species of this genus are given. *A. australis*, of which two more specimens have been obtained, there having hitherto been but two known, seems to belong to the province of Otago, the extreme south of New Zealand. *A. oweni* is plentiful in the province of Nelson, where *A. maxima* is supposed also to occur; but of the latter it does not appear that a specimen has ever been obtained by any naturalist. *A. mantelli* is the common species of the North Island. It is not improbable that on the west coast of the South Island a fifth species exists, resembling *A. oweni*, but smaller, with more slender legs and a longer bill. W. Buller, Ess. Orn. N. Zeal. pp. 14, 15.

REPTILIA

BY

ALBERT GÜNTHER, M.A., M.D., PH.D., F.R.S. &c.

A. *Works in progress.*

JAN, G. Iconographie générale des Ophidiens. Paris. Text 8vo, Plates 4to.

We gave descriptions of this work in the Record, i. p. 99, and ii. p. 139. The author died in the course of last year, leaving the manuscript and drawings so far finished that the work is continued by M. F. SORDELLI, who executed the drawings. Five parts of plates, viz. Nos. 15–19, were issued in 1866; but we have not received the continuation of the text. We cannot give here a rectification of the synonymy of all the species; but it is evident that only a small proportion of the species which appear under new names in these parts are really new to science.

OWEN, R. Anatomy of Vertebrates. London, 1866. 8vo.

This work has been noticed above (p. 1).

B. *Papers published in Journals.*

BOAKE, B. On the Crocodiles of Ceylon. Journ. of the Ceylon Branch R. As. Soc. 1866, pp. 160–163.

Observation on their propagation.

BOCAGE, J. V. BARBOZA DU. Lista dos reptis das possessoes portuguezas d'Africa occidental que existem no Museu de Lisboa.—Reptiles nouveaux ou peu connus recueillis dans les possessions portugaises de l'Afrique occidentale, qui se trouvent au Muséum de Lisbonne. Jornal de Sc. mathcm. phys. & nat. Lisboa, 1866, No. 1. pp. 37–78, with a plate.

BOCOURT. See MILNE-EDWARDS.

COPE, E. D. Fourth Contribution to the Herpetology of Tropical America. Proc. Ac. Nat. Sc. Philad. 1866, pp. 123–132. Fifth Contribution, &c. Ibid. pp. 317–323.

——. On the Reptilia and Batrachia of the Sonoran Province of the Nearctic Region. Ibid. pp. 300–314.

- DUMÉRIL, A. Observations sur la reproduction dans la ménagerie] des reptiles du Muséum d'Histoire Naturelle, des Axolotls, Batraciens urodèles à branchies extérieures du Mexique, sur leur développement et sur leurs métamorphoses. *Nouv. Arch. Mus. d'Hist. Nat.* 1866, ii. pp. 265-292, with a plate and woodcuts.
- . Troisième notice sur la ménagerie des Reptiles du Muséum d'Histoire Naturelle. *Nouv. Arch. Mus. d'Hist. Nat.* 1865, i. *Bullet.* pp. 31-46.
- . Note sur la Collection des Reptiles et des Batraciens du Muséum d'Histoire Naturelle. *Ibid.* pp. 47-50.
- GIEBEL, C. Die Schildkröten der Insel Banka. *Zeitschr. ges. Ntrwiss.* 1866, pp. 11-21, with two plates.
[The Tortoises of the Island of Banka.]
- . Osteologie der Klapperschlangen. *Ibid.* pp. 172-180.
[Osteology of *Crotalus*.]
- GRAY, J. E. Notes on some young specimens of Tortoises (*Testudo*). *Proc. Zool. Soc.* 1866, pp. 305-306. [*T. denticulata*, *T. tabulata*, *Chersina angulata*.]
- GUICHENOT, —. Notice sur un nouveau genre de Sauriens de la famille des Geckotiens du Muséum de Paris. *Mém. Soc. Sc. Nat. Cherbourg*, xii. 1866, pp. 248-252, with a plate. [*Correlophus*.]
- GÜNTHER, A. Fifth account of new species of Snakes in the Collection of the British Museum. *Ann. & Mag. Nat. Hist.* 1866, xviii. pp. 24-29, with two plates.
- HOEVEN, J. VAN DER. Considérations sur le genre *Ménobranche* et sur ses affinités naturelles. *Arch. Néerland. Sc. Exact. et Nat.* 1866, i. pp. 305-321. (*Ann. & Mag. Nat. Hist.* xviii. pp. 255-257.)
- KESSLER, K. Beschreibung eines neuen Wassermolchs aus West-Sibirien. *Bull. Soc. Nat. Mosc.* 1866, xxxix. pp. 126-131, with a plate. [*Triton (Ranodon) sibiricus*.]
- KREFFT, G. Descriptions of three species of Snakes of the genus *Hoplocephalus*. *Proc. Zool. Soc.* 1866, June 28, pp. 370-371.
- MILNE-EDWARDS, H. Rapport sur le Voyage de M. Bocourt à Siam. Notes sur les Reptiles, les Batraciens et les Poissons recueillis pendant un voyage dans le royaume de Siam par M. BOCOURT. *Nouv. Arch. Mus. d'Hist. Nat.* 1866, ii. *Bullet.* pp. 1-20.
- PAYOT, V. Erpétologie, Malacologie et Paléontologie des environs de Mont Blanc. *Ann. Sc. Phys. et Natur. &c. de Lyon*, viii. 1864, pp. 454-519.

PETERS, W. Ueber neue Amphibien des zoologischen Museum zu Berlin. Monatsber. Ak. Wiss. Berl. 1866, pp. 86-94.

——. Vorläufige Uebersicht der von Baron Carl von der Decken gesammelten Amphibien. Sec p. 11.

STRAUCH, A. Synopsis der gegenwärtig lebenden Crocodiliden, nebst Bemerkungen über die im zoologischen Museum der Kaiserl. Akademie der Wissenschaften vorhandenen Repräsentanten dieser Familie. Mém. Acad. Sc. St. Pétersb. x. No. 13, 1866, pp. 120, with a plate and map.

[Synopsis of recent *Crocodilidae*, with remarks on the specimens in the Zoological Museum of the Imperial Academy of Sciences.]

——. Ueber die Arten der Eidechsen-Gattung *Cyclodus* (Wagl.). Bull. Ac. Sc. St. Pétersb. 1866, x. pp. 449-462.

C. Anatomical Publications.

BALSAMO-CRIVELLI, G. Sovra alcuni nuovi casi di Polimelia (membra sopranumerarie) osservati in alcuni individui del genere *Rana*. Rendic. Ist. Lomb. Sc. e Lett. ii. 1865, pp. 261-263.

The author describes three cases of polymely in specimens of *Rana esculenta*, preserved in the Cabinet of Comparative Anatomy of the University of Pavia.

BARKAU, A. Beiträge zur Entwicklungsgeschichte des Auges der Batrachier. Sitzgsber. Ak. Wiss. Wien, 1866, xiv. pp. 70-74, with a plate.

[Contributions to the history of development of the eye of Batrachians.]

BRANDT, E. Sur une carotide particulière de *Pelias berus*. Bull. Ac. Sc. St. Pétersb. ix. (1865) 1866, pp. 273-279, with a plate.

CALORI, C. L. Sul sistema linfatico delle Rane e delle Salamandre Annotazioni anatomiche. Mem. Accad. Sc. Istituto. Bologna, iii. 1864, pp. 465-511, with two plates.

CISTERNAS, R. A case of Polymely in *Alytes obstetricans*. Rev. et Mag. Zool. 1865, pp. 287-288.

DUMÉRIL, A. Observations sur la monstruosité dite polymélie ou augmentation du nombre des membres chez des Batraciens anoures. Nouv. Arch. Mus. d'Hist. Nat. i. pp. 309-319, pl. 20.

An abstract of this paper has appeared in the Compt. Rend., and was noticed in last year's Record, vol. ii. p. 144. The author enumerates all instances of Frogs in which polymely has been observed. Those which came under his own observation are figured. See also CISTERNAS and BALSAMO-CRIVELLI.

GAMPERT, O. Ueber die Niere von *Tropidonotus natrix*. Zeitschr. wiss. Zool. xvi. 1866, pp. 369-372, with a plate.

[On the kidney of *Tropidonotus natrix*.]

GEGENBAUR, C. Zur vergleichenden Anatomie des Herzens. 2. Ueber die Atrioventricular-Klappen der rechten Kammer bei Crocodilen, Vögeln und *Ornithorhynchus*. Jena. Zeitschr. Med. und Ntrwiss. ii. pp. 375-383.

[On the atrio-ventricular valves of the right ventricle in Crocodiles, Birds, and *Ornithorhynchus*.]

HOEVEN, J. VAN DER. Note sur le carpe et le tarse du *Cryptobranchus japonicus*. Arch. Néerland. Se. Exact. et. Nat. 1866, i. pp. 321-327, with two woodcuts.

LANGER, C. Ueber das Lymphgefäß-System des Frosches. Sitzgsber. Ak. Wiss. Wien, 1866, xiii. pp. 395-423, with two plates.

[On the lymphatic system of the Frog.]

PLATEAU, F. Sur la vision des Poissons et des Amphibiens. Compt. Rend. 1866, Sept. 17, pp. 499-500. (Ann. & Mag. Nat. Hist. xviii. pp. 469-473.)

RATKHE, H. Untersuchungen über die Entwicklung und den Körperbau der Krokodile. Herausgegeben von WILHELM VON WITTICH. Braunschweig, 1866. 4to. pp. 275, with 11 plates.

[Researches into the development and organization of Crocodiles.]

This work was left by Rathke as a nearly finished manuscript, and is edited by Prof. von Wittich. The observations were made on eight embryos, of different ages and species; and the object of the work is to give descriptions of the earlier stages of development of these animals, rather than a complete account of the anatomy of the adult.

STRICKER, S. Beiträge zur Biologie der Batrachier. Verh. zool.-bot. Ges. Wien, 1866, pp. 451-456.

This paper contains an account of the author's observations with regard to spawning individuals of the common species of Frogs and Toads.

TÖRÖK, A. Untersuchungen über die Entwicklung der Mundhöhle und ihrer nächsten Umgebung im Batrachier-Embryo. Sitzgsber. Ak. Wiss. Wien, xiv. 1866, pp. 75-80, with a plate.

[Researches into the development of the cavity of the mouth and of the parts nearest to it in embryos of Batrachians.]

GENERAL REMARKS. CONTRIBUTIONS TO FAUNAS.

M. AUG. DUMÉRIL states that the Muséum d'Histoire Naturelle possessed 846 species of Reptiles in the year 1834; 1393 in the year 1857; and that its catalogue shows 1551 species at present, viz. 137 Tortoises, 545 Saurians, 619 Ophidians, 13 Coccilias, 187 Tailless and 50 Tailed Batrachians. *Nouv. Arch. Mus. d'Hist. Nat.* 1865, i. pp. 47-50.

Dr. GÜNTHER has published his fifth annual account of new species of Snakes in the Collection of the British Museum. The total number of species in that collection amounts now to 827, and that of the typical specimens to 303.

M. AUG. DUMÉRIL enumerates 44 species of Reptiles received in the menagerie of the Muséum d'Histoire Naturelle between 1861 and 1864, and not previously kept in that establishment. The total number of species received from the time of its foundation is 237, and that of specimens 4200. He adds some remarks on several of these Reptiles. *Arch. Nouv. Mus. d'Hist. Nat.* 1865, i. pp. 31-46.

Island of Lewis. Prof. Duns states that this island is inhabited by one Reptile only, *Anguis fragilis*, and perhaps also by *Vipera berus*. No Batrachian. *Proc. Roy. Soc. Edinb.* v. p. 619.

Mont Blanc. V. Payot has given a short account of the Reptiles found in the vicinity of Mont Blanc. *Ann. Sc. Phys. et Nat. Lyon.* viii. pp. 464-473. He distinguishes 7 Lizards (for instance, *Lacerta agilis* as distinct from *L. stirpium*), 1 Glow-worm, 10 or 11 Snakes, 12 Frogs or Toads (one being described as a new species, or hybrid between *R. esculenta* and *R. temporaria*, and named *Rana flaviventris*), and 6 Newts or Salamanders.

Russia. G. Belke enumerates 16 species of Reptiles as inhabiting the district of Radomysl, in the Gouvernement of Kief. *Bull. Soc. Nat. Mosc.* 1866, xxxix. p. 496.

West Africa.—Dr. Bocage has given a list of the Reptiles received by the Lisbon Museum from the Portuguese possessions in West Africa (*Jorn. Sc. Math. Phys. & Nat. Lisboa*, 1866, no. 1); they were collected chiefly in the districts Duque de Bragança, Cabinda, Molembo, Rio Quilo, and Loango. The list comprises 5 Tortoises, 27 Saurians, 31 Ophidians, and 19 Frogs. Those regarded as new will be mentioned subsequently.

East Africa. Prof. Peters enumerates 38 species of Reptiles and Amphibians collected by the late Baron von der Decken on the coasts of Eastern Africa. The new species will be mentioned subsequently. *Monatsber. Ak. Wiss. Berlin*, 1866, pp. 887-892.

Siam. M. Bocourt has given a list of the Reptiles collected by him in Siam. *Nouv. Arch. Mus. d'Hist. Nat.* 1866, ii. *Bullet.* pp. 1-10. It comprises 9 Tortoises, 2 Crocodiles, 16 Lizards, 36 Ophidians, and 10 Batrachians. Notes on some of them are appended.

Banka. Prof. Giebel has received a collection of the Tortoises of this island, which he determines as *Cistudo amboinensis*, *Cistudo orbiculata*, *Clemmys dentata*, *Hydromedusa banka*, sp. n., *Trionyx euphraticus* [P], *Chelonia imbricata* and *virgata*. The specimens are described. *Zeitschr. ges. Naturwiss.* 1866, pp. 11-21.

North America. Mr. Cope has examined a collection from the territory of Arizona and in the Colorado district; it contained 44 species. The total number of species known from the Sonoran province is (according to his views of specific and generic characters) 68, referable to 27 genera. He tabulates

them according to their range into the neighbouring provinces, and points out that, herpetologically, the Sonoran and Lower Californian provinces are nearly as distinct from each other as the Sonoran is from the Central, and that these and the Pacific province are more nearly related to each other than to the Eastern province.

Vancouver Island. Mr. Lord, in the work mentioned above, p. 6 (vol. ii. pp. 301-309), mentions 19 Reptiles observed by him in Vancouver Island and British Columbia. They are named after the publications of Baird and Girard, and require revision.

Central America. Prof. Cope has continued his examinations of various collections received from Tropical America. Proc. Ac. Nat. Sc. Philad. 1866, pp. 123-132, 317-323. He has made a most valuable addition to our knowledge of the Herpetology of that zoologically almost unknown province of *Yucatan*, enumerating 38 species. Another collection, made in *Belize* and *Honduras*, contained only 11 species. He describes also a considerable number of species from Mexico and Vera Cruz which he regards as new.

CHELONIA.

Cyclemys dentata is described and figured by Giebel, Zeitschr. ges. Naturwiss. 1866, p. 15, tab. 3.

Hydromedusa bankæ, sp. n., Giebel, *l. c.* p. 19, tab. 4, from Banka.

Sternotherus. Notes on *St. derbianus* and *gabonensis* by Dr. Bocage, *l. c.* p. 57.

SAURIA.

DR. ALEX. STRAUCH has published a most elaborate memoir on recent Crocodiles generally, and on the species in the St. Petersburg Museum especially (Mém. Acad. Sc. St. Pét. x. no. 13, 1866, pp. 120). It is divided into three parts. In the *first* the author gives a systematic synopsis of all the species known, adding to each a detailed account of the synonymy and a diagnosis, and stating as exactly as possible the localities whence they have been obtained. He admits only the three genera *Crocodylus*, *Alligator*, and *Gavialis*, stating that although in the first two, and in the second three, groups of species may be recognized, they can scarcely be regarded as subgenera. *Croc. planirostris* of Graves is considered distinct from *Cr. rhombifer*; *Cr. frontatus* (Murray, 1862) is identical with *Osteolemus tetraspis* (Cope, 1860). Adanson's "Crocodile noir" is not *Cr. frontatus*, but *Cr. cataphractus* (Cuv.), with which *Mecistops bathyrhynchus* (Cope) is identical. In the *second* part detailed descriptions are given of the species known to the author from autopsy, viz. *Alligator mississippiensis*, *niger*, *latirostris*, *sclerops*, *punctulatus*, *trigonatus*, *Crocodylus frontatus* (plate), *rhombifer*, *vulgaris*, *palustris*, *biporcatus*, *acutus*, *cataphractus*. Finally; the *third* part contains general remarks on the geographical distribution of these Reptiles (pp. 110-116): North America has 1, South America 9, Africa 3, and Asia (with Australia) 6 species. This part is illustrated by a map.

* H. RATHKE'S work on the development of Crocodiles has been noticed above, p. 120.

Crocodilus palustris. The Rev. Principal Boake describes nests made by Crocodiles in Ceylon for the reception of the eggs. He thinks there may be two kinds of Crocodiles in the island. Journ. Ceyl. Branch Roy. As. Soc. 1866, pp. 160-163.

Varanus saurus (Laur.) is distinct from *V. niloticus*. Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 888.

Cubina grandis. Mr. Cope regards it as a "Diplogloss in all points," and as the type of a distinct family between the *Gerrhonotidæ* and *Helodermidæ*. L. c. p. 322.

Ichnotropis (Ptrs.), stated to be identical with *Eremias* in Monatsber. Ak. Wiss. Berl. 1866, p. 888, is, as Prof. Peters informs me in a letter, really distinct from it, having tiled ventral scales, &c.

Cnemidophorus guttatus (Hallow.) = *Cn. gularis* (Baird and Girard) = *Cn. sexlineatus* (L.). Cope, l. c. p. 303.

Gerrhosaurus multilineatus, sp. n., Bocage, Journ. Sc. Math. Phys. e Nat. Lib. 1866, no. 1, p. 61, from Angola.

Barissia antauges, sp. n., Cope, l. c. p. 132, from Orizaba.

Gerrhonotus ophiurus, sp. n., Cope, l. c. p. 321, from Mexico.

Ablepharus cabindæ, sp. n., Bocage, l. c. p. 64, from Angola.

Cyclodus. Dr. Strauch has examined the species of this genus (Bull. Ac. Sc. St. Pétersb. 1866, x. pp. 449-462), to which he refers also *Omolepida* (Gray). He gives diagnoses of all the species known, and arranges them thus:—

A. Ear-opening perfectly visible, with the anterior margin denticulated or entire.

a. *Cyclodus* with 7 species, *C. petersii* (p. 454) being new, habitat unknown.

b. *Omolepida*, with *O. casuarinæ* and *C. hictuosus* (sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 90, from South-west Australia).

B. *Otolepis* (subg. nov.). Ear-opening covered by two large triangular scales; a pair of supranasals. *C. brandtii*, sp. n. * (p. 475), habitat unknown.

Plistodon sumichrasti, sp. n., Cope, l. c. p. 321, from Vera Cruz.

Diploglossus chalybæus, sp. n., Cope, l. c. p. 321, from Vera Cruz.

Lygosoma (Hinulia) pantherinum, sp. n., Peters, Monatsber. Ak. Wiss. Berl. 1866, p. 89, from Swan River.

Dumerilia, g. n. (near *Soridia*), Bocage, Journ. Sc. Math. Phys. e Nat. Lib. 1866, p. 63. Tongue scaly, slightly notched; palate edentulous; ear-openings very small; no fore limbs; hind limbs very small, simple. *D. bayonii*, sp. n., from Loanda.

Euprepes anchietæ, sp. n., Bocage, l. c. p. 62, from Zaire.

Sepsina, g. n. [fam. *Sepsidæ*], Bocage, Journ. Sc. Math. Phys. e Nat. Lib.

* The St. Petersburg Museum received the typical example of this species from Parreyss under the name of *Scincus pavimentatus* (Wiegman). The British Museum received from the same dealer, under the same name, an example which agrees well with Dr. Strauch's description of *Cyclodus brandtii*, but has not the two ear-scales, and is, indeed, nothing but *Plistodon aldrovandi*. The Recorder has also examined another example of *Pl. aldrovandi*, with two ear-scales on one side and three on the other.

1866, p. 62. Nostrils between rostral, supranasal, nasal, and first labial; no freno-nasal. Tongue scaly, notched; palate toothless, with a longitudinal slit; ear-openings small; four very small limbs, three-toed. *S. angolensis*, sp. n., p. 63, pl. 1. fig. 1.

Basiliscus (Ptenosaura) seemanni (Gray). Mr. Cope states that *Basiliscus galeritus* (A. Dum.) is identical with this species. Proc. Ac. Nat. Sc. Philad. 1866, p. 123.

Sceloporus serrifer, sp. n., and *Sceloporus chrysostictus*, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1866, pp. 124 & 125, both from Yucatan.—*Sceloporus heterurus*, sp. n., Cope, l. c. p. 322, from Vera Cruz.

Cachryx, g. n. (Iguan.), Cope, Proc. Ac. Nat. Sc. Philad. 1866, p. 124. Digits shortened. Body compressed. Nostril on canthus rostralis, lateral. Femoral pores, no preanals. Tail short, flat, covered with verticils of strong, erect, conic spinous scales. Head covered with small uniform scales; no interparietal. A strong gular dermal fold. No dorsal crest. *C. defensor*, sp. n., l. c., from Yucatan.

Stellio caucasicus. Prof. de Filippi has observed that this species is herbivorous; adult specimens have the faculty of changing colour, the cause of which is explained. Mem. Accad. Torin. 1865; Bibl. Univ. 1866, Oct., Bull. Sc. pp. 198-200; Ann. & Mag. Nat. Hist. xix. pp. 145-146.

Amphibolurus pictus, sp. n., Peters, Monatsber. Ak. Wiss. Berl. 1866, p. 88, from South Australia.

Histiurus lesueurii (Gray) is described by Prof. Peters as *Amphibolurus heterurus*, l. c. p. 86.

Phrynosoma. Mr. Cope makes some remarks on *Ph. douglassii* (Bell) (= *Tapaya ornatissima*, Girard) and *Ph. brevirostre* (Girard), which may be identical. As a synonym of *Ph. regale* (Girard) is to be placed *Ph. solaris* (Gray); *Ph. blainvillii* (Gray) = *Ph. coronatum* (Girard). Proc. Ac. Nat. Sc. Philad. 1866, p. 302.

Chamaleo capellii, sp. n., Bocage, Journ. Sc. Math. Phys. e Nat. Lisb. 1866, no. 1, p. 69, from Benguela.

Brachydactylus (Ptrs.) is identical with *Coleonyx* (Gray) according to Cope, l. c. p. 125.

Hemidactylus platycephalus (Ptrs.) is described by Dr. Bocage from specimens from Angola, l. c. p. 60.

Correlophus, g. n. [fam. *Geckotidæ*], Guichenot, Mém. Soc. Sc. Nat. Cherbourg, xii. 1866, p. 248. Upperside of the head with a lateral fringed fold from the eye towards the shoulder. Five toes in front and behind, clawed, with a row of undivided plates beneath. Tail conical, long, terminating in a small discoid expansion of the skin. *C. ciliatus*, sp. n., Guichenot, l. c. pl. 12, from New Caledonia.

OPHIDIA.

TYPHLOPIDÆ.

Typhlops microstomus, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1866, p. 125, from Yucatan.—*Typhlops basimaculatus*, sp. n., Cope, l. c. p. 320, from Mexico.

Onychocephalus angolensis, sp. n., Bocage, Journ. Sc. Math. Phys. e Nat. Lisb. no. 1, 1866, p. 65.

CALAMARIDÆ.

Messrs. JAN & SORDELLI (*l. c.*) have figured the following species:—

Part 15, pl. 1: *Elapomorphus gabonicus* (A. Dum.), *Urobelus newwiedi* (Jan), *Polemon barthii* (Jan), *Uriechis atriceps* (Ptrs.), *Uriechis capensis* (Smith). Plate 2: *Homalocranium gracile* (Baird and Girard), *H. planiceps* (Blainv.), *H. wagneri* (Jan), *H. melanocephalum* (Schleg.), *H. semicinctum* (D. & B.), *H. atrocinctum* (Schleg.).

Calamaria arcticeps, sp. n., Günther, Ann. & Mag. Nat. Hist. 1866, xviii. p. 25, pl. vi. fig. C, from Borneo.

Calamelaps is a new genus founded by Dr. Günther on *Calamaria unicolor* (Rnhrdt.) in Ann. & Mag. Nat. Hist. xviii. p. 26; it is characterized thus:—Body cylindrical, rather slender; tail short in the female, of moderate length in the male. Two pairs of frontal shields; rostral rounded, moderate; nasal single, its anterior portion pierced by the nostrils; loreal and anteorbital absent, the posterior frontal forming a broad suture with the third labial; postorbital minute or absent; the fifth labial forming a long suture with the occipital; six upper labials. Eye very small. Scales smooth, without apical groove, in seventeen rows; anal bifid; subcaudals two-rowed. The posterior maxillary tooth elongate and grooved.

[*Homalocranium*] *Tantilla*. Prof. Cope enumerates the species of this genus, twelve in number. *l. c.* p. 126. — *Tantilla calamarina*, sp. n., Cope, *l. c.* p. 320, from Mexico.

Scolecophis scytalinus, sp. n., Cope, *l. c.* p. 320, from Mexico.

Contia isozona, sp. n., Cope, *l. c.* p. 304, from the Colorado.

Ficimia publia, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1866, p. 126, from Yucatan.

OLIGODONTIDÆ.

Simotes quadrilineatus (Jan) is redescribed by Jan in Nouv. Arch. Mus. d'Hist. Nat. 1866, ii. Bull. p. 7.

COLUBRIDÆ.

Messrs. JAN & SORDELLI (*l. c.*) have figured the following species:—

No. 15, plate 3: *Coronella coronata* (Schleg.), *C. regularis* (Fisch.). On plate 4: *Eirenis collaris* (Ménétr.) [= *Ablabes modestus*, Mart.]. On plate 5: *Eirenis rothii* (Jan) [= *A. modestus*]; *Ei. fasciatus* (Jan), *Ei. agassizii* (Jan), *Diadophis baliodeirus* (Schleg.), *D. purpurans* (D. & B.). On plate 6: *Diadophis punctatus* (L.).

No. 16, plate 1: *Enicognathus occipitalis* (Jan), *E. melanauchen* (Schleg.), *E. elegans* (Jan) [= *Rhasinea pœcilopogon*, Cope], *E. melanocephalus* (D. & B.). On plate 2: *E. amoenus* (Jan), *E. vittatus* (Rapp) [= *Coronella decorata*, Gthr. 1858], *E. tenuolatus* (Jan). On plate 3: *E. rhodogaster* (Schleg.), *E. grayi* (Jan) [= *Ablabes sagittarius*, Cant.], *E. braconnieri* (Jan), *E. ornatus* (Schleg.) [an = *Ablabes melanocephalus*, Gray?]. On plate 4: *E. humberti* (Jan), *E. geminatus* (Opper), *E. annulatus* (D. & B.), *E. punctatostriatus* (Jan). On plate 5: *Liophis cobella*. On plate 6: *L. reginæ*.

No. 17, plate 1: *Coronella coccinea* (Schleg.), *C. dolata* (Baird & Gir.), *C.*

eximia (Dekay). On plate 2: *C. rhombomaculata* (Holbr.), *C. evansii* (Kennicott). On plate 3: *C. girondica* (Daud.), *C. pulchella* [= *C. anomala*, Gthr. 1858]. On plate 4: *Lamprophis rufulus* (Licht.), *Homalocephalus heterurus* (Jan). On plate 5: *Liophis merremii*. On plate 6: *L. pæcilogyrus* (Neuwied).

No. 18, plate 1: *Liophis tenuigaster* (Wagl.). On plate 2: *Liophis reginae*, var. On plate 3: *L. tenuirus* (Tsch.), *L. wagleri* (Jan) [= *L. conirostris*, Gthr. 1858], *L. melanotus* (Shaw). On plate 4: *L. triscalis* (L.), *L. typhlus* (L.), *L. tricinctus* (Jan) [= *Pliocercus elapoides*, Cope, 1860 = *Elapochrus depei*, Ptrs. 1860]. On plate 5: *L. splendens* (Jan) [= *Pliocercus euryzonus*, Cope, 1860], *L. lateristriga* (Berthold); *Glaphiophis lateralis* (Jan) [= *Coronella fissidens*, Gthr. 1858], *Gl. pictus* (Jan) [= *Coronella bipunctata*, Gthr. 1858]. On plate 6: *Mesotes obtusus* (Jan) [= *Tachymenis hypoconia*, Cope], *M. chilensis* (Schleg.).

No. 19, plate 1: *Psammophylax multimaculatus* (Smith), *Ps. assimilis* (Jan), *Ps. cucullatus* (Geoffr.). On plate 2: *Dipsina multimaculata* (Smith), *Erythrolamprus æsculapii*. On plate 3: *Xenodon severus*. On plate 4: *X. rhabdocephalus*, *X. bertholdi* (Jan) [= *X. colubrinus*, Gthr.]. On plate 5: *X. rhabdocephalus*, var., *X. inornatus* (Boie). On plate 6: *Tomodon* (D. & B.).

Ablabes (Encognathus) flaviceps, sp. n., Günther, Ann. & Mag. Nat. Hist. xviii. p. 26, pl. vi. fig. B, from the East-Indian archipelago.

Encognathus ornatus, sp. n., Jan in Nouv. Arch. Mus. d'Hist. Nat. 1866, ii. Bull. p. 8, from Siam.

Rhegnops (g. n., near *Carphophis*), Cope, l. c. p. 128; *Rh. visoninus*, sp. n., from Honduras. Differs from *Carphophis* in having two distinct nasals. Two postoculars. Scales in 15 rows. Teeth equal.

Coniophanes. Mr. Cope says that this is a distinct genus from *Tachymenis*, and enumerates seven species. *Coronella bipunctata* proves to be from Belize, l. c. p. 128.

Conophis concolor, sp. n., Cope, l. c. p. 318, from Yucatan.

Coronella olivacea (Ptrs.) is described by Dr. Bocage from a West African specimen. Journ. Sc. Math. Phys. e Nat. Lisb. 1866, p. 66.

Rhagerrhis. *Coronella multimaculata* (Smith) proves to be a species of this genus. *Dipsina* (Jan) is synonymous with it. Günther, Ann. & Mag. Nat. Hist. xviii. p. 25.

Ophibolus pyromelanus, sp. n., Cope, l. c. p. 305, from the Colorado.

Coluber triaspis, sp. n., Cope, l. c. p. 128, from Belize.—*Coluber flavirufus*, sp. n., Cope, l. c. p. 319, from Yucatan.

Bascanion suboculare, sp. n., Cope, l. c. p. 319, from Guatemala.

Masticophis spinalis, sp. n., Peters, Monatsber. Ak. Wiss. Berl. 1866, p. 91, from Mexico?

[*Salvadora*] *Phimothyra hexalepis*, sp. n., Cope, l. c. p. 304, from Fort Whipple.

Zamenis brachyurus, sp. n., Günther, Ann. & Mag. Nat. Hist. xviii. p. 27, pl. 6. figs. A, A', from Poonah.

Zamenis bocourti, sp. n., Jan, Nouv. Arch. Mus. d'Hist. Nat. 1866, ii. Bull. p. 6, from Siam.

Herpetæthiops, g. n., Günther, Ann. & Mag. Nat. Hist. xviii. p. 27. Body and tail slender, scarcely compressed; trunk with about 150 ventral shields, which are keeled; head somewhat elongate, rounded in front, flat above;

eye of moderate size, with round pupil; nostril lateral, between shields. Plates of the head regular; loreal present; one anterior and two posterior oculars. Scales rather elongate, smooth, without apical groove, in fifteen rows; ventrals strongly bent up the sides; anal entire. The two posterior maxillary teeth are the longest, not grooved, separated from each other and from the preceding ones by a short interspace. *Herpetæthiops bellii*, sp. n., l. c. pl. 7. fig. B, from Sierra Leone.

Tropidonotus. Mr. Cope gives a synopsis of some scarcely known species or varieties of the group *Eutania* of North Americans. Proc. Ac. Nat. Sc. Philad. 1866, p. 306.

Macrophis ornatus is described by Dr. Bocage (l. c.) as a new genus and species of Colubrine Snake from Angola; the characters of the genus are not apparent; the snake appears to belong to the group *Natricidæ*. The head is figured, pl. 1. fig. 2.

HOMALOPSIDÆ.

Ferania sieboldii (Schleg.). A very large specimen is described by Dr. Günther, who adds that *Hypsirhina bocourti* (Jan) is probably not distinct. Ann. & Mag. Nat. Hist. xviii. p. 28.

Cantoria (Girard). Mr. Cope mentions that *Hydrodipsas* (Ptrs.) is the same genus. Proc. Ac. Nat. Sc. Philad. 1866, p. 312.

DENDROPHIDÆ.

Ahetulla nigromarginata, sp. n., Günther, Ann. & Mag. Nat. Hist. xviii. p. 28, from the Upper Amazons.

Philothamnus punctatus is described by Prof. Peters as a new species from Eastern Africa. Monatsber. Ak. Wiss. Berlin, 1866, p. 880. It was formerly regarded by him [and also by the Recorder] as *Ph. semivariatus* (Smith).

Philothamnus neglectus, sp. n., Peters, l. c. p. 800, from Eastern Africa.

Leptophis dorsalis, sp. n., Bocage, Journ. Sc. Math. Phys. e Nat. 1866, no. 1, p. 69, from Angola.

DIPSADIDÆ.

Crotaphopeltis punctata, sp. n., Peters, l. c. p. 93, from South Africa.

Tropidodipsas brevifacies, sp. n., Cope, l. c. p. 127, from Yucatan.

Himantodes tenuissimus, sp. n., Cope, l. c. p. 317, from Yucatan.

Mesopeltis, g. n., Cope, l. c. p. 318. Maxillary, palatine, and pterygoid bones elevated, lamiform, the first bearing slender teeth to opposite middle of orbit. Cephalic shields normal; posterior genials quite small, the first united into an ovoid shield which is in contact with the symphysial. No scale-pores.¹ Anal divided. Body compressed, head quite distinct, with large and vertical pupil. Scales smooth, without larger vertebral series.—*M. sanniolus*, sp. n., from Yucatan.

[*Parcas*] *Leptognathus margaritophorus*, sp. n., Jan in Nouv. Arch. Mus. d'Hist. Nat. 1866, ii. Bull. p. 8, from Siam.

LYCODONTIDÆ.

Lycophidium horstockii. A singular variety is described and figured by Dr. Günther in Ann. & Mag. Nat. Hist. xviii. p. 29.

BOIDÆ.

Aspidotes melanocephalus (Krefft). Some remarks on its dentition by Dr. Günther, Ann. & Mag. Nat. Hist. xviii. p. 29.

HYDROPHIDÆ.

Hydrophis. Dr. J. Shortt has described an example of double-headed monstrosity, which, being $12\frac{1}{2}$ inches long, must have lived for some time. Journ. Linn. Soc. ix. 1866, pp. 49-50, with a woodcut.

ELAPIDÆ.

Hoplocephalus. Mr. Krefft describes two new species in Proc. Zool. Soc. 1866, viz. *H. ater* and *H. mustersii* (p. 370), from Flinders Range, and a variety of *H. gouldii*, from Port Lincoln.

Elapsoides, g. n., Bocage, Journ. Sc. Math. Phys. e Nat. Lisb. 1866, no. 1. Anterior fangs grooved, with three or four small smooth teeth behind. Snout rounded; eyes of moderate size, tail rather short. Two nasals, no loreal; posterior frontals in contact with the third labial. Scales smooth, in 13 rows; anal simple; caudals partly simple. *E. güntherii*, sp. n., p. 70, pl. 1. fig. 3, from Angola.

Naja nigricollis. A variety from Angola is described by Dr. Bocage, *l. c.* p. 71.

Atractaspis microlepidota, sp. n., Günther, Ann. & Mag. Nat. Hist. xviii. p. 29, pl. vii. fig. C, from West (?) Africa.

Atractaspis corpulentus (Hallowell). A variety is noticed by Günther, *ibid.*

Atractaspis fallax, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 890, from Eastern Africa. Prof. Peters thinks that all the species of this genus may prove to be varieties of one [which view will hardly be adopted on comparing the typical specimens].

CROTALIDÆ.

Crotalus. Mr. Cope gives a synopsis of eighteen species or varieties of *Caudisona*, Proc. Ac. Nat. Sc. Philad. 1866, pp. 308-310, describing one as new, viz. *Caudisona pyrrrha*, and proposing the generic name *Aploaspis* for *Caudisona lepida* (Kennicott).

Prof. Giebel describes the skeletons of *Crotalus horridus* and *durissus*, and *Lachesis mutus*. Zeitschr. ges. Ntrwiss. 1866, pp. 172-180.

VIPERIDÆ.

Vipera aspis. Comte J. de Mac-Mahon relates that on the 25th of January 1864, 140, and some days afterwards 50 other specimens of the "Vipère aspie" were found in one lump below a stone in the middle of a spring the water of which never freezes. Mém. d'Hist. Nat. Soc. Eduenne, i. p. 248.

Hyalys himalayanus (Gthr.) extends to an altitude of 10,000 feet above the level of the sea in the North-western Himalayas. Stoliczka, Verh. zool.-bot. Ges. Wien, 1866, p. 868.

PSEUDOPHIDIA.

Siphonops syntremus, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1866, p. 129, from Honduras.

Coccolia ochrocephala, sp. n., Cope, *l. c.* p. 132, from Panama.

BATRACHIA.

BATRACHIA SALIENTIA.

Mr. C. E. HAMLIN has made a communication to the Boston Soc. of Nat. Hist., entitled "Remarks on some facts connected with the development of frogs observed at Waterville, Maine, U.S." From his observations he infers that at least a part of the young of one or more species of frogs are, in this vicinity, overtaken by winter before completing their changes, and that, having hybernated as tadpoles, they resume their development with the return of spring; and having found so late as October 17th Salamanders still retaining their gills, that the same is probably true of some species of *Urodela*. Proc. Bost. Soc. Nat. Hist. x. pp. 79-80.

Dactylethra. Some notes by J. P. Mansell Veale, in Ann. & Mag. Nat. Hist. xvii. pp. 391-392.

Rana. Dr. Bocage (Jorn. Sc. math. phys. e nat. Lisb. 1866, no. 1, p. 73) describes *R. angolensis* and *R. subpunctata* as new species from Angola. *Rana bragantina* (Bocage; see Zool. Record, ii. p. 159) proves to be identical with *R. occipitalis*.

[*Rana*]. *Ramula chrysoprasina*, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1866, p. 129, from Costa Rica.

Cystignathus ocellatus. M. Guyon mentions the disappearance of this frog in Martinique. Compt. Rend. 1866, lxiii. p. 589.

Bufo funereus, sp. n. ♀, Bocage, *l. c.* p. 77, from Angola.

Bufo cocifer, sp. n., Cope, *l. c.* p. 130, from Costa Rica.—*B. frontosus*, sp. n., and *B. microscephus*, sp. n., Cope, *l. c.* p. 301, from the Colorado.

Engystoma variolosum, sp. n., Cope, *l. c.* p. 131, from Costa Rica; *E. ustum*, sp. n., Cope, *ibid.*, from West Mexico.

Ruppia. Dr. Bocage (*l. c.*) describes from examples collected in Angola *Hyperolius marmoratus* (Rapp), p. 74; *H. microps* (Gthr.?), *H. cinnamomeoventris* (sp. n.), and *H. steindachneri* (sp. n.), p. 75; *H. fuscigula* (sp. n.) and *H. tristis* (sp. n.), p. 76; and *H. quinquevittatus* (sp. n.), p. 77.—*H. granulatus*, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 891, from Mossambique.

Phyllobates latinatus (Cope) is the type of a distinct genus, *Calostethus*, Cope, *l. c.* p. 130.

Phyllobates ridens, sp. n., Cope, *l. c.* p. 130, from Nicaragua.

Lythodytes rhodopis, sp. n., Cope, *l. c.* p. 323, from Mexico.

Pharyngodon. This name (see Zool. Record, ii. p. 160) is now changed into *Triprion* by Mr. Cope. Proc. Ac. Nat. Sc. Philad. 1866, p. 127.

Hyla curta, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1866, p. 313, from Cape St. Lucas.

BATRACHIA GRADIENTIA.

Prof. VAN DER HOEVEN has reviewed the attempts of various authors to classify the "Ichthyoid" Batrachians, giving a chronological account of the discoveries made in this group. He indicates the affinity of *Menobranthus* to *Proteus*, and would arrange the genera in the following series:—*Siren*, Am-
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phiiuma, *Proteus*, *Menobranchus*, *Cryptobranchus*, *Sirenodon*. On this occasion he mentions also some errors in the 'Erpétologie Générale par Duméril et Bibron' with regard to *Cryptobranchus* and *Siredon harlanii*. Arch. Néerland. Sc. Exact. et Nat. i. 1866, pp. 305-321 (translated in Ann. & Mag. Nat. Hist. xviii. pp. 363-375).

Amblystoma. The very important observations made in the Jardin des Plantes on the reproduction and metamorphosis of the Axolotl are now collected in a memoir by M. Duméril in Nouv. Arch. Mus. d'Hist. Nat. ii. 1866, pp. 265-292. We refer for an abstract of its contents to Zool. Record, ii. p. 161. A plate showing the various stages of the metamorphosis of the species in Paris (*A. lichenoides*, Baird?) accompanies this memoir.

Amblystoma nebulosum (Hallow.). Notes by Mr. Cope, *l. c.* p. 300.

Triton. M. J. M. Philipeaux has demonstrated by experiments that the limbs are only regenerated when their basal portion at least is preserved; if the fore limb with the scapula is excised, no reproduction takes place. Compt. Rend. 1866, Oct. 1, pp. 576-578; abstract in Ann. & Mag. Nat. Hist. xix. p. 72.

Triton (Ranodon) sibiricus, sp. n., Kessler, Bull. Soc. Nat. Mosc. 1866, xxxix. p. 126, tab. 7, from Western Siberia; described as the type of a new subgenus on account of the vomerine teeth, which are placed in two groups on two eminences of the bone.

Cryptobranchus. Prof. van der Hoeven has examined the bones of the carpus and tarsus, particularly with regard to the views of Gegenbaur on the typical composition of these bones. Arch. Néerland. Sc. Exact. et Nat. 1866, i. pp. 321-327.

Proteus anguineus feeds on *Scenaris* and *Lumbricus*. Grube, 43. Jahresber. Schles. Gesellsch. vaterl. Cultur für 1865: 1866, p. 63.

PISCES

BY

ALBERT GÜNTHER, M.A., MD., PH.D., F.R.S.

1866

A. *Works in progress.*

GÜNTHER, A. Catalogue of the Fishes in the British Museum. London, 8vo, vol. vi. 1866, pp. 368.

The scope and object of this work has been described in the Record for 1864, vol. i. p. 133. The present volume contains the families *Salmonidæ*, *Percopsidæ*, *Galaxidæ*, *Mormyridæ*, *Gymnarchidæ*, *Esocidæ*, *Umbridæ*, *Scombresocidæ*, and *Cyprinodontidæ*. The number of species treated of amounts to 548, whilst Cuvier and Valenciennes described 270 species in the corresponding parts of the 'Histoire Nat. des Poissons.' The author states that "during the progress of his detailed examination of the *Scombresoces* so many points of affinity with the Cyprinodontes became apparent, that he was reluctantly obliged to deviate from Müller's ordinal division and to give up his original intention of distinguishing the *Scombresoces* as a distinct order, viz. *Malacopterygii pharyngognathi*."

OWEN, R. Anatomy of Vertebrates. London, 1866, 8vo.

This work has been noticed above, p. 1.

B. *Separate Publications.*

The Fishes of Zanzibar. *Acanthopterygii* by R. L. PLAYFAIR; *Pharyngognathi*, etc. by A. C. L. G. GÜNTHER. London, 1866, 4to, pp. 153, with 21 plates.

This work comprises the fish-fauna of Eastern Africa, from the Red Sea to Mozambique. It is chiefly based on a collection made by Col. Playfair at Zanzibar and other places, and containing about 500 species. No descriptions are given of the more common and well-known species; but the principal synonyms are added to all. The specimens of the collection were compared and determined in accordance with those in the British Museum, where they are now deposited. A systematic index of all the East African fishes known is given at the commencement of the work. The authors have thought it advisable

that there should be only one authority for new species, and therefore each of them has attached his name to a moiety of the work, Dr. Günther taking that portion in the study of which he was more particularly engaged at the time. Science is indebted for this work to the Government of Bombay, who most liberally assisted its publication by taking 100 copies. Most of the plates are drawn by Mr. Ford, and some of them surpass all similar productions in beauty of execution.

Les Poissons des eaux douces de la France. Anatomie, Physiologie, Description des espèces, Mœurs, Instincts, Industrie, Commerce, Ressources alimentaires, Pisciculture, Législation concernant la pêche. Par EMILE BLANCHARD. Paris, 1866, 8vo, pp. 656, with 151 woodcuts.

We have copied the full title of this work as indicating at once its contents. There is no originality about the introductory chapters on the general history of fishes (pp. 124). The special part, the history of French fishes, has many serious defects, of which the principal consists in the excessive multiplication of species; the author distinguishes not less than 91 freshwater fishes, which may be more properly referred to about 54. The supposed new species taking scarcely the rank of permanent or local varieties, the descriptions of their characteristics are extremely vague. Although the author quotes some of the principal synonyms, he cannot have read or studied the works to which he refers, otherwise it would not have been possible, after Siebold's exact researches, to describe *Abramis buggenhagii*, *A. abramo-rutilus*, *Alburnus dolabratus*, &c., as distinct specific forms, without even mentioning that they are now commonly regarded as hybrids! The woodcuts by which the book is illustrated are very unequally executed; thus, for instance, the head of the Perch on p. 134 is good, whilst that of *Cyprinus collarii* on p. 332 is evidently made by some one who had a very crude idea of the construction of a fish's head. The new names occurring in this book will be subsequently mentioned without further comment.

BOCAGE, J. V. B. DU, e CAPELLO, F. DE B. Apontamentos para a ichthyologia de Portugal. Peixes Plagiostomos. 1ª parte Esqualos. Lisboa, 1866, 4to (pp. 40, with 3 plates).

The sharks of Portugal. This appears to be a separate publication; it is written in Portuguese and French. The paper mentioned in Zool. Record, i. pp. 141 and 186, is an abstract of it.

HARTING, P. Notices zoologiques, anatomiques et histiologiques, sur l'*Orthragoriscus ozodura*; suivies de considérations sur l'ostéogénèse des téléostiens en général. Publiées par l'Académie Roy. des Sciences à Amsterdam. Amsterdam, 4to, pp. 48, with 8 plates.

C. *Papers published in Journals.*

BLEEKER, P. Révision des espèces de *Mastacmbelus* (*Belone*, Cuv.) de l'Inde Archipélagique. Nederl. Tydschr. Dierk. iii. 1866, pp. 214-236.

— . Sur la pluralité des espèces Indo-archipélagiques du genre *Megalops* (Lacép.). Ibid. pp. 278-292.

— . Description de quelques espèces inédites ou peu connues de Clupéoides de l'Inde archipélagique. Ibid. pp. 293-308.

BOAKE, B. On the air-breathing fish of Ceylon. Journ. of the Ceylon Branch R. As. Soc. 1866, pp. 128-142.

BOCOÛRT, — . Notes sur les Poissons recueillis pendant un voyage dans le royaume de Siam. Nouv. Arch. Mus. d'Hist. Nat. 1866, ii. Bull. pp. 11-20, with a plate.

The author states that fishes of the families of *Labyrinthici* and *Ophiocephalidae* form an article of food in Siam. He describes and figures three Siluroids.

BRANDT, J. F. Bemerkungen über die Classification der kaltblütigen Rückenmark-Thiere, zur Beantwortung der Frage, "Was ist ein Fisch?" Mém. Ac. Sc. St. Pétersb. ix. no. 3, pp. 30. [See Zool. Record, ii. pp. 169 and 178.]

CANESTRINI, G. Prospetto critico dei Pesci d'acqua dolce d'Italia. Arch. per la Zool. Anat. ecc. iv. 1866, pp. 47-187, with a plate.

An abstract of this paper, containing the list of species with their synonymy, is given in Annuar. Soc. Natur. Modena, i. 1866, pp. 73-90, with the same plate.

CARTE, A. Notes on the genus *Chiasmodon*. Proc. Zool. Soc. 1866, pp. 35-39, with a plate.

COUCH, J. On the occurrence on the coast of Cornwall of an example of the fish called Cuvier's *Ausonia* or Luvuru. Proc. Zool. Soc. 1866, pp. 332-335, with a woodcut.

— . Some account of a newly discovered British fish of the family *Gadidae* and the genus *Couchia*. Journ. Linn. Soc. ix. 1866, pp. 38-41, with a woodcut.

DESMAREST, E. Observations sur les mœurs des Anguilles. Rev. et Mag. Zool. 1866, pp. 161-165.

DUMÉRIL, A. Observations sur des Lépidosiréniciens (*Protopterus annectens*, Rich. Owen) qui ont vécu à la Ménagerie des Reptiles au Muséum d'histoire naturelle et y ont formé leur cocon. Compt. Rend. 1866, Jan. 8, pp. 97-100.

GERVAIS, R. Nouvelles remarques sur les Poissons fluviatiles de l'Algérie. Compt. Rend. 1866, lxiii. pp. 1051-1058 (Ann. & Mag. Nat. Hist. 1866, xix. pp. 131-138).

GILPIN, J. B. On the Food-fishes of Nova Scotia. No. iii. Proc. & Trans. Nov. Scot. Inst. Nat. Sc. 1866, pp. 11-17, No. iv. pp. 76-91.

GROGNOT, —. Poissons du Département de Saone-et-Loire. Mém. d'Hist. Nat. Soc. Éduenne, i. pp. 205-232.

A paper of merely local interest.

GUICHENOT, —. Catalogue des poissons de Madagascar de la Collection du Musée de Paris avec la description de plusieurs espèces nouvelles. Mém. Soc. Sc. Nat. Cherbourg, xii. 1866, pp. 129-148.

JOHNSON, J. Y. Description of *Trachichthys darwinii*, a new species of Berycoid Fish from Madeira. Proc. Zool. Soc. 1866, May 22, pp. 311-315, with a plate.

JOUAN, H. Description de quelques poissons de l'île de Paulou-Condor. Mém. Soc. Sc. Nat. Cherbourg, xii. 1866, pp. 113-128.

KNER, R. Specielles Verzeichniss der während der Reise der kais. Fregatte 'Novara' gesammelten Fische. III. und Schluss-Abtheilung. Sitzgsber. Ak. Wiss. Wien, 1866, liii. pp. 543-550.

Prof. Kner gives here the concluding part of the list of species collected during the voyage of the 'Novara.' He enumerates 200 species, of which 3 genera and 8 species are new. This being a preliminary notice, we prefer to give a full account of this part of his work in the Record for next year, when the part containing detailed descriptions will be published.

LÜTKEN, C. Ichthyologische Notiser. Vidensk. Meddel. naturh. Foren. Kjöbenh. (1865) 1866, pp. 205-223.

PHILIPPI, R. A. Bemerkungen über die chilenischen Flussfische. Monatsber. Ak. Wiss. Berlin, 1866, pp. 708-717. [Remarks on Freshwater fishes from Chile.]

POEY, F. Memoria sobre la enfermedad ocasionada por los Peces venenosos. Repert. Fis.-nat. de la Isla de Cuba, ii. 1866, pp. 1-24.

— . Revista de los tipos Cuvierianos y Valenciennianos correspondientes á los Peces de la isla de Cuba. Ibid. pp. 265-278, 308-338, 369-383, 409-412.

This is a continuation, see Zool. Record, ii. p. 174.

REINHARDT, J. Om trende, formcentligt ubeskrevne Fisk af *Characinernes* eller *Karpelaxenes* Familie. Overs. Dansk. Vid. Selsk. Forhandl. 1866, pp. 49-68, with two plates.

SMITH, J. A. Description of *Calamoichthys* (*Erpetoichthys*), a new genus of Ganoid Fish from Old Calabar, Western Africa; with observations on the internal structure, by

R. H. TRAQUAIR. Proc. R. Soc. Edinb. v. 1866, pp. 654-659, or Ann. & Mag. Nat. Hist. xviii. pp. 112-114; and Trans. R. Soc. Edinb. xxiv. 1866, pp. 457-479, with two plates.

STEINDACHNER, F. Ichthyologischer Bericht über eine nach Spanien und Portugal unternommene Reise. Sitzgsber. Ak. Wiss. Wien, liii. 1866, pp. 198-205; liv. 1866, pp. 4-27, with six plates; pp. 261-272, with three plates.

——. Ichthyologische Notizen (iii.). Ueber einige neue Fisch-Arten aus Südamerica. Ibid. liii. 1866, pp. 208-214, with two plates. [On some new species of South American Fishes.]

——. Zur Fischfauna von Port Jackson in Australien. Ibid. liii. pp. 424-480, with seven plates.

——. Ichthyologische Mittheilungen (viii.). Verh. zool.-bot. Gcs. Wien, 1866, pp. 475-484, with two plates. (ix.) Ibid, pp. 761-796, with six plates.

TROSCHEL, H. Ein Beitrag zur ichthyologischen Fauna der Inseln des Grünen Vorgebirges. Wieg. Arch. 1866, pp. 190-235, with a plate. [Contribution to the Ichthyological fauna of the Cape de Verde Islands.]

TURNER, W. A remarkable mode of gestation in an undescribed species of *Arius* (*A. boakeii*). Journ. Anat. & Physiol. i. 1866, pp. 78-82.

D. *Anatomical and Physiological Publications.*

DUROSSÉ, —. De l'ichthyopsopose ou des différents phénomènes physiologiques nommés voix des Poissons. Compt. Rend. 1866, Avril 30, pp. 978-981.

DYCE, R. Notes on some peculiarities in the eye of the Mackrel. Ann. & Mag. Nat. Hist. 1866, xvii. pp. 307-309, with a plate.

FRIPP, H. On the function of sight in Fishes, and on certain structural peculiarities of the fish's eye. Proc. Bristol Nat. Soc. 1866, pp. 1-4.

GAMPERT, O. Ueber die Niere der Cyprinoiden. Zeitschr. wiss. Zool. xvi. 1866, p. 372. [On the kidney of Cyprinoids.]

GEGENBAUR, C. Zur vergleichenden Anatomie des Herzens. I. Ueber den Bulbus arteriosus der Fische. Jena. Zeitschr. f. Medic. und Ntrwiss. ii. pp. 365-375. [Contribution to the comparative anatomy of the heart. 1. On the Bulbus arteriosus of fishes.]

GOURIET, E. Du rôle de la vessie natatoire. Ann. Sc. Nat. vi. 1866, pp. 369-382.

- HOLLARD, H. Recherches sur la structure de l'encéphale des poissons et sur la signification homologique de ses différentes parties. Robin, Journ. Anat. et Physiol. 1866, iii. pp. 286-335, with four plates.
- . Développement de l'encéphale des Poissons. Nouvelles recherches. Compt. Rend. 1866, Mars 26, pp. 747-748.
- HYRTL, J. Ueber den Seitencanal von *Lota*. Sitzgsber. Ak. Wiss. Wien, 1866, liii. pp. 551-556, with a plate. [On the lateral canal of *Lota*.]
- KNER, R. Ueber das Vorkommen der Schwimmblase und die Anordnung der Sexual-Organen bei aal-ähnlichen Fischen. Sitzgsber. Ak. Wiss. Wien (Deabr. 14, 1865), lii. 1866, pp. 648-653. [On the occurrence of an air-bladder and the arrangement of the sexual organs in eel-like fishes].
- KOVALEVSKY — . Le développement de l'*Amphioxus lanceolatus*. Bibl. Univ. 1866, Oct., Bull. Se. pp. 193-195.
- MELNIKOW, N. Ueber die Verbreitungsweise der Gefäße in den Häuten des Darmkanals der *Lota vulgaris*. Reich. & Du Bois R. Archiv f. Anat. etc. 1866, pp. 587-591, with a plate. [On the distribution of vessels in the membranes of the intestinal tract of *L. v.*]
- MONOYER, F. Contribution à l'étude de l'équilibre et de la locomotion chez les Poissons. Compt. Rend. 1866, Avril 9, pp. 847-850. Or, Recherches expérimentales sur l'équilibre et la locomotion chez les poissons. Ann. Sc. Nat. vi. 1866, pp. 5-15.
- PLATEAU, F. Sur la vision des Poissons et des Amphibiens. Compt. Rend. 1866, Sept. 17, pp. 499-500. (Ann. & Mag. Nat. Hist. xviii. pp. 469-473.)
- RANSOM, W. H. Observations on the Ovum of Osseous Fishes. Proc. Roy. Soc. 1866, pp. 226-228 (abstract).
- TROIS, F., e PERUGIA, A. Sui linfatici del cuore del *Mola aspera* nota. Atti R. Ist. Ven. Se. Lett. ed Art. xii. 1866-67, pp. 5-8, with a plate.
- TROIS, F. Sull' intima struttura delle villosità uterine dell'*Acanthias vulgaris* sotto il punto di vista zootomico-fisiologico osservazioni. Ibid. pp. 171-176, with a plate.

GENERAL REMARKS AND FAUNÆ.

Prof. BRANDT'S "Remarks on the classification of the cold-blooded Vertebrates" were noticed in last year's 'Record,' p. 178, and have now appeared in Mém. Ac. Sc. St. Pétersb. ix. no. 3 (pp. 30).

Prof. POEY has collected various notices on fishes, the flesh of which is said to have produced more or less serious effects in those who partook of it,

and enumerates about seventy different species from nearly all families. *Repert. Fis.-nat. Cub. ii.* 1866, pp. 1-24.

Mr. HIGGINS has delivered an address upon *Otoliths*, in which he states that they are "the only portion of the skeleton which possessed a specific distinctive character," "that they had not only a distinctive specific character, but special generic characters also, and, further, that he believed that their microscopic structure would be found to be characteristic of groups," &c. *Proc. Bristol Nat. Soc.* 1866, pp. 69-70.

Pyrenean Peninsula. Dr. Steindachner has supplied a great desideratum in our knowledge of European fishes by collecting and examining the freshwater species of the Pyrenean Peninsula, which were less known than those of many extra-European countries. He has been rewarded by the discovery of many undescribed and highly interesting forms, which are well described and figured by him. The commencement of his report on this collecting-tour has been noticed in last year's 'Record' (ii. p. 175). It is continued in 'Sitzgsber. Ak. Wiss. Wien,' 1866, liii. p. 198, with "The Fishes of the Ebro and rivers near Bilboa," where 13 species are enumerated, among which *Salmo salar*, *S. fario*, *Alosa vulgaris*, *Acipenser sturio*. Four species were collected in the River Tet near Perpignan. From the Rivers Tajo, Duero, Miño, and Jucar twenty-two species are described (*ibid.* liv. 1866, pp. 6-27), among which *Tinca vulgaris*, *Salmo trutta* [?], *Cobitis tania*, *Gasterosteus aculeatus*, var. *brachycentrus*; and, finally, nineteen from the southern parts of the Peninsula (*ibid.* pp. 261-272).

Italy. It is universally acknowledged that Bonaparte's bulky work on the Fauna Italica does not contain a satisfactory account of the freshwater fishes of this country; not only is it incomplete, but the distinction of species is carried to an extent perfectly bewildering, and not warranted by the researches of the author, who was limited chiefly to museum specimens, sometimes stuffed and in a very indifferent state of preservation. Therefore a critical examination of these fishes by an Italian zoologist was very desirable, and has been made in a truly scientific manner by Prof. CANESTRINI, who published the results of his researches in 'Arch. per la Zool. Anat. ecc.' iv. 1866, pp. 47-187. He gives a critical review of the synonymy, and a full description of each species, paying particular attention to the variations of form, &c. Unlike M. Blanchard, he reduces the number of species to 60, 17 of which are peculiar to Italy, whilst 30 of them occur in Central Europe, and 24 in Great Britain. However, we must mention that the author has omitted several specific names occurring in the works of Bonaparte and Valenciennes. He makes the very true observation that the representatives of Central European species in Italy are generally smaller and less developed.

France. Prof. Blanchard's book on French Fishes has been noticed above, p. 132.

France—Départ. de Saône-et-Loire. M. Grognot has given a short account of the Fishes of this Département in 'Mém. d'Hist. Nat. Soc. Éduenne,' i. pp. 205-232. The paper does not contain anything of general interest.

North Uist, Outer Hebrides. Dr. W. C. McIntosh has given a list of 33 species of fishes observed by him in this island. *Proc. Roy. Soc. Edinb. v.* 1865-66, p. 614.

Denmark. Dr. Lütken adds to the Danish fauna 4 species, viz. *Cottus gobio*, *Cantharus lineatus*, *Liparis ekströmi* (Malm), and *Syngnathus rostell-*

latus (Nilss.). The total number of Danish Fishes is 143. Vid. Med. ntrh. Foren. Kjöbenh. (1865) 1866, pp. 218-223.

Russia. G. Belke enumerates 32 species of fishes inhabiting the fresh waters of the district of Radomysl, in the Gouvernement of Kief. Bull. Soc. Nat. Mosc. 1866, xxxix. p. 496.

Cape de Verde Islands. Prof. Troschel has examined a collection of fishes from these islands, containing 42 species. Five of them are found in most of the tropical or subtropical seas; eight belong to northern, as many to western, and three to southern types, the remaining eighteen being local species peculiar to this region. The author regards seven as new, and has appended notes to nearly all, so that we shall have occasion of referring to them subsequently. Wieg. Arch. 1866, pp. 190-235.

Algeria. M. P. Gervais has written on the freshwater fishes of Algeria (Compt. Rend. 1866, Dec. 17, pp. 1051-1058, translated in Ann. & Mag. Nat. Hist. xix. pp. 131-138), discussing points which have been settled by previous writers, and not adding much to our knowledge of this fauna. A collection received by him contained a *Gobius* and a *Gasterosteus*, two genera previously not known from that country. Having examined specimens in the Paris Museum, apparently representing the *Sparus desfontainii* (Lacép.), he regards them as a species of *Glyphidodon*. He opposes the view that the *Chromides* of the pools of the Sahara are the remainder of the fauna of an ocean which once covered this desert. In this we entirely agree with the author, the *Chromides* being freshwater and not marine fishes.

Madagascar. M. Guichenot has compiled a list of 86 species contained in the Paris Museum, and described by Cuvier, Valenciennes, and Kaup, adding seven others which he regards as undescribed. They are all marine species, with the exception of an *Ambassis*, two *Therapon*, and one *Pocillia*. Mém. Soc. Sc. Nat. Cherbourg, xii. 1866, pp. 129-148.

Nepal. Mr. Jerdon expresses his belief that none of the seven marine fishes sent by Mr. Hodgson from Nepal to the British Museum, and introduced by Dr. Günther into the Catalogue of Nepalese Fishes, extend so far into fresh water. Ann. & Mag. Nat. Hist. xvii. p. 153.

Cochin-China—Island of Paulo-Condor. M. J. Jouan enumerates 23 species of marine fish obtained from this island. Some of the more common species are named by M. Duméril, the remainder being designated by the generic name only. Mém. Soc. Sc. Nat. Cherbourg, xii. 1866, pp. 113-128.

Nova Scotia. Dr. Gilpin has continued his examination and highly interesting descriptions of the food-fishes of Nova Scotia, Proc. & Trans. Nov. Scot. Inst. Nat. Sc. 1866, pp. 11-17, 76-91. These articles treat of the Mackerel and the Salmonidæ.

Cuba. Prof. Poey (Repert. Fis.-nat. Cub. i. 1866) has continued his critical examination of the Cuban species described by Cuvier and Valenciennes. He adds many valuable descriptive details and remarks on the synonymy generally. On the whole he agrees with the Recorder that those French ichthyologists have unduly increased the number of species. He differs from him in several points, which may be easily accounted for by the difference in the materials examined; for whilst Prof. Poey has, of course, unsurpassed opportunities for examining the Cuban species proper, the Recorder has frequently series of examples from numerous and distant localities.

Vancouver Island and British Columbia. Mr. Lord, in the work mentioned

above, p. 6 (vol. ii. pp. 351-356), mentions some 50 species of Fishes observed by him in Vancouver Island and British Columbia. However, this list requires some revision, inasmuch as several species must have been introduced into it from recollection only or from other sources, no specimens having been collected of them,—for instance, *Salmo paucidens*, four species of *Gasterosteus*. Further, all the species of *Ditrematidæ* are received into the list—for instance, those from California and even from Japan. The body of the work contains many details on the habits and capture of Salmonoid Fishes, Herring, Sturgeon, *Ditrema*, &c.

Chili. Dr. Philippi's remarks on Chilian freshwater fishes are published in Monatsber. Ak. Berl. 1866, pp. 708-717. The species described as new will be mentioned subsequently.

Port Jackson. The Vienna Collection received two collections of fishes from Port Jackson, which are described by Dr. Steindachner in Sitzgsber. Ak. Wiss. Wien, 1866, liii. pp. 424-480, with 7 plates. The specimens are referred to 71 species, 21 of which are described as new. However, as far as we have examined these supposed new species, seven have already proved to be previously described.

DIPNOI.

Prof. PETERS opposes the opinion of those who unite *Lepidosiren* and *Protopterus* with the Ganoids, from which they essentially differ (beside the structure of the auricle of the heart and the valves of the aorta) [by the absence of a muscular coat in the base of the aorta, and] by the form of the laminar branchiæ, united to each other as far as the middle, and destitute of cartilaginous supports. As regards the external branchiæ of *Protopterus* (considered by Dr. Steindachner to be of importance only during the earliest periods of life) Prof. Peters shows that these organs increase in size even after the animals have attained a reproductive age (at less than $\frac{1}{3}$ metre in length), and that, if they are found quite aborted in very old individuals, this is an individual occurrence. He again directs attention to the composite structure of the paired fins of *Rhinocryptis* (*Protopterus*) as an essential generic difference. Monatsber. Akad. Wiss. Berl. 1866, January, pp. 12-13 (or Ann. & Mag. Nat. Hist. 1866, xvii. p. 473).

Subsequently the author convinced himself of the presence of muscular fibres in the bulbus aortæ. Ibid. p. 509.

Lepidosiren annectens. Prof. Duméril has observed the formation of the cocoon by two specimens living in the menagerie at the Jardin des Plantes. Compt. Rend. 1866, January 8, p. 97 (Ann. & Mag. Nat. Hist. xvii. p. 160).

Lepidosiren paradoxa. On its great scarcity and difficulty of obtaining specimens, see Sclater & Bates, Proc. Zool. Soc. 1866, p. 34.

ACANTHOPTERYGII.

PERCIDÆ.

Perca fluviatilis. Dr. W. H. Ransom has found the micropyle of the ova of the Perch. It is regularly placed facing towards the cavity of the tube formed by the network in which the ova are arranged. Ann. & Mag. Nat. Hist. xvii. p. 79.

Labrax schœnleinii (Pters.) is most probably identical with *L. lineatus*. Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 512.

Lates colonorum (Gthr.) has been described by Dr. Steindachner as *Dules novem-aculeatus*, Sitzgsber. Ak. Wiss. Wien, 1866, liii. p. 428, taf. 2. fig. 1.
 ↘ *Percilia gracilis*, sp. n., Philippi, Monatsber. Ak. Wiss. Berl. 1866, p. 710, from Chile.

↙ [*Centropristis*] *Serranus luciopercanus* (Poey) is described by Steindachner, Verh. zool.-bot. Ges. Wien, 1866, p. 777, taf. 16. f. 1.

Serranus. Col. Playfair (Fish. Zanz.) figures *S. erythraeus* (C. & V.), pl. 1. f. 1; *S. sonneratii* (C. & V.), pl. 3. f. 1; *S. dispar*, sp. n., pl. 1. f. 2 & 3; *S. summana* (Forsk.), pl. 2. f. 1; *S. tumilabris* (C. & V.), pl. 2. f. 2; *S. hoevenii* (Blkr.), pl. 2. f. 3; *S. striolatus*, sp. n., pl. 3. f. 2.

Serranus lanceolatus is not the young of *S. suillus*. Playfair, l. c. p. 4.

↙ *Serranus*. Dr. Steindachner (Verh. zool.-bot. Ges. Wien, 1866) describes *S. humulatus* (Bl. Schn.), p. 775, taf. 14. fig. 1, and *S. guativerere* (Bl. Schn.) [= *ouatalibi*], p. 776.

✓ *Serranus taniops* and *S. goreensis* are described by Troschel from specimens from the Cape de Verde Islands. Wieg. Arch. 1866, pp. 195 & 196.

Serranus undulato-striatus, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 518, from Sydney.

Plectropoma. On the Cuban species described by Cuv. and Val. see Poey, Repert. Fis.-nat. Cub. i. pp. 265-266.

Plectropoma cyanostigma (Gthr.) has been described by Dr. Steindachner as *Pl. myriaster*, Sitzgsber. Ak. Wiss. Wien, 1866, liii. p. 426, taf. 1. fig. 3.

↙ *Plectropoma multiguttatum*, sp. n., Günther, Proc. Zool. Soc. 1866, p. 600, from Panama.

Mesoprion. On the Cuban species described by Cuv. & Val. see Poey, l. c. pp. 266-270.

↙ *Mesoprion griscus* is described by Troschel from Cape de Verde specimens. Wieg. Arch. 1866, p. 197.

↘ *Pentaceros lnerii*, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, liii. 1866, p. 208, taf. 1. figs. 1, 2, Cape Horn.

Priacanthus. On the Cuban species described by Cuv. & Val. see Poey, l. c. pp. 272-274.

↙ *Priacanthus macrophthalmus* is described by Troschel from Cape de Verde specimens, l. c. p. 198.

Apogon nigripes, sp. n., Playfair in Fish. Zanz. p. 19, pl. 5. fig. 1, Zanzibar.

Ambassis productus, sp. n., Guichenot, Mém. Soc. Sc. Nat. Cherbourg, 1866, p. 130, from Madagascar.

Labracoglossa, g. n., Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 513. Body elongate-elliptical, with ctenoid scales of moderate size; snout short, cleft of the mouth small, ascending; villiform teeth in the jaws, vomer, palatines, and on the tongue; opercle with a spine, præoperculum scarcely serrated; B. 7; pseudobranchiæ; ventral fins thoracic; one long dorsal fin with 11 slender spines and numerous rays; anal with 3 spines and numerous rays; soft vertical fins scaly. ↘ *L. argenteiventris*, sp. n., from Yokuhama.

D. $\frac{11}{26}$. A. $\frac{3}{23}$. L. lat. 66.—This fish is referred by the author to the *Grystina*; judging from the description, we are inclined to regard it as the type of a distinct group in or near the family of *Scombridae*.

PRISTIPOMATIDÆ.

Therapon. M. Guichenot describes two species from Madagascar as new,

Mém. Soc. Sc. Nat. Cherbourg, 1866; he names them *Datnia obtusirostris*, p. 132, and *Datnia elongata*, p. 133.

Pristipoma. Col. Playfair describes two new East African species in Fish. Zanz.: *P. multimaculatum*, p. 23, pl. 3. f. 3, and *P. operculare*, p. 24, pl. 4. f. 1.

Pristipoma bennettii. Notes by Troschel, in Wieg. Arch. 1866, p. 200.

Hapalogenys meyenii, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 96, from Manilla.

Diagramma. Troschel adopts the genus *Genyatremus* of Gill, and describes as new species from the Cape de Verde Islands *G. latifrons*, l. c. p. 202 [appears to be identical with *Diagramma citrinellum*, Gthr.], and *G. angustifrons*, l. c. p. 203.—Prof. Peters describes (Monatsber. Akad. Wiss. Berl. 1866) as new species *D. picoides* (p. 94), from the East Indies, and *D. microlepidotum* (p. 95), from China. He states also that the specimens of *Diagramma cavifrons* (C. & V.) in the Berlin Museum belong to this genus, and not to *Pristipoma*.

Diagramma griseum (C. & V.) figured in Fish. Zanz. pl. 4. f. 3.—*Diagramma pertusum* (Thunb.) figured, ibid. f. 2.

Hæmulon. On the Cuban species described by Cuv. & Val. see Poey, l. c. pp. 309–311.

Dentex multideus (C. & V.) is described by Prof. Troschel from Cape de Verde specimens. Wieg. Arch. 1866, p. 213.

Heterognathodon flaviventris, sp. n., Steindachner, Verh. zool.-bot. Ges. Wien, 1866, p. 778, taf. 13. fig. 6, from Zanzibar.

Scolopsis nototænia, sp. n., Playfair in Fish. Zanz. pl. 5. f. 2.

SQUAMIPINNES.

Chatodon. Col. Playfair describes the following new East African species in Fish. Zanz.:—*Ch. zanzibarensis*, p. 33, pl. 6. f. 1, *Ch. melanopoma*, p. 35, pl. 6. f. 2, and *Ch. leucopleura*, p. 35, pl. 6. f. 3.

Holacanthus multispinis, sp. n., Playfair, l. c. p. 37, pl. 6. f. 4, from Zanzibar.

Pomacanthus aureus (C. & V.) is distinct from *P. paru* according to Poey, l. c. p. 410.

Scorpis. A new species from Port Jackson has been described by Dr. Steindachner as *Schuettea* (g. n.) *scalaripinnis*, Sitzgsber. Ak. Wiss. Wien, 1866, liii. March 8, p. 449, taf. 6. fig. 1.—The same species is described by Prof. Peters as *Scorpis boops*, Monatsber. Ak. Wiss. Berlin, 1866, July 23, p. 519. D. $\frac{5}{29-31}$. A. $\frac{3}{29-31}$. L. lat. 55.—*Scorpis richardsonii*, described by Dr. Steindachner as a new species, l. c. p. 437, taf. 5. fig. 1, is evidently not specifically different from *Sc. equipinnis* (Rich.).

Atypichthys strigatus is figured by Steindachner, l. c. p. 435, taf. 4. fig. 2. He thinks that this genus ought to be referred to the closest vicinity of *Chatodon*.

NANDIDÆ.

Catopra. Mr. Jerdon states that this is the same genus named by him *Pristolepis*, and that the "species lately described by Dr. Günther from the Malabar Coast" is identical with his *Pristolepis marginatus* (Ann. & Mag. Nat. Hist. 1865, xvi. p. 298). He appeals to the authority of Mr. Day, who intended to give it as his opinion that *Pristolepis* must be re-

ferred to *Catopra* (ibid. 1866, xvii. p. 153). [However, on referring to Day's 'Fishes of Malabar' (p. 130), we find that this latter gentleman simply repeats Mr. Jerdon's description of *Pristolepis*, without expressing an opinion as to its identity with *Catopra*. Dr. Bleeker, on being consulted by Mr. Day about *Catopra malabarica*, gave it as his opinion that it rather belonged to *Nandus* than to *Catopra*, but that eventually it might prove to be the type of a distinct genus. Accordingly Mr. Day describes and figures it (rather indifferently) as *Nandus malabaricus*, proposing for it the generic name *Paranandus*. He says he is confirmed in this view by the skeleton, as if he ever had seen a skeleton of *Catopra*!

The case is singularly instructive as regards the way in which the history of a simple form of fish, the affinities of which cannot leave one in doubt for a moment, may be confused from insufficient original description, and from want of experience generally. It is to the Recorder quite inexplicable how even Bleeker could add to the confusion by referring it to *Nandus*. The essential character of *Catopra* is the singular dentition of the bottom and roof of the cavity of the mouth; to separate *C. malabarica* as a distinct genus on account of the entire præoperculum is a proceeding quite consistent with Dr. Bleeker's systematic attempts generally, but which will not be adopted by the majority of ichthyologists.]

MULLIDÆ.

On the Cuban species described by Cuv. & Val. see Poey, Repert. Fis.-nat. i. p. 277.

√ *Upeneus prayensis*. Notes by Prof. Troschel, Wieg. Arch. 1866, p. 216.

Mullus dispilurus, sp. n., and *Mullus pleurotenia*, sp. n., Playfair in Fish. Zanz. p. 41, pl. 5. figs. 3 & 4.

SPARIDÆ.

√ *Box goreensis* (C. & V.). Prof. Troschel considers this to be distinct from *B. salpa*. Wieg. Arch. 1866, p. 215.

√ *Girella stübeli*, sp. n., Troschel, l. c. p. 217, from the Cape de Verde Islands; perhaps identical with *S. zonata* (Gthr.).

Tephræops zebra (Richards.). Two specimens from Port Jackson are determined and described by Dr. Steindachner as *Girella zebra*. Sitzgsber. Ak. Wiss. Wien, liii. 1866, p. 430, taf. 6. fig. 2.

Tripteronodon, g. n., Playfair in Fish. Zanz. p. 42. Pectoral short, anal spines three. Large moveable tricuspid teeth in several series in both jaws, none on the vomer and palatines. *T. orbis*, sp. n., pl. 7. f. 1, from Zanzibar.

√ *Charax puntazzo*. Notes by Troschel, in Wieg. Arch. 1866, p. 209.

Lethrinus. Dr. Steindachner has described in Verh. zool.-bot. Ges. Wien, 1866, *L. genivittatus* (C. & V.), p. 478; and *L. striatus* as a questionably new species from Zanzibar, p. 479, taf. 5. fig. 3.

Lethrinus longirostris, sp. n., Playfair in Fish. Zanz. p. 44, pl. 7. f. 2.

√ *Pagellus goreensis* (C. & V.). Prof. Troschel thinks that this is a distinct species from *P. mormyrus*. Wieg. Arch. 1866, p. 211.

Chrysophrys. Prof. Poey regards *Pagellus calamus* and *penna* as distinct species, *l. c.* p. 314.

Pimelopterus boscii (Lac.) is described by Poey, *l. c.* p. 318.

SCORPÆNIDÆ.

✓ *Scorpena lævis*, sp. n., Troschel, Wieg. Arch. 1866, p. 206, from the Cape de Verde Islands.—*Scorpena longicornis*, sp. n., and *Scorpena zanzibarensis*, sp. n., Playfair in Fish. Zanz. p. 47, pl. 8. figs. 1 & 2.

Scorpena bynoënsis (Rich.) has been described as *Scorpena jacksoniensis* by Steindachner, Sitzgsber. Ak. Wiss. Wien, liii. 1866, p. 438, taf. 3. fig. 2.

Centropogon robustus has been described by Dr. Steindachner as *C. troscheli*, *l. c.* p. 440, taf. 4. fig. 1.

✓ *Dactylopterus volitans*. Notes by Troschel, in Wieg. Arch. 1866, p. 205.

TEUTHIDIDÆ.

Teuthis rostrata (C. & V.) is figured in Fish. Zanz. pl. 10. f. 2; *T. nebulosa* (Q. & G.), *ibid.* fig. 3.

BERYCIDÆ.

✓ *Trachichthys darwini*, sp. n., Johnson, Proc. Zool. Soc. 1866, pp. 311–315, pl. 32, from Madeira.

✓ *Myripristis viridensis*, sp. n., Troschel in Wieg. Arch. 1866, p. 199, from the Cape de Verde Islands.

✓ *Holocentrum hastatum*. Notes by Troschel, *l. c.* p. 200.

Holocentrum melanospilos (Blkr.) proves to be identical with *H. rubrum* (Forsk.). Playfair in Fish. Zanz. p. 52.

SCIÆNIDÆ.

✓ *Corvina chrysoleuca*, sp. n., and *C. vermicularis*, sp. n., described by Günther, Proc. Zool. Soc. 1866, p. 600 & 601, from Panama.

Sciæna (Corvina) nasus, sp. n.?, an *C. belangeri*?, Steindachner, Verh. zool.-bot. Ges. Wien, 1866, p. 771, taf. 15. fig. 1, from Calcutta.

Sciæna (Corvina) novæ hollandiæ, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, 1866, liii. p. 445, taf. 5. fig. 2, from Port Jackson.—D. 10 $\frac{1}{25}$. A. 2/7. L. lat. 50.

Collichthys lucida. The Recorder has unfortunately committed a serious error in the description of this species (Fishes ii. p. 312). The species was, as it is well known, fully described and figured in the 'Ichthyology of the Voy. of the Sulphur' by Sir J. Richardson, who, on examining the examples of Chinese fishes in the British Museum for his 'Report on the Ichthyology of the seas of China and Japan,' referred a specimen collected by Mr. Reeves to the same species. This specimen being larger and in finer condition than any of the types, was chosen by the Recorder for the description of the specific characters; but on re-examination it proves to be a young *Collichthys baurita*. Our largest examples of *C. lucida* (8 inches) and this young *C. baurita* (10 inches) are very similar in form, the skinny scapular lobe of the latter being as much developed as in *C.*

lucida, but less so than in adult *C. biaurita*. Both species may be easily distinguished by the number of dorsal and anal rays. Thus the zoological characters given in the 'Catal. of Fish.' of *C. lucida* are those of a young *C. biaurita*, whilst all the remarks on the anatomy were made from a true *C. lucida*. From the list of examples specimen *a.* ought to be erased. This mistake was first discovered by Bleeker, who thought this a sufficient reason for rejecting a good name (*Collichthys*) and substituting for it a bad one (*Hemisciæna*). In this he was not justified, inasmuch as the genus *Collichthys* was and is intended for *C. lucida*, including *C. biaurita*—two congeners, specimens of which were confounded in the specific account of one of the species. Besides, Blyth, not having seen that volume of the 'Catalogue of Fishes' (1860), had proposed the name *Sciænoïdes* for the same genus in 1861, two years before Bleeker. Dr. Steindachner has received also a specimen which he determined (evidently misled by the Recorder's account) as *Collichthys lucida*, Verh. zool.-bot. Ges. Wien, 1866, p. 475. This appears to be also *C. biaurita*. His statement that the pseudo-branchiæ are present in this genus is quite correct.

✓ *Ancylodon altipinnis*, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, liii. 1866, p. 209, from the western coast of South America.—D. 10 | $\frac{1}{25}$. A. $\frac{2}{17}$.

✓ *Otolithus squamipinnis*, sp. n., Günther, Proc. Zool. Soc. 1866, p. 601, from Panama.

✓ *Pseudotolithus bleekeri*, sp. n., Steindachner, Verh. zool.-bot. Ges. Wien, 1866, p. 773, taf. 14. fig. 4, from Hong-Kong.

XIPHIIDÆ.

Histiophorus brevirostris, sp. n., Playfair in Fish. Zanz. pp. 53 & 145.

ACRONURIDÆ.

✓ *Acanthurus phlebotomus*. Prof. Troschel thinks that this is distinct from *A. chirurgus*. Wieg. Arch. 1866, p. 227.

Acanthurus xanthurus (Blyth) is figured in Fish. Zanz. pl. 8. f. 4.

CARANGIDÆ.

Caranx. On the Cuban species described by Cuv. & Val. see Poey, *l. c.* pp. 326–329.

✓ *Caranx punctatus*. Notes by Prof. Troschel in Wieg. Arch. 1866, p. 224.

✓ *Caranx caninus*, sp. n., Günther, Proc. Zool. Soc. 1866, p. 601, from Panama.—*Caranx vomerinus*, sp. n., Playfair in Fish. Zanz. p. 59, pl. 10. f. 1.

Trachynotus. On the Cuban species described by Cuv. & Val. see Poey, *l. c.* p. 325.

Psettus orbicularis, sp. n., Guichenot, Mém. Soc. Sc. Nat. Cherbourg, 1866, p. 136, from Madagascar.

✓ *Zanclus canescens* (Artemi) has been raised to the rank of a distinct genus under the name of *Gnathocentrum centrognathum* by M. Guichenot, Ann. Soc. Linn. Maine-et-Loire, ix. Ichthyol. p. 4.

Pseonus fuscus, sp. n., Guichenot, Mém. Soc. Sc. nat. Cherbourg, 1866, p. 138, Madagascar.

↓ *Naucrates*. Dr. Lütken has arrived at the same conclusion with regard to *Nauclerus* as Mr. Gill, viz. that it is merely the young state of *Naucrates*. He also thinks that there is but one species. Vid. Medd. ntrh. Foren. Kjöbenh. (1865) 1866, pp. 205-208. Dr. Günther, on reconsideration, has removed this genus from the *Scombridae* to the *Carangidae*. Fish. Zanz. p. 63.

CORYPHÆNIDÆ.

Coryphæna. On the Cuban species described by Cuv. & Val. see Poey, *l. c.* pp. 331-332.

↓ *Ausonia cuvieri*. Mr. Couch reports on the occurrence of this rare fish on the coast of Cornwall, as having been found for the first time on the British coast. He describes the specimen in Proc. Zool. Soc. 1866, pp. 332-335. It need scarcely be mentioned that the, in the opinion of the author, important differences between this and a Madeiran specimen do not point to a difference of species.—Dr. Günther has appended notes on the skeleton, *ibid.* pp. 336-338, and figured it*.

Singularly enough, a second example was captured near Falmouth on September 30. Bullmore & Couch, Ann. & Mag. Nat. Hist. 1866, xviii. pp. 424 & 425; the Cornish Zoologist, 1866, pp. 501-504.

[The Recorder has seen a sketch of this example, which evidently was the male fish, having the anterior dorsal ray prolonged. He has learned that a gentleman without ichthyological experience has described it as a distinct species in a weekly newspaper!]

Stromateus. M. Guichenot describes as a new species from Cayenne

↓ *Rhombus orbicularis*, Mém. Soc. Sc. nat. Cherbourg, 1866, pp. 243-247. This would be a very extraordinary species, if the number of fin-rays (D. $\frac{4}{20}$. A. $\frac{3}{39}$) be correctly stated.

SCOMBRIDÆ.

↓ *Scomber pneumatophorus* (P.). Dr. Gilpin gives a detailed account of the characters and history of the Nova Scotia Mackerel. Proc. & Trans. Nov. Scot. Inst. Nat. Sc. 1866, pp. 11-17.

Scomber scomber. Dr. R. Dyce, in describing the eyeball of the Mackerel, directs attention to a slit in the cartilaginous substance of the sclerotica, dividing it into two equal portions. There is a notch in one of the edges of the slit for the reception of the optic nerve. Ann. & Mag. Nat. Hist. xvii. pp. 307-309, with a plate.

Thynnus. On the Cuban species described by Cuv. & Val. see Poey, Repert. fis.-nat. Cuba, i. pp. 320-322.

Cybium. On the Cuban species described by Cuv. & Val. see Poey, *l. c.* p. 322.

Echeneis. Dr. Steenstrup agrees with the view of those zoologists who regard the suction disk as a modified spinous dorsal fin. Vid. Medd. ntrh. Foren. Kjöbenh. (1865) 1866, p. 238.

[*Labracoglossa*, g. n., Peters. See p. 140.]

* The author regrets to state that the woodcut is far from being good, particularly as regards the cranial bones; it was published before he had an opportunity of revising the drawing on the block.

TRACHINIDÆ.

Percis xanthozona (Blkr.) is figured in Fish. Zanz. pl. 8. fig. 3.

Latilus chrysops (C. & V.) is described by Poey, Repert. fis.-nat. i. p. 311.

✓ *Opisthognathus megastoma* (Gthr.) = *O. macrogathus* (Poey). Poey, Rep. fis.-nat. Cub. i. p. 334.

Opisthognathus macrolepis, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 520, from Bangkok.

BATRACHIDÆ.

Batrachus marmoratus is described as a new species by Dr. Steindachner, Verh. zool.-bot. Ges. Wien, 1866, p. 482, taf. 6. fig. 3.—Hab. —?

Batrachus uranoscopus, sp. n., Guichenot, Mém. Soc. Sc. nat. Cherbourg, 1866, p. 140, Madagascar. [This fish, if correctly described, is evidently not a *Batrachus*.]

PEDICULATI.

Antennarius pinniceps. Dr. Steindachner describes a variety from Port Jackson, Sitzgsber. Ak. Wiss. Wien, 1866, liii. p. 457,

✓ *Malthe*. Dr. Lütken, from an examination of specimens in the Copenhagen Museum, has arrived at a conclusion differing from that of the Recorder, viz. that *M. notata* (C. & V.) = *M. truncata* (C. & V.) is a distinct species, and that probably *M. longirostris* (C. & V.) is also distinct from *M. vespertilio*. Vid. Medd. ntrh. Foren. Kjöbenh. (1865) 1866, pp. 208-213.

COTTIDÆ.

Platycephalus angustus, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, liii. 1866, p. 213, taf. 1. fig. 4, from Surinam [P?].

✓ *Trigla polyommatus* (Richards.) has been raised to the rank of a distinct genus, *Hoplonotus*, by M. Guichenot, Ann. Soc. Linn. Maine-et-Loire, ix. Ichthyolog.

Agonus proboscidealis (Valenc. in Compt. Rend. xlvii. 1858, p. 1040) is the type of a distinct genus, *Agonomalus*, according to M. Guichenot, Mém. Soc. Sc. nat. Cherbourg, 1866, pp. 252-256; it is figured on pl. 9.

GOBIIDÆ.

Gobius. On the Cuban species described by Cuv. & Val. see Poey, Rep. fis.-nat. Cub. i. pp. 334-335.

✓ *Gobius punctatissimus* (Canestr., see Zool. Rec. i. p. 157) is figured by Canestrini, in Arch. p. la Zool. iv. 1866, tav. 6. figs. 1-5.

Gobius obscurus (Ptrs.) fig. by Steindachner in Verh. zool.-bot. Ges. Wien, 1866, taf. 18. fig. 6.

Gobius canina, var. *africana*, Playfair, in Fish. Zanz. pl. 9. fig. 1. The same described from a small example as a distinct species, *Gobius petersii*, by Steindachner, Verh. zool.-bot. Ges. Wien, 1866, p. 781, taf. 18. fig. 7.

Gobius seawardii, sp. n., Playfair, l. c. p. 71.—*Gobius krefftii*, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, 1866, liii. p. 451, from Port Jackson.

Gobiosoma fasciatum, sp. n., Playfair, l. c. p. 72, Zanzibar.

Gobiodon reticulatus, sp. n., Playfair, l. c. p. 72, pl. 9. f. 2, Zanzibar.

Eleotris. Dr. Steindachner describes (*l. c.*) as new from New South Wales *E. striata*, p. 452, *E. gymnocephalus*, p. 453, taf. 2. fig. 3, and *E. richardsonii*, p. 455. The types of these species being from the same source as the species

described by Mr. Krefft in 1864, a further comparison will be necessary.—On the Cuban species described by Cuv. & Val. see Poey, *l. c.* pp. 336–338.

Col. Playfair (*l. c.*) has described two new species, viz. *Eleotris wardii*, p. 73, pl. 9. f. 3, from Zanzibar, and *E. soaresi*, p. 74, pl. 9. f. 4, from Mozambique, and figured *E. microlepis* (Blkr.) on pl. 9. f. 5.

BLENNIIDÆ.

- ✓ *Blennius alpestris*, sp. n., Blanchard, *l. c.* p. 261, from Savoy.
 ✓ *Salarias dussumieri* (C. & V.) is figured in Fish. Zanz. pl. 9. figs. 6 & 7.
 } *Clinus philippii*, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, liii. 1866, p. 210, from the western coast of South America.—D. $\frac{19}{13}$. A. $\frac{2}{20}$.

SPHYRÆNIDÆ.

Sphyræna. On the Cuban species described by Cuv. & Val. see Poey, *l. c.* pp. 274–277.

✓ *Sphyræna grandisquamis*, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, 1866, liii. p. 446.

MUGILIDÆ.

Mugil. Prof. Troschel describes (Wieg. Arch. 1866), from the Cape de Verde Islands, *M. nigrostriatus* (Gthr.), p. 219, *M. brasiliensis* (Agass.), p. 221, and *M. pulchellus*, sp. n., p. 222.

Mugil breviceps, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, liii. 1866, p. 459, taf. 1. fig. 1, from Port Jackson.

Myzus. Dr. Steindachner (*l. c.* p. 461) refers *Mugil crenidens* (Kner) to this genus.

ATHERINIDÆ.

Nematocentris, g. n., Peters, Monatsber. Akad. Wiss. Berlin, 1866, p. 516, is distinguished from *Atherinichthys* by the presence of vomerine and palatine teeth, absence of a lateral line, pungent first spine of the two dorsals, the four other spines of the first dorsal being flexible. The species *N. splendida* is not specifically distinct from *Atherina nigrans* (Rich.).

GASTEROSTEIDÆ.

Gasterosteus. Prof. Blanchard (*l. c.*) describes a *Gast. neustrianus*, *bailloni*, *argentatissimus*, *elegans*, *burgundianus*, *lotharingus*, and *breviceps*.

FISTULARIDÆ.

✓ *Auliscops*, g. n., Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 510. Intermediate between *Fistularia* and *Spinachia*. Body elongate, naked, with four series of bony shields. Præoperculum articulated with the suborbital; gill-opening wide. B. 4. Ventral fins thoracic, close together. The spinous dorsal formed by numerous, isolated, very small spines; soft dorsal short; opposite the anal. ✓ *Au. spinescens*, sp. n., figs. 1–3, from California.

Amphisila. Dr. Lütken describes the characters of the three species known, adding that it is unnecessary to split them into two genera, and that *A. macrophthalma* (Steindachner) is = *A. scutata* (L.), and *A. scutata* (Steindachner) = *A. strigata* (Gthr.). He also thinks that Klein has figured *A. strigata*, and not *A. punctulata*. Vid. Medd. ntrh. Fören. Kjöbenh. (1865) 1866, pp. 213–218.

OPHIOCEPHALIDÆ.

On the peculiarity of respiration in some Ceylonese species see Mr. Boake's observation mentioned below.

Channa ocellata (Ptrs.) is described as *Ch. fasciata* (sp. n.) by Steindachner, Verh. zool.-bot. Ges. Wien, 1866, p. 481, taf. 6. fig. 1.

LABYRINTHICI.

The Rev. Principal BOAKE has made the most interesting observation, and proved it by experiment, that several Ceylonese fishes are obliged to rise at certain intervals to the surface of the water to receive a quantity of air, the oxygenation of the blood by means of the gills being apparently insufficient to support life. When prevented from rising to the surface, they invariably died within from one to six hours. The species experimented upon were the Maddhacariya [?], Hoonga [*Clarias teysmanni*], Magoora [?], Connia [*Ophiocephalus kelaartii*], Loola [*Ophioc. striatus*], Kawayya [*Anabas oligolepis*], Pooloota [*Polyacanthus signatus*]. Journ. of the Ceylon Branch R. As. Soc. 1866, pp. 128-142. [As regards *Anabas* and other Labyrinthici, this observation is opposed to the statement of other naturalists, according to which these fishes are able to remain for a long period in more or less thickened mud, the surface of which is covered with so firm a crust that it is impossible for the fish to rise to the surface and to receive air. The branchial cavity was supposed to hold a small quantity of water, filtered into it from the surrounding mud.]

TRACHYPTERIDÆ.

✓ *Gymnetrus banksii* (?). The capture of a specimen off the coast of Durham, about the beginning of March, is reported by Tristram, Proc. Zool. Soc. 1866, p. 147. The same specimen is mentioned in Ann. & Mag. Nat. Hist. xvii. p. 312; and again by J. Hogg, *ibid.* p. 390. A second example was found near Whitby on April 23, Hogg, *ibid.* xviii. p. 136.

ACANTHOPTERYGII PHARYNGOGNATHI.

Pomacentrus obtusirostris (Gthr.) is figured in Fish. Zanz. pl. 10. f. 4.

Pomacentrus trichourus (not *trichourus*, as misprinted), sp. n., Günther in Fish. Zanz. p. 146, pl. 17. f. 5.

Glyphidodon. M. Paul Gervais regards the *Sparus desfontainii* (Lacép.) as a species of this genus; see above p. 138.

Glyphidodon adenensis, sp. n., Günther in Fish. Zanz. p. 83, pl. 11. f. 1.

Helicastes opercularis, sp. n., Günther, *l. c.* p. 84, pl. 11. f. 2, Zanzibar.

✓ *Onychognathus*, g. n., Troschel, Wieg. Arch. 1866, p. 231. Præoperculum irregulariter denticulatum; os protractile; dentes intermaxillares et mandibulares pluriseriati conici, serie externa maiores; maxilla acute carinata supra uncino retrorso instructa; spinæ dorsalis 12, anales 2; radii membranæ branchiostegæ sex; pseudobranchiæ. ✓ *O. cautus*, sp. n., *l. c.* taf. 5. figs. 12-14, from the Cape de Verde Islands.

Heterochærops is a new generic name given by Dr. Steindachner to a small fish which has the appearance of a young *Cossyphus*, with a dentition similar to that of *Chærops*. *H. viridis*, sp. n., from Port Jackson. Sitzgsber. Ak. Wiss. Wien, 1866, liii. p. 461, taf. 5. fig. 3.

Xiphochilus. Dr. Günther describes in Fish. Zanz. X. *gymnogenys*, sp. n., p. 85, pl. 12. f. 4, and figures X. *robustus*, fig. 3.

✓ *Cossyphus tridecimspinosus*. Prof. Troschel has received from the Cape de Verde Islands a specimen with 12 dorsal spines, which is probably identical with this species; he prefers a name given by Bowdich (*Labrus jagonensis*), although "the description given is too incomplete for determining with certainty the species from which it is taken." Wiegmann Arch. 1866, p. 229.

✓ *Labrichthys australis*, sp. n., Steindachner, Verh. zool.-bot. Ges. Wien, 1866, p. 476, from the South Sea.

Cheilinus rhodochrous, sp. n., and *Cheilinus calophthalmus*, sp. n., Günther in Fish. Zanz. p. 90, pl. 11. figs. 3 & 4.

PlatyGLOSSUS opercularis (Gthr.) is figured in Fish. Zanz. pl. 12. f. 1.

PlatyGLOSSUS hyrtlii (Blkr.) has been described by Dr. Steindachner as *Pl. bifasciatus*, sp. n., in Verh. zool.-bot. Ges. Wien, 1866, p. 477, taf. 5. fig. 2. The specimen was from Hong-Kong.

Pseudojulis argyreogaster, sp. n., Günther in Fish. Zanz. p. 95, pl. 12. f. 2.

Coris frerei, sp. n., Günther, l. c. p. 101, pl. 13, from Zanzibar.

Scarus and *Pseudoscarus*. On the Cuban species described by Cuv. & Val. see Poey, Rep. fis.-nat. Cub. i. pp. 371-376, 410.

Pseudoscarus. Dr. Günther (Fish. Zanz.) describes two new species from East Africa, *Ps. nigripinnis*, p. 105, pl. 15. f. 2, and *Ps. chloromelas*, p. 109, pl. 15. f. 1; and gives three figures of *Ps. troschlii* (Blkr.) on pl. 15, showing the great variation of colours in this genus; these examples would be types of three distinct species according to Bleeker's views.

Odx richardsonii (Gthr.) is described by Dr. Steindachner as *O. hyrtlii*, Sitzgsber. Ak. Wiss. Wien, 1866, liii. p. 464.

Gerres. On the Cuban species described by Cuv. & Val. see Poey, Repert. fis.-nat. Cuba, i. pp. 315-317.

Dr. Günther describes *Gerres lineolatus*, sp. n., in Fish. Zanz. p. 110, pl. 16. f. 2, and figures *G. acinaces* (Blkr.), *ibid.* fig. 1.

✓ *Chromis*. Dr. Steindachner describes three new species from Angola, Verh. zool.-bot. Ges. Wien, 1866: ✓ *Ch. ovalis*, p. 761, taf. 15. fig. 2; ✓ *Ch. humilis*, p. 763, taf. 13. fig. 1; and ✓ *Ch. acuticeps*, p. 764, taf. 15. fig. 3.

Heros. Dr. Günther has described the following new species in Proc. Zool. Soc. 1866, p. 601: ✓ *H. nigrofasciatus*, from the Lakes of Amatitlan and Atitlan; ✓ *H. multispinosus*, from Lake of Managua; ✓ *H. longimanus*, from Lake of Nicaragua, p. 602; ✓ *H. erythreus* and *lobochilus*, from Lake of Managua; ✓ *H. trimaculatus*, from Guatemala; ✓ *H. motaguensis* and *oblongus*, from Rio Motagua; ✓ *H. managuensis*, from Lake of Managua.

✓ *Nectrophus*, g. n., Günther, l. c. p. 603. Differing from *Heros* in having a front series of flat incisor-like teeth. ✓ *N. nematopus*, l. c., from Lake of Managua.

Cichla. *Acharnes speciosus* (Müll. & Trosch.) proves to be identical with *Cichla ocellaris* (Bl.). Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 522.

ANACANTHINI.

Gadopsis. Dr. Steindachner prefers to place this genus in the family of *Blenniæ*. Sitzgsber. Ak. Wiss. Wien, 1866, liii. p. 456.

Lotella callarias (Gthr.) has been described by Dr. Steindachner as *L. schueltei*, l. c. p. 406, taf. 3. fig. 1.

Lota. The system of muciferous canals has been examined by Hyrtl. Anzeiger der Ak. d. Wiss. Wien, 1866, May, p. 119 (translated in Ann. & Mag. Nat. Hist. xviii. p. 264).

↙ *Lota vulgaris*. Dr. Steindachner has discovered certain differences of form in examples from the Lakes of Geneva and Lucerne. Verh. zool.-bot. Ges. Wien, 1866, p. 387.

✓ *Couchia edwardii* is described by Mr. Couch as a new British fish in Journ. Linn. Soc. ix. 1866, pp. 38-41.

↙ *Chiasmodus*. A fine example of this fish from the West Indies is described and figured by Dr. Carte, Proc. Zool. Soc. 1866, pp. 35-39, pl. 2. It had in its stomach another fish exceeding the size of the swallower.

PHYSOSTOMI.

SILURIDÆ.

Clarias. On the peculiarity of respiration in *Cl. teysmanni* see Mr. Boake's observation mentioned above, p. 148.

Clarias. Dr. Steindachner describes two new species from Angola specimens, 6 inches long: *C. dumerilii*, Verh. zool.-bot. Ges. Wien, 1866, p. 766, taf. 14. fig. 5; and *C. angolensis*, p. 766, taf. 13. fig. 4.

Cryptopterus bleekeri (Bocourt) is described and figured by Bocourt, Nouv. Arch. Mus. d'Hist. nat. 1866, ii. Bull. p. 17, pl. 1. fig. 3.

↙ *Pangasius larnaudii*, sp. n., Bocourt, l. c. p. 15, pl. 1. fig. 2, from Siam.

Clarotes. Prof. Troschel publishes a notice from a letter of Prof. Kner regarding the statements of the Recorder that "*Clarotes heuglini* is nothing but a deformed specimen of *Pimelodus laticeps*." This is denied by Prof. Kner. Wieg. Arch. 1865, xxxi. 2, p. 101. [The identity of these fishes is certainly not apparent, if, like Prof. Kner, we have only Rüppell's figure and a deformed old example for comparison; but the circumstance of possessing materials so insufficient should have made Prof. Kner more cautious in contradicting a statement which the Recorder has arrived at after examining a complete series of examples in the British Museum.]

[*Macrones*] *Heterobagrus bocourti* (see Zool. Rec. i. p. 167) is described and figured in Nouv. Arch. Mus. d'Hist. Nat. 1866, ii. Bull. p. 19, pl. 1. fig. 1.

↘ *Pimelodus managuensis*, sp. n., Günther, Proc. Zool. Soc. 1866, p. 603, from Lake Managua.

↙ *Arius boakei* is a new species from Ceylon described by Prof. Turner in Journ. Anat. & Physiol. i. pp. 78-82. Like certain South American species, it takes care of its progeny. Mr. Turner adds anatomical details.—The Rev. Principal Boake, who first observed this peculiarity in Ceylon species, has published his description in Journ. of the Ceylon Branch R. As. Soc. 1866, pp. 138-142.

↘ *Arius layardi*, sp. n., Günther, Ann. & Mag. Nat. Hist. xviii. pp. 473, 474, pl. 15, from Ceylon.—This fish also takes care of its progeny, like the preceding species.

Diplomystax papillosus (C. & V.) is described by Dr. Philippi, Monatsber. Ak. Wiss. Berlin, 1866, p. 710.

The same author describes several other Siluroid fishes from Chile, which he refers to *Arius*, but which evidently belong to a distinct genus, perhaps to *Diplomystax*:—*Arius curcharias* (Leybold), *l. c.* p. 711; *A. villosus*, sp. n., p. 712; *A. squalus*, sp. n., and *A. micropterus*, sp. n., p. 713; and *A. synodon*, sp. n., p. 714.

Synodontis gambiensis (Gthr.) is figured in Fish. Zanz. pl. 17. f. 1.

✓ *Chatostomus aspidolepis*, sp. n., Günther, Proc. Zool. Soc. 1866, p. 603, from Veragua.

Nematogenys. Dr. Philippi (Monatsber. Ak. Wiss. Berlin, 1866, p. 716) describes two new species from Chile, *N. nigricans* and *N. pallidus*.

Trichomycterus. Dr. Philippi (*l. c.*) describes three new species from Chile: *T. marmoratus*, p. 714, ✓ *T. pallens* and *T. tigrinus*, p. 715.

SCOPELIDÆ.

Prof. LEUCKART has examined the brilliant pigment-spots found scattered over the body of fishes of this and allied families; he discovered a spherical body like a crystalline lens, and a kind of vitreous body behind it, but was unable to detect a retina-like organ. He is inclined to regard these organs as accessory eyes. The observations were made on *Chauliodus* [*Sternoptychidæ*] and *Stomias* [*Stomiatidæ*]. Bericht. Versamm. deutsch. Ntrf. u. Aerzte, 1865, p. 153 (Ann. & Mag. Nat. Hist. xvii. p. 320).

[The Recorder, guided by actual observations on living or freshly caught examples, has regarded these organs as phosphorescent bodies, which by diffusing light must be a great assistance to the vision of these fishes, which generally inhabit depths to which the surface-light does not penetrate.]

CYPRINIDÆ.

Cyprinus carpio. Prof. Grube has reported on the capture of a specimen (not kept in a domesticated state) in Silesia, which was 34 inches long and 8 inches deep; it weighed 25 lb., and the longest dorsal ray was $3\frac{1}{2}$ inches long. Jahresber. d. Schles. Gesellsch. für vaterländ. Cultur für 1865 (1866), p. 34.

Barbus. Dr. Steindachner (Sitzgsber. Ak. Wiss. Wien) describes the following species from the Pyrenean peninsula:—*B. graëllsii*, sp. n., liii. 1866, p. 198; *B. caninus* (Bonap.), *ibid.* p. 205; *B. bocagei* (Steind.) liv. 1866, taf. 1; *B. comiza* (Steind.), *ibid.* p. 8, taf. 2; *B. guiraonis*, sp. n., *ibid.* p. 11, taf. 5.

Dr. Steindachner (*l. c.* liv. 1866, p. 13) also again notices the supposed hybrids between *Barbus* and *Chondrostoma*.

Barbus majori (C. & V.) is, according to Dr. Steindachner, not distinct from *B. fluviatilis*. Verh. zool.-bot. Ges. Wien, 1866, p. 385.

Puntius vittatus, sp. n., Steindachner, Verh. zool.-bot. Ges. Wien, 1866, p. 767, taf. 17. fig. 2, and *Puntius kessleri*, sp. n., *l. c.* p. 768, taf. 14. fig. 3; both from Angola. [The name *vittatus* having been previously given to an Indian species, that from Angola may be called *uniteniatus*.]

Schizopygopsis, g. n., Steindachner, Verh. zool.-bot. Ges. Wien, 1866, p. 785. Allied to *Schizothorax*, but with the body nearly entirely naked, and pharyngeal teeth 4/3—3/4. *Sch. stolickai*, sp. n., l. c. p. 786, taf. 16. fig. 2, from Ladak.

Diptychus, g. n., Steindachner, l. c. p. 787. Allied to *Capoeta*, but with the pharyngeal teeth 4/3—3/4, smooth dorsal spine, an anal and dorsal sheath, and two barbels. *D. maculatus*, sp. n., l. c. p. 788, taf. 13. fig. 3, from Tibet (11,200 ft.).

Ptychobarbus, g. n., Steindachner, l. c. p. 789. Allied to *Schizothorax*, but with the pharyngeal teeth 4/3—3/4, no dorsal spine, an anal and dorsal sheath; mouth semielliptical. *Pt. conirostris*, sp. n., p. 790, taf. 17. fig. 4, from Ladak (15,200 ft.).

Crossochilus diplochilus (Heck.) is described by Dr. Steindachner, l. c. p. 791.

Rasbora zanzibarensis, sp. n., Günther in Fish. Zanz. p. 119, pl. 17. f. 4.

Phoxinus hispanicus, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, liv. 1866, p. 268, taf. 1. fig. 1.

Leuciscus. Dr. Steindachner (Sitzgsber. Ak. Wiss. Wien) describes the following species from the Pyrenean peninsula:—*Leuciscus arcasii*, sp. n., xliii. 1866, p. 199, & liv. 1866, p. 14, taf. 3. figs. 2 & 3; *Leuciscus arrigonis*, sp. n., liv. 1866, p. 16, taf. 4. fig. 1; *Squalius cephalus* (L.), ibid. pp. 18 & 262; *Leuciscus alburnoides*, sp. n., ibid. p. 263, taf. 1. fig. 3; *Leuciscus lemningii*, sp. n., p. 265, taf. 1. fig. 2.

Prof. Blanchard, l. c., describes a *Leuciscus pallens*, a *Squalius meridionalis* and *clathratus* (very properly referred by Dr. Steindachner to *L. cephalus*), and a *S. bearnensis*.

Alburnus lucidus. A. J. Jäckel describes a fish from the river Altmühl, in Bavaria, which he regards as a hybrid of *Alburnus lucidus*, probably with *Scardinius erythrophthalmus*. Following Siebold's example, he designates it with a binomial name, *Alburnus rosenhaueri*. Zoolog. Garten, 1866, pp. 20–25.

Alburnus alborella lateristriga (see Zoolog. Record, i. p. 172) is figured by Canestrini, Arch. per la Zool. iv. 1866, tab. 6. fig. 6.

Alburnus mirandella and *A. fabraei* are two species of Prof. Blanchard, l. c. pp. 369, 370.

Abramis gehini is described as a new species by Prof. Blanchard, l. c. p. 355, from the Moselle.

Abramis melanus (Agassiz) proves to have been founded on specimens of *A. blicca* and *A. leuckartii*. Siebold, Bull. Soc. Sc. nat. Neuchât. vii. p. 113.

Telestes polylepis, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, 1866, liv. p. 300, with a plate, from Croatia.

Leuciscus idella (Cuv. and Val., Richards.) has been described by Dr. Steindachner as *Ctenopharyngodon* (g. n.) *laticeps*. Verh. zool.-bot. Ges. Wien, 1866, p. 782, taf. 18. figs. 1–5.

Hypophthalmichthys nobilis is confounded by Dr. Steindachner with *L. (H.) hypophthalmus* (Gray, = *H. molitrix*) and figured, l. c. p. 383, taf. 3.

Chondrostoma. Dr. Steindachner (Sitzgsber. Ak. Wiss. Wien) describes the following species from the Pyrenean peninsula:—*Ch. niegii*, sp. n., liii. 1866, p. 202, liv. taf. 3; *Ch. polylepis*, Steind. liv. 1866, p. 18, taf. 6; a hybrid between *Ch. polylepis* and *Leuciscus arcasii*, ibid. p. 21, taf. 4. fig. 2; *Ch. willkommii*, sp. n., ibid. p. 266, taf. 2.

Prof. Blanchard (*l. c.*) describes a *Chondrostoma carulescens, dremæi*, and *rhodanensis*, pp. 416-420.

Cobitis. Dr. Steindachner (Verh. zool.-bot. Ges. Wien, 1866) describes three new species from the countries north of the Himalayas: *C. tenuicauda*, p. 792, taf. 17. fig. 3; *C. stolickai*, p. 793, taf. 14. fig. 2; and *C. microps*, p. 794, taf. 13. fig. 3.

Cobitis larvata (De Fil.) is figured by Canestrini, Arch. p. la Zool. iv. 1866, tab. 6. fig. 7.

Kneria, g. n. (Acánthopsid.), Steindachner, Verh. zool.-bot. Ges. Wien, 1866, p. 769. Corpus valde elongatum, caudam versus compressum, antice subcylindricum, squamis parvis cycloideis obtectum; caput nudum, rostrum prominens; os inferum in aciem attenuatum, labiis et cirrhis nullis, fissura inter marginem anteriorem oris et rostrum; pinna dorsalis et analis brevis; pinna dorsalis inter pinnam ventralem et analem posita; apertura branchialis brevis, usque ad basin pinnæ pectoralis extensa. *K. angolensis*, sp. n., p. 770, taf. 17. fig. 1.

CHARACINIDÆ.

Prochilodus nigricans (Agass.) from the Amazons, is distinct from its congener of the Essequibo River, which is probably the *P. rubroteniatus* (Schomb.). Günther, Ann. & Mag. Nat. Hist. xviii. p. 30.

Parodon hilarii, sp. n., Reinhardt, Overs. Dansk. Vid. Selsk. Forh. 1866, p. 62, tab. 2. figs. 3, 4, from Minaes Geraes.

Characidium is the name of a new genus described by Prof. Reinhardt, considered to be distinct from *Anostomus*. The mouth is minute, and the upper jaw overlaps the lower. *Ch. fasciatum*, sp. n., Reinhardt, *l. c.* p. 56, tab. 2. figs. 1, 2, from the Rio das Velhas.

√ *Tetragonopterus bartlettii*, sp. n., Günther, Ann. & Mag. Nat. Hist. xviii. p. 30, from the Upper Amazons.

√ *Brycon lineatus*, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, liii. 1866, p. 211, taf. 2, from the La Plata.

√ *Piabina*, g. n., near *Chalcinopsis*, Reinhardt, Overs. Dansk. Vid. Selsk. Forh. 1866, p. 49. Intermaxillary teeth in three series, the anterior conical, the posterior tricuspid; very few maxillary teeth; mandibular teeth tricuspid, in a single series. Abdomen obtusely keeled; scales of moderate size. Dorsal fin behind ventrals. √ *P. argentea*, sp. n., p. 50, pl. 1, from the Rio das Velhas. —D. 10. A. 22. L. lat. 40.

√ *Cynodon pectoralis*, sp. n., Günther, Ann. & Mag. Nat. Hist. xviii. p. 30, from the Upper Amazons.

CYPRINODONTIDÆ.

Dr. GÜNTHER (Fish. vi.) has made numerous additions to this family, especially from Central American collections made by Messrs. Dow, Godman, and Salvin. He arranges these fishes thus:—

First group CYPRINODONTIDÆ CARNIVORÆ.

- √ 1. *Cyprinodon* (Lac.), with 22 species, of which *C. carpio* (p. 306), probably from Central America, is new.
2. *Fitzroyia* (g. n., p. 307), established for *Lebias multidentata* (Jenyns).
- √ 3. *Characodon* (g. n.) *lateralis* (sp. n., p. 308), from Central America.
4. *Tellia* (Gervais), with 1 species.

5. *Limnurgus* (Gthr.) = *Girardinichthys* (Blkr.) with *L. variegatus* (Gthr.) = *G. innominatus* (Blkr.).
6. *Lucania* (Gthr.), with 2 species.
7. *Haplochilus* (M'Cllell.), with 24 species, of which the following are from Africa, and new: *H. infrafasciatus* (pp. 313, 357), *H. playfairii* (p. 314, fig. in Fish. Zanz. pl. 20. fig. 1), and *H. fasciolatus* (p. 358).
8. *Fundulus* (C. & V.), with 20 species, of which the following are from Central America and new: *F. labialis* (p. 319), *F. punctatus* (p. 320), *F. guatemalensis* (p. 321), and *F. pachycephalus* (p. 321).
9. *Rivulus* (Poey), with 3 species, *R. urophthalmus* (p. 327), from Para, being new.
10. *Orestias* (C. & V.), with 6 species.
11. *Jenynsia* (g. n.), established for *Lebias lineata* (Jenyns).
12. *Pseudoxiphophorus* (Blkr.), with 2 species.
13. *Belonesox* (Kner), with 1 species.
14. *Gambusia* (Poey), with 11 species, *G. humilis* (p. 335) and *G. nicaraguensis* (p. 336) being new.
15. *Anableps* (Artedi), with 4 species.

Second group CYPRINODONTIDÆ LIMNOPHAGÆ.

16. *Pacilia* (Gthr.), with 20 species, the following from Central America being new: *P. chisoyensis*, *P. elongata*, and *P. petenensis* (p. 342); *P. dovii* (p. 344); *P. spilurus* and *P. melanogaster* (p. 345).
17. *Mollienesia*.
- a. *Mollienesia* (Les.), with 5 species: *M. petenensis*, sp. n. (p. 348).
- b. *Xiphophorus* (Heck.), with 1 species.
18. *Platyccilius* (g. n.) *maculatus* (sp. n., p. 350), from Mexico.
19. *Girardinus* (Poey), with 10 species, new being: *G. versicolor* (p. 352), from San Domingo; *G. guppii* (p. 353), from Trinidad and Venezuela; *G. pleurospilus* (p. 353), from Guatemala.

Appendix: *Lebistes paciloides* (De Fil.).

Pacilia nuchimaculata, sp. n., Guichenot, Mém. Soc. Sc. Nat. Cherbourg, 1866, p. 143, Madagascar.

Fundulus orthonotus (Ptrs.) is figured in Fish. Zanz. pl. 17. figs. 2 and 3.

SCOMBRESOCIDÆ.

Dr. GÜNTHER (*l. c.*) has not adopted the numerous so-called subgeneric divisions into which the natural genera of this family have been split by recent ichthyologists. The species are arranged thus:—

1. *Belone* (Cuv.).

a. *Belone*, with 49 species, the following of which are new:—*B. lovi* (p. 236), from the Cape de Verde Islands; *B. microps* (p. 237), from the Guianas; *B. angusticeps* (p. 238), from Ecuador; *B. ferox* (p. 242), from Sydney; *B. robusta* (p. 242), from the Red Sea; *B. natalensis* (p. 243); *B. capensis* (p. 247); *B. krefftii* (p. 250), from Australia; *B. eurini* (p. 252); *B. cornidii* (p. 255), from Portugal.

b. *Potamorhaphis*, g. n., with *P. tæniata*, sp. n. (p. 250), from the River Amazons, and *P. scolopacina* (C. & V.).

2. *Scombresox* (Lac.), with 5 species.

3. *Hemirhamphus* (Ouv.), with 59 species, the following of which are new:—*H. regularis* (p. 261), from Australia; *H. sinensis* (p. 265); [*H. calabaricus* (p. 266), see a subsequent note]; *H. affinis* and *H. laticeps* (p. 267), from the South Sea; *H. robustus* (p. 270), from Van Diemen's Land; *H. brevirostris* (p. 274) = *H. dispar* (Kner, not C. & V.).

4. *Arrhamphus* (g. n.) *sclerolepis* (sp. n.), p. 277, from New Zealand.

5. *Exocoetus* (Artedi), with 58 species, the following of which are new:—*E. rostratus* (p. 280), from the Sandwich Islands; *E. obtusirostris* (p. 283), from tropical and subtropical seas; *E. spilurus* (p. 285), hab. —?; *E. affinis* (p. 288), from the Atlantic; *E. robustus* (p. 280), from Australia; *E. arcticus* (p. 289), from China; *E. callopterus* (p. 292), from Panama; and *E. brachycephalus* (p. 297), from China.

Belone. Dr. Bleeker has revised the species of this genus (for which he uses now the name of *Mastacembelus*, because Klein happened to place a *Belone* as first species of the division so named by him) and given descriptions of them. Nederl. Tydschr. Dierk. iii. 1866, pp. 214–236. The paper includes only the species from the East-Indian Archipelago; none of them are new. Through the kindness of the author, the Recorder was enabled to make use of this paper for the sixth volume of his 'Catalogue of Fishes.'

Belone. Prof. Troschel (Wieg. Arch. 1866) has received from the Cape de Verde Islands two species, which he determines as *B. hians* (p. 233) and *B. trachura* (p. 234). [The latter is more probably *B. loyii*, Gthr.]

✓ *Scombrex brevirostris*, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 521, from California.

Hemirhamphus. *Hemirhamphus vittatus* (Blkr.) = *Esox brasiliensis* (L.), not = *H. vittatus* (Val.). *Hemirhamphus guineensis* (Blkr.) = *H. vittatus* (Val.). ✓ *Hemirhamphus schlegelii* (Blkr., 1862) = *H. calabaricus* (Gthr., 1866). Günther, Ann. & Mag. Nat. Hist. xviii. p. 427.—On a species from the Cape de Verde Islands, *H. brownii* (C. & V., not Blkr.), see Troschel, Wieg. Arch. 1866, p. 236.

Hemirhamphus australis, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, 1866, liii. p. 471, from Port Jackson.

✓ *Exocoetus hirundo*, sp. n., Steindachner, Verh. zool.-bot. Ges. Wien, 1866, p. 482, taf. 6. fig. 2, from Hong-Kong?

UMBRIDÆ.

This family is established by Dr. GÜNTHER (Fish. vi. p. 231) for the European species of *Umbra* and the North American *Melanura limi*, which do not prove to be generically distinct.

MORMYRIDÆ.

Dr. GÜNTHER (l. c.) has adopted three genera only of this family, viz. *Mormyrus*, *Hyperopisus*, and *Mormyrops*, and describes the following species as new:—*M. macrophthalmus* (p. 217), *M. niger* (p. 219), *M. adspersus* (p. 221), and *M. catostoma* (p. 222); *Hyperopisus occidentalis* (p. 223) from West Africa.

Mormyrus pauciradiatus, sp. n., Steindachner, Verh. zool.-bot. Ges. Wien, 1866, p. 705, taf. 17, from Angola.

GALAXIDÆ.

Galaxias

Dr. GÜNTHER (*l. c.*) describes as new *G. olidus* (p. 209), *G. kreffii* (p. 211), *G. punctatus* (p. 212), and *G. brevipinnis* (p. 213).

SALMONIDÆ.

The account given by Dr. GÜNTHER of this family is more detailed than, and differs in several respects from, that of the remainder of his work. It commences with introductory general remarks on the distinction of the species of the genus *Salmo*, and on certain more or less obscure points in their life-history. In consequence of the vague descriptions of the greater part of the species it was impossible to give their distinctive characters; so that the locality will be the best guide to recognize them*. Therefore the species of this genus are geographically arranged.

First group SALMONINA.

1. *Salmo* (Artedi).

a. *Salmones* (Nilss.), with 52 species, of which the following are described as new:—*S. microlepis*, from Hungary (p. 85), *S. brachypoma* (p. 87), *S. gallivensis* (p. 88), *S. orcadensis* (p. 91), *S. stomachicus* (p. 95), and *S. nigripinnis* (p. 96), all from Great Britain and Ireland; *S. mistops* (p. 105), *S. hardii* (p. 107), *S. venemensis* (p. 110), and *S. polyosteus* (p. 111), from Scandinavia.

b. *Salvelini* (Nilss.), with 36 species, one of which is new: *S. lordii* (p. 148), from the Skaget River.

2. *Oncorhynchus* (Suckley), with 13 species.

3. *Brachymystax*, g. n., established for *S. coregonoides* (Pall.).

4. *Luciobruttia*, g. n., established for *S. mackenzii* (Rich.).

5. *Plecoglossus* (Schleg.), with 1 species.

6. *Osmerus* (Cuv.), with 3 species.

7. *Thaleichthys* (Girard), *T. pacificus* (Rich.).

8. *Hypomesus* (Gill), *H. olidus* (Pall.).

9. *Mallotus* (Cuv.), with 1 species.

10. *Retropinna* (Gill), with 1 species.

11. *Coregonus* (Artedi), with 45 species, the following of which are new:—*C. lloydii* (p. 174), *C. lapponicus* (p. 181), *C. gracilis* (p. 182), *C. maxillaris* (p. 189), and *C. humilis* (p. 190), from Scandinavia; *C. richardsonii* (p. 185), from Arctic North America.

12. *Thymallus* (Cuv.), with 8 species.

13. *Argentina* (Artedi), with 4 species.

14. *Microstoma* (Cuv.), with 2 species.

* Quite against his intention, the author omitted to mention in the preface that, by the kindness of Prof. Peters, he was enabled to examine that portion of Pallas's specimens which is preserved in the Berlin Museum. Some of these specimens are evidently types to the descriptions in the 'Zoographia Rosso-Asiatica,' whilst others cannot have been used in the description of the species the name of which is attached to them.

Second group SALANGINA.

15. *Salanx* (Cuv.), with 2 species.

Salmo. Dr. Steindachner has determined three species in the Pyrenean peninsula as *S. furio* and *S. salar* in Sitzgsber. Ak. Wiss. Wien, liii. 1866, p. 203; and as *S. trutta*, ibid. liv. 1866, p. 22.

Dr. Gilpin has described the Salmonoids of Nova Scotia, Proc. & Trans. Nov. Scot. Inst. Nat. Sc. 1866, pp. 76-91. He distinguishes five species, determined as *S. salar*, *S. fontinalis*, *S. canadensis* (Ham. Smith), *S. gloverii* (Girard), and *S. confinis* (Dekay) = *S. adirondicus* (Norris).

Argentina lioglossa (Cuv.) has received a generic name from M. Guichenot, Ann. Soc. Linn. Maine-et-Loire, ix. Ichthyol. p. 7.

CLUPEIDÆ.

✓ *Alosa*. Dr. Daniell states that he has successfully introduced the American Shad into the Alabama River. Proc. Ac. Nat. Sc. Philad. 1866, pp. 236-237.

Alosa malayana, sp. n., Bleeker, Nederl. Tydschr. Dierk. iii. 1866, p. 294, from Java and Sumatra.

Clupeoides hypselosoma, sp. n., Bleeker, l. c. p. 293, from Borneo.

Pellona. Dr. Bleeker (l. c.) describes *Ilisha macrogaster*, sp. n., from Borneo, p. 300; and *Ilisha novgula* (C. & V.), p. 302.

✓ *Meletta petenensis*, sp. n., and *M. libertatis*, sp. n., Günther, Proc. Zool. Soc. 1866, p. 603, from Guatemala.

Engraulis. On the Cuban species described by Cuv. & Val. see Poey, Rpp. fis.-nat. Cup. i. pp. 378-381; he describes two new species, *E. brevis* and *E. productus*.—*Engraulis mysticetus*, sp. n., Günther, Proc. Zool. Soc. 1866, p. 604, from Panama.

Stolephorus zollingeri (Blkr.), *St. heterolobus* (Rüpp.) are redescribed by Bleeker, l. c. pp. 303 & 305. *Stolephorus (Thryssa) valenciennesi*, sp. n., Bleeker, l. c. p. 306.

↘ *Pristigaster macrops*, sp. n., and *P. argenteus*, sp. n., Günther, Proc. Zool. Soc. 1866, p. 603, from Panama.

[*Pristigaster*] *Opisthopterus tartoor* (C. & V.) is described by Bleeker, l. c. p. 296. As a second species is described by him *Opisthopterus macrognathus* (sp. n.), p. 299, from the East-Indian archipelago.

Megalops. Dr. Bleeker distinguishes now six species from the East-Indian archipelago, which he describes in Nederl. Tydschr. Dierk. iii. 1866, pp. 278-292, viz.:—*M. giganteus* (Shaw) = *M. atlanticus* (C. & V.); *M. macropterus*, sp. n., p. 284; *M. filamentosus* (Lac.); *M. kundinga* (H. B.) = *M. setipinnis* (Rich.); *M. cyprinoides* (Brouss.) = *M. indicus* (C. & V.) = *M. macrophthalmus* (Blkr.); *M. oligolepis*, sp. n., p. 291.

Elops machmata. Dr. Günther makes some remarks on the different structure of the caudal rays in adult and young examples. Fish. Zanz. p. 121.

MURENIDÆ.

Prof. KNER has found an air-bladder in the *Anguilloidei*, *Congroidei*, and *Ophisuroidei*, whilst it is absent in the *Ptyobranchoidei*, *Gymnothoracoidei*, and *Symbranchi*. Its form and

size, the position and development of vesicular glands, not only differ in the various genera and species, but vary in one and the same species. He has also examined the sexual organs of several species, and comes to the conclusion that they do not afford a character for systematic divisions, Sitzgsber, Ak. Wiss, Wien, lii. pp. 648-653.

Anguilla vulgaris. M. Desmarest describes his observations on an Eel kept in a tank for the last thirty-seven years. Rev. et Mag. Zool. 1866, pp. 161-165.

Anguilla johannæ, sp. n., from the Island of Johanna, and *Anguilla ambledon*, sp. n., from the Seychelles, described by Dr. Günther in Fish. Zanz. pp. 124, 125.—*Anguilla amboimensis*, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 523.

Chilorhinus (Muraenichthys) vermiformis, sp. n., Peters, l. c. p. 524, from Ceylon.

✓ [Ophisurus] *Leptognathus serpens* (Lac.) is described by Dr. Steindachner, Sitzgsber. Ak. Wiss. Wien, 1866, liii. p. 473.

Muraena nudivomer, sp. n., Günther, l. c. p. 127, pl. 18, Zanzibar.

✓ *Ophichthys (Herpetoichthys) ater*, sp. n., Peters, l. c. p. 525, Chile.

✓ *Pæcilophis unicolor* (De la Roche) is described by Dr. Steindachner, Sitzgsber. Ak. Wiss. Wien, 1866, liii. p. 472.

Thyrsoidea maculipinnis (Kaup). Notes by Prof. Troschel, Wiegmann. Arch. 1866, p. 237; it extends northwards to the Cape de Verde Islands.

Gymnomuraena fusca, sp. n., Peters, l. c. p. 524, Amboyna.

LEPTOCEPHALI.

Helmichthys oculus, sp. n., Peters, Monatsber. Ak. Wiss. Berlin, 1866, p. 525, fig. 4, from Amboyna.

PLECTOGNATHI.

✓ *Orthragoriscus*. Harting's memoir on *O. ozodura* has been mentioned above, p. 132.

Atopomycterus bocagei, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, liii, 1866, p. 477, taf. 6, fig. 3, from Port Jackson.

Crayracian cochinchinensis, sp. n., Steindachner, Verh. zool.-bot. Ges. Wien, 1866, p. 480, taf. 5, fig. 1.

Balistes niger (Osbeck) is figured in Fish. Zanz. pl. 10, fig. 1.

Monacanthus. Dr. Steindachner has made remarks on *M. chinensis*, *granulatus*, and *vittatus*. Sitzgsber. Ak. Wiss. Wien, 1866, liii. p. 476.

Monacanthus fronticinctus, sp. n., Günther in Fish. Zanz. p. 136, pl. 19, fig. 2.

LOPHOBRANCHII.

Solenostoma cyanopteron (Blkr.) is figured by Dr. Günther in Fish. Zanz. pl. 20, figs. 2 and 3; he states (p. 138) that the female is provided with an egg-pouch, and carries the eggs.

Hippocampus subcoronatus, sp. n., Günther in Fish. Zanz. p. 139, pl. 20. fig. 4.—*Hippocampus novæ hollandiæ*, sp. n.?, Steindachner, Sitzsber. Ak. Wiss. Wien, 1866, liii, p. 474, taf. 1. fig. 2, from Port Jackson.

Syngnathus zanzibarensis, sp. n., Günther, l. c. p. 140, pl. 20. f. 5.

GANOIDEI.

✓ *Calamoichthys* (J. A. Smith) is the new name for the new genus of Ganoid fish mentioned as *Herpetoichthys* in the Zoolog. Record, ii. p. 208. It is described in Proc. R. Soc. Edinb. v. 1865-66, pp. 654-659, or in Ann. & Mag. Nat. Hist. xviii. pp. 112-114; and more fully in Trans. R. Soc. Edinb. 1866, pp. 457-479, where figures on pls. 31 and 32 are added. Dr. Traquair has joined his notes on the anatomy of this fish to the publication in Ann. & Mag. l. c. (an error in the paper is corrected in Ann. & Mag. N. H. xviii. p. 495).

ELASMOBRANCHII.

Prof. GEGENBAUR has examined the heart of various Plagiostomata (*Acanthias*, *Heterodontus*, *Hexanchus*), and found that the valves of the hinder row differ anatomically and functionally from those known in Selachians. He distinguishes them as "tongue-valves" from the others (pouch-valves). The foremost row of valves only is homologous to the valves at the ostium arteriosum of *Teleostei*. The bulbus arteriosus of Ganoids, Selachians, and Chimæras is a part of the heart morphologically different from that of Teleosteous fishes. The former is a prolonged and in some respects independent division of the ventriculus, which also in Teleosteous fishes is not entirely absent, but generally shorter, and without a plurality of rows of valves. This division is the conus arteriosus of higher Vertebrates. Jena. Zeitschr. Med. u. Ntrwiss. ii. pp. 365-375.

Messrs. BOCAGE and CAPELLO have published a very complete account of the Sharks of Portugal, see p. 132. They enumerate 27 species, all of which are described. As the authors have already published descriptions of the species then regarded as new in Proc. Zool. Soc. 1864, pp. 260-263, which we mentioned in Zool. Record, i. p. 186, we have to add here only that coloured figures of them are given in this publication, with illustrations of their dentition, &c.

✓ *Centrophorus*. Messrs. Bocage and Capello state that their *C. lusitanicus* is identical with *C. granulatus* (M. & H.), and their *C. crepidalbus* with *C. calceus* (Lowe). l. c. p. 23.

✓ *Oxyrhina gomphodon* (M. & H.) fig. by Bocage and Capello, l. c. tab. 3. fig. 3.

Ginglymostoma brevicaudatum, sp. n., Günther, in Fish. Zanz. p. 141, pl. 21.

Mustelus natalensis, sp. n., Steindachner, Sitzgsber. Ak. Wiss. Wien, 1866, liii. p. 482, taf. 1, from Port Natal.

✓ *Centrina salviani* (Risso) fig. by Bocage and Capello, l. c. tab. 1. fig. 2.

✓ *Rhinobates leucorhynchus*, sp. n., Günther, Proc. Zool. Soc. 1866, p. 604, from Panama.

Trygonoptera. Dr. Steindachner describes three species from Port Jackson as new, Sitzgsber. Ak. Wiss. Wien, 1866, liii.: *T. müllerii*, p. 479, pl. 6. fig. 4; *T. henlei*, p. 479, pl. 6. fig. 5; *T. australis*, p. 480, pl. 7.

✓ *Chimæra monstrosa*. A note on this fish by Prof. Poey in Repert. fis.-nat. Cub. 1865, p. .

LEPTOCARDII.

Amphioxus lanceolatus. A. Kovalevsky has made researches into the earliest stages of its development. Abstract in Bibl. Univ. 1866, Oct., Bull. Sc. pp. 193-195, or in Ann. & Mag. Nat. Hist. xix. pp. 69-70.

MOLLUSCA

BY

EDUARD VON MARTENS, M.D., C.M.Z.S.

A. THE GENERAL SUBJECT.

I. *General Works in Progress.*REEVE, L. *Conchologia Iconica*. Nos. 246-255.

Parts 246-253 are dated 1865, 254 and 255 1866; they contain the continuation of the genera *Unio*, *Ovulum*, *Erato*, further *Carinaria*, *Tornatella*, *Pyramidella*, *Eulima*, *Cerithium*.

SÖWERBY, G. B. *Thesaurus Conchyliorum*. Part xxiv. London, 1866, 8vo.

This part completes vol. iii., and contains the rest of the *Pupinidæ*, the genera *Carinaria*, *Donax*, *Typhis*, *Trichotropis*, a supplement to *Cerithium*, *Eburna*, and *Conus*, and a completely revised monograph of *Helicina*.

PFEIFFER, L., and DUNKER, W. *Novitates Conchologicae*. Cassel, Th. Fischer, 4to.

The first section contains extra-marine shells, by L. Pfeiffer. The first volume, commenced in 1854, has been finished—the parts containing plates 61-63 having been issued in 1864, 64-66 in 1865, and 67-72 in 1866. A new volume has been commenced in this year (1867). The second section contains sea-shells, by W. Dunker; the date is unfortunately not marked either on the *wrappers* of the parts or on the sheets. As far as we could make out, part 7, containing plates 19-21, was published in the year 1864; parts 8-9, containing plates 22-27, in the year 1865; part 10, plates 28-30, in 1866; and the author is at present engaged in the publication of another part.

The work is, in fact, a continuation of Philippi's well-known 'Icones Conchyliorum' or 'Abbildungen und Beschreibungen neuer oder wenig bekannter Conchylien,' destined to give exact figures of either new or not yet well-figured shells. The plates may be said (with very few exceptions in some of the former parts) to be very well executed.

1866. [VOL. III.]

M

PFEIFFER, L. Malako-zoologische Blätter, vol. xiii. Cassel, 8vo, pp. 154, with 5 plates.

CROSSE, H. Journal de Conchyliologie, vol. xiv., or vi. of the third series. Paris, 8vo, pp. 404, with 14 plates.

TRYON, G. W. American Journal of Conchology, vol. ii. Philadelphia, 8vo, pp. 393, with 23 plates.

These three journals, together with the 'Proceedings of the Zoological Society,' continue to give descriptions of numerous new species and valuable information on the geographical distribution.

2. Morphology and Physiology of Mollusca in general.

EBERHARD, ERNST. Ueber die Schneekenzungen. [On the tongues of Snails.] Programm der Realschule zu Coburg, 1865, 4to, with 5 plates.

Contains descriptions and figures of the buccal organs of *Helix pomatia* in different states of protrusion, in connexion with one another as well as isolated (pl. 1), and original descriptions and figures of the so-called teeth of the tongue or radula, taken from fifty-four species of Gastropoda and one Cephalopod. We shall mention subsequently only those species which are not figured in the paper of Lovén (Öfversigt af K. Vet. Akad. 1847) or in the standard work of Trosehel. Of some of the snails, only the generic name is given in the explanation of the plates and in the text; the Recorder is able to supply the specific names of a few of them through a private communication from the author.

VELTEN, CASPAR. De sensu olfactus Gasteropodum. Dissertatio inauguralis. Bonn, 1865.

The tentacles are stated to be the organs of smelling in water-snails as well as in land-snails; this is proved by experiments and by their analogy with the smelling-organs of fishes.—We have not seen this dissertation.

WOODWARD, S. P. On the form, growth, and construction of Shells. Intellectual Observer, Nov. 1866, pp. 241-252. [From a manuscript of the late author.]

On the copulation of *Sepia officinalis*, see P. Fischer, Ann. Sc. Nat. vi. 1866, p. 308.

The eggs of *Achatina bicarinata* (Brug.) and *Columna flammea* (Martyn) are described by H. Dohrn, Mal. Blätt. xiii. pp. 122 and 124.

Ovo-viviparity in *Achatina (Perideris) alabaster*, Rang, and *Buliminus burnayi* observed by the same, *ibid*, pp. 123 and 125.

Teratology.

An abnormally umbilicated specimen of *Achatina fulica* (Fér.), found by the unfortunate Baron von der Decken on the Seychelle Islands, is mentioned by the Recorder, Sitzungsberichte der naturforsch. Freunde zu Berlin, 1866,

p. 16.—An abnormal specimen of *Physa gyrina* (Say), with short somewhat scalariform spire, is described by Conrad, Am. Journ. Conch. ii. p. 114, pl. 10. fig. 9; it suggested to him the probability that *Paludina scalaris* (Say) might be the same abnormality in a more exaggerated form.—Half-grown specimens of *Physa heterostropha* (Say) with the last whorl suddenly enlarged near the aperture have been found in almost equal number with normal ones at Cape Elizabeth, Maine, by Mr. Wheatley. Am. Journ. Conch. ii. p. 181.—A scalariform specimen of *Planorbis bicarinatus* (Say) is described by Tryon, ibid. p. 3, pl. 1. fig. 4.

B. CONTRIBUTIONS TO FAUNAS.

a. Land- and Freshwater Mollusca.

1. Northern and Central Europe.

ZETTERSTEDT, F. E., mentions that *Bulimus montanus* (Drap.) has been found in Sweden at Zenköping. Öfvers. K. Vetensk. Akad. Förhandl. Stockholm, 1864, p. 339.

MÖRCH, O., gives some additions to his list of Danish land- and freshwater mollusks (see Zool. Record, i. p. 193). Vidensk. meddel. fra den naturhist. foren. Kjöbenhavn, (1865) 1866, pp. 246, 247.

TATE, RALPH. A plain and easy account of the Land- and Freshwater Mollusks of Great Britain. London, 1866, 18mo, pp. 244.

“This little volume is more than it claims to be, and will prove a very useful and entertaining pocket companion to the well posted as well as the uninitiated shell-collectors of England. The species are all illustrated by lithographic plates and woodcuts.” (Tryon, Am. Journ. Conch. ii. p. 285.)

SPORLEDER, A. Die Gehäusschnecken der Siebenberge. [The shell-bearing Snails of the Siebenberge, limestone-hills in Hanover.] Mal. Blätt. xiii. pp. 48–54.

A list of 18 species of *Helix*, 2 of *Bulimus*, 7 of *Clausilia*, 1 *Balea*, 7 of *Pupa*, including *Vertigo*, 1 *Achatina* (*Azeqa*), 1 *Vitrina*, 1 *Carychium*, 1 *Acme*, 1 *Cyclostoma*.

HENSCHÉ, A. Dritter Nachtrag zur Mollusken-Fauna Preussens. [Third Supplement to the malacological fauna of the province Prussia.] Schrift. physical.-ökonom. Gesellsch. Königsberg, vii. 1, 1866, pp. 99–106.

Five species (*Acicula lineata*, *Pupa edentula*, *Valvata con torta*, *naticina*, and the marine *Embletonia pallida*) have been added to a former list of the mollusks of the province Prussia since 1859; new localities are given for a few other rather rare species. [The first paper on this subject was published by Dr. Hensché in the same journal, 1861, a second in 1862.]

MARTENS, E. VON. Ueber die Mollusken-Fauna Württembergs. Jahresh. Ver. Naturkunde in Würt. xxi. 1865 (1866), pp. 178–217.

This paper contains:—1. A historical review of the labours of previous authors and collectors. 2. A list of the species of *Arion* and *Limax* observed by the author in this kingdom, with remarks on their synonymy and distinctive characters. 3. Additions towards the determination of several species named in a list by Seekendorf (1846); three species are added, viz. *Hyalina contorta* (Held), *Balea fragilis*, and *Planorbis glaber*. The Recorder may mention here that he has been convinced of the occurrence of *Clausilia filograna* by Prof. Alex. Braun, and therefore withdraws the doubts expressed by him in this respect. 4. A list of 115 species of Mollusca hitherto found in Württemberg, enumerating the localities for the several species, the entire area being divided into four hydrographical and five geological sections. 5. General remarks on the frequency or rarity, and on the geographical range of the species. *Helix hortensis* is more common than *H. nemoralis*, especially in the more elevated parts; *Helix arbustorum* is rather local in the lower regions and very common in the higher. Among the *Clausiliae* the most frequent is *Cl. biplicata* (Mont.). *Buliminus detritus*, Müll., is very local, but occurs, where it is, in great numbers; it is found only in localities exposed to the sun, either vineyards or barren rocks. *Helix candidula*, *Clausilia parvula*, and *Pupa frumentum* prefer limestone ground, *Pupa avena*, *secale*, *dolium*, *doliolum*, and *Helix rupestris* are, within this province, entirely limited to it.

Paludina vivipara has been found only on the frontiers of the kingdom towards Bavaria, and the occurrence of *Planorbis corneus* has not been positively confirmed; which two facts suffice to characterize this part of South Germany as a country of hills and elevated plains. *Neritina fluviatilis* lives only in the river Neckar and its tributaries, the genus *Neritina* being generally absent in the upper parts of the Rhine as well as the Danube. *Paludina vivipara* is not found in the Lake of Constance, although it is common in Bavarian lakes belonging to the system of the Danube. Thus *Limnæus stagnalis*, *palustris*, *auricularius*, &c., are the only freshwater shells of large size generally distributed over the country. *Dreissena polymorpha* has not yet been observed.

- BIELZ, E. A. Systematisches Verzeichniss der Land- und Süßwasser-Mollusken des österreichischen Kaiserstaates. [Systematic list of the land- and freshwater Mollusca of the Austrian Empire.] Verhandl. und Mittheil. des siebenbürg. Vereins für Naturwiss. in Hermannstadt, vol. xvi. 1865, pp. 132–142, 158–162, 173–186, 204–210, 223–234.

There are enumerated 6 species of *Arion*, 7 *Limax*, 1 *Amalia* (= *Milax*, Gray), 1 *Testacellus* (Triest), 1 *Glandina*, 4 *Daudebardia*, 15 *Hyalina*, 6 *Zonites*, 6 *Vitrina*, 3 *Succinea*, 99 *Helix*,

and 12 *Buliminus*. [These large numbers are due to the circumstance that the Austrian Empire includes parts of the Germanic or Northern European, of the Alpine and Mediterranean zoological provinces of Europe; the number of species will be still greater in the genus *Clausilia*, which will be treated in the continuation of the paper, not yet seen by the Recorder.]

VENANCE PAYOT. Liste des Mollusques des environs du Mont-blanc. Ann. Sc. phys. et nat. d'agricult. et d'industrie de Lyon, viii. 1865, p. 474.

One hundred species are enumerated, all land-snails.

[Twenty species of *Pupa*, and only 11 of *Clausilia*; these numbers are quite characteristic of the western half of the orographical system of Europe.]

MABILE, JULES. Études sur la faune malacologique de Saint Jean de Luz, de Dinan, et quelques autres points du Littoral Océanien de la France. Journ. Conch. xiv. pp. 12-33.

Sixty species of land- and 49 of freshwater Mollusca (including the submarine *Alexia*), among which 8 *Zonites* (*Hyalina*), 24 *Helix*, and 5 *Clausilia*.

2. Mediterranean Province.

PALADILHE, —. Nouvelles miscellanées malacologiques. Rev. et Mag. Zool. 1865, pp. 89-99, 168-173.

Remarks on species of *Pupa*, *Hydrobia*, *Paladilhia*, *Ancylus*, *Valvata*, and *Pisidium* inhabiting Southern France.

ISSEL, A. Dei molluschi raccolti nella provincia di Pisa. [On the Mollusks collected in the Province of Pisa.] Mem. Soc. Ital. Sc. Natur. vol. ii. Milano, 1866, 4to, pp. 38.

A list of 68 land-, 34 freshwater, and 2 submarine (*Auricula*) mollusks, with several varieties; the most remarkable is *Melanopsis dufourii* (Fér.), collected in a streamlet of hot water called Caldana di Ravi, near Campiglia, on sandy bottom, a few centimetres deep. Hitherto no *Melanopsis* had been found in Italy, though they are well represented in Spain as well as in Greece; some inaccurate statements concerning the occurrence of that genus in Southern France are corrected by Paladilhe. Rev. et Mag. Zool. 1866, pp. 98, 99.

PFEIFFER, L. Beschreibung neuer Clausilien. [Description of new *Clausilia*.] Mal. Blätt. xiii. pp. 146-154.

Nineteen species from Greece, Dalmatia, and Western Asia.

BOURGUIGNAT, H. J. B. Recherches sur la distribution géographique des Mollusques terrestres et fluviatiles en Algérie et dans les régions circonvoisines. Ann. Sc. Nat. Zool. vol. vi. p. 313.

Reprinted from the author's 'Mollusques de l'Algérie (see Zool. Record for 1865, p. 222).

J. ZELEBOR has given a list of 23 land- and of only 2 freshwater shells inhabiting the island of Cyprus, in Unger und Kotschy's work, 'Die Insel Cypem,' Wien, 1865, 8vo, p. 591. Among them are 17 of *Helix* and 3 *Clausilia*, 1 *Melanopsis* and 1 *Neritina*.

3. *British India.*

BLANFORD, W. T. Contributions to Indian Malacology. No. VI. Descriptions of new land-shells from the Nilgiri and Anamullay Hills and other places in the Peninsula of India. Journ. As. Soc. new ser. No. 131, pt. ii. no. 1, 1866, pp. 31-42.

Eleven new species, most of which were collected by Capt. Beddome. Among them is a *Spiraculum*, a genus not yet found in the Cisgangetic peninsula. Seventeen other land-shells and two freshwater shells, previously found on the Anamullay hills, are merely mentioned.

———. Contributions to Indian Malacology. No. VII. List of species of *Unio* and *Anodonta* described as occurring in India, Ceylon, and Burmah. Ibid. No. 135, pt. ii. no. 2, 1866, pp. 134-155.

Forty-seven species of *Unio* (29 from India proper, 8 from Assam, 2 from Ceylon, and 8 from Burmah) and 3 of *Anodonta* are enumerated and accompanied with very sound critical remarks.

THEOBALD, W. Note on a Collection of Land- and Freshwater Shells from the Shan States, collected by F. FEDDEN. Journ. As. Soc. 1865, No. 130, pp. 273-279, with a plate.

The new species described in this paper will be mentioned subsequently; but some others, named only, without any description, are omitted here, as they cannot be regarded as introduced into science.

4. *Eastern Asia.*

MORELET, A. Description d'espèces appartenant à la faune malacologique de l'Indo-Chine. Journ. Conch. xiv. pp. 62-68.

MABILLE, J., and LE MESLE, G. Observations sur la faune malacologique de la Cochinchine et Camboja. Ibid. pp. 117-138, with plate 7.

PFEIFFER, L. Beschreibung neuer Landschnecken von der Insel Formosa. [Description of new land-snails from the island of Formosa.] Mal. Blätt. xiii. pp. 40-44.

The same species are described by the same author in Proc. Zool. Soc. 1865, p. 830, and mentioned in the Record for the preceding year.

ADAMS, H. Description of fifteen New Species of Land- and Freshwater Shells from Formosa, collected by Robert Swinhoe, Esq., Consul at Taiwan in that island. Proc. Zool. Soc. 1866, pp. 316-319, with pl. xxxiii.

SEMPER, O. Description d'Helicécs nouvelles des Philippines. Journ. Conch. xiv. pp. 152, 261-263, with pl. 8.

5. *Polynesia and Australia.*

PEASE, W. HARPER. Descriptions of New Species of Land-shells inhabiting Polynesia. Am. Journ. Conch. ii. pp. 289-293, with several figures.

COX, J. C. Description d'espèces nouvelles provenant d'Australie et des îles Salomon et Norfolk. Journ. Conch. xiv. pp. 45-48.

— Characters of Six new Australian Land-shells. Proc. Zool. Soc. 1866, pp. 373-375.

GASSIES, J. B. Description d'espèces nouvelles provenant de la Nouvelle Calédonie. Journ. Conch. xiv. pp. 49-52.

6. *Africa.*

MARTENS, E. VON. Uebersicht der Land- und Süßwasser-Mollusken des Nil-Gebietes. [List of the land- and freshwater Mollusca of the Nile countries.] Mal. Blätt. xiii. pp. 1-20; continued from the preceding year (see Record for 1865, pp. 223, 224).

Among the freshwater Mollusca the true tropical forms of *Ampullaria*, *Melania*, *Cyrena*, and the exclusively African *Lanistes* have been carried by the current into Lower Egypt, but *Physopsis*, *Ætheria*, and *Spatha* are to be found only in the upper parts of the Nile. The lake Mareotis at Alexandria is said to contain marine and freshwater Mollusca promiscuously; but it remains to be shown whether they are really living near each other, or whether only dead shells are found together.

MARTENS, E. VON. Ueber einige afrikanische Binneneonehylien. [On some African land- and freshwater shells.] Mal. Blätt. xiii. pp. 91-110, with two plates.

This paper contains:—several additions to the list of Nilotic Mollusca, mentioned above, chiefly from collections made by Heuglin and Steudner in and near Abyssinia, among them some freshwater shells from Lake Tzana; further descriptions and figures of a *Limicolaria* and *Achatina* from Guinea; finally, a new *Pupa* (*Ennea*) from Natal. Some general remarks are added on the genera of land- and freshwater Mollusks hitherto found in Western Africa; *Cyclostomidæ* appear to be totally absent. *Ampullaria vitrea*, *Melania aurita* and *fusca* are the most characteristic forms among the freshwater shells. The

genera *Achatina*, *Ætheria*, *Spatha*, and *Galatea* are the most peculiar forms throughout the tropical parts of Africa.

- ADAMS, H. List of Shells collected by S. White Baker, Esq., during his recent Explorations in Central Africa. Proc. Zool. Soc. 1866, pp. 375, 376.

One land-shell, *Limicolaria tenebrica* (Reeve), and eleven freshwater shells, two of which (*Unio*) are new.

- DOHRN, H. Die Binnenconchylien von Ilha de Principe. Mal. Blätt. xiii. pp. 116-136, with a plate. [The land- and freshwater shells of Prince Island, Gulf of Guinea.]

The author, known for many years as a zealous and judicious conchyliologist, has spent some months in exploring that island, but, attacked by fever, was unfortunately prevented by the state of his health, as well as by the want of goodwill on the part of the residents, from exploring the islands of St. Thomas and Fernando Po.

He gives in his paper a list of 18 land-shells, two freshwater snails (*Neritina*), and some submarine species (*Melampus*, *Truncatella*, and one of the *Neritimæ*), the greater part being found and examined alive by the author. The predominance of the genus *Achatina*, the presence of *Nanina*-like snails, and the absence of all operculated true land-shells in Western Africa are conspicuously confirmed by this list. A new genus, *Strepto-stele*, the natural affinities of which with *Streptaxis* and *Ennea* are pointed out by the author, is an interesting addition to those already known as characteristic of the African fauna. Numerous peculiarities concerning the life, station, and natural affinities of the species are to be found in this paper.

- MORELET, A. Coquilles nouvelles recueillies par M. Welwitsch dans l'Afrique équatoriale. Journ. Conch. xiv. pp. 153-162.

- PAIVA, CASTELLO DE. Dix nouveaux mollusques de l'île de Madeira. Journ. Conch. xiv. pp. 339-343, with pl. 11.

Some are fossil or subfossil.

- PFEIFFER, L. Ueber die Auriculaccen der Madera-Gruppe. Mal. Blätt. xiii. pp. 142-146.

One *Pedipes*, 1 *Marinula*, 2 *Alexia*.

7. West Indies.

- BLAND, TH. Remarks on the Origin and Distribution of the Operculated Land-shells which inhabit the Continent of America and the West Indies, with a Catalogue of the American species. Am. Journ. Conch. ii. pp. 54-63, 136-143.

Fully two-thirds of all the operculated land-shells are peculiar to islands, whilst more than one-half of the inoperculated are peculiar to continents. As regards America, twelve genera of

the operculated land-shells are common to the continent and the islands, two peculiar to the continent, and ten to the islands. Regarding species, four only are common to both, but about 600 peculiar to the islands, and only about 150 to the continent. The zoological province of the West Indies may be divided into five subprovinces :—

1. Cuba, with the Bahamas and Bermudas. *Diplopoma* is exclusively peculiar, *Megalomastoma*, *Choanopoma*, *Ctenopoma*, *Cistula*, *Chondropoma*, *Trochatella*, and *Helicina* are well represented. A foramen in the superior margin of the aperture is found in many Cuban species of several genera of *Cyclostomidae*, but not in one species from any of the other islands. *Chondropoma dentatum* and *Helicina subglobulosa* are common to these islands and the continent (Florida).

2. Jamaica. The genera *Gcomclania*, *Chittya*, and *Jamaicia* are peculiar, *Stoastoma* (with 80 species) and *Lucidella* nearly so. No *Megalomastoma* or *Chondropoma*. No species in common with the continent.

3. Haiti. No peculiar genus. *Megalomastoma*, *Licina*, and *Chondropoma* in common with Cuba, *Stoastoma* and *Lucidella* with Jamaica.

4. Porto Rico, with Vièque, the Virgin Islands, Anguilla, and St. Bartholomew. No peculiar genus. *Megalomastoma* and *Chondropoma* are represented, indicating a nearer alliance with Cuba and Haiti than with Jamaica; but there are wanting *Cyclotus*, *Ctenopoma*, and *Trochatella*. No species in common with the continent, but a rather large number of species common with the several islands of this subprovince.

5. Guadaloupe, Martinique, and Trinidad, with the adjacent islands. No genus exclusively peculiar; but *Cyclophorus*, which is not found in the other subprovinces, is common to this and the continent of Southern America, and even to Asia. No *Megalomastoma*, and only one species of the subfamily *Licina*. *Cyclotus translucidus* and *Helicina dysoni* common to Trinidad and the continent (Venezuela and even Honduras).

BLAND, TH. Remarks on the Distribution of the Inoperculated Land-shells which inhabit the Continent of America and the West Indies. Am. Journ. Conch. ii. pp. 349–370.

The genus *Helix* predominates in North America, *Bulinus* (with *Bulinulus*) in South America, and *Cylindrella* in the West Indies. The closer relations of the subprovinces embracing Cuba, Jamaica, and Haiti to North America, and of the Porto Rico and Guadaloupe subprovinces to South America, are shown by the greater numerical representation of *Helix* in the former, and of *Bulinus* in the latter. The development of these two genera is more nearly balanced in Mexico and Central America. *Cylindrella*, *Olcacina* (*Glandina*), and *Spiraxis* are copiously represented in Mexico and Central America on the continent, in Cuba, Jamaica, and Haiti among the islands, but feebly represented in the Porto Rico and Guadaloupe subprovinces, as well as on the continent of South America. The subgenera of *Helix* most characteristic of Cuba are :—*Eurycampta* (*H. bonplandi*), *Coryda* (*H. alauda*), *Thelidomus* (*H. auricoma*), *Polymita* (*H. muscarum*), *Polydotes* (*H. imperator*), and *Caracohus* (*H. sagemon*). Those of Haiti :—*Cysticopsis* (*H. tenerrima*), *Pleurodonta* (*H. lucerna*, *soror*, *sinuata*), and *Leptoloma* (*H. fuscocincta*); the genus *Sagda* is almost peculiar to Jamaica. The pecu-

liar forms of *Helix* in the island of Haiti belong to the subgenera *Plagioptycha* (*H. loxodon*), *Eurycratera* (*H. dominicensis*), *Cepolis* (*H. cepa*), and *Caracolus* (*H. caracolla*). *Liguus* (*Achatina fasciata*) and *Strophia* (the large species of *Pupa*) are common to Cuba and Haiti, but absent in Jamaica. The subprovince of Porto Rico has closer relations to Haiti than to Jamaica or Cuba; there are no strictly North-American forms; *Caracolus* and *Strophia* are represented; the only West-Indian species of *Clausilia* (*Cl. tridens*) inhabits Porto Rico. The characteristic form of the islands from Guadeloupe to Martinique and Barbadoes is the subgenus *Dentellaria*, several species of which are common to this subprovince and to the continent (French Guyana)—for example *Helix orbiculata*, *isabella*, *dentiens*, *nux denticulata*, *badia*. St. Vincent is well marked by the genus *Stenopus*. In the Porto Rico subprovince more subgenera of *Bulimulus* are represented than in Cuba, Haiti, or Jamaica; and in the Guadeloupe subprovince there are added some South-American subgenera of the restricted genus *Bulimus*, viz. *Pelecychilus* (*B. auris sileni* and *auris sciuri*), *Borus* (*B. oblongus*), and *Eurytus* (*B. aulacostylus*),—*Bulimus oblongus* and *auris sileni* inhabiting also the continent (French Guyana).

PFEIFFER, L. Zur Molluskenfauna von Cuba. Mal. Blätt. xiii. pp. 54-64.

Some remarks concerning Arango's catalogue of Cuban land-shells (see Record for 1865, p. 228), and original descriptions of some new varieties and species collected in Cuba by Dr. Gundlach.

——. Beschreibung neuer Landschnecken. [Description of new land-snails.] Mal. Blätt. xiii. pp. 76-91.

Thirty-nine species from New Granada, Mexico, and several West-Indian Islands.

——. Beschreibung einiger neuer Landschnecken von Cuba. L. c. pp. 138-141.

TRYON, G. W., Jun. On the terrestrial Mollusca of the Guano island of Navassa. Am. Journ. Conch. ii. pp. 304, 305.

This very small island is between Haiti and Jamaica, about fifty miles west of the former: three species have been there collected by Mr. E. Gaussoin, all new, one belonging to the genus *Chondropoma*, which is common to Cuba and Haiti, but absent in Jamaica, one *Helix* related to a Cuban group.

GUPPY, R. J. LECHMERE. Catalogue of the Land and Fresh-water Mollusca of Trinidad. Proceedings of the Scientific Association of Trinidad, First Part, Dec. 1866. Port of Spain, 8vo, pp. 10-35.

The Mollusks of this island were scarcely known to Mr. Bland when he published the papers mentioned above. Mr. Guppy enumerates 24 land-shells, including a slug (*Veronicella*), only five of which are operculated, not one being a true *Helix*. Only *Bulimulus* and *Stenogyra* are represented by more than two species. Eight freshwater and 3 submarine species. A preliminary ac-

count of the same fauna is published by Mr. Guppy in *Ann. & Mag. Nat. Hist.* 1866, January, pp. 42-55. A few of the names have been altered.

8. *South America.*

GONZALEZ HIDALGO, J., et CROSSE, H. Nouvelles espèces de la république Écuador. *Journ. Conch.* xiv. pp. 273, 343-345, 354-356, pl. 14.

ADAMS, H. List of Land and Freshwater Shells collected by Mr. E. Bartlett on the Upper Amazon and on the River Ucayali, Eastern Peru, with Descriptions of [7] New Species. *Proc. Zool. Soc.* 1866, pp. 440-445, plate 38.

PHILIPPI, R. A. Diagnosen einiger neuen Arten. [Diagnoses of some new species.] *Mal. Blätt.* xiii. pp. 38-40.

Two land- and one freshwater shell from Chile.

LEA, F. Description of twelve New Species of *Unionida* from South America. *Proc. Acad. Nat. Sc. Philad.* 1866, pp. 33-35.

9. *North America.*

TRYON, G. W. Monograph of the Terrestrial Mollusca of the United States. *Am. Journ. Conch.* ii. pp. 218-277, 306-329, with 6 plates (to be continued).

These pages, being written not so much for the use of those "who are, but rather for those who desire to become, conchologists," give descriptions of all North American species "as concise and as free from technical words as possible." All are figured: "whenever good specimens could not be readily obtained for figuring, recourse has been had to previously published figures." The parts published contain the genera *Glandina*, *Succinea*, *Vitrina*, and all the genera or subgenera included by Lamarck and Pfeiffer under the name *Helix*, with exception of the *Mesodontina*. *Hyalina cellaria*, [*Helix*] *Hygromia rufescens* and *hispida*, *Tachea hortensis*, and *Pomatia aspersa* are enumerated by Tryon as European species introduced into several localities in North America. Neither *Vitrina limpida* and *Conulus chersina* nor any species of *Succinea* is admitted to be identical with European species.

HUBBARD, J. W., and SANDERSON-SMITH. Catalogue of the Mollusca of Staten Island, N. Y. *Ann. Lyc. Nat. Hist. New York*, viii. nos. 4 and 5, 1865, pp. 151-154.

Thirty land-, twelve freshwater, and two brackish-water species. The occurrence of *Tebennophorus carolinensis* is remarkable. *Succinea aurea*, Lec., is plentiful on the salt-marshes.

BLAND, TH. Descriptions of New Species of North American Land Shells. *Am. Journ. Conch.* ii. pp. 371-374, with figures.

NEWCOMB, W. Addition to the Catalogue of Helices inhabiting the west coast of North America, north of Cape St. Lucas. *Am. Journ. Conch.* ii. p. 13.

Three species, *Helix arborea*, *H. minuscula*, and *H. idahoensis*, and new localities for five others, are added to the catalogue published in the volume for the preceding year of the same Journal.

DALL, W. H. On a species of *Helix* from California, supposed to be new. *Am. Journ. Conch.* ii. pp. 328, 329.

This paper includes a list of eight other small species hitherto found west of the Rocky Mountains.

GABB, W. M. Descriptions of three new species of land-shells from Arizona. *Am. Journ. Conch.* ii. pp. 230, 331.

TRYON, G. W. Monograph of the family *Strepomatidae*. *Am. Journ. Conch.* ii. pp. 14-52, 115-133.

This continuation contains brief descriptions and woodcuts of 274 species of *Goniobasis* and 32 of *Anculosa*.

ANTHONY, J. G. Descriptions of new American freshwater shells. *Am. Journ. Conch.* ii. pp. 145-147, pls. 6 and 7. [*Anodon*, *Unio*, *Goniobasis*, from Michigan.]

CONRAD, T. A. Descriptions of American freshwater shells. *Am. Journ. Conch.* ii. p. 278, 279, pl. 15. [*Physa*, *Anculosa*, *Vivipara*, *Unio*.]

b. *Marine Mollusca.*

1. *European Seas.*

JEFFREYS, J. GWYN. Report on dredging among the Hebrides. *Ann. & Mag. Nat. Hist.* xviii. pp. 387-397.

The invertebrate fauna of the Hebridean seas is of a northern character, although there are a few exceptions, as *Phasianella pulla*. Some species seem to reach their most southern limit in the Hebrides, as *Lima elliptica*, *Nucula pygmæa*, *Trochus grönlandicus*. The author has added some very valuable observations on animal life in the depths of the sea.

MÖRCH, O., mentions some species of mollusks new to the Danish marine fauna in *Vidensk. Meddel. fra den naturhist. Foren. i Kjöbenhavn*, 1865 (published 1866), p. 247, viz.:—*Pleurophyllidia loveni* (Bergh.), *Tylodina dübenii* (Lovén), *Cylichna nitidula* (Lovén), *Omalogyra nitidissima* (Ad.), *Fusus propinquus* (Alder), *Nassa pygmæa* (Lam.), *Panomya norwegica* (Spengler), and *Panopæa plicata* (Jeffer.).

MERCIER, F., et AUCAPITAINE, H. Liste des Mollusques Ptéropodes observés sur les côtes du Maroc, de l'Algérie et de la Tunisie. *Revue et Mag. Zool.* 1866, pp. 410-412.

STOSSICH, A. Enumerazione dei Molluschi del Golfo di Trieste. Trieste, 1866, 4to, pp. 19.

Five Cephalopods, 184 marine or submarine Gastropods, and

140 marine Bivalves are enumerated, according to the systematic arrangement of Messrs. Adams, which is known to the author only by Chenu's Manual. The synonymy is neither complete nor exact; Linnean and Lamarckian names are sometimes cited as synonyms only because some elder Italian authors, like Olivi, could not distinguish the Mediterranean species from the exotic, to which the Linnean names belong, or are, at least, now generally referred. Thus we find in his list a *Voluta castra* (Linn.), *Nerita canrena* (Linn.), *Cypræa pediculus* (Linn.), *Murex fuscatus* (Gmel.), *Turbo terebra* (Linn.), *Serpula arenaria* (Linn.), *Delphinula calcar*, Lam. [as written by the author, who means *Turbo calcar*, Linn. = *Trochus calcar*, Lam., which is a shell of the Eastern Seas, and by no means the young of *Turbo rugosus* (Linn.), although some malacologists have used the former name for the latter], *Monodonta canaliculata*, Lam. [here the author is misled by Philippi], *Trochus cinerarius*, Lam. [a species belonging to the Germanic province, but its name has been misapplied very frequently by Italian authors to somewhat similar Mediterranean species, especially *Trochus adriaticus*, Phil.]. On the other hand, we find in this paper some synonyms taken from the manuscript papers of the late Prof. Renier, which are little known to conchologists, for example, *Mytilus dentatus*, Renier = *Coralliphaga renieri*, *Tellina aperta*, Renier = *Galeomma turtoni*.

[It is to be regretted that the author, otherwise tolerably well informed in the literature of the shells of the Mediterranean, was not acquainted with the very elaborate list of Venetian shells published by Georg von Martens some forty years ago in his work 'Reise nach Venedig,' 1824, 8vo, second volume, with a plate representing some of the shells; M. Stossich would have found there several species and one genus, *Cæcum* = *Serpula arcuata* (Martens), not contained in his list. The fauna of the Adriatic, as shown by this list and by other more recent conchological researches in Dalmatia, resembles closely that of the Tyrrhenian part of the Mediterranean sea, which is known from the works of Philippi, Payraudeau, and Risso. The much smaller number of shells found on the Venetian side of the Adriatic is dependent, not on the geographical distance or the enclosure of this sea, but on the nature of the bottom, viz. absence of rocky ground.]

WEINKAUFF, H. C. Nouveau supplément à la liste des coquilles marines de la côte de l'Algérie. Journ. Conch. xiv. pp. 227-248.

2. Red Sea and Indian Ocean.

Some species of shells collected by Dr. E. SCHWEINFURTH on the shores of the Red Sea are enumerated by the RECORDER in Verhandl. zool.-bot. Gesellsch. Wien, 1866, p. 381.

SOVERBIE, S. M., and MONTROUZIER, R. T. Descriptions d'espèces nouvelles de l'Archipel Calédonien. Journ. Conch. xiv. pp. 138-151, 248-260, with plates 6 and 9.

3. *North America and the West Indies.*

HUBBARD, J. W., and SANDERSON-SMITH. Catalogue of the Mollusca of Staten Island, N. Y. Ann. Lyc. Nat. Hist. New York, viii. pp. 151-154.

Thirty-one marine Gastropods; forty marine Bivalves. *Ranella caudata* (Say), *Pyrula carica* and *P. canaliculata* (Brug.) are abundant; *Pecten irradians* (Lam.) and *Cardium mortoni* (Conrad) rare.

SANDERSON-SMITH. Catalogue of the Mollusca of Little Gull Island, Suffolk County, New York. Ibid. pp. 194, 195.

Twelve marine Gastropods, and nine Bivalves.

CROSSE, H., and FISCHER, P. Sur la distribution géographique des Brachiopodes aux Antilles. Journ. Conch. xiv. pp. 265-273.

DAVIDSON, T. Notes on some recent Brachiopoda dredged by the late Lucas Barrett off the north-east coast of Jamaica. Proc. Zool. Soc. 1866, pp. 102-104, with figures.

Two new species of *Argiope*; two species known for a long time as inhabitants of the Mediterranean, *Terebratulina caput serpentis* and *Thecidium mediterraneum*; and one hitherto known in a fossil state only, viz. *Th. barretti* (Woodw.).

c. *Palæontology of Recent Species.*

SARS, M. Om de i Norge forkommende fossile dyrelevninger fra quataerperioden. [On the fossil animals of the quaternary period in Norway.] Christiania, 1865, 4to, pp. 134, with 4 plates.

Although chiefly of importance to geologists, this work may be mentioned here on account of the intimate connexion of the quaternary with the present period of animal life. 175 species of Brachiopoda, Conchifera, Gastropoda, and Pteropoda have been recognized in the postglacial deposits near Christiania; and only four of them are not known as present inhabitants of the Norwegian shores, none being entirely extinct. *Terebratula* (*Gwynia*) *capsula* (Jeffreys) and *Cæcum incurvatum* (Adams, sp.) may yet be found alive in Norway, as they may easily be overlooked on account of their small size, whereas the two others, *Tapes decussata* (L., sp.) and *Pholas candida*, are Mediterranean species, which, during the postglacial period, appear to have extended further northwards than at present. In the glacial deposits, 60 species of Brachiopoda, Conchifera, and Gastropoda have been found, none being at present extinct, but almost all belonging to the present Arctic fauna.

A "résumé" in the French language, pp. v-viii, will materially assist in the use of this valuable work, which is written in the Danish language.

DAWSON, J. W. Notes on post-pliocene deposits at Rivière du Coup and Tadoussac, Canada. *Canad. Nat. and Geol.* 1865, ii. pp. 81-88.

These notes contain a list of about fifty shells, which, with very few exceptions, are specifically identical with recent ones, living on the coasts of Northern America from Massachusetts to Greenland.

Notices concerning the recent species of *Buccinum* found in the pleistocene beds of Canada and Maine by the same author and Dr. Packard are scattered through the memoir of Dr. Stimpson in the same journal, pp. 364-389.

SANDERSON-SMITH. Notice of a Post-pliocene deposit on Gardiner's Island, Suffolk County, New York. *Ann. Lyc. Nat. Hist.* viii. pp. 149-151.

Twenty-three shells have been found, "at an elevation of about 15 or 20 feet above the sea-level; with the exception of *Fusus decemcostatus*, and perhaps *Lucina radula*, they are still inhabitants of the neighbouring waters, south of Cape Cod; but still the group as a whole has a more northern aspect than the group of species at present inhabiting these waters."

[*Hyalina*] *Mesomphix demissa*, Binney, living in Western Pennsylvania, fossil in Alabama and Texas. Tryon, *Am. Journ. Conch.* ii. p. 255.

Several subfossil land-shells are found in St. Croix (West Indies)—among them *Helix caracolla*, *H. marginella*, two species of *Strophia*, *Cyclostoma basicarinatum* and *chordiferum*—none of which are now living on the island, the two first mentioned being Cuban and Haitian species. Bland, *Am. Journ. Conch.* ii. pp. 139, 365.

C. GENERA AND SPECIES.

Class CEPHALOPODA.

CHERON, JULES. Recherches pour servir à l'histoire du système nerveux des Céphalopodes dibrachiaux. *Ann. Sc. Nat.* 1866, pp. 1-122, with plates 1-5.

A most elaborate description of the anatomy and histology of the nervous system of the Cephalopods. The principal results are recapitulated at the end of the paper in twenty-seven paragraphs, the author declaring himself against the opinion of those who maintain a unity of fundamental structure in Cephalopods and Vertebrates.

FISCHER, P. Observations sur quelques points de l'histoire naturelle des Céphalopodes. *Ann. Sc. Nat.* vi. 1866, pp. 308-320.

Sepia officinalis, *Loligo vulgaris*, and *Octopus vulgaris* have been observed alive by the author, who describes their natural attitudes and mode of pro-

gression, especially swimming,—further the copulation and reproduction of the first species. The arms of both individuals are so narrowly interlaced during copulation, that the jaws are in contact, and at the same time the pupils are so extended as to appear circular. Males and females of *Sepia* are not to be distinguished externally by any striking difference in form or colour.

Octopus dentatus (Gabb). On its dentition see Dall, Proc. Calif. Ac. Nat. Sc. 1866, no. 1.

Sepiolo atlantica from the German Ocean. Teeth of the radula described by Eberhard, Programm der Realschule zu Koburg, 1865, p. 9, pl. 4. fig. 68 [this figure differs remarkably, as regards the shape of the teeth, from that given by Lovén]; jaws, figs. 69, 70.

Nautilus pompilius. The contributions to its anatomy by Prof. Keferstein (see Record for 1865, p. 240) are republished in the Mal. Blätt. xiii. pp. 21–38, but without plates.

Nautilus. Conrad retains the name *N. perforatus* given by him for the umbilicated and striated species, as it is impossible to say whether Solander's *scrobiculatus* represents this species or *umbilicatus*. Am. Journ. Conch. ii. p. 101.

Class PTEROPODA.

AGASSIZ, ALEX. Remarks on the habits of *Spirialis flemingii*.

Proceed. Bost. Soc. Nat. Hist. 1865. Am. Journ. Conch. ii. p. 182:

This species occurred in great abundance at Nahant during the summer of 1863. They come to the surface of the water about an hour after dusk, and do not remain long; after ten o'clock at night they were rarely met with; they can creep about by means of their wing-like appendages, and remain suspended in the water for hours simply by spreading, and suddenly drop to the bottom on folding them: they move by beating the water like a butterfly; and a long siphon counterbalances the weight of the shell and the parts enclosed in it.

Hyalæa quadridentata (Rang). Teeth of the radula, Eberhard, *l. c.* p. 20, pl. 5. fig. 84. [Perfectly agreeing with those of *H. tridentata* figured by Lovén.]

Cleodora cuspidata (Bosc). Teeth of the radula, Eberhard, *l. c.* p. 20, pl. 5. fig. 85. [Agreeing with the figures given by Troschel of *Creseis phæostoma*, but not with that for *Cleodora pyramidata*.]

Class HETEROPODA.

Carinaria. Three species are figured in Reeve's Conchologia Iconica, part 248, 1865; and three in Sowerby's Thesaurus, part 24, 1866:—*C. vitrea* (Lam.), *cristata* (L.), and *atlantica* (Adams and Reeve).

Class GASTROPODA.

Order PECTINIBRANCHIATA.

Suborder PROBOSCIDIFERA.

MURICIDÆ.

Murex brandaris and *trunculus* (L.). Dentition of both described, but only of one [which?] figured by Eberhard, *l. c.* p. 13, pl. 3. fig. 58.

Murex trigonulus (Lam.) and *longicornis* (Dunker), Novitat. Conchol. part 8, 1865, p. 72, pl. 22. figs. 3, 4, 5, and 6.

Murex weinkauffianus, sp. n., Crosse, Journ. Conch. xv. p. 274, pl. 8. fig. 4, Adriatic.

Typhis (Montf.). In Sowerby's monograph in Thesaurus, part 24, vol. iii. pl. 284, the following eleven species are described and figured:—*T. sowerbii* (Brod.), *quadratus* and *nitens* (Huds.), *yatesii* (Crosse), *belcheri* (Brod.), *cleryi* (Petit), *montfortii* (A. Ad.), *coronatus* and *pinnatus* (Brod.), *cumingii* (Brod.), *arcuatus* (Hinds). No localities are mentioned. *T. angasi*, Crosse, is excluded from the genus.

Fusus longurio, sp. n., Weinkauff, Journ. Conch. xiv. p. 247, pl. 5. fig. 4, Algeria.—*Fusus titii*, sp. n. Stossich, l. c. p. 7, Adriatic. Allied to *F. corallinus*, Scacchi.

Pyrula melongena (L., sp.). Teeth of the radula, Eberhard, l. c. p. 14, pl. 5. fig. 87. [Very well agreeing with those of the allied species *Fusus morio* as figured by Lovén.]

BUCCINIDÆ.

STIMPSON, W. Review of the Northern Buccinums. Part I. Canad. Nat. and Geol. new series, vol. ii. 1865, pp. 364–389.

We may be allowed to give a more detailed account of this important paper. As regards the antarctic species referred to this genus, more careful examination, both of the shell and soft parts, is stated to be required before deciding upon their actual pertinence to it; *Bucc. dalei* (Sow.) and *ovoides* (Middendorff) are at once removed from it on account of the differences in the lingual dentition, and a new genus "*Liomesus*" proposed for them. [This genus has already been established and named *Buccinopsis* by Messrs. Adams.]

The species are established as follows:—

B. polare, Gray, Zool. Beech. North of Behring's Straits.

B. grönlandicum, Hancock, Ann. & Mag. Nat. Hist. 1846, Reeve, fig. 118, = *hancocki*, Mörch. Davis Straits.

B. glaciale, L., = *carinatum*, Phipps, Voy. Behring's Straits, Greenland, Spitzbergen.

B. donovani, Gray, = *glaciale*, of Donovan, and of Gray in the Appendix to Parry's first voyage, = *tubulosum*, Reeve, fig. 105. Newfoundland.

B. angulosum, Gray, Zool. Beech. (Middendorff, Mal. Ross.?). North of Behring's Straits.

B. striatum, Sowerby, "Records of General Science," and Smith, Wern. Mem. 1839, not of Pennant, = *ochotense*, Midd. Sea of Ochotsk; fossil in pleistocene beds of the Clyde.

B. ciliatum, Fabr., Möller, = *cyaneum* of Hancock not of Bruguière, = *mölleri*, Reeve, = *tenebrosum*, var. *borealis*, Midd. Periostraca ciliated. Greenland, Newfoundland banks, Nova Scotia, Behring's Straits.

B. plectrum, sp. n., Stimps. p. 374, has nearly the forms and plaits of *B. tenue*, with a striation of the *glaciale* type. North of Behring's Straits.

B. undatum, L., including *striatum*, Penn. Western coasts of Europe, from Southern Norway to Portugal.

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N

B. undulatum, Möller, = *undatum* of Greene, Gould, and De Way, Catal. of Massachusetts and New York, = *labradorensis*, Reeve. "It is not often that two species of shells can be found the differences between which are more difficult to define than those of the common whelks of the European and North American shores of the Atlantic."

B. cyaneum, Bruguière, Beck, Reeve, = *undatum* of Fabr. Fn. Grönl., = *boreale*, Leach, = *humphreysianum*, Möller, = *hydrophanum*, *sericatum*, *tenebrosum*, and *undulatum*, Hancock, = *grönlandicum* of Mörch. Greenland, Northern Norway and Lapland.

B. simplex, Midd. Schantar Island in the sea of Ochotsk.

B. totteni, sp. n., Stimps. p. 385, = *ciliatum*, Gould MS., partly. Allied to *B. humphreysianum*, but the whorls plicated and more convex, the transverse sculpture deeper, and no deep colour. Banks of Newfoundland.

The author has added an analytical table for distinguishing the species. However, as he says himself, "in a genus where almost every specific character is subject to great variation, and where the species must be recognized rather by the gross amount of the characters than by the prominence of particular ones, this is a very difficult matter. Such a synopsis is here only useful for the determination of the specific relations of perfect and well-characterized specimens" :—

Body-whorl angulated or carinated.

Primary transverse ridges flat, secondary ridges inconspicuous.

Shell thin, aperture not patulous, outer lip not sinuated.

Whorls shouldered, aperture broadest above *B. polare*.

Whorls scarcely shouldered, apert. broadest below. *B. grönlandicum*.

Shell thick and strong, aperture patulous, outer lip sinuated.

Shell elongated *B. donovani*.

Shell ovate *B. glaciale*.

Prim. transv. ridg. convex, second. grooves very distinct.

B. angulosum.

Body-whorl not angulated.

Aperture narrow.

Primary ridges flat. *B. striatum*.

Prim. ridg. convex, tooth-like plait on columella. . *B. ciliatum*.

Aperture broad.

Longitudinal folds numerous, often interrupted or interposed.

Primary ridges flat. *B. plectrum*.

Prim. ridg. obsolete; second. conspicuous, crowded. *B. tenue*.

Longitudinal folds not interrupted nor interposed.

Shell thick and coarsely striated.

Sinus of outer lip near the suture, columella short.

B. undulatum.

Sinus of out. lip near middle, colum. projecting. *B. undatum*.

Shell finely striated, usually thin.

Secondary ridges easily distinguished from the primaries, which are often obsolete.

Columella distinctly folded *B. simplex*.

Columella smooth, not distinctly folded . . *B. cyaneum*.

Secondary ridges confounded for the most part with the primaries.

Longitudinal folds conspicuous *B. totteni*.

Longitudinal folds obsolete *B. humphreysianum*.

Buccinum. The radula figured by Eberhard, *l. c.* pl. 5. fig. 83, under the name "*Buccinum (annulatum?)*" does not agree with Lovén's *Nassa annulata*, which is *Buccinum ann.* of Lam., and *Bullia ann.* of more recent conchologists; but it resembles very much Lovén's [*Buccinum*] *cyaneum*; perhaps the name may be misprinted for *angulosum*, *B. angulosum* (Gray) being a northern species allied to *glaciale*, *cyaneum*, and *undatum*.

Bullia rhodostoma (Gray) and *B. achatina* (Lam.). Teeth of the radula, Eberhard, *l. c.* p. 14, pl. 5. figs. 94 and 95. [Both agree well with Lovén's figure for *Bullia annulata* (Lam.), and show that this genus resembles *Nassa* in the middle tooth being multidenticated, and the true northern *Buccinums* in the denticulations of the lateral teeth.]

Eburna semipicta, sp. n., Sowerby, *Thes.* part 24 or vol. iii. pl. 291. figs. 12, 13, locality unknown.—*Eb. borneensis*, sp. n., *ibid.* fig. 14, Borneo.—*Eb. chrysoptoma*, sp. n., *ibid.* figs. 15, 16, Ceylon.—*Eb. formosæ*, sp. n., *ibid.* figs. 17, 18, Formosa.

Nassa coronata (Brug.). Teeth of the radula, Eberhard, *l. c.* p. 14, pl. 5. fig. 6. The radula figured by Eberhard, *l. c.* pl. 5. fig. 82, is referred in the explanation of the figures to the genus *Fusus*, and quoted in the text as a *Buccinum*, but resembles much more those of *Nassa* figured by Lovén and by Eberhard himself.

Nassa intermedia, sp. n., Dunker, *Verh. zool.-bot. Gesellsch. Wien*, 1866, p. 909, Australia. Between *N. glans* (L.) and *N. suturalis* (Lam.).

Nassa reticulata (L.) is destructive to oysters, the shells of which are pierced by it. Soubeiran, *Bull. Soc. Imp. Acclimat. Paris*, iii. 1866, p. 3.

[*Nassa*] *Nassodonta insignis*, H. Adams, *Proc. Zool. Soc.* 1866, p. 445, pl. 38. fig. 8, River Peiho, China, in company with *Velorita*. Distinguished by a tooth in the outer margin of the aperture.

Purpura echinata. Teeth of the radula figured by Eberhard, *l. c.* p. 14, pl. 3. fig. 56.

Purpura distinguenda and *tristis*, sp. n., Dunker, *Verh. zool.-bot. Gesellsch. Wien*, 1866, p. 910, Nicobar Islands and New Zealand.

Concholepas peruviana. Teeth of the radula figured by Eberhard, *l. c.* p. 14, pl. 3. fig. 57. [Also by Troschel, *Arch. für Naturg.* 1852, pl. 7. fig. 5.]

VOLUTIDÆ.

Voluta kaupii, sp. n., Dunker, *Novitat. Conchol.* part 8. p. 71, pl. 22. figs. 1, 2.—*V. deliciosa*, sp. n., Montrouzier, *Journ. Conch.* xiv. p. 151, pl. 6. fig. 3 (operculum), New Caledonia.

Lyria. The characters of this genus of operculated *Volutæ* are pointed out, and eleven species formerly referred to *Voluta* are enumerated, by Crosse, *Journ. Conch.* xiv. pp. 105-116. The change in the situation of the nucleus is dependent on the age of the operculum, pp. 335-337.

MITRIDÆ.

Mitra nicobarica, sp. n., Dunker, *Verh. zool.-bot. Gesellsch. Wien*, 1866, p. 911.—*Mitra leontocroma*, sp. n., Brusina, *Faun. Moll. Dalmat.* p. 34, Adriatic.

Columbella lactescens and *troglydites*, sp. n., Souverbie, Journ. Conch. xiv. pp. 144, 145, pl. 6. figs. 5 and 4, New Caledonia.—*C. isabellina*, sp. n., Crosse, l. c. p. 165, pl. 7. fig. 8.

RANELLIDÆ.

Tritonium scabrum (King). Teeth of the radula, Eberhard, l. c. p. 12, pl. 3. fig. 52. [If the specimen on which this observation has been made be correctly determined, it proves that this species belongs to the true *Ranelloidæ*, being tænioglossate, and not to *Pollia* (Gray), which is hamiglossate, and belongs to the *Buccinidæ*.]

[*Ranella*] *Bursa fuscocostata*, *asperrima*, *grayana*, and *cumingiana*, sp. n., Dunker, Novitat. Conch. part 7 (1864), pl. 20.

LAMELLARIIDÆ.

Lamellaria kleciachi, sp. n., Brusina, Faun. Moll. Dalm. p. 35, Adriatic.

SCALARIIDÆ.

Scalaria cantrainei and *algeriana*, sp. n., Weinkauff, Journ. Conch. xiv. p. 246, Algeria.—*S. subauriculata*, sp. n., Souverbie, ibid. pp. 147 and 260, pl. 6. fig. 2, New Caledonia.—*S. zelebori*, sp. n., Dunker, Verh. zool.-bot. Gesellsch. Wien, xvi. p. 912, New Zealand.

PYRAMIDELLIDÆ.

Pyramidella. Reeve figures 45 species in Conchol. Icon. parts 250 and 251. *Odstomia* (*Pyramidella*?) *interstriata*, sp. n., Souverbie, Journ. Conch. xiv. p. 255, pl. 9. fig. 6, New Caledonia.

Auriculina exilissima, sp. n., Brusina, Faun. Moll. Dalmat. p. 35, Adriatic. *Monopygma vitreum*, sp. n., Brusina, l. c. p. 36, Adriatic.

EULIMIDÆ.

Eulima gracillima (Sow.), Guatemala, *retrorsa* (Sow.), Tahiti, *arcuata solida*, *sandwichiensis*, *conoidalis*, *opaca* (Sow.), and *subpellucida* (Pease), all from the Sandwich Islands, and apparently new, are figured in Reeve's Conchologia Iconica, parts 252 and 253.

STYLIFERIDÆ.

A species of *Stylifer* has been found within the cloaca of an *Holothuria* [*H. glaberrima*, Selenka] by F. Jagor; the foot of the animal penetrates deeply into the fleshy walls of the cloaca; and the shell is surrounded by a cup-like expansion of the mantle. Martens, Sitzungsberichte der Gesellschaft naturforschender Freunde in Berlin, 1865, p. 14.

Suborder TOXIFERA.

CONIDÆ.

Conus. The dentition is described and figured by Eberhard, l. c. p. 13, pl. 4. figs. 71-73. [The species examined are stated to be *Conus gubernaculum* and *C. vicarius*. The Recorder does not know a *C. gubernaculum*, but a *C. gubernator*; and the specimen communicated to him as the type of the investigation is *C. consors*, Brod.]

The following species are added by Sowerby in Part 24 of the 'Thesaurus,' pls. 286-289, to his former monograph:—*Conus compressus, roseotinctus, straturatus, subcarinatus, excavatus, nigrescens, proximus, condensus, multicatenuatus, nodulosus, tasmanica, quadratomaculatus, turriculatus, cordigera* [cordiger], *concinus, borneensis, and complanatus*, Sow.; *anaglyptus, moussoni, macei, circumsignatus, anabathrum, archetypus, and frauenfeldi*, Crosse; *lienardi, macaræ, calina, chenii, conderti, crosseanus, villepini, cecilia, cabritii, pazzi, and rollandi*, Bernardi; *planaxis* and *spiroglossus*, Desh.; *daphne* and *consul*, Boivin; *alabaster*, Reeve. No localities are given.

PLEUROTOMIDÆ.

Pleurotoma tigrina (Lam.). Dentition figured by Eberhard, *l. c.* p. 13, pl. 5. fig. 105.

[*Defrancia*] *Raphitoma barbierii*, sp. n., Brusina, Faun. Moll. Dalmat. p. 33, Adriatic.

Suborder ROSTRIFERA.

OVULIDÆ (AMPHIPERASIDÆ).

Ovulum. The monograph of this genus in Reeve's Conchologia Iconica has been brought to a conclusion in Nos. 248 and 249. The total number of species is 66. New are:—*O. angasi* (Adams), Australia; *roseum* (Adams), China Seas; *indicum* (Rve.), Bombay; *californicum* (Sow.), California; *lividum* (Rve.), Panama; *antillarum* (Rve.), West Indies; *arcuatum* (Rve.), *variable* and *neglectum* (C. B. Adams).

STROMBIDÆ.

Strombus gigas, L. Dentition figured by Eberhard, *l. c.* p. 10, pl. 3. fig. 46.

TRICHOTROPIDÆ.

Trichotropis. In Sowerby's monograph, Thesaurus, part xxiv. vol. iii. pl. 285, the following twelve species are described and figured:—*borealis*, Brod. et Sow.; *costellata*, Couth.; *inermis*, Hinds; *kuzeri* [kroyeri], Phil.; *flavidula* and *cancellata*, Hinds; *cedo-nulli* and *quadricarinata*, A. Ad.; *conica*, Müll. [Möller, not Müller]; *insignis*, Midd.; *bicarinata*, Brod. et Sow.; *unicarinata*, Sow.

CERITHIIDÆ.

Cerithium. One hundred and forty-nine species are figured in Reeve's Conchologia Iconica, 1865, the following of which are published as new:—Parts 250 and 251: *C. nigrifasiatum* (Sow.) and *C. circinatum* (Adams), both from the Philippines. Parts 252 and 253: *C. filosum* and *pupa* (Sow.), Philippines; *unilineatum, fucatum, beticum, paxillum, and tricarinatum* (Pease), Sandwich Islands; *adenense* (Sow.), Aden; *excavatum* (Sow.), North Australia; *insculptum* (Sow.), South Australia; *tæniatum* (Sow.), Natal; *delectum* (A. Adams), Gallapagos; *californica* and *trochiforme* (Sow.), California; *rissoidæ* and *thomasica* (Sow.), St. Thomas, West Indies; *bermudæ* (Sow.), Bermudas; and *lentiginosum, siphonatum, clavis, altum, gracillimum, and obsoletum* (Sow.), without indication of locality. To these is to be added *Vestagus graniferus* (Pease), Sandwich Islands, *ibid.* In Sowerby's Thesaurus, plate 290, are figured 29 species, mostly the same as those in Reeve; new is *C. coarctatum* [Colina], figs. 321, 322.

- Cerithium gibberosum*, sp. n., Dunker, Verh. zool.-bot. Gesellsch. Wien, 1866, p. 911, Nicobar Islands.
Colina gracilis, sp. n., Adams, Proc. Zool. Soc. 1866, p. 150, Eastern Seas.

MELANIIDÆ.

Brotia, g. n. Operculum multispiral, as in the Cerithiidae, appearance of the shell like *Io*. *Melania pagodula* (Gould), River Thoungyin, Tavoy. H. Adams, Proc. Zool. Soc. 1866, p. 150.

Melania præmordica, sp. n., Tryon, Am. Journ. Conch. ii. p. 111, pl. 10. fig. 3, Burmah.—*M. minuta*, id. ibid. p. 299, pl. 20. fig. 3, Tahiti.—*M. oualanensis*, sp. n., Pease, ibid. p. 299, pl. 20. fig. 4, Oualan Island.—*M. peasei*, sp. n., Tryon, ibid. p. 300, pl. 20. fig. 5, Fiji Islands.—*M. tahitensis* and *huteola*, sp. n., Dunker, Verh. zool.-bot. Gesellsch. Wien, 1866, pp. 911, 912, Tahiti.—*M. tetrica* and *balonnensis* (Conrad, 1850), from Australia, are figured in Am. Journ. Conch. ii. pl. 1. figs. 9 and 10.

Melania variabilis (Bens.). Five well-marked varieties are described by Theobald, Journ. As. Soc. 1865, no. 130, pp. 273–279, and four figured on pl. 9. figs. 4–7. They are named var. *glabra*, *vittata*, *turrita*, *pyramidalis*, and *buccifera*.

The continuation of Mr. TRYON'S monograph of the family *Streptomatidæ* has been noticed above (p. 172). He has also published a "Note on the lingual dentition of the *Streptomatidæ*" (Am. Journ. Conch. ii. pp. 134, 135), which is a reproduction of the corresponding part of Prof. Troschel's "Gebiss der Schnecken."

Pleurocera bicinctum, sp. n., Tryon, *l. c.* p. 4, pl. 2. fig. 2, Alabama.

Angitrema wheatleyi, sp. n., Tryon, *l. c.* pl. 2. fig. 1, Elk River, Tennessee.

Lithasia cylindrica, sp. n., Coosa River, and *L. wheatleyi*, sp. n., Cababa River, Alabama, Lea, Proceed. Acad. Nat. Sc. Philad. 1866, p. 133.

Eurycelon leaii, sp. n., Tryon, *l. c.* p. 5, pl. 2. fig. 3, Etowah River, Georgia.

Goniobasis undulata, sp. n., Tryon, *l. c.* p. 5, pl. 2. fig. 4, Georgia.—*G. cingenda*, sp. n., Anthony, Am. Journ. Conch. ii. p. 146, pl. 7. fig. 3, North Carolina.

Anculosa pumila (Conrad) figured in Am. Journ. Conch. ii. pl. 15. fig. 5, Alabama.

Hemisinus baudonianus, sp. n., Mabille and Le Mesle, Journ. Conch. xiv. p. 133, pl. 7. fig. 1, Cochin China.—*H. binneyi*, sp. n., Tryon, *l. c.* p. 8, pl. 2. fig. 8, New Granada.—*H. pazi* and *simplex*, sp. n., id. ibid. pp. 300, 301, pl. 20. fig. 6 and 7, Quito.

LITTORINIDÆ.

Melaraphe subgranosa, sp. n., Dunker, Verh. zool.-bot. Gesellsch. Wien, 1866, p. 913, Madras.

Risella kielmannsegi, sp. n., Dunker, *l. c.* p. 913, New Zealand.

PLANAXIDÆ.

Planaxis nicobaricus, sp. n., Dunker, Verh. zool.-bot. Gesellsch. Wien, 1866, p. 910, Nicobar Islands. Most closely allied to *P. nucleus* (Brug.) and *P. ovatus* (Krauss).

RISSOIDÆ.

Rissoa octona (L. Nilss.). Dentition described by Eberhard under the name of *Hydrobia octona*, *l. c.* p. 10, pl. 3. fig. 54.

Rissoa salina, sp. n., Stossich, l. c. 1865, p. 10, Pirano, Adriatic.—*R. cenoensis*, *R. frauenfeldiana*, *R. strangulata*, sp. n., Brusina, Faun. Moll. Dalmat. pp. 20, 22, and 23, pl. 3. figs. 6, 7, and 8, Adriatic.—*R. exilis*, sp. n., Tryon, Am. Journ. Conch. ii. p. 12, pl. 2. fig. 18, San Diego, California, with *R. cooperi* (Tryon).

Alvania schwartziana, sp. n., Brusina, Faun. Moll. Dalmat. p. 25, pl. 3. fig. 9, Adriatic.

Rissoina funiculata, *duclosi*, *spiralis*, and *exasperata*, sp. n., Montrouzier and Souverbie, Journ. Conch. xiv. pp. 256–259, pl. 9. figs. 7–10, New Caledonia.

STIMPSON, W. Researches upon the *Hydrobiinae* and allied forms. Smithson. Miscell. Coll. 201. Washington, August 1865, 8vo, pp. 59, with 59 woodcuts.

An excellent memoir, in which the author examines the characters and principal species of small shells inhabiting fresh or brackish water formerly included in the genus *Paludina*, but distinguished from it by the spiral structure of the operculum, and recently split into too many generic divisions. Particular attention is paid to the form of the living animal and to the lingual dentition, which are illustrated by several original figures. The following genera are adopted by the author:—

1. *Stenothyra*, Bens. Freshwater [brackish-water]. India, South-eastern Asia, and the neighbouring islands. *Nematura deltae*, Bens.

2. *Tricola*, Bens. Freshwater. India. *T. montana*, Bens.

3. *Littorinella*, Braun. Brackish or sea-water, in sheltered positions; probably mundane. *Turbo ventrosus*, Montagu, and *T. minutus*, Totten.

4. *Hydrobia*, Hartmann. Brackish water; mundane. *Turbo ulva*, Penn. [See below.]

5. *Bythinella*, Moquin-Tandon. Freshwater. Europe and North America: *Bulimus viridis*, Poiret, &c. North American species: *Paludina nickliniana*, Lea, and *Pomatiopsis binneyi*, Tryon.

6. *Paludestrina*, Orbigny. Freshwater. South America and the West Indies. *P. auberiana*, Orb., &c.

7. *Pyrgula*, Cristofori et Jan. Freshwater in mountainous regions. Europe and South America. *Melania helvetica*, Michelin=*P. annulata*, Cristofori et Jan [this species has never been found in Switzerland, but only in some lakes of Upper Italy, principally the lake of Garda]; *Bythinia bicarinata*, Dupuy [*Paludina bicarinata*, Desmoulins, Michaud]; *P. pyrenaica*, Bourg.; and *Paludestrina andicola*, Orb.

8. *Tryonia*, Stimps. (Record for 1865, p. 256). Freshwater. Southern California. *T. clathrata*, Stimps.

9. *Potamopyrgus*, Stimps. (Record for 1865, p. 256). Freshwater. New Zealand. *Melania corolla*, Gould.

10. *Cochliopa*, Stimps. (Record for 1865, p. 256). Freshwater. California. *Annicola rowelli*, Tryon.

11. *Gillia*, Stimps. (Record for 1865, p. 256). Freshwater. The Eastern parts of the United States of North America. *Melania altilis*, Lea.

12. *Somatogyrus*, Gill. Freshwater. The central parts of North America. *Annicola depressa*, Tryon.

13. *Ammicola*, Gould et Haldeman. Freshwater. North America. *Paludina limosa*, Say, &c.

14. *Lithoglyphus*, Mühlfeld. Freshwater. South-eastern Europe and South America. *Paludina naticoides*, Fér.; *Paludestrina lapidum*, Orb., &c.

15. *Fluminicola*, Stimps. (Record for 1865, p. 256). Freshwater. Oregon and Columbia. *Paludina virens*, Lea; *nuclea*, Lea; *seminalis*, Hinds; and *Ammicola hindsii*, Baird.

16. The genus *Pomatiopsis* (Tryon), restricted by Mr. Stimpson, forms a subfamily, *Pomatiopsinæ*, being terrestrial, although it is provided with a true gill and has no trace of a vascular lung; it lives in company with *Succinea* and *Helix electrina* near the borders of streams and marshes; the mode of progression of the animal is "stepping," which it affects by affixing the disk-like extremity of the snout to the ground as far ahead as possible, in a manner somewhat similar to that of *Truncatella* [and *Pedipes*]. This observation was made by the author on *P. lapidaria*. *Ammicola sayana* (Adams) belongs probably also to this genus. *Cecina* and *Blanfordia* (A. Adams) have considerable resemblance to it in form and habits; but neither their lingual dentition nor their respiratory organs are known.

[Dr. Stimpson does not appear to have been acquainted with a paper, "Ueber einige Brackwasser-bewohner aus den Umgebungen Venedigs" (Wieg. Arch. 1858, xxiv.), in which most of the genera mentioned are treated of, and which especially contains information on Hartmann's *Hydrobia (acuta*, Drap., and *vitrea*, Drap.), on the position of *Pyrgula* among the *Hydrobiæ* (instead of *Melaniæ*), and on the *H. thermalis* of most authors, which is not the true *thermalis* of Linné, but *H. aponeensis* (Martens).]

G. W. TRYON reviews this memoir of Dr. Simpson in Am. Journ. Conch. ii. pp. 152-158, and defends his opinion that the *Rissoidæ*, *Skeneidæ*, and *Ammicolidæ* should be separated as distinct families.

Hydrobia baltica (Nilss.). Radula described, but not figured by Eberhard, l. c. p. 11.

Hydrobia ligurica, etrusca, macei, charpyi, lusitanica, sp. n., from Italy, Southern France, and Portugal. Paladilhe, Rev. et Mag. Zool. pp. 89-95.

Cingula epidaurica and *Hydrobia strongylostoma*, sp. n., Brusina, Faun. Moll. Dalmat. p. 29, pl. 3. figs. 10 and 11, Adriatic.

Bugesia, n. g., Paladilhe, l. c. p. 54, pl. 13. figs. 8-10, a little *Hydrobia*-like shell, but tuberculated like a *Cerithium*. The species is called *B. bourguignati*, and has been found in the alluvium of the Lez, near Montpellier.

Paladilhia. A list of the known species, including *Paludina bicarinata* (Desmoulins), has been given and a new species, *P. bourguignati*, added by Paladilhe, l. c. p. 94. The latter is figured pl. 13. fig. 4-7; it occurs near Montpellier. The animal has been found alive, but could not be satisfactorily observed on account of its extreme shyness; it liked to stay near the surface of the water, a small part of the aperture emerging from the water.

Ammicola cincinnatiensis (Anthony) has been found also in Mexico. Tryon, Am. Journ. Conch. ii. p. 11.

PALUDINIDÆ.

Mr. TRYON insists upon the importance of the differences in the number of bands in the species of *Vivipara* [*Paludina*] which are in other respects similar to one another; all the true North American species have four bands, if they have any; the Cuban species, *bermondiana* (Orb.) has only two; the two European are three-banded; those living in Asia and Australia are provided with more numerous narrow bands. Am. Journ. Conch. ii. p. 109, 110. [The Recorder is able to confirm this, especially with regard to the *Paludina* of Siam and Sumatra, *P. polygramma* and *sumatrensis*. He takes this opportunity of correcting an error in the Record for 1865, p. 258, where it should be read, "*Paludina lineata*, Val. = *multilineata*, Say = *bengalensis*, Lam.; this is not the North American four-banded shell, which is analogous to the European three-banded species." Küster first identified them; and several authors followed him; but Valenciennes, in the "Observations Zoologiques" which form part of Humboldt's celebrated description of his American voyage, clearly states that his *Paludina lineata* has numerous bands. Therefore the American four-banded species must be called *P. lineata* (Küster), not *P. lineata* (Val.), or receive another name.]

Hr. VON FRAUENFELD has published some remarks on about thirteen specimens of Indian and Australian *Paludina*, Verh. zool.-bot. Ges. Wien, 1866, pp. 197-199. *Vivipara gassiesi*, sp. n., from Anam. He continues to regard *V. fallax* and *V. maheyana* as distinct species.

Paludina lecithoides (Bens.). The teeth of the radula are described and figured by Eberhard, l. c. p. 10, pl. 3. fig. 42.

Paludina naticoides, sp. n., with two well-marked varieties, *fasciata* and *carinata*, Theobald, Journ. As. Soc. Beng. 1865, no. 130, p. 274, pl. 9. figs. 2 & 3, from the Shan States, India.

Paludina cambodjensis and *fischeriana*, sp. n., Mabile and Le Mesle, Journ. Conch. xiv. pp. 135, 136, pl. 7. fig. 4 and 3, Cambodja.

[*Paludina*] *Vivipara sublineata* (Conrad, 1850) figured Am. Journ. Conch. ii. pl. 1. fig. 8, Australia. [This figure resembles very much young individuals of the Recorder's *Pal. purpurea*, Mal. Blätt. xii. p. 150.]—*V. supra-fasciata*, sp. n., Tryon, Am. Journ. Conch. ii. p. 8, pl. 2. fig. 7, Tropical Australia.

Paludina abyssinica, sp. n., Martens, Mal. Blätt. xiii. p. 97, pl. 3. fig. 7, Abyssinia. Allied to *P. unicolor*, Olivier.

[*Paludina*] *Vivipara waltonii*, sp. n., Tryon, l. c. p. 108, pl. 10. fig. 2, Florida.—*V. genicula* (Conrad), figured ibid. pl. 15. fig. 17, very near *P. ponderosa* and *integra*.

Bithinia lucensis and *B. saviana*, sp. n., Issel, Molluschi di Pisa, pp. 30, 31; the first from the thermal waters of Lucca, the second from those of S. Giuliano, near Pisa. The author states that the latter exists in some private collections in Tuscany under the name of *B. thermalis* (L.), which, in his opinion, is an erroneous determination, the true *thermalis* being an *Hydrobia* living in Abano, near Padova. [This is not correct; Linné himself states that his *Turbo thermalis* lives "in aqua dulci prope Pisam;" and the Recorder is inclined to regard Issel's *B. saviana* as the true *thermalis* of Linné. The shell from Abano was confounded with Linné's *thermalis* first by Olivi, and hence by almost every subsequent author; but Linné's diagnosis agrees so little with

this *Hydrobia* that the Recorder proposed for the Abano species the name of *Hydrobia aponensis*.]

" *Bithinia nassa*, sp. n., Theobald, Journ. As. Soc. 1865, no. 130, p. 275, Shan States, India.

VALVATIDÆ.

Valvata naticina, Menke (Zeitschrift für Malakozoologie, 1845), has been recognized by Dr. Hensche in a shell found near the mouth of the river Memel or Niemen, Province of Prussia. As this species is very little known, we may add Dr. Hensche's description of it:—Testa orbiculato-convexa, anguste umbilicata, solidula, nitida, haud diaphana, tenuissime striata; supra corneo-flava, infra albedo-cæsia; spira convexo-depressa; anfr. $3\frac{1}{2}$, celeriter crescentes, sutura obsoleta distincti, ultimus convexus ampliatus; apertura subverticalis, ampla, subcircularis; peristoma simplex, continuum, in margine columellari nec non in margine dextro leviter excisum, margine columellari supra reflexiusculo, umbilicum ad $\frac{1}{2}$ latitudinis tegente, supra ad $\frac{1}{2}$ longitudinis affixo, cum margine externo angulum rectum formante. Diam. maj. 6·2, min. 5·3, alt. 5·5, ap. long. 4, lat. 3 mm. Operculum corneum, supra subangulatum, e centro spira lata lineatum. The lingual dentition differs from that of its congeners in the external plates being very narrow, without any denticulation. This species is perhaps identical with *V. menkeana* (Jelski, Journ. Conch. 1863). Schrift. phys.-ökon. Ges. Königsberg, 1866, pp. 101–105.

Valvata globulina (Fér.) is another European species almost unknown, and enumerated in his list of species from Southern France by Paladilhe, Rev. et Mag. Zool. 1865, pp. 168–171. The French species of *Valvata* are referred by him to three groups, viz. 1. *Piscinales*; 2. *Globuleuses*; 3. *Planorbiques* (*V. cristata*, Müll.).

AMPULLARIIDÆ.

Ampullaria crocostoma (Phil.). Teeth of the radula, Eberhard, l. c. p. 10, pl. 3. figs. 50, 51.

Ampullaria onata (Olivier), on its varieties and localities in the Nile. Martens, Mal. Blatt. xiii. p. 1, 2.

Ampullaria. *A. urceus*, var. *purpurascens*, *A. effusa*, var. *conica* and var. *tristis*, and *Marisa cornu arietis*, var. *swifti*, occur in Trinidad, together with the typical forms of the same species. *Marisa* [*Ampullaria*] *knorri*, Phil., ought not to be distinguished from *cornu arietis*, which is very common in most of the streams, and even in the fountains of the botanic garden of that island. *Amp. urceus* is eaten in great numbers by the Africans and savage squatters. *Amp. effusa* has been observed gliding along the surface of the water like *Physa*. Guppy, Proceed. Scientif. Assoc. Trinidad, i. pp. 28, 33, 34.

Ampullaria martinexi, sp. n., Gonzalez Hidalgo, Journ. Conch. xiv. p. 345, pl. 14. f. 5, Ecuador.

Lanistes. The species of this genus are arranged by the Recorder in Pfeiffer's *Novitates Conchologicæ*, pp. 285–295, in the following manner:—

1. Species with spiral sculpture; bands numerous and narrow.

L. bernardianus, Morelet. Western Africa. A variety pl. 70. figs. 1–4.

L. libycus, Morelet. Western Africa, pl. 70. figs. 5–6.

2. Without spiral sculpture.

a. With a keel round the umbilicus; bands few and broad.

L. carinatus, Olivier. Nile.

b. Without keel and bands.

L. guinaicus, Chemnitz, Lam. Western Africa.

L. ovum, Peters. Mossambique. Var *elativ*, pl. 70. figs. 7, 8. Niebohr River.

L. olivaceus, Sow. (*Paludina*). Var. *procerus*, pl. 71. figs. 1, 2; var. *ambiguus*, pl. 71. figs. 3, 4. Mossambique.

L. purpureus, Jonas. Mossambique.

L. ellipticus, n. sp., p. 294, pl. 70. figs. 9, 10. Mossambique.

Doubtful species of *Lanistes* of the first section are *Ampullaria intorta*, (Lam.) and *Amp. subcarinata* (Lam.); to the second section belong probably *Paludina sinistrorsa* (Lea) and *Paludina gigas* (Lesson).

CAPULIDÆ.

Hipponyx australis (Q. G.). Teeth of the radula, Eberhard, *l. c.* p. 12, pl. 5. fig. 107. [There are some slight differences from that of *H. conicus* figured by Troschel.]

NARICIDÆ.

Narica foveolata, sp. n., Montrouzier, Journ. Conch. xiv. p. 138, pl. 6. fig. 6, New Caledonia.

Order SCUTIBRANCHIATA.

Suborder PODOPTHALMA.

NERITIDÆ.

Nerita peleronta (L.) and *atrata* (Gmel.). Radula of both described, and of one [which?] figured by Eberhard, *l. c.* p. 15, pl. 4. fig. 75.

Neritina communis (Q. G.). Teeth of the radula, Eberhard, *l. c.* p. 15, pl. 5. fig. 106. [This is a brackish-water species from the Indian archipelago; nevertheless its radula agrees tolerably well with that of the European freshwater species figured by Lovén; the radula of true marine *Nerita* is not essentially different.]

Neritina mörchiana, sp. n., Dunker, Verh. zool.-bot. Gesellsch. Wien, 1866, p. 913, Madras. Nearly allied to *N. zebra*, Lam.—*N. artensis* and *costulata*, sp. n., Gassies, Journ. Conch. xiv. pp. 51, 52, New Caledonia.

Neritina æquinoctialis (Morelet) in different varieties, and *N. manoeli*, sp. n., from Prince Island. Dohrn, Mal. Blätt. xiii. pp. 134, 135.

Neritina microstoma (Orb.) in fresh waters of Trinidad, *N. meleagris* (Lam.) in mangrove swamps, and *N. viridis*, L., marine. Guppy, Proceed. Scientif. Assoc. Trinidad, i. p. 32.

Navicella moreletiana, sp. n., Gassies, Journ. Conch. xiv. p. 52, New Caledonia.

Chrysostoma nicobaricum (Gmel.), its horny operculum described by Crosse, Journ. Conch. xiv. p. 116, pl. 5. fig. 8.

Trochus [*Polydonta*] *maculatus*, L., and *Tr.* [*Gibbula*] *divaricatus*, L., dentition described by Eberhard, p. 16, and that of the latter figured on pl. 5. fig. 80; that of *Monodonta labio*, L., *ibid.* p. 16, pl. 4. fig. 78; of *Turbo* [rather *Trochus*] *pica* (L.), p. 16, pl. 5. figs. 92, 93. [The few denticulations of the inner lateral teeth in this figure agree more with Lovén's figure for *Trochus cinerarius* than with the figures for *Turbo argyrostomus* or *niger*.]

TROCHIDÆ.

Phasianella. Teeth of the radula described and figured by Eberhard, *l. c.* p. 16, pl. 5. f. 98.

Turbo. Eberhard, *l. c.* describes and figures the teeth of the radula of *T. argyrostomus*, p. 15, pl. 5. f. 90, and of *T. niger* (Gray), p. 16, pl. 5. f. 99. [See Troschel in Wieg. Arch. 1852.]

Trochus scrobiculatus, reevei, and *Monodonta fischeri*, sp. n., Montrouzier and Souverbie, Journ. Conch. xiv. pp. 140-142, pl. 6. figs. 9, 8, and 7, New Caledonia.

Suborder EDRIOPHTHALMA.

FISSURELLIDÆ.

Rimula. On the validity of this genus, with a list of the known species, see Crosse, Journ. Conch. xiv. pp. 167-172.—*R. mariei*, sp. n., Crosse, *l. c.* pl. 5. fig. 7, New Caledonia.

Emarginula cusmichiana, sp. n., Brusina, Faun. Moll. Dalmat. p. 38, Adriatic.

TECTURIDÆ.

CARPENTER, P. P. On the *Acmæida* [*Tecturidæ*] of the Vancouver and Californian province. Am. Journ. Conch. ii. pp. 332-348.

There are five common species of *Acmæa* on this coast, viz. *A. patina* (Esch.), including *tessellata*, *diaphane*, *strigilata*, *mammillata*, *fenestrata*, (Nutt.), *pintadina* and *cribraria*, Gould, *verriculata* and *cinis* (Reeve),—*A. pelta* (Esch.), including *monticuta* (Nutt.), *fimbriata* (Gould), *leucophæa* (Nutt., Reeve),—*A. persona* (Esch.), including *radiata*, *ancylus*, and *digitalis* (Esch.), *oregona* and *umbonata* (Nutt.), *scabra* and *textilis* (Gould),—*A. spectrum* (Nutt., Reeve),—*A. scabra* (Nutt., Reeve),—besides two others more doubtful, *A. asmi* (Midd.) and *A. rosacea* (Carp.).

The genus *Lottia* (sensu strictiore) is represented only by *L. gigantea* (Gray) = *grandis* (Gray); the genus *Scurria* by *Sc. mitra* (Esch.), including *mammillata* and *marmorea* (Esch.) = *Lottia pallida* (Gray) = *Patella conica* (Gould), and by the somewhat doubtful *Sc. funiculata* (Carp.); the genus *Lepeta* (Gray) = *Propilidium* (Forb.) by *L. cæcoides* (Carp.). True *Patellæ* are absent from the whole northern coast of America.

PATELLIDÆ.

Patella insignis, sp. n., Dunker, Verh. zool.-bot. Gesellsch. Wien, 1866, p. 914, Cape.—*P. frauenfeldi*, sp. n., Dunker, *l. c.*, Madras. [The Recorder, who has seen specimens of the latter, sent to him by Hr. Zelebor, does not consider them distinct from *P. guttata* (Orb.), which he has collected at Madeira. The locality Madras appears to have been erroneously stated for Madeira.]

CHITONIDÆ.

Chiton marmoratus (Gmel.). Teeth of the radula, Eberhard, *l. c.* p. 16, pl. 4. fig. 75.

Frembleya, g. n., H. Adams, Proc. Zool. Soc. 1866, p. 445. "Testa ovalis, convexa. Valvæ transversæ, latæ, carinatæ; apex posterioris valvæ terminalis,

producta [-us], fissa [-us]. Limbus angustus, postice fissus, setis corneis dense obsitus." *F. egregia*, sp. n., pl. 38. fig. 9. Locality unknown.

Chiton discolor, *subassimilis*, *tuberculosis*, *obscurellus*, and *insculptus*, sp. n., Souverbie, Journ. Conch. xiv. pp. 248-254, pl. 9. figs. 1-5, New Caledonia.

Order OPISTHOBRANCHIATA.

Suborder TECTIBRANCHIATA.

TORNATELLIDÆ.

Tornatella. Twenty-two species are figured in Reeve's Conchologia Iconica, part 248, 1865. The following are new:—*T. suturalis*, *puddicus* [-a], and *modesta* (Adams), Philippines; *niphonensis* and *diana* (Adams), Japan; *lyrata* (Carpenter), Hongkong; *fumata* (Rve.), Australia; *senegalensis* (Pétil), Senegal; *cumingii* (Adams), Rio Janeiro; and *maricæ* (Adams).

BULLIDÆ.

Cylichna leptoneilema, sp. n., Brusina, Faun. Moll. Dalmat. p. 39, Adriatic.

Bulla. Eberhard figures the teeth of the radula, *l. c.* pl. 4. f. 79. [*B. striata* (Brug.). The radula represented differs typically from those of all the *Bullidæ* figured by Lovén in having a transverse multidenticulate central tooth, two multidenticulate and a third smaller unicuspid lateral tooth. *Cylichna alba* is the only shell somewhat approaching to this form.]

Acera bullata (Müll.). Teeth of the radula, Eberhard, *l. c.* p. 19, pl. 5. fig. 81. [The inner lateral teeth are more differentiated from the outer ones than in the figure given by Lovén.]

APLYSIIDÆ.

Actesia producta, sp. n., Pease, with some remarks concerning this genus, Am. Journ. Conch. ii. p. 207, Tahitian archipelago.

PLEUROPHYLLIDIIDÆ.

BERGH, R. Bidrag til en monographi af Pleurophyllidierne.

Naturhistorisk Tidsskrift, Kjöbenhavn, third series, vol. iv. 1866, 8vo, 80 and 180 pages, with 12 plates.

This is as complete a monograph as could possibly be produced at present. Three genera and 17 species are distinguished in the first part, the second and more voluminous part containing a very elaborate anatomical investigation of ten of those species. The systematic place of the family seems to be near that of *Æolididæ*; numerous points of similarity between them are pointed out in the anatomical part of the memoir. The genera and species admitted are the following:—

Gen. *Pleurophyllidia*, Meckel, 1816, = *Diphyllidia*, Cuvier, 1817, = *Linquella*, Blainv. 1825, ? = *Armina*, Rafinesque, 1814.

a. Lineated species.

Pl. undulata (Meckel) = *lineata* (Cuvier), Mediterranean, pl. 1, very exactly described and illustrated; *P. loveni* (Bergh, 1860) = *lineata* of English and Scandinavian authors, east coast of England and Kattégat, pl. 2. figs. 1-24;

P. californica (Cooper); *P. natalensis*, sp. n., Bergh, p. 34, Natal coast; *P. cuvierii*, Orb., Valparaiso; *P. semperi*, sp. n., Bergh, p. 37, pl. 2. figs. 27-30, and pl. 3, perhaps Cuvier's *Diph. brugmansii*, Philippines; *P. tenuolata*, sp. n., Peters, MS., p. 42, Mossambique; *P. petersi*, sp. n., Bergh, p. 46, pl. 4, Mossambique; *P. rubida* (Gould), Honolulu; *P. formosa* (Kelaart), Ceylon.

b. Tuberculated species.

P. pustulosa (Schultze, Phil.), Sicily, ?=*ocellata* (Desh.), ?=*verrucosa*, (Cantraine); *P. marmorata* (Kelaart), Aripa.

Gen. *Sancara*, Bergh, Vidensk. meddel. naturh. foren. Kjöbenhavn, 1864, pl. 3. Mantle smooth, not distinctly separated from the body anteriorly. No caruncula tentacularis.

Sancara quadrilateralis, sp. n., Bergh, p. 60, Mediteranean, perhaps = *Linguella elforti* (Blainv.); *S. iaira*, Bergh, l. c. pl. 3, Japanese Sea.

Gen. *Camarga*, Bergh. Caruncula tentacularis low, united with the front of the mantle; this latter without nettle-organs.

Camarga marginata (Ersted, MS.), Bergh, p. 70, Realejo, Central America.

Order NUDIBRANCHIATA.

DORIDIDÆ.

Doris. Teeth of the radula, Eberhard, l. c. p. 18, pl. 4. figs. 65-67. [Neither is the species named, nor is it stated whence it was procured; it differs from *D. ovelata*, figured by Lovén, in the absence of a median tooth.]

Chromodoris. To this genus are to be referred *Doris dorsalis* (Gould), *D. decora* and *marginata* (Pease). Pease, Am. Journ. Conch. ii. p. 207.

Goniobranchus, g. n., Pease, Doridinæ, with simple, elongate, quadrangular branches, two sides of which are finely and delicately laminated. *G. albo-maculatus* and *reticulatus*, sp. n., Pease, Am. Journ. Conch. ii. pp. 204, 205; the latter figured pl. 14. fig. 1. To the same genus are to be referred *Doris vibrata*, *propinquata*, *picta*, and *pulehra* (Pease, Proc. Zool. Soc. 1860 and 1861), Tahitian archipelago.

Stenodoris, g. n., Pease; body narrow, elongate, without mantle or lateral fissure, gills and cervical tentacles like those of *Doris*. *St. rubra*, sp. n., Pease, l. c. pp. 205, 206, pl. 14. fig. 2, Tahitian archipelago.

Polycera. Teeth of the radula, Eberhard, l. c. p. 19, pl. 4. figs. 59, 60. [Species not named, probably the common *P. quadrilineata*.]

TRIOPIDÆ.

Idalia. Teeth of the radula, Eberhard, l. c. p. 19, pl. 4. figs. 61, 62. [The species is not named; specimen from Ostende. It does not agree with the figure of *I. cirrigera*, given by Lovén, but belongs to the same type.]

TRITONIDÆ.

Lobifera. This name is substituted by Pease for *Polybranchia* (Proc. Zool. Soc. 1860), the radiating lines of the lobes not being true branchiæ.

L. nigricans and *L. papillosa*, sp. n., Pease, Am. Journ. Conch. ii. p. 206, Tahitian archipelago.

ÆOLIDIDÆ.

Æolis. Radula figured by Eberhard, *l. c.* p. 19, pl. 5. figs. 100, 101. [The species is not determined; the figure resembles more Lovén's *Glaucus* than his *Æolis branchialis*.]

Glaucus. Eberhard's figure of the radula, pl. 5. fig. 103, differs, in the middle backward prolongation, from that given by Lovén; jaw, fig. 104.

HERMÆIDÆ.

Embletonia pallida (A. H.) found in the Baltic, near Königsberg by Hensche, *Schrift. phys.-ökonom. Gesellsch. Königsberg*, 1866, p. 105.

Order PULMONATA INOPERCULATA.

Suborder GEOPHILA.

The classification of the inoperculated land-shells adopted by G. W. TRYON in his "Monograph of the terrestrial Mollusca of the United States" (*Am. Journ. Conch.* ii. pp. 225, 306) is, as far as published, the following:—

Fam. OLEACINIDÆ: *Glandina*.

Fam. SUCCINIDÆ: *Succinea*.

Fam. HELICELIDÆ. Subfam. *Vitrininae*: *Vitrina*, *Binneya*. Subfam. *Helicellinae*: *Macrocyclis* and *Hyalina*. Subfam. *Gastrodantinae*: *Mesomphix*, *Conulus*, *Gastrodonta*, and *Strobila*. Subfam. *Patulinae*: *Anguispira*, *Patula*, *Planogyra*, *Helicodiscus*, and *Pseudohyalina*.

Fam. HELICIDÆ. Subfam. *Hygromiinae*: *Hygromia*, *Aglaja*, *Arionta*, *Polymita*, *Tachea*, and *Pomatia*. Subfam. *Mesodontinae*.

CROSSE, H. Sur les classifications trop exclusives. *Journ. Conch.* xiv. pp. 213–227.

The author opposes the view of those who regard the buccal plate, the dentition, and the operculum as principal systematic characters in the *Pulmonata operculata*.

BROWN, A. D. Catalogue of the genera *Helix*, *Anostoma*, *Hypselostoma*, *Streptaxis*, *Tomigerus*, *Bulimus*, *Orthalicus*, *Partula* in the collection of A. D. Brown. Second edit. Princeton, New Jersey, 1866, 8vo, 65 pages.

An alphabetical list of names, with indications of the habitat, to facilitate the exchange of specimens. 952 species of *Helix* and 298 of *Bulimus* are enumerated.

VAGINULIDÆ.

[*Vaginulus*] *Veronicella levis* (Fér.) = *sloanei* (Guppy, olim). Eggs oval-oblong, united into chains of ten or twelve. Guppy, *Proc. Scientif. Assoc. Trinidad*, i. p. 15.—*Ver. crosseana*, sp. n., Mabilie and Le Mesle, *Journ. Conch.* xiv. p. 123, Cochinchina.

LIMACIDÆ.

KEFERSTEIN, W. Ueber die Anatomie der Gattung *Incillaria*,

Bens., und *Meghimation*, Hass., im Vergleich zu der von *Philomycus*, Raf. Mal. Blätt. xiii. pp. 64–70, with a plate.

These three genera agree in all anatomical points, except in the saccus sagittæ amatoriæ being absent in the first two and well developed in *Philomycus*; but as this seems to be of minor importance, and, perhaps, may be accounted for by the different development of the specimens examined, the three genera are to be united into one, for which the name *Philomycus* must be preserved.

Limax marginatus (O. Fr. Müller) = *arborum* (Bouchard) = *salicum* (Bouillet) = *rusticus* and *affinis* (Millet) = *glaucus* (Clarke) = *livonicus* (Schrenk) = *scandens* (Normand). Martens, Jahreshefte d. Vereins f. Naturkund. in Württemberg, 1865, p. 186.

Limax carinatus (Leach) = *marginatus* (Drap., not Müller) = *sowerbyi* (Fér.), gen. *Milax* (Gray) or *Amalia* (Heynemann). Martens, *l. c.* p. 186.

Arion empiricorum (Fér.), teeth of the radula, Eberhard, *l. c.* p. 17, pl. 2. fig. 31.

Arion melanocephalus (Faure Biguet apud Férussac) = *flavus* (Nilss., Moq.-Tand.) = *intermedius* (Normand) = *tenellus* (Heynemann). Martens, *l. c.* p. 184.

Parmarion flavescens, sp. n., from Mossambique, Keferstein, Mal. Blätt. xiii. pp. 70–76. The author gives a description and figures of the external and anatomical characters of this new snail, which has been collected by Prof. Peters, and which seems to be very near to *Urocyclus kirkii* (Gray) and to *Limax extraneus* (Fér.). The opening in the mantle (which is much smaller than in the typical *Parmarion*) corresponds to a small not spiral piece of shell contained in the mantle.

AGNATHA (TESTACELLIDÆ).

Glandina. The North American species are:—*Gl. truncata* (Say), South Carolina to Florida; *Gl. parallela* (Binney) and *bullata* (Gould), Louisiana; *Gl. texasiana* (Pfr.), *vanuzemii* (Lea), and *decussata* (Desh.), Texas; *Gl. turris* (Pfr.) and *albersi* (Pfr.), Mazatlan. Tryon, Am. Journ. Conch. ii. pp. 225–227; all are figured on pl. 16 (Monogr. pl. i.).

Oleacina berendti, *oblonga*, *perpusilla*, sp. n., Mexico; *smithiana* and *paivana*, sp. n., Haiti. Pfeiffer, Mal. Blätt. xiii. pp. 85–87.—*Ol. incerta* (Reeve), redescribed; *gundlachi*, *poeyana*, *wrighti*, and *teres*, sp. n., all from Cuba. Pfeiffer, *ibid.* pp. 138–140.

Spiraxis linearis, *mexicana*, and *bullacea*, sp. n., Pfeiffer, Mal. Blätt. xiii. p. 84, Mexico.—*Sp. moreletiana*, sp. n., *ibid.* p. 140, Cuba.

Cylindrella garciana, sp. n., Wright, Repertorio fisico-natural de Cuba, no. 8, 1865, p. 220, and Pfeiffer, Mal. Blätt. xiii. p. 62, Cuba.—*C. presasiana*, sp. n., Pfeiffer, *l. c.* p. 62, Cuba.—*C. transparens* and *flexuosa*, sp. n., Jamaica; *C. smithiana*, sp. n., Haiti; *C. berendti*, Mexico, Pfeiffer, *l. c.* pp. 87, 88.—*C. fabreana* (Poey); *striatella*, and *vignalensis* (Wright), *uncata*, *interrupta*, *brooksiana*, *ventricosa*, *blainiana* (Gundlach), *obliqua* (Pfr.), and *coronadoi* (Arango), figured in Pfeiffer's Novitates Conchologicæ, pl. 63, all from Cuba.—*C. arcuata*, *tumidula*, and *suturalis* (Weinland), from Haiti; *C. zebrina* and *paivana* (Pfr.), from Jamaica; *C. arcustriata*, *violacea*, and *plumbea* (Wright),

trilamellata (Pfr.), *fastigiata* and *lateralis* (Gundlach), all from Cuba, figured in the same work, pl. 65.

OXYGNATHA (VITRINIDÆ).

Vitrina auriformis, sp. n., Blanford, Journ. As. Soc. 1866, p. 36, Nilgiri Hills; allied to *V. gigas*, Bens.—*V. cochinchinensis*, sp. n., Morelet, Journ. Conch. xiv. p. 62.—*V. planilabris*, sp. n., Cox, *ibid.* p. 45, Australia.—*V. bocagei*, sp. n., Paiva, *ibid.* p. 340, pl. 11. fig. 4, Madeira.—*V. dumeticola*, sp. n., Dohrn, Mal. Blätt. xiii. p. 119, pl. 5. figs. 1-4, Prince's Island, Guinea.

Vitrina limpida (Gould), *angelica* (Beck), and *pfeifferii* (Newcomb) described and figured by Tryon, Am. Journ. Conch. ii. pp. 243, 244, pl. 18.

Bineya notabilis, Cooper, *ibid.* p. 244, pl. 18. fig. 4, California.

[*Nanina*, group *Xesta*] *Helix trochus* (Müll.), Celebes, figured by Pfeiffer, Novitat. Conchol. pl. 73. figs. 4-7; *H. bella* (Pfr.), Flores, pl. 74. figs. 6-10.

[*Nanina*, group *Hemiplecta*] *Helix hugonis* (Pfr.), Borneo, figured Novitat. Conch. pl. 74. figs. 1-3; *H. steursi* (Shuttl.), Celebes, pl. 73. figs. 8-10; *H. dohrniana* (Pfr.), Siam, pl. 73. figs. 11-13.—*N. (Hemiplecta?) sisparica*, sp. n., Blanford, Journ. As. Soc. 1866, p. 34, Nilgiri Hills; its external soft parts are described.

[*Nanina*, group *Rhyssota*] *Helix uranus* (Pfr.), Polillo Islands, Philippines, figured Novitat. Conch. pl. 73. figs. 1-3.

Nanina (Ariophanta) intumescens, sp. n., Blanford, Journ. As. Soc. 1866, p. 32, Mahabaleshwar.

Nanina dvitija, sp. n., Semper, Journ. Conch. xiv. p. 263, pl. 8. fig. 3, Philippines.

Nanina (Macrochlamys) hebescens, *liza*, and *infausta*, sp. n., Blanford, Journ. As. Soc. 1866, pp. 34-36, Annamallay Hills, Southern India. *Zonites rambourianus*, and *Z. bourguignatianus*, sp. n., Mabile and Le Mesle, Journ. Conch. xiv. p. 123, pl. 7. figs. 7 & 6, Cochinchina.—*Zonites benoiti* and *Helix anamitica*, Crosse, *ibid.* p. 338, Cochinchina.—*Helix consul* and *H. jucunda* (Pfr.), both from Borneo, figured in Pfeiffer's Novitat. Conch. pl. 74. figs. 11, 12, 13, & 14.

Nanina. The West-African species (group *Thapsia*, Albers) are revised by Martens, Mal. Blätt. xiii. pp. 103, 104.—*N. thomensis*, sp. n., Dohrn, *ibid.* pp. 114, 115, Island St. Thomas, Guinea.—*Helix liberica*, Brown (Record for 1865, p. 271)=*africana*, Pfr. Am. Journ. Conch. ii. p. 183.

Nanina aglypta, sp. n., Dohrn, Mal. Blätt. xiii. p. 119, pl. 5. figs. 5, 7, Prince Island, Guinea. This species is allied to (*Helix*) *ibuensis* (Pfr.), *talcosa* (Gould), *adansonica* (Morelet), *folini* (Morelet), and *calabarica* (Pfr.), which will form a distinct subgenus of *Nanina*. The living *N. folini* has been observed by Mr. Dohrn; the hinder extremity of the foot is prolonged into a sort of tail, similar to that of *Dermatocera*.

[*Nanina* or *Trochomorpha*?] *Helix labuanensis*, Pf. [= *conicoides*, Metcalfe], Borneo, figured Novitat. Conchol. pl. 74. figs. 4, 5.—*Trochomorpha mossambicensis*, var. *elator*, Martens, Mal. Blätt. xiii. p. 92, Abyssinia.

[*Hyalina*] *Helix cellaria* (Müll.), dentition described by Eberhard, *l. c.* p. 17, pl. 2. fig. 36.—*Hyalina malinowskii*, Zeebor (Record for 1865, p. 272), figured in Pfeiffer's Novitat. Conch. pl. 67. figs. 11-13 [= *H. natalica*, Albers].

Hyalina. Twenty-two species, inhabiting North America, are briefly described and figured by Tryon, Am. Journ. Conch. ii. pp. 246-253, pls. 18 & 19. 1866. [VOL. III.]

Mesomphix. The North American species are, according to Tryon, *inter-texta* (Binn.) from Western New York to Georgia and Iowa, *ligera* (Say) in all the Middle and Western States, *demissa* (Binn.) in Western Pennsylvania, and *cerinoidea* (Anthony) in North Carolina. Am. Journ. Conch. ii. pp. 254, 255, pl. 19.

Conulus. Four species are found in North America:—*fabricii* (Beck), Greenland; *minutissima* (Lea), from Maine to Pennsylvania and Ohio; *chersona* (Say), throughout the whole country; and *gundlachi* (Pfr.), Florida (and Cuba). Tryon, *l. c.* pp. 256, 257, pl. 19.—*Helix (Conulus) chersinella*, sp. n., Dall. Am. Journ. Conch. ii. p. 328, pl. 21. fig. 4, California.—*Zonites subfulvus*, sp. n., Gassies, Journ. Conch. xiv. p. 49, New Caledonia.

Gastrodonta. Five species occur in North America:—*multidentata* (Binn.), New England; *interna* and *suppressa* (Say), Middle States and Ohio; *gularis* (Say) and *lasmodon* (Phillips), Alabama. Tryon, Am. Journ. Conch. ii. pp. 257, 258, pl. 19. figs. 39–42.—*Helix significans*, sp. n., Bland, *l. c.* p. 372, pl. 21. fig. 9, Fort Gibson, Indian Territory.

Strobila labyrinthica (Say), from Maine to Texas and the Western States; and *Str. hubbardi* (Brown), Texas. Tryon, *l. c.* p. 259, pl. 19. figs. 44, 45.

Macrocyclus newberryana, *vancouverensis*, *sportella*, *concava*, *voyana*, and *elliotti* are the North American species described and figured by Tryon, Am. Journ. Conch. ii. pp. 244–246, pl. 18.; four of them are peculiar to California or Oregon; *M. concava* (Say), from Maine to Iowa, Georgia, and Mississippi; *M. elliotti* in North Carolina and Georgia.—*Helix pazi* and *andicola*, sp. n., Philippi, Mal. Blatt. xiii. p. 39; the latter, Novitat. Conchol. pl. 72. figs. 1–3, Chile.

[*Leucochroa*.] J. B. Gassies has published an "Examen critique du groupe des *Helix cariosa*, *mayrani*, *candidissima* et *betica*" in Journ. Conch. ii. pp. 33–39, in which he compares and describes these four species.

ODONTOGNATHA.

[*Patula*.] The North American species are enumerated by Tryon in the following manner (Am. Journ. Conchyl. ii.):—

Anguispira (Morse), large, depressed-turbinata, banded or striped; umbilicus moderate: *solitaria*, *idahoensis* (see below), *cooperii*, *alternata*, *strigosa*, and *cumberlandiana*.

Patula, moderate, a little convex above, unicoloured; umbilicus very wide, but shallow: *perspectiva*, *striatella*, *durantii*, *whitneyi*, *cronkheitei*.

Planogyra (Morse), minute, perfectly flat above, unicolored; umbilicus moderate: *asteriscus*.

Helicodiscus (Morse), minute, planorboid, with revolving striæ, aperture lamellarly toothed within the outer lip: *lineata*, Say.

Pseudohyalina (Morse), "distinguished from *Patula* by the minute size and more moderate umbilicus:" *limatula*, *minuscula*, *incrustedata*, *conspecta*, *exigua*, *milium*, *mazatlanica*.

All are briefly described and figured, *l. c.* pp. 259–265, pl. 19.

Helix idahoensis, sp. n., Newcomb, Am. Journ. Conch. ii. p. 1, pl. 1. figs. 1–3, Idaho territory.—*Helix hornii*, sp. n., Gabb, *ibid.* p. 330, pl. 21. fig. 5. Arizona, North America.

[*Patula*] *Helix distans* and *capitata*, sp. n., Pease, Am. Journ. Conch. ii. pp. 290 & 292, Sandwich Islands.

[*Endodonta*] *Helix decussatula, rugata, and laminata*, sp. n., Pease, *l. c.* pp. 291, 292, Sandwich Islands.

Helix aspersa and *nemoralis*. Specimens from the sea-shore with unusually thick shell are mentioned by J. Parry and A. Latham, Proc. Lit. and Philos. Soc. Manchester, iv. p. 62.

Helix crinita (Sandri) is distinguished from *H. setosa* (Ziegler) by Brusina, Faun. Moll. Dalmat. p. 53, and figured, pl. 3. fig. 11.

Helix nemoralis and *hortensis*. GEORG VON MARTENS has reproduced his paper on the bands of these snails (Act. Ac. Cæs. Leop. Carol. Nat. Cur. xvi. 1832) in Jahresh. Verein. Ntrk. Würtemb. 1866, pp. 218-226. He showed in this paper that all the different variations in these and many other species of *Helix* can be referred to five bands, which never vary in their position, but in number only, some of them being present or absent, and are either narrow and with wide intervals or dilated and confluent.—P. TH. BRÜHN has treated the same subject in Giebel's Zeitschr. ges. Ntrwiss. 1866, pp. 382-388 ("Formenreihe für *Helix nemoralis* und *H. hortensis* und deren graphische Bezeichnung.")—Series of variations of *H. n.* and *h.*, and their graphic expression). On the whole, his results are the same as those arrived at by G. von Martens; but he uses the form of a fraction when the arrangement of the bands of an older portion of a shell differs from that of the younger near the aperture. Twenty-three out of eighty-eight combinations are said to be "doctrinal and probably not occurring in nature." The author omits to state whether all the others were really observed by him, and whether in one or both species. [Of the twenty-three "doctrinal" variations nine have been found by other writers, for instance that in which all the five bars are confluent (a common variation in both species). After G. von Martens, M. BACH had arrived at the same results; but the numbers of the bands are inverted, this author commencing to count from the undermost instead of the uppermost, Verhandl. ntrh. Ver. preuss. Rheinl. i. 1844, pp. 70-80. And the number of variations actually observed has been considerably increased by the researches of:—BACH, *l. c.*; A. GRAS, in his list of the land- and freshwater mollusks of the département de l'Isère (1846); ASSMAN, in Menke's and Pfeiffer's 'Zeitschrift für Malakozoologie,' ix. 1852; AD. SCHMIDT, in Giebel's 'Zeitschr. gesamt. Naturwiss.' 1856; MOQUIN-TANDON, in his well-known history of the French land- and freshwater mollusca; and GYSSER, in the list of the shells of Baden, 1863.]

Helix revelata (Fér.) is probably a young *H. incarnata* or *strigella*; but that of Michaud is = *H. ponentina* (Morelet). Mabille, Journ. Conch. xiv. p. 20.

Helix. New species from Eastern Asia:—

Helix primeana and *bocageana*, Crosse, Journ. Conch. xiv. p. 57, pl. 6. figs. 3, 4, China?—*H. (Plectotropis) fulvicans*, sp. n., H. Adams, Proc. Zool. Soc. 1866, p. 316, pl. 33. fig. 2, Tamsui, Formosa.—*H. (Camæna) bairdi* and *succincta*, sp. n., H. Adams, *ibid.* 1866, p. 316, pl. 33. figs. 3 & 4, Formosa. [The former looks very like a specimen of *H. luluana* with distorted aperture.].—*Nanina (Acusta) assimilis*, sp. n., H. Adams, *ibid.* p. 316, pl. 33. fig. 1, Takow, Formosa. [The group *Acusta*, which has been referred to *Nanina* by Albers, belongs to the true *Helix*, as the Recorder convinced himself during his visit to China and Japan.].—*H. gysseriana, lorquini*, and *zoæ*, Pfr., Moluccas, Novitat. Conchol. pl. 67.

New species from Polynesia :—

Helix kanakina, Gassies, Journ. Conch. xiv. p. 49, New Caledonia.—*H. hidalgoiana*, *cailleti*, and *mabillei*, Crosse, *ibid.* p. 56, pl. 1. figs. 2, 5, & 6.—*H. oualanensis*, *venosus* [-a], and *frivola*, Pease, Am. Journ. Conch. ii. pp. 289, 290, pl. 21. figs. 1, 2, 3.

New species from Australia :—

Helix greenhilli, *urarenensis*, *nautiloidea*, *aridorum*, *splendescens*, *flosculus*, Cox, Journ. Conch. xiv. pp. 45–48.—*H. porteri*, *conscendens*, *fenestrata*, *corticicola*, Cox, Proc. Zool. Soc. 1866, pp. 373, 374, Upper Richmond River.

African species :—

Helix lienardiana, sp. n., Crosse, Journ. Conch. xiv. p. 53, pl. 1. fig. 1, Mauritius. With three varieties.

Helix (*Pella*) *darnaudi* (Pfr.) and *rivularis* (Krauss) described from Abyssinian specimens by Martens, Mal. Blätt. xiii. pp. 92, 93; the former figured, pl. 3. figs. 1–4.

Helix welwitschi, sp. n., Morelet, Journ. Conch. xiv. p. 153, Equatorial Africa.

Helix monrovia (Rang) is the young of *Streptaxis nobilis*, Martens, Mal. Blätt. xiii. p. 104, as formerly supposed by Dr. Pfeiffer, and confirmed by Dohrn, *l. c.* pp. 136, 137.

Helix pitte, *gomesiana*, *latina*, and *barbozæ*, sp. n., Paiva, Journ. Conch. xiv. pp. 340–342, pl. 11. figs. 5–8, from the small islands near Madeira and Porto Santo.—*H. luseana* and *alleniana*, sp. n., Paiva, *l. c.* figs. 9, 10, Madeira.—*H. leonina* (Lowe), Salvage Islands, near Madeira; *H. planorbella* (Lam.) and *H. quadrincincta* (Morelet), Canary Islands; figured in Pfeiffer's *Novitat. Conchol.* pl. 72. figs. 6, 7, 8–12, and 13–16.

West-Indian species :—

Helix subtussulcata (Wright), *parallela* (Poey), *broccheri* (Gutierrez), *versicolor* (Born), *schwartziana* and *arctistria* (Pfr.), *wrighti* (Gundlach), all from Cuba, figured in Pfeiffer's *Novitat.* pls. 61 and 67.—Varieties of *H. picta* (Born) and *H. alauda* (Fér.), Cuba, described by Pfeiffer, Mal. Blätt. xiii. pp. 56, 57; the former figured in *Novitat.* pl. 72.—*H. nigropicta*, *sauvallei*, and *luzi*, sp. n., Pfr. Mal. Blätt. xiii. pp. 57, 58, Cuba.—*H. gaussoini*, sp. n., Tryon, Am. Journ. Conch. ii. p. 304, pl. 20. fig. 11, guano island of Navassa, allied to *H. melanocephala*.—*H. effusa*, *virescens*, *smithiana*, and *platonis*, sp. n., Haiti, Pfeiffer, Mal. Blätt. xiii. pp. 77–80.—*H. macroglossa*, sp. n., Pfeiffer, *ibid.* p. 81, Bahama Islands, allied to *H. indistincta*, Fér.—*H. incisa*, sp. n., Pfeiffer, *ibid.* p. 78, Barbadoes.

Species from Central America and Tropical Mexico :—

Helix bridgesi, sp. n., Tryon, Am. Journ. Conch. ii. p. 303, pl. 20. figs. 9, 10, Nicaragua, allied to *H. chiapensis*, Pfr. (group *Polygyra*).—*H. selenkai*, *ampla*, *impura*, *wilhelmi*, *obsita*, *hermanni*, sp. n., Pfeiffer, Mal. Blätt. xiii. pp. 77–80, Mirador, near Vera Cruz.

Species from North America :—

[Group *Polygyra*] *Helix jacksoni*, Fort Gibson, Indian Territory, and *H. febigeri*, New Orleans, sp. n., Bland, Am. Journ. Conch. ii. pp. 371, 373, pl. 21. figs. 8 & 10.

[Group *Mesodon*] *Helix thyroides*, var. *rufa* = *H. rufa* (De Kay), and probably also = *H. bucculentu* (Gould), in Pennsylvania, E. Michener, Am. Journ.

Conch. ii. p. 53. G. Tryon adds that this variety or species has been observed also in New Jersey, Maryland, North Carolina, and even, according to Dr. Gould, from Georgia to Texas.

[Group *Arionta*.] Only six North-American species are recognized as belonging to this group, and figured by Tryon, Am. Journ. Conch. ii. pp. 316-318, pls. 22 & 23, all from Southern California and Northern Mexico, among which also *Helix humboldtiana*, which is placed by most other authors in the group *Pomatia*.

Group *Aglaja*. Eighteen species inhabiting the west coast of North America are distinguished, and most of them figured by Tryon, Am. Journ. Conch. ii. pp. 309-316, pl. 22. They are distinguished from *Arionta* by the more depressed form, open umbilicus, and malleate surface, *Helix arrosa*, *nicklina*, and *tudiculata* being transferred into this group.

Group *Polymita*. To this West-Indian group are referred by Tryon, Am. Journ. Conch. ii. pp. 318-321, the following six Californian species, figured on pl. 23:—*Helix tryonii* (Newc.), *intercisa* (Binn.), *areolata* (Sow.), *redimita* (Binn.), *pandora* (Forb.), and *levis* (Pfr.).

Cochlostyla (*Corasia*) *halichlora* and *elisabethæ*, sp. n., Semper, Journ. Conch. xiv. pp. 261-263, pl. 8. figs. 1, 2, Philippines.—*Coch. dattaënsis*, Semper, ibid. p. 152, pl. 5. fig. 1, Philippines.—*Bulimus portei*, Pfr. [*Cochlostyla*], from the Polillo Islands, figured Novitat. Conchol. pl. 74. f. 1-3.

Bulimus (*Amphidromus*) *formosensis*, sp. n., H. Adams, Proc. Zool. Soc. 1866, p. 317, pl. 33. fig. 5, Tamsui Mountains, Formosa.—*B. comes* and *B. dohrni* (Pfr.), Cambodja and Cochinchina, fig. Novitat. Conch. pl. 74. figs. 10, 11, 12, 13.

Bulimus artensis, sp. n., Gassies, Journ. Conch. xiv. p. 50, New Caledonia.

Achatina (*Limicolaria*) *numidica* (Reeve) described and figured from Guinean specimens, very variable in the diameter of the shell, Martens, Mal. Blätt. xiii. pp. 105, 106, pl. 4. figs. 5-8.—*Ach. (L.) heuglini*, sp. n., Martens, ibid. p. 94, pl. 4. figs. 1-4, Southern Abyssinia.—*Bulimus* (*Limicolaria*) *chromatellus* and *jaspideus*, sp. n., Morelet, Journ. Conch. pp. 154, 155, Equatorial Africa.

Achatina bicarinata (Brug.) observed alive on Prince's Island. The majority of specimens were without epidermis, and never so glossy as they are found (after artificial preparation) in European collections. Eggs described, Dohrn, Mal. Blätt. xiii. pp. 121, 122.

Achatina bandeirana, *welwitschi*, *tavaresiana*, *bayoana*, *colubrina*, *paivana*, *zebriolata*, *polychroa*, *hortensia*, *specularis*, *barbigera*, *strigosa*, *monticola*, and *petrensis*, sp. n., Morelet, Journ. Conch. xiv. pp. 156-161, Equatorial Africa.

Achatina vignoni (Morelet) from Guinea, allied to the subgenera *Perideres* and *Pseudachatina*, described and figured by Martens, Mal. Blätt. xiii. pp. 107, 108, pl. 4. fig. 9.

Achatina histrio, sp. n., Pfeiffer, Mal. Blätt. xiii. p. 85, Haiti. [*Glandina* ?]

Perideres alabaster (Rang) observed alive on trees and shrubs of Prince's Island. The bands belong to the epidermis, and offer many variations. Animal ovoviviparous, Dohrn, Mal. Blätt. xiii. p. 123.

Carelia olivacea, sp. n., Pease, Am. Journ. Conch. ii. p. 293, Sandwich Islands.

Columna flammea (Martyn) observed alive on Prince's Island. Eggs bean-shaped. Dohrn, l. c. p. 124.

Columna leai, sp. n., Tryon, Am. Journ. Conch. ii. p. 297, pl. 20. fig. 1, and *C. hainesi* (Pfr.) figured for comparison, *l. c.* fig. 2, both from Prince's Island. [Dr. Dohrn, who has collected hundreds of specimens of *Columna* in this island, does not distinguish more than one species.]

GONIOGNATHA (ORTHALICIDÆ).

[*Bulimulus*] *Olastomus pulcherrimus, bartletti*, and *scitus*, sp. n., H. Adams, Proc. Zool. Soc. 1866, p. 442, pl. 38. figs. 3, 4, 5, Upper Amazon or Ucayali.—*Bulimus paivanus, chiapasensis, ghiesbreghti, kefersteini, heynemanni, sporlederii*, and *heterogeneous*, sp. n., Pfeiffer, Mal. Blätt. xiii. pp. 81-84, Mexico; the first, third, and fourth figured in Novitat. Conch. pl. 74.—*Bulimus juarezi* (Pfr.), Mexico, and *B. anguillensis* (Pfr.), island Anguilla, West Indies, figured in Novitat. Conchol. pl. 69.

Bulimulus immaculatus (C. B. Adams, Reeve) = *flavidus* (Menke) = *stramineus* (Guilting e parte), from Trinidad, Guppy, Proc. Scientif. Assoc. Trinidad, i. p. 18.—*B. multifasciatus*, var. *imperfectus*, Guppy, is a variety limited to the southern part of the island of Trinidad, and resembling the young of the typical form, the outer lip not being expanded. Ibid. p. 16.

AULACOGNATHA (PUPACEÆ).

Buliminus (Rhachis) burnayi, sp. n., Dohrn, Mal. Blätt. xiii. pp. 124, 125, Prince's Island, allied to *B. electrinus* (Morelet) and *B. zomulatus* (Pfr.). Several variations of the bands were observed. The colour of the shell varies somewhat according to the trees on which the animal feeds, Cacao, Gujava, or Avogado [*Persea*]. Animal ovoviviparous.—*B. eminulus* (Morelet), also found on Prince's Island, Dohrn, *l. c.* p. 126.—*B. welwitschi*, sp. n., Morelet, Journ. Conch. xiv. p. 155, Equatorial Africa.—*B. trutta*, sp. n., Blanford, Journ. As. Soc. 1866, p. 42, Anamullay Hills, Southern India.

Buliminus, group *Naparus*. Dentition of one of the German species [*B. obscurus*] by Eberhard, *l. c.* p. 17, pl. 2. fig. 32.—*B. montanus* (Drap.) has been found in Sweden, and is identified with the North-American *Pupa placida* (Say) by Zetterstedt, Cefv. K. Vetensk. Akad. Förhandl. 1865, p.

Buliminus olivieri, var. *major*, Martens, Mal. Blätt. xiii. p. 95, pl. 3. figs. 5, 6, Southern Abyssinia.

Partula fusca, ovalis, vittata, citrina, trilineata, elongata, gracilis, striolata, vexillum, stolidia, crassilabris (= *otaheitana*, var., Reeve, Conchol. Icon. fig. 11c), *rustica, umbilicata, compacta, bilineata, simulans, fasciata*, and *variabilis* are new species described by Pease, Am. Journ. Conch. ii. pp. 193-203, Tahitian archipelago. The shell figured by Reeve, Conch. Icon. figs. 13a and 13b, is called *P. sinistrorsa* by Pease.—*P. fasciata* (Pease) = *P. ganymedes* (Pfr.), Pease, *l. c.* p. 293.

Achatinella kauaiensis, anthonii, nigra, humilis, pusilla, petricolla, succincta, fuscoidea, dwightii, physa, tetrao, remyi, alexandri, undulata, and *mauiensis*, Newcomb, figured in Am. Journ. Conch. ii. pl. 13.

[*Cionella*] *Achatina anamullica, beddomei*, and *ventilis*, sp. n., Blanford, Journ. As. Soc. 1866, pp. 37-42, Anamullay Hills, India.—*Achatina montana*, sp. n., Martens, Mal. Blätt. xiii. p. 95, Abyssinia [may be better placed in *Cionella*].—*A. lowei*, sp. n., Paiva, Journ. Conch. xiv. p. 339, pl. 11. fig. 1, Porto Santo, near Madeira.

Tornatellina lamellata (Potiez et Michaud) = *antillarum* (Shuttl.) is viviparous. Guppy, Proc. Scientif. Assoc. Trinidad, i. p. 20.

[*Stenogyra*] *Rumina* (*Obeliscus*) *pusilla*, sp. n., H. Adams, Proc. Zool. Soc. 1866, p. 443, pl. 38. fig. 1, Upper Amazon or Ucayali. Mr. Adams appears to use the generic name *Rumina* (Risso), for priority's sake, for all *Stenogyrae*.

Stenogyra (*Opeas*) *pauper*, sp. n., *St.* (*Subulina*) *striatella* (Rang), and *St.* (*S.*) *angustior*, sp. n. (= *striatella*, Pfeiffer in Philippi's *Icones*), from Prince's Island. Dohrn, Mal. Blätt. xiii. pp. 126, 127. The first is figured on pl. 5. figs 14-16.

Bulimus (*Melaniella*) *multicosta* and *scalarinus*, sp. n. (Gundlach), described by Pfeiffer, Mal. Blätt. xiii. pp. 58, 59, Cuba.

Macroceramus parallelus, *blaini*, *minor*, *clerchi*, *arangoi*, and *paivanus*, sp. n., described by Pfeiffer, l. c. pp. 59, 61, Cuba.

Megaspira elatior. Note on its internal structure by Th. Bland, Am. Journ. Conch. ii. p. 64, with a woodcut.

Balea and *Temesa*. Remarks upon these two genera or groups by O. Semper, Journ. Conch. xiv. pp. 41-45.

Balea haueri and *cyclostoma*, *Clausilia meschendorferi* and *angustata* (Bielz), figured in Pfeiffer's *Novitat. Conch.* pl. 66.

Clausilia glabricollis, from Acarnania; *rufospira*, Cyprus; *jonica*, Cephalonia; *kreglinger*, from Maura in Greece; *altecostata*, Naxos; *tschetschenica*, Caucasus; *monilifera*, Corfu; *anguina*, Eubœa [Negroponte]; *eris*, Cadiluk; *graciliformis*, Istria; *filumna*, Lebanon; *angustella*, Dalmatia; *kriiperi*, Greece; *gospici* [*gospiciensis*] and *croatica*, Croatia; *substricta* (= *subcylindrica*, var. γ , Pfr. Monogr. Helic. vol. iv.), Dalmatia; *presckarii*, Prescka; *tenella*, island of Curzola in Dalmatia; and *striolata* (locality not indicated), are new species named by Parreyss, Zelebor, and others, and described, and therefore introduced into science by Pfeiffer, Mal. Blätt. xiii. pp. 146-154.

Clausilia brusinae (Kutschig, MS.) and *Cl. leucopleura*, sp. n., Brusina, Faun. Moll. Dalmat. p. 51, pl. 3. figs. 2 & 3, Dalmatia.

Clausilia alboguttulata (Wagn.). Two varieties, var. *obesa* and var. *nigra*, found near Lucca, described by Issel, Moll. Pisa, p. 20.

Clausilia (*Laciniaria*) *exilis*, *Cl.* (*Phædusa*) *formosensis*, sp. n., H. Adams, Proc. Zool. Soc. 1866, p. 317, pl. 33. figs. 6, 7, and *Cl.* (*Ph.*) *similaris*, sp. n., H. Adams, *ibid.* p. 446, pl. 38. fig. 10; all three from Formosa. Two other Formosan species, *Cl. swinhoei* and *Cl. sheridani*, Pfr. (Record for 1865, p. 277), are figured in *Novitat. Conch.* pl. 69. figs 11, 12, and 13-18.

Clausilia (*Nenia*) *bartletti*, sp. n., H. Adams, Proc. Zool. Soc. 1866, p. 441, pl. 38. fig. 2, Upper Amazon or Ucayali.

Pupa masclaryana, sp. n., Paladilhe, Rev. et Mag. Zool. 1865, p. 89, pl. 13. figs. 1-3, Montpellier.—*P. canaliculata*, sp. n., Crosse, Journ. Conch. xiv. p. 163, pl. 5. fig. 6.

Pupa (*Modicella*) *arizonensis* and *hordacea*, sp. n., Gabb, Am. Journ. Conch. ii. p. 336, pl. 21. figs. 6, 7, Arizona, west coast of North America. They belong to *Leucochila* (Martens).

Pupa edentula, var. *minor*, together with *P. umbilicata* (Drap.) and *P. fontana* (Krauss), from Southern Abyssinia, Martens, Mal. Blätt. xiii. p. 96.

[*Pupa*] *Isthmia ventricosa* and *bollesiana*, from New England, *I. corpulenta*, from Nevada, *Pupilla blandii*, from Missouri, are new species described by Morse, Ann. Lyc. Nat. Hist. New York, viii. 1865, pp. 207-212, with woodcuts.

Vertigo modesta, sp. n., Westerlund, Mal. Blätt. xiii. p. 45, from Rennéby, Sweden.

[*Pupa*, group *Strophia*] *P. proteus* (Gundlach), including *P. dimidiata* (Pfr.) as one of its numerous varieties, from Cuba, figured in Pfeiffer's Novit. Conchol. ii. pl. 66. figs. 13-22.

Ennea pupaeformis, sp. n., Morelet, Journ. Conch. xiv. p. 154, Equatorial Africa.—*Ennea sorghum* (Morelet), shell described, and *E. crystallum*, from Prince's Island, Dohrn, *l. c.* pp. 132, 133.—*Pupa* (*Ennea*) *infrendens*, sp. n., Martens, Mal. Blätt. xiii. p. 110, pl. 3. fig. 10-12, Natal.

[*Ennea*] *Elma*, subg. nov., Adams. A strong sinus at the aperture of the outer lip, the aperture edentulous. *Ennea* (*Elma*) *swinhoei*, sp. n., H. Adams, Proc. Zool. Soc. 1866, p. 317, pl. 33. fig. 8, Formosa.

Streptostele, g. n., Dohrn, Mal. Blätt. xiii. pp. 128-132; shell of the form of *Achatina*, but hyaline as in *Streptaxis* and *Ennea*; pillar-lip short, twisted, and thickened. Colour of the animal intensely red or yellow, as in the two last-named genera. Four species are referred to this genus: *Bulinus lotophagus*, *fastigiatus*, and *folini* (Morelet), and the new *Str. moreletiana*, Dohrn, figured on pl. 5. figs. 17-19; all living on Prince's Island.

ELASMOGNATHA (SUCCINIDÆ).

Succinea. Thirty-four North American species are described and figured by Tryon, Am. Journ. Conch. ii. pp. 228-241, pl. 17 (Monogr. pl. ii.). They are referred to two distinct groups or subgenera—the typical *Succineæ* with well rounded whorls, 18 species; and *Bradyspira*, with the whorls flattened above and effuse below, to which the author refers also several European species, as *S. pfeifferi*, *longiscata*, and *italica*.

Succinea dunkeri (Zelebor), too nearly allied to *S. longiscata* (Morelet), from the delta of the Danube, figured in Pfeiffer's Novit. Conchol. ii. pl. 69. figs. 9, 10.

Succinea concisa (Morelet) on St. Thomas and Prince's island in the Gulf of Guinea. Dohrn, *l. c.* p. 133.—*S. bogotensis*, sp. n., Pfeiffer, Mal. Blätt. xiii. p. 77, New Granada.—*S. arangoi*, sp. n., Pfeiffer, *l. c.* p. 140, Cuba.—*S. higginsii*, sp. n., Bland, Am. Journ. Conch. ii. p. 373, pl. 17. fig. 24, Baye Island, Lake Erie.

Suborder LIMNOPHILA.

AURICULIDÆ.

Alexia loweana, sp. n., Pfeiffer, Mal. Blätt. xiii. p. 145, Madeira.—*A. pavana*, sp. n., Pfeiffer, p. 146, Salvages Islands near Madeira.

Melampus exiguus (Lowe), Madeira, described from fresh specimens by Pfeiffer; *M. gracilis* (Lowe) is probably only an individual variety of *M. æqualis*. Pfeiffer, Mal. Blätt. xiii. pp. 143-145.

Melampus flavus and *pusillus* (Gmel.), West-Indian species, found also in Prince's Island by Dohrn, Mal. Blätt. xiii. p. 133.

Melampus montrouzieri, sp. n., Soubervie, Journ. Conch. xiv. p. 148, pl. 6. fig. 1, New Caledonia.

LIMNÆIDÆ.

Chilina. A revision of the species known or admitted by authors, particularly with regard to the specimens in Cuming's collection, is given by

Frauenfeld, Verhandl. zool.-bot. Gesellsch. Wien, xvi. 1866, pp. 192-197.—Two new species are added—*Chilina elegans*, from Valdivia, and *Ch. globosa*, from the States of the La Plata River, each illustrated by a woodcut, pp. 196 & 197.

Limnæa zrmanjæ, sp. n., Brusina, Faun. Moll. Dalmat. p. 55, pl. 3. fig. 4, Zrmanja River [= *truncatulus*, Müll.].

Limnæa swinhoei, sp. n., H. Adams, Proc. Zool. Soc. 1866, p. 319, pl. 33. fig. 13, Formosa.—*L. crosscana*, sp. n., Mabile and Le Mesle, Journ. Conch. iv. p. 130, pl. 7. fig. 5, Cochinchina.

Limnæus. Four species peculiar to the Sandwich Islands, one forming the genus *Erinna* (H. & A. Adams), are enumerated and the relations between them pointed out by Ed. v. Martens, Ann. & Mag. Nat. Hist. March 1866, p. 208.—*Lymnea wilsonii*, sp. n., Tryon, Am. Journ. Conch. ii. p. 11, pl. 2. fig. 17, New Zealand, also sinistral.

Limnæus succinoides, sp. n., Morelet, Journ. Conch. xiv. p. 161, Angola.

Limnæus natalensis (Krauss), var. *exsertus*, Martens, Mal. Blätt. xiii. p. 101, Abyssinia.

Lymnea cubensis (Pfr.), from St. Croix and Mexico, and *L. macrostoma* (Say), from Mexico, mentioned by Tryon, Am. Journ. Conch. ii. p. 11.

Limnæa (*Limnophysa*) *shurtleffii*, n. sp., Tryon, Am. Journ. Conch. ii. p. 111, pl. 10. fig. 2, Connecticut.—*Limnæus papyraceus* (Spix). The typical specimen is a young individual of *Bulinus goniostoma* (Fér.). Kriechbaumer, Mal. Blätt. xiii. p. 141.

Pompholyx is made the type of a new subfamily, *Pompholinæ*, in the family *Limnæidae*. W. H. Dall, Proc. Calif. Acad. Nat. Sc. 1866, no. 2.

Amphipeplea glutinosa (Müll.). Teeth of the radula, by Eberhard, *l. c.* p. 18, pl. 4. fig. 74, much more resembling those of *Limnæus* than of *Physa*.

Amphipeplea luzonica (Beck) and its synonymy described by Martens, Ann. & Mag. Nat. Hist. March 1866, p. 210.—Some remarks on the genus and several species are added.

Amphipeplea perlevis (Conrad, 1850) figured Am. Journ. Conch. ii. pl. 1. fig. 5, Australia [*Limnæus* ?].

Physa fontinalis (L.). Radula described and figured by Eberhard, *l. c.* p. 18, pl. 1. figs. 26-28; that of [*Aplexa*] *hypnorum* (L.) is stated to be quite similar. [See also Troschel, Arch. f. Naturgesch. 1836; Thomson, Ann. & Mag. Nat. Hist. 2nd series, ii. etc.]

Physa pisana, sp. n., Issel, *l. c.* p. 26, Pisa.

Physa, subgenus *Isidora* (Ehrenberg) without the digitations of the mantle; to this subgenus are referred the Egyptian *Ph. contorta* (Mich.) = *truncata* (Audouin) = *brocchi* (Ehrenb.), found also in Southern Europe; further *hemprichii* (Ehrenb.), *lamellosa* (Roth.), and *forskali* (Ehrenb.). Martens, Mal. Blätt. xiii. pp. 6-8. *Ph. forskali*, var. *clatior*, from Abyssinia, *wahlbergi* (Krauss) and *schmidti* (Dunker) are nearly allied. Martens, *ibid.* p. 100.

Physa welwitschi, *globosa*, and *angolensis*, sp. n., Morelet, Journ. Conch. xiv. p. 162, Angola.

Physa pectorosa and *australiana* (Conrad, 1850) figured in Am. Journ. Conch. ii. pl. 1. figs. 6 & 7, Australia. [The former is very like the shell figured in Sowerby's Genera and Reeve's Conchologia Systematica as *Ph. castanea*.]

Physa (Isidora) hainesii, sp. n., Tryon, Am. Journ. Conch. ii. p. 9, pl. 2. fig. 9, Australia. [Very closely allied to *Ph. ferruginea*, Adams et Angas.]

Physa (Physoopsis) abyssinica, sp. n., Martens, Mal. Blätt. xiii. p. 101.

Physa rivalis (Mat. and Rack.) = *sowerbiana* (Orb.). Its eggs and movements described by Guppy, Proceed. Scientif. Assoc. Trinidad, i. p. 28.

Physa coniformis, sp. n., Tyron, Am. Journ. Conch. ii. p. 6, pl. 2. fig. 5, Oregon.—*Ph. oleacea*, sp. n., Tryon, l. c. fig. 6, Lake Superior and Alabama.

New localities for eight American species of *Physa* are enumerated by the same, l. c. p. 7.—*Ph. pomilia* (Conrad, 1834) figured, ibid. pl. 15. fig. 1.

Physa (Bulinus) acutispira, sp. n., Tryon, l. c. p. 9, pl. 2. fig. 10, Australia.

Planorbis spinorbis (Müll.). Teeth of the radula, Eberhard, l. c. p. 18, pl. 2. fig. 33.

Planorbis riparius, sp. n., Westerlund, Sveriges Land- och Sötvatten-Mollusker, 1865 (see Record for 1865, p. 218), p. 106, and Mal. Blätt. xiii. 1866, p. 47, Renneby, Sweden.—*Planorbis capocestianus*, sp. n., Brusina, Faun. Moll. Dalmat. p. 56, pl. 3. fig. 5, from Capocesto. [Very closely allied to *Pl. marginatus*, Drap.]

Planorbis alexandrinus (Ehrenberg) redescribed by Martens, with remarks concerning *Pl. cornu* and *egues* (Ehrenb.). Mal. Blätt. xviii. pp. 3–5.

Planorbis esperanzaensis, sp. n., Tryon, l. c. p. 10, pl. 2. figs. 11–13, Cuba. Allied to *Pl. lucidus*, Pfr.

Planorbis (Planorbella) berendtii, sp. n., Tryon, l. c. p. 10, pl. 2. figs. 14–16, Mexico. [Seems to be very like *Pl. albicans*, Pfr.]

Planorbis (Gyraulus) circumstriatus, sp. n., Tryon, l. c. p. 112, pl. 10. figs. 6–8, Connecticut. Most specimens somewhat irregular.

Segmentina swinhoei, sp. n., H. Adams, Proc. Zool. Soc. 1866, p. 319, pl. 33. fig. 14, Formosa.

Ancylus foncki, sp. n., Philippi, Mal. Blätt. xiii. p. 38, Chile.—*Ancylus niger*, sp. n., Brusina, Faun. Moll. Dalmat. p. 56, Dalmatia.

Suborder THALASSOPHILA.

AMPHIBOLIDÆ.

Amphibola avellana. Lehmann has described its anatomy, Mal. Blätt. xiii. pp. 111–114. Male and female organs in the same individual, but distinct from each other. Lingual dentition similar to that of the *Pulmonata inoperculata*. Eyes at the inner side of the basis of the tentacles. A somewhat doubtful "flat-roundish body," granulated inside, and situated near the heart, is stated to be the respiratory organ.

Order PULMONATA OPERCULATA.

CYCLOPHORIDÆ.

Spiraculum beddomei, sp. n., Blanford, Journ. As. Soc. 1866, p. 31, Kimery Hills, near Waltair (Vizagapatam).

Pterocyclos insignis, sp. n., Theobald, Journ. As. Soc. 1865, no. 130, p. 278, Shan States, India.—*Pl. parva* [-us] (Pease, 1865) figured Am. Journ. Conch. ii. pl. 5. fig. 8.

Cyclotus swinhoei and *minutus*, sp. n., H. Adams, Proc. Zool. Soc. 1866, p. 318, pl. 33. figs. 9 & 10, Formosa.

[*Cyclotus*] *Aperostoma connivens*, sp. n., H. Adams, *l. c.* p. 443, pl. 38. fig. 6, Upper Amazon or Ucayali.—*Cyclotus pazi*, sp. n., Crosse, *Journ. Conch.* xiv. p. 356, pl. 14. fig. 3, Ecuador.

Cyclophorus exaltatus (Pfr.), var., from Formosa, and *C. cruentus* (Martens), from the island of Samar, Philippines, figured in Pfeiffer's *Novit. Conchol.* vol. ii. pl. 68. figs. 14, 15, and 16, 17.

Cyclophorus martinezi, *crossceanus*, and *perezi*, Gonzalez Hidalgo, and *C. hidalgoi*, Crosse, are new species described in *Journ. Conch.* xiv. pp. 273, 343, 344, and 354, pl. 8. f. 5, pl. 14. f. 1, 2, & 4, Ecuador.

Cyclostoma guesterianum, sp. n., Gassies, *Journ. Conch.* xiv. p. 50, New Caledonia.

Leptopoma achatinum, sp. n., Crosse, *Journ. Conch.* xiv. p. 164, pl. 5. fig. 5.

Alycæus (*Dioryx*) *swinhoei*, sp. n., H. Adams, *Proc. Zool. Soc.* 1866, p. 318, pl. 33. fig. 11, Formosa.

Opisthostoma de-crepignii (see *Zool. Record*, ii. p. 284). A very thin, horny operculum has been discovered, and the shell figured by H. Adams, *l. c.* p. 447, pl. 38. fig. 12; who figures also *O. nilgircicum*, fig. 13.

PUPINEA.

Pupina pineticola, sp. n., Cox, *Proc. Zool. Soc.* 1866, p. 375, Upper Richmond River, Australia.

Pupinella. *Pupinopsis* is a new subgenus with the texture of *Pupinella* and a posterior sinus in the aperture as in *Pupina*. *P. mindorensis* (Ad. et Rv.), *humilis* (Jacq.), and *Pupina* (*Pupinopsis*) *swinhoei*, sp. n., H. Adams, *Proc. Zool. Soc.* 1866, p. 318, pl. 33. fig. 12; the last from Formosa.

DIPLOMMATINACEA.

Seventeen species from the Pelew Islands, referred to a new genus, *Palaina*, by Semper, are figured in the *Journ. Conch.* xiv. pls. 2, 5, & 10. No diagnoses are given either for the genus or for the species. Crosse adds some notes on the allied genera *Arinia* and *Moussonia* of the same author, *l. c.* pp. 351–354.

Diplommatina (*Diancta*) *martensi*, sp. n., H. Adams, *Proc. Zool. Soc.* 1866, p. 446, pl. 38. fig. 11, locality unknown. [The Recorder cannot recognize it as a species of *Diancta*, the whorl before the last not being constricted; it resembles very much his *Pavillus rubicundus* from Borneo; and as the author himself says "plica columellari obsoleta," it may perhaps be more naturally referred to *Pavillus*.]

[*Diplommatina*] *Pupoidæa scalariformis* (Pease, 1865) figured *Am. Journ. Conch.* ii. pl. 5. fig. 6.

CYCLOSTOMIDÆ.

Licina? *percrassa* (Wright), *Choanopoma echinus* (Wright), *Cistula jimenoï* (Arango), *Cyclostonus römeri* and *heynehami* (Pfr.), from Cuba, are figured in Pfeiffer's *Novitates Conchol.* vol. ii. pl. 68.

Choanopoma? *smithianum*, sp. n., Pfeiffer, *Mal. Blätt.* xiii. p. 88, Haiti.

Adamsiella aripensis, sp. n., Guppy, Trinidad on the Cerras of Aripe, at a height of 2000–2500 feet, frequently suspended by means of glutinous threads from branches or the under surface of leaves, at the height of about a foot from the ground. Guppy, *Proceed. Scientif. Assoc. Trinidad*, i. p. 31.

Chondropoma canaliculatum, *foveatum*, and *presasianum* (Gundlach), *Ch.*

echinulatum, *sinuosum*, and *discolorans* (Wright), figured in Pfeiffer's *Novitates Conchol.* vol. ii. pl. 62 (1864), all from Cuba.—*Ch. dunkeri*, sp. n., Pfr. *Mal. Blätt.* xiii. p. 63, Cuba.

Chondropoma juliæni, sp. n., Pfeiffer, *Mal. Blätt.* xiii. p. 89, island Sombrero, West Indies.—*Chondropoma navassense*, sp. n., Tryon, *Am. Journ. Conch.* ii. p. 305, pl. 20. fig. 12, guano-island of Navassa, West Indies.

Realia ochrostoma, *variabilis*, *scalariformis*, *affinis*, and *levis* (Pease, 1865) figured *Am. Journ. Conch.* ii. pl. 5. fig. 1-5.

TRUNCATELLIDÆ.

Truncatella princeps, sp. n., Dohrn, *Mal. Blätt.* xiii. p. 134, Prince Island, Guinea.

ASSIMINEÆ.

Assiminea. The known species of this genus, many of which have been placed by previous authors in other genera, especially *Hydrocena* and *Omphalotropis*, are enumerated by ED. v. MARTENS, *Ann. & Mag. Nat. Hist.* March 1866, p. 202.

Another revision of the species of this genus, as represented in Cuming's collection, is given by FRAUENFELD, *Verhandl. zool.-bot. Gesellsch. Wien*, xvi. 1866, pp. 185-192.

HR. v. FRAUENFELD (*l. c.* pp. 421-427) treats once more of the species of this genus, and expresses his doubts as regards the propriety of referring to it those with a keel round the umbilicus. [The Recorder regards the position of the eyes as the essential character of this genus; and as he has observed this character in *A. carinata* (Lea), he cannot entertain any doubt with regard to its systematic place.—The differences between *Frauenfeld's* and the Recorder's lists of *Assimineæ* are great, and due chiefly to the circumstance that the former examined the species labelled *Assiminea* in Cuming's collection, whilst the latter endeavoured to point out which of the species named *Hydrocena* in the same collection appeared to him to belong to *Assiminea*.]

HELICINIDÆ.

Hydrocena. HR. v. FRAUENFELD, *Verh. zool.-bot. Gesellsch. Wien*, p. 421, states that the original locality of *Hydrocena cattaronsis*, the type of the genus, on the foot of Monte Sello, near Cattaro, has been destroyed, but that the shell was found by himself afterwards on another spot at Cattaro; both localities are moistened by fresh water. He adds a list of the so-called *Hydrocenæ* in Pfeiffer's *Monograph*, with more or less critical remarks on the systematic position of the several species.

Helicina. This genus is again treated by Mr. Sowerby in the 'Thesaurus;' he enumerates and figures all the species. The genera *Trochatella*, *Lucidella*, *Schasicheila*, and *Alcacia* are reunited with *Helicina*, as they are stated not to be defined by any constant character. The sections admitted in the genus are the following:—

1. Apertura inter columellam et labrum emarginata. *Alcadia*, 39 species.
2. Apertura fere integra, supra et infra sinuatim cuneata, operculo biorstrato. Genus *Schasicheila* (Shuttl.), 3 species.
3. Labro supra et infra tumido, sinuato. 12 species.
4. Liratae [lyratae], labro sinuoso, supra et infra dentato. *Lucidella* (Swains.), 4 species.
5. Trochiformes, solidæ, spiraliter liratae. 28 species.
6. Conicæ, læves. 16 species.
7. Rotundatim depressæ. 30 species.
8. Globosæ, [vel] subglobosæ. 48 species.
9. Angulatim depressæ. 39 species.
10. Medio carinatae. 51 species.

All together 270. New seem to be *H. crassicostata*, fig. 97, near [*Trochatella*] *virginea* (Lea), *subturrata*, fig. 185, *subconica*, fig. 226, *alta*, figs. 251, 252, *forbesiana*, fig. 344, *fumigata*, fig. 345, *subovalis*, fig. 376, *tecta*, fig. 434. Unfortunately no locality is given for any of the species.

Helicina nuda and *pfeifferiana*, sp. n., Pfeiffer, Mal. Blätt. xiii. pp. 63, 64, from Cuba.—*Helicina circumlineata*, sp. n., Tryon, Am. Journ. Conch. ii. p. 306, pl. 20. fig. 13, guano-island of Navassa, West Indies.—*Helicina paviana*, *binneyana*, *smithiana*, sp. n., Haiti, *moussoniana*, sp. n., Turks Island, Bahamas, *botteriana*, sp. n., Mexico. Pfeiffer, *l. c.* pp. 89–91.

Helicina pacifica (Pease, 1865) figured Am. Journ. Conch. ii. pl. 5. fig. 9.—*Helicina diversicolor*, sp. n., Cox, Proc. Zool. Soc. 1866, p. 375, Queensland and Upper Richmond River, Australia.

Trochatella regina (Morelet) and *Helicina emoda* (Pfr.), from Cuba, *Trochatella mouhoti* (Pfr.), from Siam, *Lucidella sulcata* (Weinland), from Haiti, and *Helicina macmurrayi* (Pfr.), from Trinidad, figured in Pfeiffer's Novit. Conchol. vol. ii. pl. 64.

Order SOLENOCONCHÆ.

Dentalium abyssorum (Sars, 1858) = *entalis*, var. β , of Lovén, Ind. Moll. Scandinav. = *tarentinum* in the catalogues of Asbjørnsen and Malm, is described and figured by Dr. Mich. Sars, Fossile dyrelevninger fra quaternær-perioden, 1865, p. 42, pl. iii. figs. 100–109.

Siphonodentalium vitreum (Sars) figured *ibid.* fig. 99.

Helonyx (Stimps.). T. A. Conrad, in a paper on American fossil shells, Am. Journ. Conch. ii. p. 75, identifies this name with "*Gadus*, Montagu? Rang, 1829," including three eocene species from Paris, three American (miocene), and two living—*gadus* (Montagu) and *clavatus* (Gould). He states himself that Montagu did not use this name as generic. [At all events the name *Gadus* cannot stand for any other genus of animals than for the well-known genus of fishes. Gray introduced for the same shell the name *Gadila* ("Genera of Recent Mollusca," Proc. Zool. Soc. 1847, p. 159). Mörch, in his critical revision of *Serpulidæ* (Naturh. Tidskr. Kjöbenh. 1863), mentions an observation made by Berkeley, showing that the *Dentalium gadus* (Mont.) belongs to an Annelid, and not to a Mollusk.]

Class CONCHIFERA.

Order INCLUSA, Cuvier (*Pholadacea*, Adams).

PHOLADIDÆ.

BAUMHAUER, E. H. VON. Sur le Taret et les moyens de préserver le bois de ses dégâts. Archives Néerlandaises des Sciences Exactes et Naturelles, i. 1866, pp. 1-45, with four plates, also in Ann. Sc. Nat. vi. 1866, pp. 112-151.

In the summer of the year 1858 public attention was directed to the ravages made by the *Teredo* in the Port of Nieuwendam. A commission, consisting of M. Vrolik, P. Harting, D. Storm Buysing, J. W. L. van Oordt, and the author, was appointed for examining the natural history of this mollusk, and for proposing means of protection against it. The results of their investigations are contained in this paper: an exact description of the animal and of its holes is given; it is stated to make them by the mechanical rasping-action of the minute denticulations covering a part of the surface of its valves, the movements having been seen by M. Kater on a living animal, the dwelling of which had been opened. The utility of an Annelid, *Lycoris fucata* (Haan), which feeds upon the *Teredo* is pointed out. The opinion that the *Teredo* has been imported by ships from India to Europe is disproved by the evidence of fossil wood damaged by it; and it is stated that it is found at all times on the shores of Holland, but in extraordinary numbers in dry years, when the inland waters are low and the inlets of the sea contain more salt water, such as were the years 1731, 1770, 1827, 1858, and 1859. Finally, as regards the means of protection, the commission have arrived at the following conclusions:—

1. It is of no use to coat the surface of the wood with any substance supposed to be impenetrable to the *Teredo*, as this coating will be damaged sooner or later.

2. The impregnation of the wood with soluble inorganic salts does not prevent the animal from invading the wood.

3. The hardness of the wood itself does not offer any protection, the wood of the "gaïac" and the "mamberklak" being invaded.

4. The only means offering a high probability of protection against the animals is the impregnation of the wood with creosote.

WRIGHT, E. PERCEVAL. Contributions to a Natural History of the *Teredida*. Trans. Linn. Soc. xxv. pp. 561-568, with plates 64 and 65.

After an historical review of our knowledge of the genera of this family, taken from the papers of Griffiths and Home (1806),

Gray, Tryon, and Gould, the following six genera are established, chiefly based on the form of their siphonal palettes:—

1. *Teredo* (L.). Siphonal palettes simple, oblong, transverse, entire, rarely serrated or toothed.

2. *Nausitora* (P. Wright). Siphonal palettes on the outer surface convex, covered with thick scale-like striæ; inner flat or slightly concave.—*N. dunlopei* (P. Wright), described in the preceding volume of the same journal, freshwater, India, and a new species, *N. saulii*, p. 567, pl. 65. figs. 9–15; valves with well-developed auricles, from Port Phillip, Australia.

3. *Kyphus* (Guettard). Siphonal palettes with apex dilated, transverse, spatulate, with a central midrib and an elongated, slender, cylindrical base. Siphons free throughout the greater part of their length.—*K. arenarius* (L.) and *K. ? manni*, sp. n., p. 565, pl. 65. figs. 1–8, Singapore, in timber, whilst *K. arenarius* lives in sand or soft mud.

4. *Calobates* (Gould). Siphonal palettes large, long, stilt-shaped; siphons adherent, only becoming free at their tips.—*C. thoracites* (Gould, Proc. Bost. Soc. 1856) = *Teredo furcelloides* (Gray, Proc. Zool. Soc. 1861), described p. 564, pl. 64. figs. 6–12, from Tavoy and also from Singapore, where it lives in the timber of the same jotty as *Kyphus manni*.—*C. australis*, sp. n., Wright, p. 564, pl. 64. figs. 1–5, Freemantle, Western Australia.

5. *Xylotrya* (Leach). Siphonal palettes elongate, penniform, horny, lateral edges with short filaments, spongy texture.—*X. bipinnata* (Turt.), *X. fimbriata* (Jeffr.) &c.

6. *Uperotus* (Guettard). Siphonal palettes spoon-shaped, depressed; area elegantly ribbed, ribs forming teeth on the upper margin.—*U. clava* (Gmel.).

GASTROCHÆNIDÆ.

FISCHER, P. Anatomie des Fistulanes. Journ. Conch. xiv. pp. 321–335, with plate 12.

The specimens dissected belong to *F. grandis*, Desh., from New Caledonia, and prove the genus to be distinct from *Gastrochæna*, although nearly allied to it. Type *F. mumia* (Spengl.).

SOLENIIDÆ.

Solen lischkeanus, sp. n., *woodwardi*, *grandis*, *molluccensis* (Dkr.), and *gracilis* (Phil.), Dunker, Novitat. Conchol. part 8, 1865, p. 70, pl. 24. figs. 1–6, Red Sea and East Indies.

Culltellus attenuatus, Dunker, l. c. p. 71, pl. 24. fig. 4, Philippines.

SAXICAVIDÆ.

Panopæa plicata (Jeffr.) is supposed by O. Mörch to be the young state of *P. (Panomya) norvegica* (Spengl.), Videnskab. meddel. naturhist. Foren. Kjöbenh. Aaret 1865, p. 247.

Saxicava rhomboides (Blainv.) distinguished from *S. arctica* (L.) by Brunsina, Faun. Moll. Dalmat. p. 40, Adriatic.

MYIDÆ.

Mya arenaria (L.) enclosed in timber, Sanderson Smith, Ann. Lyc Nat. Hist. viii. p. 154.

CORBULIDÆ.

Corbula contracta (Say) figured by T. A. Conrad, Am. Journ. Conch. ii. p. 280, pl. 15. fig. 12, North Carolina.

Azara undata, sp. n., Conrad, *l. c.* p. 280, pl. 15. figs. 9, 10, 15, Rio de la Plata.

ANATINIDÆ.

Periploma fragilis (Totten), from Massachusetts. Conrad insists upon its distinctness from the more southern *P. papyratia* (Say), and its near affinity to the miocene *P. alta* (Conrad), Am. Journ. Conch. ii. p. 106.—*P. papyraceum* (Say) figured *ibid.* pl. 15. fig. 6.

Thracia hiatelloidea, sp. n., Brusina, Faun. Moll. Dalmat. p. 40, Adriatic.

Order CARDIACEA, Cuvier (*Veneracea*, Adams).

MACTRIDÆ.

Mactra lühdorffi (see Record for 1864, p. 241) figured by Dunker, Novitat. Conch. pl. 20.

TELLINIDÆ.

Tellina (Angulus?) tampaënsis, sp. n., Conrad, Am. Journ. Conch. ii. p. 281, pl. 15. fig. 8, Florida.—*Tellina daniliana*, sp. n., Brusina, Faun. Moll. Dalmat. p. 41, Adriatic.

Licinopsis corrugata, sp. n., Brusina, *l. c.*, Adriatic.

Donax. In the monograph in Sowerby's Thesaurus, part 24, vol. iii. plates 280–283, sixty-five species are described and figured. New appear to be:—*D. transversus*, fig. 11, allied to *D. scalpellum*; *curtus*, fig. 20, allied to *D. cayennensis*; *angustatus*, fig. 44; and *inconspicuus*, fig. 117. No localities are given.

Donax euglyptus and *splendens*, sp. n., Dunker, Novitat. Conchol. part 9, 1865, pp. 78, 79, pl. 27. figs. 1–4 and 5–8, Moluccas and Australia.—*D. granosus*, sp. n., Zelebor, Verh. zool.-bot. Gesellsch. Wien, 1866, p. 916, Amboina.—*Donax cattaniana* [-us], sp. n., Brusina, Faun. Moll. Dalmat. p. 42, Adriatic.

Syndosmya strigilloides (Vaillant) = *lactea* (Dunker). Semper, Journ. Conch. xiv. p. 166.

VENERIDÆ.

Dosinia tenuilirata, *subdichotoma*, *ceylanica*, and *regularis*, sp. n., Dunker, Novitat. Conchol. part 9, 1865, pp. 80–82, pls. 80–82; the three first from Ceylon; of the last the locality is unknown.—*D. floridana*, sp. n., Conrad, Am. Journ. Conch. ii. p. 280, pl. 15. fig. 4, Florida Keys and Gulf of Mexico.

RÖMER, ED. Monographie der Mollusken-Gattung *Venus*, L.

The fifth and sixth parts, pp. 43–58, pls. 13–18, were published in December 1866, containing 13 species of the group *Calliste*, eleven of which are critically examined and beautifully figured:—

C. chione (L.), pl. 13. fig. 1; *maculata* (L.), pl. 16. fig. 1; *squalida* (Sow.) = *biradiata* (Sow.) = *chionea* (Menke), pl. 13. fig. 2; *aurantiaca* (Sow.), pl. 14. fig. 1; *guttata*, sp. n., pl. 16. fig. 2; *pannosa* (Sow.) = *lutea* (Koch) = *puella* (Carpenter), pl. 14. fig. 2; *gigantea* (Chemn.), pl. 15. fig. 1; *floridella* (Gray)

= *africana* (Phil.), pl. 15. fig. 2; *umbonella* (Lam.), pl. 17. fig. 1; *impar* (Lam.), pl. 17. fig. 2; *festiva* (Sow.), pl. 17. fig. 3. Unknown to the author are *Dione obesa* and *rutila* (Sow.).

Calliste gotthardi, sp. n., Dunker, Novitat. Conchol. part 9, 1865, p. 73, pl. 25. figs. 1-3, Samoa Islands.

Sunetta concinna, sp. n., Dunker, l. c. p. 74, pl. 25. figs. 4-6, Amboina.

Tivela subglobosa and *natalensis*, sp. n., Dunker, Novitat. Conchol. part 8, 1865, pp. 68, 69, pl. 23. figs. 7-9 and 10-12; the first without indication of locality, the second from Natal.

Tapes schnellianus, sp. n., Dunker, Novitat. Conchol. part 9, pl. 25. figs. 7-9, Japan.

CYRENIDÆ.

Cyrena (*Corbicula*) *cor* (Lam.), *consobrina* (Cailliaud), and *pusilla* (Phil.), from the Nile, described by Martens, Mal. Blätt. xiii. pp. 13-15.

Corbicula erosa (Prime), Cambodja; *lydigiana* (Prime), and *pisidiiformis*, sp. n., Siam; *triangularis* (Desh.), locality unknown; *crassula* (Mouss.), rivers Orontes and Tigris; *cumingii* (Desh.)=*squalida* (Desh.)=*notata* (Prime), Luzon; *tumida* (Desh.), Borneo; *occidens* (Bens.), *bengalensis* (Desh.), and *trigona* (Desh.), British India; *stimpsonianana*, sp. n., locality unknown; *vulgaris*, sp. n., China?; *quilonensis* (Beus.), India; *africana* (Desh.)=*gauritziana* (Krauss), Southern Africa; *ducalis* (Prime)=*fluminea* (Mousson), Java; *woodiana* (Lea)=*similis* (Gray)=*grandis* (Desh.)=*primeana* (Mörch, non Morelet), China, are described and figured in woodcuts, by T. Prime, Ann. Lyc. Nat. Hist. New York, viii. nos. 8-10, Apr. 1866, pp. 213-228.

Batissa similis (Prime), Nicobar; *triquetra* (Desh.), Philippines and Australia [?]; *ponderosa* (Prime), New Caledonia, are described and figured by T. Prime, *ibid.* pp. 229-232.

Cyrena mörchiana, sp. n., locality unknown; *lævis* (Prime) and *triangularis* (Metcalf), Borneo, are described and figured by T. Prime, *ibid.* pp. 232-235.

Velorita cochinesis (Harley), to which is referred *Cyrena corbiculaformis* (Prime) as a synonym, British India, is described and figured by T. Prime, *ibid.* p. 236.

Pisidium amnicum (Müll.), var. *elongatum*, Martens, Mal. Blätt. xiii. p. 102, Egypt.

Pisidium moitessierianum, sp. n., Paladilhe, Rev. et Mag. Zool. 1865, p. 72, pl. 13. figs. 11-17, Montpellier.—*Pisidium watsoni*, sp. n., Paiva, Journ. Conch. xiv. p. 340, pl. 11. fig. 3, Madeira.

Order MYTILACEA, Cuvier (*Lucinacea*, Adams).

LUCINIDÆ.

Lucina carnosa and *mirabilis*, sp. n., Dunker, Novitat. Conchol. part 9. pp. 76, 77, pl. 26. figs. 4-6 and 7-9: the former from Natal; the latter=*Luc. voorhoevei*, Desh. 1857, Journ. Conch. xiv. pp. 39, 40.—*L. lintea*, sp. n., Conrad, Am. Journ. Conch. ii. p. 281, pl. 15. fig. 7, Florida.

Diplodonta bullata, sp. n., Dunker, l. c. p. 76, pl. 26. figs. 1-3, Ceylon.

KELLIADÆ (LASEIDÆ).

Montacuta tumidula, Jeffreys, Ann. & Mag. Nat. Hist. xviii. 1866, p. 393, Hebridean Sea, North-west coast of Ross-shire.

GALEOMMIDÆ.

Galeoma pileum, sp. n., Brusina, Faun. Moll. Dalmat. p. 42, Adriatic.

UNIONIDÆ (NAJADEA).

Unio. Reeve's Conchol. Icon. parts 248 & 249 contain figures of species of this genus. A list of the species found in British India has been published by Blanford, Journ. As. Soc. 1866, pp. 134-155, in which several species are treated in a critical and masterly manner.

Unio villa (Stabile) is distinguished from *U. requienii* by Issel, *l. c.* p. 35; It inhabits the lake of Bientina, Tuscany.

Unio merdiger, Watts [?], Reeve, *l. c.*, from Hungary.

Unio swinhoei, sp. n., H. Adams, Proc. Zool. Soc. 1866, p. 319, from Formosa.—*U. flavidens* (Benson), Reeve, *l. c.*, from Bengal.—*U. siamensis*, *asperulus*, and *pilatus* are new species from Siam, described by Lea, Proc. Ac. Nat. Sc. Phil. 1866, p. 133.—*U. evitatus*, sp. n., Lea, *l. c.*, from Bengal.—*U. venustus* and *micropterus*, sp. n., Morelet, Journ. Conch. xiv. p. 63, from Cochinchina.

Unio bakeri and *acuminatus*, sp. n., H. Adams, Proc. Zool. Soc. 1866, p. 376, Lake Albert Nyanza, Central Africa.—*U. abyssinicus*, sp. n., Martens, Mal. Blätt. xiii. p. 102, Lake Tzana, Abyssinia.—*U. dembea*, Rossmässler, Reeve, *l. c.*, Abyssinia.—*U. ægyptiacus* (Fér.), *rugifer* (Küst.), *niloticus* (Fér.), and *cailliaudi* (Fér.), on their synonymes and localities, Martens, Mal. Blätt. xiii. pp. 11-13.

Unio opalinus, sp. n., Anthony, Am. Journ. Conch. ii. p. 146, pl. 7. fig. 2, Michigan.—*U. depygis*, sp. n., Conrad, Am. Journ. Conch. ii. p. 107, pl. 10. fig. 1, Harpeth River, Tennessee.—*U. uber*, sp. n., Conrad, *l. c.* p. 279, pl. 15. fig. 16, Alabama River.—*U. fontanus*, sp. n., Conrad, *l. c.* fig. 13, Missouri, near Vicksburg.—*U. prasinatus*, sp. n., Conrad, *l. c.* fig. 14, Florida.

Unio strebeli, sp. n., Lea, Proc. Ac. Nat. Sc. Philad. 1866, p. 133, Vera Cruz.

Unio peculiaris, *firmus*, *rugososulcatus*, *apprimus*, *locellus*, *parvus*, *acutirostris*, *ampullaceus*, *paraguayensis*, sp. n., Lea, *l. c.* pp. 33, 34, South America.

Unio zelevori, sp. n., Dunker, Verh. zool.-bot. Gesellsch. Wien, 1866, p. 914, New Zealand.—*U. menziesianus* (Gray), Reeve, *l. c.*, New Zealand.

Monocondyllea lentiformis and *pazii*, Lea, *l. c.* 1866, p. 34, South America.—*Monocondylus tumidus* and *exilis*, sp. n., Morelet, Journ. Conch. xiv. pp. 62, 63, Cochin China. *Monocondylus* is a correction for *Monocondyllea*.

Anodonta swinhoei, sp. n., H. Adams, Proc. Zool. Soc. 1866, p. 446, from Formosa.—*Anodonta m'niclii*, *subgibbosa*, *inornata* are new species, from Michigan, Anthony, Am. Journ. Conch. ii. pp. 104 & 105, pl. 6. figs. 1 & 2, and pl. 7. fig. 1.—*Anodonta pazi*, sp. n., Lea, *l. c.* p. 35, from South America.

Spatha. Dr. v. Martens describes the following species from the Nile:—*S. cailliaudi*, sp. n., *S. hartmanni*, sp. n., and *S. plicata* (Parreiss), Mal. Blätt. xiii. pp. 9-11.

Spatha baikii, sp. n., Adams, *l. c.* p. 447, River Niger.

ÆTHERIIDÆ.

Bartlettia, g. n., H. Adams, Proc. Zool. Soc. 1866, p. 444. Distinguished from *Ætheria* by the shell being nearly equivalve, and not adherent, the ligament

marginal and not sunk in a groove of the area of one valve. The only known species is *Etheria stefanensis* (Moricand), found by M. Porte in the Amazon, near its mouth, and now by Mr. Bartlett in the upper part of that river; it is figured *l. c.* pl. 38. fig. 7.

MYTILIDÆ.

Mytilus ater and *M. janeirensis*, sp. n., Dunker, Verh. zool.-bot. Gesellsch. Wien, 1866, pp. 914, 915, the first from New Zealand, the second from Rio Janeiro.

Septifer bilocularis, from New Caledonia, has been dissected by P. Fischer, Journ. Conch. xiv. pp. 5-11, pl. 4. It is much more nearly allied to the true marine *Mytilus*, without apical septum, than to *Dreissena*.

Septifer trautwineanus, sp. n., Tryon, Am. Journ. Conch. ii. p. 302, pl. 20. f. 8, from the River S. Juan, New Granada.

Modiola imberbis, sp. n., Brusina, Faun. Moll. Dalmat. p. 41, Adriatic.

AVICULIDÆ.

Pinna. The known species are distributed into several groups and subgenera, with particular regard to the slit in the pearly layer and the apical outside furrow in some of the species. Martens, Ann. & Mag. Nat. Hist. Febr. 1866, pp. 81-88.

Order OSTRACEA, Cuvier (*Pectinacea*, Adams).

ARCIDÆ.

Arca paucistrigata, Bombay, *adamsiana*, China sea, and *pectunculiformis*, Borneo, sp. n., Dunker, Novitat. Conchol. pp. 87, 88, pl. 30, figs. 4-6, pl. 29, figs. 4-6, and pl. 28, figs. 4-6.—*Anomalocardia subrubra*, Philippines; *rugifera*, Indian Seas; *paucigranosa* [= *nodifera*, Martens, Proc. Zool. Soc. 1860], Siam; *carpenteri*, Southern Australia, sp. n., Dunker, *l. c.* pp. 83-86, pl. 28, figs. 1, 2, figs. 7-9, pl. 29, figs. 10-12, and pl. 30, figs. 7-9.—*A. oblonga* (Philippi), Mergui, figured, *ibid.* pl. 29, figs. 7-9.—*Barbatia rodatzki*, Zanzibar, and *B. ezimia*, sp. n., locality unknown, Dunker, *l. c.* pp. 89, 90, pl. 29, figs. 1-3, and pl. 30, figs. 1-3.

Arca varidentata (Wood). Dr. Michael Sars considers the arctic *A. glaciatis* (Gray, Torell), found alive at Melville Island, Spitzbergen, and the northernmost extremity of Norway, and fossil near Christiania, to be a larger variety of *A. varidentata*, which diminishes in size gradually towards the south. Mich. Sars, Fossile dyrelevninger fra quaternærperioden, 1865, p. 35, pl. 2, figs. 29, 30.

NUCULIDÆ.

Yoldia intermedia (Sars, 1858) is described and figured by Dr. M. Sars, *l. c.* p. 98, pl. 3, figs. 92-96; it is found alive on the shores of Arctic Norway.—*Y. nana*, Sars, *l. c.* p. 99, pl. 4, figs. 118-120, found alive near Christiania and at Lofoten.

PECTINIDÆ.

Pecten multisquamatus, sp. n., Dunker, Novit. Conchol. part 8. p. 67, pl. 23, figs. 1-3, Cuba.—*P. sulcicostatus* (Sowerb.), *ibid.* figs. 4-6, Natal.—*P. yesoensis* (Jay), *ibid.* pl. 22.—*P. leptogaster*, sp. n. Brusina, Faun. Moll. Dalmat. p. 45, Adriatic.

OSTREIDÆ.

A publication by CHR. RASCH, "Veiledningen til behandlingen af naturlige Oesterbanker og anlæget af nye" enz. [Instructions for the management of natural oyster-banks, and the establishment of new ones], Christiania, 1866, has not been seen by the Recorder.

J. L. SOUBERAN has published "Rapport sur l'ostreiculture à Arcachon," Bull. Soc. Zool. d'Acclimat. Paris, iii. 1866, pp. 1-18; also some remarks on Norwegian Oysters and the instruments used in their capture, *ibid.* pp. 482-484.

Mr. A. W. E. O'Shaughnessy, in a paper "on green oysters," Ann. & Mag. Nat. Hist. 1866, Sept. pp. 221-228, has compiled what is known on this subject.

ANOMIIDÆ.

Anomia hemisphærica, sp. n., Brusina, Faun. Moll. Dalmat. p. 46, Adriatic.

Class BRACHIOPODA.

Argiope schrammi and *antillarum*, sp. n., Crosse and Fischer, Journ. Conch. xiv. pp. 269, 270, pl. 8. figs. 6 & 7, Guadeloupe.—*A. barrettiana* and *woodwardiana*, sp. n., Davidson, Proc. Zool. Soc. 1866, p. 103, pl. 12. figs. 3 & 4, Jamaica.

Thecidium barretti (Woodward, MS.) described first from fossil specimens in the Geological Magazine, 1864, i. pl. 2. figs. 1-3, has been found living in Jamaica, Davidson, *l. c.* p. 104.

MOLLUSCOIDA

BY

E. PERCEVAL WRIGHT, M.A., M.D., F.L.S.

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- AGASSIZ, ALEX. Description of *Salpa cabotti*, Desor. Proc. Bost. Soc. Nat. Hist. vol. xi. Dec. 1866, pp. 17-23, figs. 1-5.
- DUTHIERS, H. LACAZE. Sur un genre nouveau d'Ascidien (*Chevreulius callensis*). Ann. des Sc. Nat. Zool. 5^{me} série, tom. iv. pp. 293-316, pl. 5 (*vide* Record, 1865, p. 299).
- FISCHER, M. P. Etude sur les Bryozoaires perforants de la famille des Térébriporides. (Abstract.) Compt. Rend. tome lxii. (Avril 1866) pp. 985-987, and Ann. & Mag. Nat. Hist. vol. xvii. 1866, p. 471.
- GIGLIOLI, E. Nota sul così detto sistema nervoso Coloniale dei Briozoi. Atti Accad. Sc. di Torino, vol. i. disp. 2 (Dec. 1865), pp. 131-134.
- KOWALEWSKY, A. Beiträge zur Anatomie und Entwicklungsgeschichte des *Loxosoma neapolitanum*. Mém. Acad. Imp. St. Pétersbourg, tom. x. No. 2, 1866, with a plate, pp. 1-9.
- M'INTOSH, W. C. Some observations on British *Salpa*. Journ. Linn. Soc. vol. ix. No. 33, pp. 41-48, pl. 1.
- Observations on the Marine Zoology of North Uist, Outer Hebrides. Proc. Roy. Soc. Edinb. 1866, pp. 600-614, with woodcuts.
- PARFITT, E. On two new Species of Freshwater Polyzoa (*Plumatella*). Ann. & Mag. Nat. Hist. vol. xviii. 1866, pp. 171-173, pl. 12.
- PROUT, H. Descriptions of New Species of Bryozoa. Trans. Acad. St. Louis, vol. ii. pt. 2, 1866, pp. 410-413.

TUNICATA.

M'INTOSH (Proc. Roy. Soc. Edin. vol. v. pp. 604-606) gives a list of some of the Tunicate Mollusca met with at North Uist, and describes a new species of *Cynthia* (*C. uistia*), p. 605, fig. 3.

Perophora. Keferstein makes some observations on the contractions of the heart in this genus. Bericht deutsch. Naturf. u. Aerzte, Giessen, 1864, p. 165.

Schizascus (Stimpson). J. Alder (Ann. & Mag. Nat. Hist. vol. xvii. 1866, p. 152) points out Lacaze-Duthiers's mistake in giving a new name (*Chevreulius*) to this genus; and O. A. I. Mörch (ibid. p. 313) believes that the same genus is distinctly indicated by Ehrenberg (1828) in the introduction to his 'Symbolæ Physicæ,' thus: ". quod formam animalium novam attulimus (*Rhodosoma verecundum*) Ascidias bivalvibus Molluscis externa etiam forma adnectentem, Ascidiam scilicet tunica cartilaginica bivalvi indutam;" he also fancies that Linnæus's *Asterias (lunata) semiorbiculata* (Amœnitates Academicæ, iv. p. 256. n. 44. fig. 14) may have been founded on a dried specimen of *Rhodosoma*.

Salpa. McIntosh gives an account of the occurrence of several species of this genus off the Hebrides in August 1865. At the beginning of August *S. runcinata* was the only species met with; about a fortnight later, *S. spinosa* (Otto), both the solitary and chained forms, occurred in amazing quantities. The climax of *Salpa*-life was about the 22nd of August, the sea being unusually calm and the weather very fine; in some parts the sea resembled boiled sago for long distances. Several young forms (*S. runcinata*, *spinosa*) are described and figured in this paper. Journ. Linn. Soc. ix. pp. 41-48, pl. 1.

Salpa cabotti. Agassiz (*l. c.*) describes this species at great length; it is met with very frequently south of Cape Cod.

POLYZOA.

McINTOSH (Proc. Roy. Soc. Edin. vol. v. p. 603) gives a list of forty-nine Polyzoa met with at North Uist in the outer Hebrides.

PHYLACTOLEMATA.

Parfitt mentions having found *Plumatella emarginata*, Allm., and *P. fruticosa*, Allm., in the River Clyst, Bishop's Clyst. Ann. & Mag. Nat. Hist. vol. xviii. 1866, p. 426.

Plumatella lineata, sp. n., Parfitt, *l. c.* p. 172, pl. 12. figs. 1-3, from the underside of the leaves of water-lilies, Exeter; near *P. stricta*, Allm.

Plumatella limnas, sp. n., Parfitt, *ibid.* p. 172, pl. 12. figs. 4-8, on an old valve of *Anodon cygneus*, in the canal, Exeter.

GYMNOLEMATA.

TEREBRIPORIDÆ. Fischer makes this family, which is closely allied to the Hippothoidæ, for D'Orbigny's genus *Terebripora*, a new species of which, from the Mediterranean and Arcachon, is alluded to without being described: so, also, is a new genus,

Spathipora, differing from *Terebripora* in having its cells alternating and carried on alternate axes; two species are indicated, one from the Pacific and one from the Mediterranean. The existence of this family in both the secondary and tertiary periods is also alluded to.

Paludicella ehrenbergi. W. Houghton mentions the occurrence of this Polyzoon in the Union Canal, Shropshire, Ann. & Mag. Nat. Hist. vol. xvii. 1866, p. 237. Parfitt (*l. c.* p. 171) describes the statoblasts of this species from specimens found near Exeter.

Prout (*l. c.*) describes the following new species:—

Fenestella nodosa (p. 410), *F. dilata* (p. 411), both species from the Hamilton group; *F. bifurcata* (p. 411), geological position and locality unknown.

Polypora imbricata (p. 412), mountain limestone; Indiana; *P. rigida* (p. 412).

Retepora hamiltonensis (p. 412), Hamilton group.

Ptilodictya (Stictopora) variabilis (p. 413), Upper Silurian, Columbus, Ohio.

Serialaria heleneæ, sp. n., Giglioli (*l. c.* p. 132). *Vallonia intricata* has been described by Kützing and Agardh as an *Alga*. It was found in considerable quantities at Leghorn by the author, and was seen at once to be a *Serialaria*; a brief description is given of the nervous system.

Lozosoma neapolitanum, sp. n. Kowalewsky (*l. c.*) describes a new species of this strange genus, established for *L. singulare* by Keferstein. This species was found at Naples on the stems of several Polyzoa and Hydrozoa. The author suggests that it forms the type of a new family; an account of its development is given, accompanied by figures.

CRUSTACEA

BY

C. SPENCE BATE, F.R.S.

BATE, SPENCE C., and WESTWOOD, J. O. History of the British Sessile-eyed Crustacea. Vol. I. 1861-1863. Vol. II. parts xi. & xii. (pp. 1-64) 1863. Parts xiii., xiv., xv. 1866. London. 8vo.

The work is illustrated by a woodcut of every species, so that the page of the text is that of the figure also.

BATE, SPENCE C. Vancouver Island Crabs.

These notices are contained in the 'Naturalist in Vancouver Island and Brit. Columbia,' by J. Keast Lord. London, 1866. 8vo, vol. ii. chap. xiii. pp. 262-284, with a plate.

——. Report of the Committee appointed to explore the marine Fauna and Flora of the South Coast of Devon and Cornwall. No. I. Crustacea. Brit. Assoc. Report, 1865, pp. 51-54.

——. Carcinological Gleanings.—No. II. Ann. & Mag. Nat. Hist. vol. xvii. p. 24, pl. 2: 1866.

The last two communications are on the same subject, being little more than reprints.

BRADY, G. S. On new or imperfectly known Species of Marine *Ostracoda*. Trans. Zool. Soc. Lond. v. (1866) pp. 359-393, pls. lvii.-lxii.

Sixty-seven species are described in this paper. Ten, viz. *Cytherella beyrichi* (Reuss), *Bairdia ovata* (Bosquet), *Cytherideis gracilis* (Reuss), *Cytheridea mülleri* (Münster), *Cythere jurinei* (Münster), *C. canaliculata* (Reuss), *C. plicatula* (Reuss), *C. clathrata* (Reuss), *C. subcoronata* (Speyer), *C. scabra* (Münster), have been identified with forms already described and figured from fossil (chiefly Tertiary) specimens; the rest (excepting *Jonesia simplex*, *Cythere latissima*, and *Cytheridea papillosa*, which have been described and figured from British specimens by the Rev. A. M. Norman) are new. The author thinks that, in the *Ostracoda*, little confidence is to be placed on either quantity or intensity of the external markings or spines; but considerable reliance may be placed for generic arrangement on the "lucid spots." But the features on which most reliance is to be placed are the general form and proportions of the car-

pace in its lateral and dorsal aspects and the character (not the quantity) of the surface-ornament.

BUCHHOLZ, R. *Hemioniscus balani*. Siebold und Kölliker's Zeitschr. f. wissensch. Zool. xvi. pp. 303-327, pls. 16 & 17: 1866.

This memoir is a valuable addition to our knowledge of the development of the parasitic Isopods, a full account of which will be found in a recently published number (vol. ii. p. 257, under the genus *Cryptothiria*) of the 'British Sessile-eyed Crustacea.'

CLAUS, C. Die Copepoden-Fauna von Nizza, pp. 34, pls. 1-5. Marburg und Leipzig, 1866, 4to.

This memoir is a contribution to the Darwinian hypothesis as exemplified in the characters and forms of the Copepoda found in the neighbourhood of Nice.

EDWARD, TH. Stray Notes on some of the smaller Crustaceans. No. I. On the Habits &c. of the *Hyperiidæ*. Journ. Linn. Soc. vol. ix. p. 143. No. II., p. 166.

In these two communications the author treats of the habits of several Amphipod Crustacea, more particularly of the *Hyperiidæ*, his object being to show that the species of this family are not parasitic, but only occasionally reside in the gill-cavities of the Medusæ.

EDWARDS, A. MILNE. Description de trois nouvelles espèces du genre "*Boscia*," Crustacés Brachyures de la tribu des Thelphéusiens. Ann. Soc. Entomol. France, 1866, tome vi. p. 203.

——. Etudes Zoologiques sur les Crustacés récents de la famille des Cancériens. Nouv. Arch. Mus. d'Hist. Nat. i. pp. 177-308, plates xi.-xix.: 1866.

This memoir gives not only descriptions of all the genera and species of the family *Canceridæ* and figures of the newest and most important, but also a list of the several fossil species belonging to each genus.

——. Description de quelques Crustacés nouveaux, appartenant à la tribu des Maicens. Ann. Soc. Entomol. France, tome v. pp. 133-147, pls. iii., iv., v.: 1865.

——. Description de quelques Crustacés nouveaux ou peu connus de la famille des Leucosiens, Ibid. tome v. pp. 148-159, pl. vi.

GOËS, A. Crustacea Amphipoda maris Spitzbergiam alluentis cum speciebus aliis arcticis. Gefv. Vetén. Akademi. Förhandl. 1865, pp. 517-536, tab. xxxv.-xli.

GRUBE, ED. Beiträge zur Kenntniss der istrischen Amphipoden-Fauna. Archiv für Naturgeschichte, 1866, pp. 377, &c., pls. ix., x. (not completed).

HELLER, CAMIL. Kleine Beiträge zur Kenntniss der Süßwasser-

- Amphipoden. Verhandl. zool.-bot. Gesellsch. Wien, 1865, xv. pp. 979-984, tab. 17.
- HELLER, CAMIL. Carcinologische Beiträge zur Fauna des adriatischen Meeres. Ibid. pp. 723-760: 1866.
- In this memoir the author precedes the description of the species by giving a concise description of all the genera.
- . Beiträge zur näheren Kenntniss der Amphipoden des adriatischen Meeres (als erste Fortsetzung der Untersuchungen über die Litoralfauna des adriatischen Meeres). Denkschr. Ak. Wiss. Wien, xxvi. pp. 1-62, pls. 1-4.
- HESSE, EU. Observations biologiques sur quelques Crustacés des côtes de Bretagne. Ann. Sci. Nat. tome v. pp. 241-264.
- This memoir consists of observations on the genera *Slaberina* [*Eurydice*, Leach], *Euclumba* (g. n.), and *Cirolana*.
- . Observations sur des Crustacés rares ou nouveaux des côtes de France (Septième article). Ibid. pp. 265-279, pl. 9. (Neuvième article*) Ibid. tome vi. pp. 51-87, pl. iv. (Dixième article) Ibid. pp. 321-360, pls. xi. xii.
- KLUNZINGER, C. B. Ueber eine Süßwassercrustacee im Nil, mit Zusätzen von Dr. Ed. v. Martens und C. Th. v. Siebold. Zeitschr. wissensch. Zool. xvi. pp. 357-368, pl. xx. 1866.
- This memoir is a full description of a freshwater prawn from the Nile (*Palæmon niloticus*), to which is added a short appendix by Dr. von Martens, and a second by Prof. von Siebold, comparing it with *P. lacustris* and other closely allied Crustacea.
- LEREBOULLET, A. Observations sur la génération et le développement de la Limnadié de Hermann (*Limnadia hermanni*, Ad. Brongn.). Ann. des Sc. Nat. tome v. pp. 283-308, pl. 12.
- This memoir was left by the author in an unfinished condition at the time of his lamented death, being part of a larger work on this species; which, unfortunately, is too incomplete for publication.
- MARTENS, E. VON. Verzeichniss der von Dr. E. Schweinfurth im Sommer 1864 auf seiner Reise am rothen Meere gesammelten und nach Berlin eingesendeten zoologischen Gegenstände. Verhandl. zool.-bot. Gesellsch. Wien, 1866, pp. 379-381.
- NORMAN, A. M. Report of the Committee appointed for the purpose of exploring the coasts of the Hebrides by means of the dredge. Part II. Crustacea, &c. Report Brit. Assoc. 1867, pp. 193-206.
- The author gives a list of two hundred and twelve species of Crustacea; the new species will be mentioned subsequently.

* Huitième article appears to be omitted. The "Neuvième Article" is marked as Huitième on the wrapper.

PACKARD, A. S., Jun. On certain Entomological speculations. Proc. Entomol. Soc. Philad. 1866, pp. 209-218.

This memoir is a review of a paper of Mr. Walsh, *l. c.* 1864, on the morphology of insects during development, and whether or not they passed through the crustacean and other forms.

SARS, G. O. Beretning om en i Sommeren 1865 foretagen zoologisk Reise ved Kysterne af Christianias og Christiansands Stifter. Christiania, 1866, 8vo, pp. 47.

SCHÖDTE, J. C. Krebsdyrenes Sugmund. I. *Cymothoa*. Naturhist. Tidsskrift, 1866, pp. 168-206, pls. x., xi.

This memoir is on the structure and homologies of the oral sucking-apparatus in the *Cymothoidæ*, an abstract of which will be found under that family.

SCHÖEDLER, J. E. Die Cladoceren des frischen Haffs, nebst Bemerkungen über anderweitig vorkommende verwandte Arten. Archiv für Naturgesch. 1866, pp. 1-56, pls. i.-iii.

This memoir is on the freshwater *Cladocera* that the author found in the neighbourhood of Kahlberg, to which are added some from the Plötzensee, a pond near Berlin.

STIMPSON, W. Descriptions of new genera and species of Marcurous Crustacea from the coasts of North America. Proceed. Chicago Acad. Scienc. vol. i. p. 46, 1866.

The species here described are from specimens mostly in the Museum of the Smithsonian Institution.

SACCARDO, P. A. Cenni storico-naturali intorno agli animaletti Entomostracci viventi nella provincia di Treviso, colla descrizione di un nuovo genere e coll' indicazione delle poche altre specie di essi trovate nel resto delle provincie Venete. 8vo, con i. tav. litogr. pp. 18. Milan, 1864.

We have not been able to obtain this memoir.

BRACHYURA.

LEPTOPODIDÆ.

Acheus cranchii (Leach), Spence Bate, Report of the Brit. Assoc. 1865, p. 51, and Ann. Nat. Hist. vol. xvii. p. 24, off Plymouth. Some account is also given of the habits of the crab in covering itself with weed.

Stenorhynchus rostratus (L.), Sars, *l. c.* p. 10.

Oregonia longimana, Spence Bate, Nat. in Brit. Columbia, vol. ii. p. 267, Vancouver's Island.—*O. gracilis* (Dana), Sp. B. *l. c.* vol. ii. p. 269, Vancouver's Island.—*O. hirta* (Dana), Sp. B. *l. c.* vol. ii. p. 269, Straits of Georgia.

MAIIDÆ.

Hyas coarctatus (Leach), Sars, *l. c.* p. 10.—*H. lyratus* (Dana), Sp. Bate, Nat. in Brit. Columbia, vol. ii. p. 267, Straits of Georgia, U. S.

Stenocinops curvirostris, sp. n., A. Milne-E. Ann. Soc. Ent. de France, v.

p. 135, pl. 5. figs. 1 *a-c*, Red Sea.—*S. cervicornis* (Herbst), A. Milne-E. *l. c.* p. 135, Mauritius.

Stenocinops cervicornis (Herbst), Martens, *l. c.* p. 379, with figure of 2nd gnathopod, cited in comparison with

Stilbognathus erythraeus, g. & sp. n., Martens, Verh. zool.-bot. Gesellsch. Wien, 1866, p. 379. This crab is very closely allied to *Stenocinops cervicornis*, so that a description of one would almost serve for that of the other. The most perceptible difference exists in the third joint and its articulation with second of the second pair of gnathopoda, of which the author gives a comparative illustration of both species. *Hab.* Red Sea.

Pugettia lordii (Spence Bate), Nat. in Brit. Columbia, vol. ii. p. 265, Vancouver Island and San Francisco, see Zool. Record, i. p. 287.

Picrocerus, g. n., A. Milne-E., Ann. Soc. Ent. de France, tome v. p. 136. Latero-anterior borders armed. Carapace triangular, tuberculated, anteriorly depressed, with spinous processes. Rostrum divided into two long divergent processes, about three-fourths the length of the carapace. The orbicular region extremely advanced, lamellous before and sharply pointed behind. Peduncles of the eyes very long, covered at their base by the under border of the orbicular process. Antennal notches broad and deep. Peduncle of the second pair of antennæ long. Second pair of gnathopoda remarkable for the form of the third joint, of which the internal and inferior angle is prolonged into a sharp point, and that of the external and anterior into a short point. First pair of pereopoda robust in the male, and terminating in a sharp bidactylous chela, four other pairs of pereopoda long and cylindrical, those of the second pair much longer than the others. Pleon in the male composed of seven somites.—*Pic. armatus*, sp. n., A. Milne-E. *l. c.* p. 137, pl. 3. fig. 1 *a, b*, from New Caledonia.

Pseudomicippe tenuipes, sp. n., A. Milne-E., Ann. Soc. Ent. de France, tome v. p. 139, tab. 5. figs. 2, 2 *a*, Indian Ocean.

Acanthophrys, g. n., A. Milne-E., Ann. Soc. Ent. de France, tome v. p. 140. Carapace a little elevated and slightly depressed towards the anterior margin. Rostrum produced into two very divergent processes. Subocular border well defined. Eye supported on a short peduncle. Antennal notches longitudinal. Basal joint of the second antennæ fused with the internal orbital angle. Flagellum excluded from the orbit and hid by the rostrum. Third joint of the second pair of gnathopoda dilated anteriorly and terminating in a circular border. First pair of pereopoda chelate. Second pair long, slender, cylindrical, and simple; the three following like the second, but shorter.—*A. aculeatus*, sp. n., A. Milne-E. *l. c.* p. 140, pl. 4. fig. 4, Indian Ocean.—*A. cristimanus*, sp. n., A. Milne-E. *l. c.* p. 141, pl. 5. fig. 3, from Noukahiva.

Naxioides, g. n., A. Milne-E., Ann. Soc. Ent. de France, tome v. p. 142. Carapace nearly triangular, considerably compressed at the antero-branchial region. Rostrum formed of two tolerably long parallel processes. Suborbital margin much advanced but not produced to a point. Orbit interrupted posteriorly by a large and deep notch, in which the peduncle of the eye is lodged. The eye is short, and does not extend beyond the external margin of the carapace. Antennal foramina broad and longitudinally disposed. Basilar joint of the antennæ longer than broad; flagella inserted on the outer side of the rostral processes. Third joint of the second pair of gnathopoda subtriangular, very oblique at the inferior margin. First pair of pereopoda small, chelate, the four other pairs are long and cylindrical, and terminate in sharp-

curved serrated dactyli. Pleon in the female broad and rounded, composed of five segments by the fusion of the fourth, fifth, and sixth somites. The telson is very broad at its base. Male unknown.—*N. hirta*, sp. n., A. Milne-E. l. c. p. 143, tab. 4. fig. 1, from the Coast of Zanzibar.

Huenia grandidieri, sp. n., A. Milne-E. l. c. p. 143, tab. 4. fig. 2, Zanzibar.

Huenioides, g. n., A. Milne-E. Ann. Soc. Ent. de France, tome v. p. 144. Carapace triangular, narrow, very long, slightly enlarged posteriorly. Anteriorly produced to a long rostrum, the sides of which are continuous with the branchial walls of the carapace, and reaches before the eyes, equal nearly to the length of the carapace. Orbits round. Peduncle of the eye short, not retractile. Internal antennæ longitudinally placed in deep foramina. Basilar joint of the external antennæ long and much narrower at the extremity than at its base, and closely fused with the adjoining structure. Flagellum outside the orbit and under the rostrum, being hid by it from above. Second pair of gnathopoda moderately large; third joint subquadrilateral, having the latero-external angle enlarged. First pair of pereopoda unknown, the others cylindrical, terminating in a long dactylos finely serrated on the under margin; the second pair longer than the others. Pleon in the male having the seven somites distinct.—*Huenioides conica*, sp. n., A. Milne-E. l. c. p. 145, pl. 4. fig. 3, from the Indian Ocean.

PARTHENOPIDÆ.

Eurynome aspera (Pen.), Sars, l. c. p. 10.

CANCERIDÆ.

Cancer pagurus (L.), Sars, l. c. p. 10; A. Milne-E., Nouvelles Archives du Museum, vol. i. p. 186, Europe.—*C. plebius* (Poeppig), A. Milne-E. p. 188, Western Coast of South America.—*C. novæ-zelandiæ* (Lucas), A. Milne-E. p. 189, New Zealand.—*C. bellianus* (Johnson), A. Milne-E. p. 190, Madeira.—*C. irroratus* (Say), A. Milne-E. p. 191, North America.—*C. edwardsii* (Bell), A. Milne-E. p. 193, Chili.—*C. productus* (Randall), A. Milne-E. p. 194, California &c.; Sp. Bate, Naturalist in Vancouver Island and Brit. Columbia, vol. ii. p. 269, Esquimalt Harbour.—*C. gracilis* (Dana), A. Milne-E. p. 195, California &c.—*C. antennarius* (Stimp.), A. Milne-E. p. 196, California &c.—*C. dentatus* (Bell), A. Milne-E. p. 197, Chili.—*C. longipes* (Bell), A. Milne-E. p. 199, Chili.

Platycarcinus recurvidens, Sp. Bate, Nat. in Vancouver Isl. & Brit. Columbia, vol. ii. p. 269, Vancouver Island and the Coast of Oregon. A. Milne-Edwards has absorbed the species of this genus into that of *Cancer*.

Metacarcinus magister (Dana), A. Milne-E. p. 202, St. Francisco.

Pirimella denticulata (Mont.), A. Milne-E. p. 207, Europe.

Carpilius maculatus (Rumphius), A. Milne-E. p. 214, Indian and Pacific Oceans.—*C. convexus* (Forskål), A. Milne-E. p. 215, Indian and Pacific Oceans.—*C. corallinus* (Herbst), A. Milne-E. p. 216, Antilles.—*C. lividus* (Gibbes), A. Milne-E. p. 217, Sandwich Isles.—*C. prætermisus* (Gibbes), A. Milne-E. p. 217, hab. not recorded. The author thinks that *Cancer petraeus* of Herbst is but the young of this species, and that *C. pitho* (Herbst), as well as *Carpilius lividus* (Gibbes), is the young of *C. convexus* (Forskål).

Liomera cinctimana (Adams & White), A. Milne-E. p. 219, Mauritius, East Indies, &c.—*L. lata* (Dana), A. Milne-E. p. 220, Feejee Islands.—*L. subacuta*

(Stimp.), A. Milne-E. p. 221, Loo-Choo.—*L. pubescens* (Milne-Edw.), A. Milne-E. p. 223, Mauritius.—*L. longimana*, sp. n., A. Milne-E. p. 221, pl. xii. fig. 7, Guadeloupe.—*L. granosimana*, sp. n., A. Milne-E. p. 222, pl. x. fig. 5, New Caledonia.

Carpilodes tristis (Dana), A. Milne-E. p. 225, Archipelago Paumotou.—*C. granulatus* (Heller), A. Milne-E. p. 226, pl. xii. fig. 5, Nicobar, Taiti.—*C. obtusus* (Dehaan), A. Milne-E. p. 227, Japan.—*C. venosus* (Milne-Edw.), A. Milne-E. p. 227, pl. xii. fig. 2, Mauritius. The last species the author says differs little from this.—*C. rugipes* (Heller), A. Milne-E. p. 229, pl. xii. fig. 4, Red Sea.—*C. rugatus* (Lat.), A. Milne-E. p. 230, pl. xii. fig. 3, Indian Ocean and China seas.—*C. vaillantianus*, A. Milne-E. p. 231, pl. xi. fig. 3, Red Sea.—*C. ruber*, sp. n., A. Milne-E. p. 228, pl. xii. fig. 4, Honolulu.—*C. stimpsonii*, sp. n., p. 232, pl. xi. fig. 2, New Caledonia.

Lachnopus rogersii (Stimpson), A. Milne-E. p. 234, Gaspar Straits.

Atergatis integerrimus (Lam.), A. Milne-E. p. 235, Japan &c.—*A. subdentatus* (Dehaan), A. Milne-E. p. 236, Japan.—*A. latissimus* (Milne-Edw.), A. Milne-E. p. 237, pl. xiv. fig. 1, Indian Ocean.—*A. dilatatus* (Dehaan), A. Milne-E. p. 238, Japan.—*A. frontalis* (Dehaan), A. Milne-E. p. 238, Japan.—*A. reticulatus* (Dehaan), A. Milne-E. p. 239, Japan.—*A. roseus* (Rüppell), A. Milne-E. p. 239, Red Sea.—*A. marginatus* (Rüppell), A. Milne-E. p. 240, Red Sea.—*A. scrobiculatus* (Heller), A. Milne-E. p. 242, Red Sea.—*A. floridus* (Rumph), A. Milne-E. p. 243, Red Sea and Indian Ocean.—*A. levigatus*, sp. n., A. Milne-E. p. 241, pl. xv. fig. 4, Malabar.—*A. obtusus*, sp. n., A. Milne-E. p. 241, pl. xiv. fig. 4, Cochinchina.—*A. nitidus*, sp. n., A. Milne-E. p. 243, Archipelago of Viti. The author considers that *A. lateralis* (Adams & White), *A. insularis* (Adams & White), and *A. elegans* (Heller) do not belong to this genus, but to that of *Xanthina*.

Lophactœa granulosa (Rüppell), A. Milne-E. p. 247, Red Sea &c.—*L. semigranosa* (Heller), A. Milne-E. p. 248, Red Sea.—*L. lobata* (Milne-Edw.), A. Milne-E. p. 249, pl. xvi. fig. 3, Antilles.—*L. rotunda* (Stimp.), A. Milne-E. p. 250, California.—*L. anaglypta* (Heller), A. Milne-E. p. 251, Red Sea.—*L. cristata*, sp. n., A. Milne-E. p. 246, Cochinchina.—*L. eydouxii*, sp. n., A. Milne-E. p. 248, pl. xvi. fig. 2, Sandwich Islands.

Atergatopsis, g. n., A. Milne-E. p. 252. In its general form the carapace much resembles that of the genus *Carpilius*, which has the regions separated by grooves that prolong themselves and divide the latero-anterior borders, whilst in this genus the carapace is smooth, without any indications of the regions, and the latero-anterior borders are entire. The lateral margins are thick, whilst in *Atergatis* they are thin and prolonged into a kind of sharp plate. In *Atergatopsis* is a line which borders the anterior portion of the carapace. The antennal region differs completely from that of *Carpilius*, and resembles that of *Atergatis*. The peduncle of the external antennæ is short, and united at its antero-internal angle to the infero-frontal surface. The third joint of the second pair of gnathopoda is subquadrilateral. The endostoma is slender. The legs are round on the upper surface, as in *Carpilius*, and not carinated as in *Atergatis*. The chelæ are subequal, whilst in *Carpilius* they are remarkably unequal and the fingers very short, carrying only two large basal teeth upon the cutting-surface. But, in the present genus, the chelæ are multidentate, and terminate in an extremely sharp apex, and not cochle-

ariform as is commonly the case in *Atergatis*. The pleon of the male resembles that of the last genus, whilst among the true *Carpilius* it counts six instead of five segments.

Atergatopsis signatus (Adams & White), A. Milne-E. p. 253, Mauritius.—*A. frauenfeldi* (Heller), A. Milne-E. p. 258, Red Sea.—*A. flavo-maculatus*, sp. n., A. Milne-E. p. 254, pl. xii. fig. 1, Pondicherry.—*A. granulatus*, sp. n., A. Milne-E. p. 255, pl. xiii. fig. 2, Isles of Zanzibar and Philippi.—*A. lucassii*, sp. n., Montrouzier, Bull. Soc. Ent. de France, p. 160; A. Milne-E. p. 256, pl. xiii. fig. 1; New Caledonia.—*A. germanii*, sp. n., A. Milne-E. p. 257, pl. xi. fig. 1, Cochin-China.

Actæa bella (Dana), A. Milne-E. p. 261, Tatuila and Upolu Islands &c.—*A. danae* (*Actæodes arcolatus*, Dana), A. Milne-E. p. 261, Archipelago Paumotu. Mr. Alphonse Milne-Edwards changed the specific name, because Dana had already made use of it in the genus *Actæa*.—*A. tomentosa* (Edwards), A. Milne-E. p. 262, Red Sea and the Indian Ocean.—*A. affinis* (Dana), A. Milne-E. p. 263, Society Isles?—*A. hirsutissima* (Rüppell), A. Milne-E. p. 263, Red Sea.—*A. arcolata* (Dana), A. Milne-E. p. 264, Sooloo Sea.—*A. pilosa* (Stimpson), A. Milne-E. p. 265, Hong-Kong.—*A. kraussii* (Heller), A. Milne-E. p. 265, pl. xvii. fig. 4, Red Sea and Isle of Bourbon.—*A. nodosa* (Stimpson), A. Milne-E. p. 266, pl. xvii. fig. 6, Antilles.—*A. sulcata* (Stimpson), A. Milne-E. p. 267, Cape St. Lucas.—*A. rufopunctata*, A. Milne-E. p. 268, pl. xviii. fig. 1, Red Sea, Indian Ocean and the Mediterranean Sea.—*A. rugata* (White), A. Milne-E. p. 269, Philippine and Zanzibar Islands.—*A. riippellii* (Krauss), A. Milne-E. p. 270, Port Natal.—*A. setigera* (Edw.), A. Milne-E. p. 271, pl. xviii. fig. 2, Antilles.—*A. speciosa* (Dana), A. Milne-E. p. 274, Red Sea and Indian Ocean.—*A. nodipes* (Heller), A. Milne-E. p. 274, Red Sea and Indian Ocean.—*A. granulata* (Audouin), A. Milne-E. p. 275, Red Sea, Hongkong, and Port Jackson.—*A. carcharias* (White), A. Milne-E. p. 276, Australia.—*A. calculosa* (Milne-Edw.), A. Milne-E. p. 276, pl. xviii. fig. 3, New Holland.—*A. nodulosa* (Adams & White), A. Milne-E. p. 277, Mauritius.—*A. subglobosa* (Stimpson), A. Milne-E. p. 277, Hong-Kong.—*A. acantha* (Milne-Edw.), A. Milne-E. p. 278, pl. xvii. fig. 1, Mauritius.—*A. fossulata* (Girard), A. Milne-E. p. 279, Red Sea.—*A. cavipes* (Dana), A. Milne-E. p. 280, Archipelagos of Viti and Samoa.—*A. cellulosa* (Dana), A. Milne-E. p. 281, Archipelago of Samoa.—*A. spongiosa* (Dana), A. Milne-E. p. 281, Sooloo Sea.—*A. crosa* and *A. labyrinthica* (Stimpson) are regarded by A. Milne-Edwards, p. 282, as species belonging to the genus *Xantho*, and the latter as identical with *Xantho vermiculatus* of Milne-Edwards.—*Actæa helleri*, sp. n., A. Milne-E. p. 270, pl. xvii. fig. 3, hab. unknown.—*A. obesa*, sp. n., A. Milne-E. p. 272, pl. xvii. fig. 2, Zanzibar.—*A. pulchella*, sp. n., A. Milne-E. p. 273, pl. xviii. fig. 5, Isle of Bourbon.

Actummus obesus (Dana), A. Milne-E. p. 284, Hawaii Isle.—*A. tomentosus* (Dana), A. Milne-E. p. 284, Taiti.—*A. globosus* (Heller), A. Milne-E. p. 286, pl. xviii. fig. 4, Red Sea.—*A. squamosus* (Dehaan), A. Milne-E. p. 286, pl. xviii. fig. 6, Japan.—*A. setifer* (Dehaan), A. Milne-E. p. 287, pl. xv. fig. 5, Japan.—*A. miliaris*, sp. n., A. Milne-E. p. 288, pl. xviii. fig. 7, Seychelles.

Euxanthus huonii (Lucas), A. Milne-E. p. 290, pl. xv. fig. 1, Torres Straits.—*E. sculptilis* (Dana), A. Milne-E. p. 291, Feejee and Tongatabou Islands.—*E. mamillatus* (Milne-Edw.), A. Milne-E. p. 292, pl. xv. fig. 2, Australia.—*E. melissa* (Herbst), A. Milne-E. p. 293, Feejee and Tongatabou

Islands.—*E. punctatus*, sp. n., A. Milne-E. p. 294, pl. xvi. fig. 6, East India.

Hypocaelus sculptus (Milne-Edw.), A. Milne-E. p. 296, Red Sea, Cochinchina, and Japan.—*H. granulatus* (Dehaan), A. Milne-E. p. 296, pl. xvi. fig. 6, Japan.

Daira perlata (Herbst), A. Milne-E. p. 298, from India to New Caledonia.—*D. americana* (Stimpson), A. Milne-E. p. 299, pl. xvi. fig. 4, west coast of North America.

PORTUNIDÆ.

Neptunus serratifrons, sp. n., Montrouzier, *l. c.* p. 161, from New Caledonia.

Carcinus mænas (L.), Sars, *l. c.*

Portunus arcuatus (Leach), Sars, *l. c.*—*Portunus marmoreus* (Leach), Edward, Journ. Linn. Soc. Zool. ix. p. 143.

Eriphia gonagra (A. Milne-E.), Sp. B., Naturalist in Brit. Columbia, vol. ii. p. 270, Esquimalt Harbour.

Panopæus crenatus (Edw. & Lucas), Sp. B. *l. c.*, Esquimalt Harbour.

Xantho dispar (Dana), Sp. B. *l. c.*, Esquimalt Harbour.—*X. bella* (Stimp.), Sp. B. *l. c.*, Esquimalt Harbour.

Chlorodius imbricatus, Sp. B. *l. c.*, Esquimalt Harbour (*vide* Zool. Record for 1864, p. 270).

Thalamita crenata (Latr.), Martens, *l. c.* p. 381, Red Sea.

THELPHUSIDÆ.

Boscia bocourti, sp. n. (A. Milne-E.), Annal. de la Société Entomologique de France, tom. vi. p. 203. The author compares this species with *B. dentata*, *B. denticulata*, *B. chilensis*, *B. americana*, and *B. macropa*.—*B. bocourti* was found in the river Coban (Haute Vera-Paz).—*B. gracilipes*, sp. n. (A. Milne-E.), *l. c.* p. 204, in the mountains of the Haute Vera-Paz.—*B. sinuatifrons*, sp. n. (A. Milne-E.), p. 205, hab. unknown.

PINNOTHERIDÆ.

Pinnotheres faba (Dana), Sp. B., Nat. in Brit. Columbia, vol. ii. p. 271, Esquimalt Harbour.

OCYPODIDÆ.

Ocypodus urvulii (Guérin), Sp. B. *l. c.*, Esquimalt Harbour.—*O. ceratophthalma* (Pall.), Martens, *l. c.* p. 381, Red Sea.

Gelasinus annulipes (A. Milne-E.), Sp. B. *l. c.*, Esquimalt Harbour.

GRAPSIDÆ.

Grapsus pharaonis (M.-E.), Martens, *l. c.* p. 381, Red Sea.

Hemigrapsus sedentatus (Dana), Sp. B., Esquimalt Harbour.

Leptograpsus messor (Forskål), Martens, *l. c.* p. 381, Red Sea.

CALAPPIDÆ.

Calappa tuberculata (Fab.), Martens, *l. c.* p. 381, Red Sea.

LEUCOSIIDÆ.

Ebalia tumefacta (Mont.), Sars, *l. c.*

Ixa edwardsii (Lucas), A. Milne-E. Ann. Soc. Ent. de France, tom. xv. p. 156, pl. vi. fig. 1, from the coast of Zanzibar; but the author says that it

is found also in the recent and perhaps Quaternary alluvium of the Indian Ocean.

Spelæophorus, g. n., A. Milne-E., Ann. Soc. Ent. de France, tom. xv. p. 148. Carapace broad, tolerably round, lateral borders considerably prolonged over the base of the legs. Posterior border broad, and presenting on each side behind two deep cavities, which open in a spiral direction like the shell of a *Helix*, by two large oval foramina into the interior of the carapace. Sub-orbital border entire. Palpus of the second pair of gnathopoda round and blunt at the extremity, and shorter than the internal branch. Eyes large. First pair of pereopoda short, strong, and chelate. Pleon in the female round, with the somites fused into five segments.

Spelæophorus nodosus (Bell), A. Milne-E. *l. c.* p. 149, hab. unknown. This species is *Oreophorus nodosus*, Bell, Monog. of the Leucosiidæ, Trans. Linn. Soc. t. xxi. p. 307, pl. 33. fig. 8. The specimen is unique and preserved in the British Museum.

Spelæophorus calappoides, sp. n., A. Milne-E. *l. c.* p. 150, pl. vi. fig. 2, hab. unknown.

Oreophorus horridus (Rüppell), A. Milne-E. *l. c.* p. 151, from the Red Sea.—*O. reticulatus* (Adams & White), A. Milne-E. *l. c.* p. 151, from the Sunda Islands.—*O. rugosus* (Stimpson), A. Milne-E. *l. c.* p. 152, pl. vi. fig. 3, from Cochin China.

Cryptocnemus grandidierii, sp. n., A. Milne-E. *l. c.* p. 155, pl. vi. fig. 4, from the coast of Zanzibar.—*Crypt. pentagonus* (Stimpson), A. Milne-E. *l. c.* p. 155 from Kagosima, Japan.

ANOMURA.

LITHODIDÆ.

Cryptolithodes typicus (Brandt), Sp. B., Nat. in Brit. Columbia, vol. ii. p. 271, Vancouver's Island.—*C. alta-fissura*, Sp. B. *l. c.* p. 272, Vancouver's Island.

Petaloceros bellianus (White), Sp. B. *l. c.* p. 275, Esquimalt Harbour.—*P. bicornis*, Sp. B. *l. c.* p. 275, Esquimalt Harbour.

Echinocerus cibarius (White), Sp. B. *l. c.* p. 277, Victoria and Esquimalt Harbour.

Lithodes maia (L.), Sars, *l. c.* Herr G. O. Sars arranges this genus under the order *Brachyura*.

PAGURIDÆ.

Pagurus bernhardus (L.), Sars, *l. c.*; Sp. B., Brit. Assoc. Rep. 1865, p. 52, and Ann. Nat. Hist. vol. xvii. p. 25.—*P. prideauxii* (Leach), Sp. B. *l. c.*—*P. cuanensis* (Thomp.), Sars, *l. c.*; Sp. B. *l. c.*—*P. chirocanthus* (Lillj.), Sars, *l. c.*—*P. hyndmani* (Thomp.), Sp. B. *l. c.*—*P. levis* (Thomp.), Sp. B. *l. c.*—*P. ulidianus* (Thomp.), Sp. B. *l. c.*—*P. dillwynii*, Sp. B. *l. c.* All taken at Plymouth.

Glaucothoë (Milne-E.), Sp. B., Brit. Assoc. Rep. p. 53, 1865, is shown to be a stage of development of *Pagurus*.

Eupagurus perlatus (Milne-E.) and *Eu. armatus* (Stimpson), Sp. B., Naturalist in Brit. Columbia, vol. ii. p. 278, Esquimalt Harbour.

Cenobites diogenes (Milne-E.), Sp. *l. c.* vol. ii. p. 278, on trees inland.

Clibanarius lineatus (Dana), Sp. B. *l. c.* vol. ii. p. 278, Esquimalt Harbour.—*C. turgidus* (Stimp.), Sp. B. *l. c.* vol. ii. p. 278, Straits of Fueca.

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PORCELLANIDÆ.

Porcellana longicornis, Sars, *l. c.* Herr G. O. Sars classifies this genus under the order *Brachyura*.

Porcellana edwardsii (Desaüre) and *P. eupicola* (Stimp.), Sp. B., Nat. in Brit. Columbia, vol. ii. p. 277, Esquimalt Harbour.

Galathea rugosa (Fabr.), Sars, *l. c.* p. 11: this species is that named *Munida rondeletii* in Bell's Hist. of the Brit. Stalk-eyed Crustacea.—*G. squamifera*, Fabr. [qu. Mont. ? Sp. B.], Sars, *l. c.*—*G. strigosa* (L.), Sars, *l. c.*—*G. intermedia* (Lillj.), Sars, *l. c.*

MACRURA.

PALINURIDÆ.

Palinurus vulgaris (Latr.). On the peculiar development of the *scaphocerite* of the second pair of antennæ, Spence Bate, Brit. Assoc. Rep. 1865, p. 53, and Ann. & Mag. Nat. Hist. vol. xvii. p. 26, pl. ii. fig. 3 c, 1866.

ASTACIDÆ.

Homarus vulgaris (Edw.), Sars, *l. c.*

Astacus klamathensis (Stimps.), Sp. B., Naturalist in Brit. Columbia, vol. ii. p. 278, all streams east of the Cascades.

Astacus caldwelli, Sp. B., Proc. Zool. Soc. p. 470, 1866, Madagascar. M. Alphonse Milne-Edwards has pointed out to us that this species is identical with *A. madagascariensis* described by M. Milne-Edwards, Archives du Muséum, t. ii. pl. 3, which the author had not previously seen.

CRANGONIDÆ.

Crangon vulgaris (auct.), Sp. B., Naturalist in Brit. Columbia, vol. ii. p. 278, Esquimalt and Victoria Harbours; Sars, *l. c.* Some remarks are made on this species, as figured by Prof. Kinahan in the Trans. R. I. Acad. vol. xxiv. p. 46, by Sp. B., Brit. Assoc. Rep. 1865, p. 53, and Ann. & Mag. Nat. Hist. vol. xvii. p. 26, 1866.—*C. nanus* (Kröy.) and *C. echinulatus* (M. Sars), Sars, *l. c.*

Pontophilus norvegicus (M. Sars) and *P. spinosus* (Leach), Sars, *l. c.*

ALPHEIDÆ.

Athanas nitescens (Leach), Sars, *l. c.*

PALÆMONIDÆ.

Pandalus annulicornis (Leach), *P. borealis* (Kröy.), and *P. brevisrostris* (Rathke), Sars, *l. c.*—*P. danae* (Stimps.), Sp. B., Naturalist in Brit. Columbia, vol. ii. p. 279, Esquimalt Harbour.

Hippolyte cranchii (Leach), *H. securifrons* (Norm.), and *H. gainardii* (Edw.), Sars, *l. c.*—*H. esquimaltianus*, sp. n., Sp. B., Naturalist in Brit. Columbia, vol. ii. p. 278, Esquimalt Harbour.—*H. brevisrostris* (Dana) and *H. layi* (Owen), Sp. B. *l. c.* vol. ii. p. 279, Esquimalt Harbour.

Hippolyte cuttellata, sp. n., Norman, Brit. Assoc. Report, 1866 (1867), p. 200, Hebrides.

Verhys fasciger (Gosse) and *V. varians* (Kröy.), Sars, *l. c.*

Caridion gordonii (Norman), Sars, *l. c.*

Palæmon squilla (L.) and *P. leachii* (Bell), Sars, *l. c.*

Palaemon —, sp. n.?, Sars, *l. c.*—*P. niloticus*, Klunzinger, *Zeitschrift für wissenschaftliche Zoologie*, vol. xi. p. 363, Upper Egypt.

Caradina varians (Leach), Sp. B., Brit. Assoc. Rep. 1865, p. 54, or *Ann. & Mag. Nat. Hist.* vol. xvii. p. 27, pl. ii. fig. 2'', Plymouth.

Caradina tenuis, sp. n., Sp. B. *l. c.* pl. ii. fig. 1, Plymouth.

SCYLLARIDÆ.

Scyllarus nodifer, sp. n., Stimpson, Proc. Chicago Acad. of Sciences, vol. i. p. 48, found among the Florida Keys, &c.

PENEIDÆ.

Pasiphaë sivado (Risso), Sars, *l. c.* p. 14.

Hippolyasmata californica, sp. n., Stimpson, *l. c.*, found at San Diego, Cal.

Rhynchocyclus parvulus, sp. n., Stimpson, *l. c.**

Glypturus, g. n., Stimpson, Proc. Chicago Acad. of Sciences, vol. i. p. 46. Flagella of the antennulæ [first pair of antennæ] much longer than their peduncles. External maxillipeds indurated; merus and ischium not dilated, no broader than the propodus, and concave on the outer surface; ischium armed along the middle of its inner edge with a sharp, prominent, spinous crest; carpus thick, and only half as broad as propodus, which is greatly dilated within, and truncated but not grooved at the broad anterior margin, against which the dactylus folds; dactylus rather stout, compressed, and rather longer than the anterior margin of the propodus. Mandibles strong, much indurated; corona with its margin unevenly toothed, deeply cleft within, and with the basal process as broad and half as high as the corona itself, and having also a toothed edge. Appendages to the first two joints of the abdomen [pleon] in the male nearly similar to the corresponding parts in the female. Caudal lamellæ deeply sculptured. Of the appendages to the penult. joint of the abdomen [pleon], the outer lamellæ appear as if composed of two pieces soldered together, the outer one of which overlaps the inner; while the inner lamellæ are obliquely triangular. Terminal segment of the abdomen [telson] very small.—*Glypturus acanthochirus*, sp. n., Stimpson, *l. c.*, Florida, and at the Tortugas.

Callichirus, g. n., Stimpson, *l. c.* p. 47. Flagella of antennulæ [first pair of antennæ] rather shorter than their peduncles. External maxillipeds soft, coriaceous; merus and ischium compressed and dilated; merus short; carpus and propodus much dilated at the inner margins; propodus large and more dilated than the carpus, and with a groove in the anterior margin, into which the small curved dactylus folds. Inner lobes and laciniae of the second pair of maxillæ for the most part narrow. Mandibles very small and weak, not indurated; internal basal projection only slightly developed. Carpus and hand [propodus] of the greater cheliped very long. The appendages of the first and second joints of the abdomen [pleon] in the male are small, those of the first pair having but one branch, while those of the second pair have two branches, the outer branch being minute. Caudal lamellæ much thickened. Inner lamellæ of the appendages to the penult. joint of the abdomen very narrow, almost styliiform. Terminal joint of the abdomen [telson] short and broad, contracted at the base, and emarginated at the extremity.

* The only number of the 'Proceedings' that has yet reached us terminates abruptly in the middle of the description of this species.

Callichirus major, Say. This species has formed the type of the present genus. Abundant on the sandy shores of the Southern States of America.

Calianassa longimana (Stimps), Sp. B., Naturalist in Brit. Columbia, vol. ii. p. 279, Puget's Sound and Straits of Fuca.

SCHIZOPODA.

MYSIDÆ.

Thysanopoda norvegica (M. Sars), Sars, *l. c.*

Nematopus goëssii, Sars, *l. c.*—*N. serratus*, Sars, *l. c.*

Nematopus pygmaeus, sp. n., Sars, *l. c.*

Myoidopsis gibbosa, Sars, *l. c.*—*M. augusta*, Sars, *l. c.*

Mysis inermis (Rathke), *M. flexuosa* (Müller), *M. ornata*, Sars, and *M. spiritus* (Norm.), Sars, *l. c.*

Mysis linguwa, sp. n., Sars, *l. c.*

CUMACEA.

DIASTYLIDÆ.

Diastylis rathkii (Kröy.), *D. bispinosa* (Stimpson), *D. rugosa*, Sars, *D. tumida* (Lillj.), *D. serrata*, Sars, *D. biplicata*, Sars, *D. longimana*, Sars, *D. ampullacea* (Lillj.), Sars, and *D. echinata* (Sp. Bate), Sars, *l. c.*

Diastylis lamellata, sp. n., Norman, Brit. Assoc. Report, 1866 (1867), p. 200, Shetland Islands.

Iphithoë serrata, sp. n., Norman, *l. c.* p. 201, Shetland Islands.

Leucon nasica (Kröy.) and *L. acutirostris*, Sars, *l. c.*

Eudora emarginata (Kröy.) and *E. truncatolata* (Sp. Bate), Sars, *l. c.*

Lanprops rosea (Norman), Sars, *l. c.*

Pseudocuma bistrata, Sars, *l. c.*

Cumella pygmaea, Sars, *l. c.*

Campylaspis rubicunda (Lillj.) and *C. costata*, Sars, *l. c.*

Campylaspis verrucosa, sp. n., Sars, *l. c.*

Cuma pusilla, sp. n., Sars, *l. c.*

AMPHIPODA.

ORCHESTIDÆ.

Orchestia littorea (Mont.), Heller, Amph. des adriatisch. Meeres, tab. i. figs. 1-2; Grube, Archiv für Nat. 1866, p. 379.—*O. montagui* (Aud.), Heller, *l. c.* tab. i. figs. 3 & 4; Grube, *l. c.* p. 380.—*O. mediterraneu* (Costa), Heller, *l. c.* p. 4, tab. i. fig. 7.—*O. deshayesii* (Aud.), Heller, *l. c.* p. 4, tab. i. fig. 7.

Orchestia cavimana, sp. n., Heller, Verhandl. zool.-bot. Ges. Wien, xv. tab. 17. fig. 1.

Allorchestes pereiri (Lucas), Grube, *l. c.* p. 382, tab. ix. fig. 2.—*A. helleri*, Grube, *l. c.* p. 384, tab. ix. fig. 3. Prof. Grube thinks that *A. imbricatus* (Sp. B.) is but the young of *A. helleri*; to this, upon comparison of his figure with that in the 'Brit. Sessile-eyed Crustacea,' we demur, also because, of the numerous specimens examined, many were adult.—*A. stylifer*, Grube, *l. c.* p. 386, tab. ix. fig. 4.—*A. verticellatus* (Dana), Sp. B., Naturalist in Brit. Columbia, vol. ii. p. 279, Esquimalt Harbour.—*A. brevicornis* (Dana), Sp. B. *l. c.* vol. ii. p. 280, Esquimalt Harbour.

Nicea (Nicolet). Dr. Camil Heller unites, in his 'Kennt. der Amphipoden

des adriatischen Meeres,' this genus with that of *Allorchestes*; so that the following species described by him must be considered synonymous with *Allorchestes* of Dana:—

Nicca nilssoni. We presume this species to be synonymous with *A. nilssonii* of Rathke; but Dr. Heller does not give the name of the author of the species.

Nicca plumicornis, sp. n., Heller, *l. c.* p. 5, tab. i. figs. 8, 9.—*N. fasciculata*, sp. n., Heller, *l. c.* p. 6, tab. 1. figs. 10, 11.—*N. buccichi*, sp. n., Heller, *l. c.* p. 7, tab. i. figs. 12–15.—*N. nudicornis*, sp. n., Heller, *l. c.* p. 8, tab. i. figs. 16–19.—*N. macronyx*, sp. n., Heller, *l. c.* p. 9, tab. i. figs. 20–24.—*N. camptonyx*, sp. n., Heller, *l. c.* p. 10, tab. i. figs. 25–30.—*N. schmidtii*, sp. n., Heller, *l. c.* p. 11, tab. i. figs. 31, 32.—*N. rudis*, sp. n., Heller, *l. c.* p. 12, tab. i. fig. 33.—*N. crassipes*, sp. n., Heller, *l. c.* p. 12, tab. i. figs. 34, 35.

Nicca (Nicolet). We consider the following species distinct from the genus *Allorchestes* (Dana):—

Nicca istrica, Grube, *Istrische Amphipoden-Fauna*, p. 387, tab. ix. fig. 5.—*N. longicornis*, Grube, *l. c.* p. 388.

GAMMARIDÆ.

Subfam. STEGOCEPHALINA.

Probolium (Costa). Dr. Camil Heller, *Beitr. zur näheren Kenntniss der Amphipoden des adriatischen Meeres*, p. 13, considers this genus synonymous with, and prior in date to, *Montagua* (Sp. B.).

Probolium marinum (*Montagua marina*, Sp. B.), Heller, *l. c.* p. 14.

Probolium megacheles, sp. n., Heller, *l. c.* p. 13, tab. ii. figs. 1, 2.

Subfam. LYSIANASSINA.

Lysianassa gryllus (Mand.), Goës, *Œfvers. Akad. Förh.* 1865, p. , pl. xxxvi. fig. 1, from Spitzbergen. This species is by the author considered to be identical with that described last year by Prof. Lilljeborg as *Eurytenes magellanica*, which that author considered to be identical with *Lysianassa magellanica* of Prof. Milne-Edwards. *Vide Zool. Record* for 1865, p. 330 *et seq.* Since this has been in the hands of the printer, the Recorder has received the following communication from M. Alphonse Milne-Edwards:—“J'ai reçu dernièrement de M. le Prof. Lilljeborg un exemplaire de son *Eurytenes magellanicus*; il me priait de le comparer à l'exemplaire type que le musée possède et qui a été pris dans l'estomac d'un poisson aux environs du détroit de Magellan. Ces deux individus paraissent de ressembler beaucoup et je n'ai vu entre elle qu'une différence de taille!”

Lysianassa. Goës (*l. c.*) describes the following species from Spitzbergen:—*L. vahli* (Kröy.); *L. lagena* (Kröy.); *L. tumida* (Kröy.); *L. martensi*, sp. n., Goës, pl. xxxvii. fig. 2; *L. crispata*, sp. n., Goës, pl. xxxvii. fig. 3; *L. producta*, sp. n., Goës, pl. xxxvi. fig. 4; *L. abyssi*, sp. n., pl. xxxvii. fig. 5, from Greenland; *L. holbölli* (Kröy.); *L. minuta* (Kröy.); *L. gulosa* (Kröy.); *L. umbo*, sp. n., Goës, pl. xxxvii. fig. 6; *L. edwardsi* (Kröy.) (the author says that this is not *Anonyx edwardsi* of the Brit. Museum Catalogue of Amphipoda, or of the Brit. Sessile-eyed Crustacea); *L. plauta* (Kröy.); *L. litoralis* (Kröy.); *L. cymba*, sp. n., Goës, pl. xxxviii. fig. 7.

Lysianassa spinicornis (Costa), Grube, *Archiv für Natur.* p. 390, tab. ix. fig. 6, from Istria; Heller, *Beit. zur näh. Kennt. der Amphipoden des adriatischen*

Meeres, p. 15, tab. ii. figs. 3-11.—*L. loricata* (Costa), Grube, *l. c.* p. 395; Heller, *l. c.* p. 16.—*L. ciliata* (Grube), *l. c.* p. 393, tab. ix. fig. 7.—*L. humilis* (Costa), Grube, *l. c.* p. 395.—*L. longicornis* (Luc.), Grube, *l. c.* p. 396, tab. ix. fig. 8, from Istria; Heller, *l. c.* p. 17, tab. ii. figs. 12-15.—*L. costæ* (Edwards), Heller, *l. c.* p. 18.

Lysianassa pilicornis, sp. n., Heller, *l. c.* p. 17, tab. ii. fig. 16.

Ichnopus affinis, sp. n., Heller, *l. c.* p. 13, tab. ii. figs. 19-25.—*I. calceolatus* sp. n., Heller, *l. c.* p. 20, tab. ii. fig. 26-28.

Anonyx minutus (Kröy.), Heller, *l. c.* p. 24.—*A. gulosus*, Heller, *l. c.* p. 24.—*A. nanus* (Kröy.), Heller, *l. c.* p. 24.—*A. tumidus* (Kröy.), Heller, *l. c.* p. 25, tab. iii. figs. 6-12.—*A. edwardsii* (Kröy.), Edward, Journ. Linn. Soc. ix. p. 137, from a Medusa.

Anonyx schmardæ, sp. n., Heller, *l. c.* p. 21, tab. ii. figs. 29-53; this species is named *Ichnopus schmardæ* in the plate.—*A. filicornis*, sp. n., Heller, *l. c.* p. 23, tab. iii. figs. 13-16.—*A. nardonis*, sp. n., Heller, *l. c.* p. 26, tab. ii. figs. 17-18.

Anonyx melanophthalmus, sp. n., Norman, Brit. Assoc. Rep. 1866 (1867), p. 201, Shetland Islands.

Callisoma hopei (Costa), Heller, *l. c.* tab. iii. figs. 17-18.

Pontoporeia femorata (Kröy.), Goës, "Crustacea Amphipoda maris Spitzbergiam alluentis" in *Cefvers. af k. Vet.-Akad. Förh.* 1865, no. 8, p. 1, from Spitzbergen.

Opis typica (Kröyer), Goës, *l. c.* p. 1, from Spitzbergen.

Euonyx, g. n., Norman, *l. c.* p. 202. Differing from *Anonyx* in having the first gnathopoda chelate, and the second stronger than the first, subchelate, nail large and strong; posterior uropods two-branched; telson cleft. This genus appears to the Recorder to be nearly allied to, if not synonymous with, *Opis* of Kröyer.—*Eu. chelatus*, sp. n., Norman, *l. c.* p. 202, Shetlands. Parasitic on *Echinus esculentus*.

Haploops tubicola (Lillj.), Goës, *l. c.* p. 12, from Spitzbergen.

Subfam. AMPELISCINA.

Ampelisca eschrichti (Kröy.), Goës, *l. c.* p. 12, from Spitzbergen.—*A. gaimardii* (Kröy.), Goës, *l. c.* p. 13, from Spitzbergen; Heller, *Beit. Kennt. der Amphipoden des adriatischen Meeres*, p. 28.

Subfam. PHOXINA.

Phoxus plumosus (Kröy.), Goës, *l. c.* from Spitzbergen.—*P. holbölli* (Kröy.), Goës, *l. c.*, from Greenland.

Isœa montaguï (Edw.), Heller, *Beitr. Kennt. Amphip. adriatischen Meeres*, p. 28.

Iphimedia obesa (Rathke), *I. eblanæ* (Sp. B.), and *I. carinata*, sp. n., Heller, *l. c.* pp. 28 and 29.

Ædiceros saginatus (Kröy.), Goës, pl. xxxix. fig. 17, Spitzbergen.—*Æ. affinis* (Bruz.), Goës, pl. xxxix. fig. 18, Spitzbergen; the author gives a short description of this species, because it was not correctly figured by Bruzelius.—*Æ. obtusus* (Bruz.), Goës, pl. xl. fig. 24, Spitzbergen.—*Æ. propinquus*, sp. n., Goës, pl. xxxix. fig. 19, Spitzbergen.—*Æ. brevicar*, sp. n., Goës, pl. xxxix. figs. 21 & 21', Spitzbergen.—*Æ. latimanus*, sp. n., Goës, pl. xxxix. fig. 23, Spitzbergen.

Syrrhoë, g. n., Goës, *l. c. p.* . Frons producta, oculi *Ædiccerorum*, antennæ supernæ flagello appendiculari instructæ, mandibula palpo triarticulato. *Syrrhoë crenulata*, sp. n., Goës, pl. xl. fig. 25, Spitzbergen.—*S. bicuspis*, sp. n., Goës, pl. xl. fig. 22, Davis Straits.

Vertumnus cristatus (Acanthonotus) (Owen), Goës, GEFvers. Vet.-Akad. Förh. 1865, p. , Spitzbergen.—*V. serratus* (Fabr.), Goës, *l. c. p.* , Spitzbergen.—*V. inflatus (Acanthonotus)* (Kröy.), Goës, *l. c. p.* , Spitzbergen. A. Goës has in this genus substituted Leach's MS. name in Mr. Adam White's Hist. of Crust. for that of Prof. Owen, because *Acanthonotus* is the name of a genus of fish.

Otus carinatus (Sp. B.), Goës, *l. c.*

Subfam. GAMMARINA.

Dexamine spinosa (Mont.), Heller, Beitr. zur Kennt. der Amph. des adriatischen Meeres, p. 31; Edward, Journ. Linn. Soc. ix. p. 137.—*D. spiniventris (Amphinotus spiniventris)* (Costa), Heller, *l. c. p.* 30.

Atylus swammerdamii (Edw.), Edward, Journ. Linn. Soc. ix. p. 137, from a Medusa.—*A. bispinosus* (Sp. B.), Edward, *l. c.*—*A. costa*, Heller, *l. c. p.* 31.

Pardalisca cuspidata (Kröy.), Goës, *l. c.*, Spitzbergen.

Amphithonotus aculeatus (Lepechin), Goës, *l. c. p.* , Spitzbergen.—*A. malmgreni*, sp. n., Goës, *l. c. p.* , pl. xxxix. fig. 17, Spitzbergen.

Protomeдея hirsutiniana (Sp. Bate & Westwood), Heller, *l. c. p.* 34; Grube, Archiv für Naturgesch. p. 402, tab. x. fig. 2; the latter author appends a (?) to the identity of this species with that named in the British Sessile-eyed Crustacea, and in the reference to the plates he gives the name as *Protomeдея pilosa* (Zadd.).—*P. guttata*, Grube, *l. c. p.* 408, tab. x. fig. 3.

Paramphitoë. Goës (*l. c.*) describes the following species from Spitzbergen:—*P. læviuscula* (Kröy.), *P. bicuspis* (Kr.), *P. tricuspis (Acanthonotus)* (Kr.), Greenland,—*P. tridulata* (Bruz.), Finmark,—*P. fulvocincta (Amphitoë)* (Sars), *P. pulchella* (Kr.), and *P. hystrix* (Owen). This portion of the genus Herr Goës considers synonymous with *Calliope* and *Pherusa* of Leach and *Amphitoë* of Sp. Bate.—*P. exigua*, sp. n., Goës, Crust. Amph., GEFvers. Vet.-Akad. Förh. 1865, p. , pl. xxxviii. fig. 12, Spitzbergen,—*P. media*, sp. n., Goës, *l. c. p.* , pl. xxxviii. fig. 13, Spitzbergen,—*P. panopla (Amphitoë)* (Kröy.), Goës, *l. c. p.* , Spitzbergen. This part of the genus Herr Goës considers to be synonymous with *Pleustes* of Sp. Bate.—*P. carinata* (Fabr.), *P. smitti*, sp. n., Goës, pl. xxxviii. fig. 14, *P. fragilis*, sp. n., Goës, pl. xxxix. fig. 16, *P. inermis (Amphitoë)* (Kröy.), Goës, Greenland. This portion of the genus Herr Goës considers to be synonymous with *Atylus* of Leach.

Eusirus cuspidatus (Kröy.), Goës, *l. c.*, Spitzbergen.

Eusirus bidens, sp. n., Heller, *l. c. p.* 32, tab. iii. fig. 19.

Leucothoë denticulata (Costa), Heller, *l. c. p.* 33.

Microdeutopus gryllotalpa (Costa), Heller, Amphip. adriatischen Meeres, p. 48.

Microdeutopus titii, sp. n., Heller, *l. c. p.* 48, tab. iv. fig. 8.

Bathyporeia pilosa (Lindst.), Goës, *l. c. p.* 12, from Finmark.

Niphargus (Gammareus) puteanus, Heller, Verh. zool.-bot. Ges. Bd. xv. p. 982.

Crangonyx recurvus, Grube, Archiv für Naturg. p. 410, tab. x. fig. 5; Heller, Beit. zur Kenntniss der Süßwasser-Amphipoden, Verh. zool.-bot. Gesellsch. in Wien, xv. p. 982.

Gammarella brevicaudata (Edw.), Heller, Amphip. des adriatischen Meeres, p. 35, tab. ii. f. 34.

Melita palmata (Mont.), Heller, Amphip. des adriatisch. Meeres, p. 36.—*M. gladiosa* (Sp. B.), Heller, l. c. p. 36.

Melita coroninii, sp. n., Heller, l. c. p. 37, tab. iii. figs. 20, 21.

Mæra grossimana (Mont.), Heller, l. c. p. 39.—*M. orchestipes* (Costa), Heller, l. c. p. 38, tab. iii. figs. 22, 23. In his genus *Mæra* Prof. Heller includes *Megamæra* (Sp. B.).—*M. scissimana* (Costa), Heller, l. c. p. 40, tab. iii. fig. 24.—*M. brevicaudata* (Sp. B.), Heller, l. c. p. 42, tab. iii. figs. 27, 28.—*M. erythrophthalmia* (Lilljeborg) (*Erystheus erythrophthalmia*, Brit. Sessile-eyed Crust.), Heller, l. c. p. 42.—*M. fusca*, Sp. B., Naturalist in Brit. Columbia, vol. ii. p. 280, Esquimalt Harbour.

Mæra integrimana, sp. n., Heller, l. c. p. 40.—*M. donatoi*, sp. n., Heller, l. c. p. 41, tab. iii. fig. 26.

Gammarus pæcilurus (Rathke), Grube, Arch. für Naturgesch. p. 413, from Trieste: the author considers this species to be that which he described under the name of *G. olivii* in his 'Ausflug nach Triest und Quarnero,' p. 125.—*G. gracilis* (Rathke), Grube, l. c. p. 414, from Chesso.—*G. locusta* (L.), Grube, l. c. p. 415, near Trieste; Heller, Amphipod. des adriatischen Meeres, p. 43.—*G. marinus* (Leach), Heller, l. c.—*G. tenuimanus* (Sp. B.), Heller, l. c.—*G. pulex* (L.), Heller, Verh. d. k.-k. zool.-bot. Ges. Wien, xv. p. 984. The Recorder suggests to continental carcinologists to determine whether or not there be two freshwater species, viz. *G. pulex* and *G. fluviatilis*, as, from the great confusion of the two names by various authors, he is inclined to think that they, and also the figures, are but the result of imperfect drawings and descriptions of one and the same species.—*G. ræselii* (Gervais), *fluviatilis* (Roesel), Heller, Verhand. d. k.-k. zool.-bot. Gesell. Wien, xv. p. 983, Vienna, Tyrol, &c.—*G. pungens* (Milne-Edw.), Heller, l. c. p. 984, warm springs of the Cassini Mountains in Italy.—*G. recurvus*, vide genus *Crangonyx*.—*G. puteanus*, vide genus *Niphargus*.

Gammarus [*Lilljeborgia*] (not *Gammarus* of Fabricius, as referred to by the author) *pallidus* (Sp. Bate), Goës, l. c. p. , Spitzbergen.—*G. loveni* (Bruz.), Goës, l. c. p. , Spitzbergen.—*G. dentatus* (Kröy.), Goës, l. c. p. , pl. xl. fig. 29, Spitzbergen; of this species there is also a variety, pl. xl. fig. 29'.—*G. locusta* (L.), Goës, l. c. p. , Spitzbergen.—*G. loricatedus* (Sab.) (this species is not a *Gammarus* according to Fabricius's typical character, and is named *Gammaracanthus* in the Cat. of Amphip. in the Brit. Mus.), Goës, l. c. p. , Spitzbergen.—*G. sabini* (Leach) (*Amathia*, Cat. Amph. Brit. Mus., but changed to *Amathilla* in the Brit. Sessile-eyed Crustacea, since *Amathia* had been previously adopted in three other branches of zoology), Goës, l. c. p. , Spitzbergen.—*G. pinguis* (Kröy.), Goës, l. c. p. , Spitzbergen.

Gammarus torelli, sp. n., Goës, pl. xl. fig. 28, from the stomach of a fish near Spitzbergen: this species evidently belongs to the genus *Megamæra* of the Brit. Sessile-eyed Crustacea.—*G. spinosus*, sp. n., Goës, pl. xl. fig. 30, from Spitzbergen.

Microprotopus, g. n., Norman, Brit. Assoc. Rep. 1866 (1867), p. 203. Antennæ with secondary appendage. First gnathopods subchelate; second gnathopods larger than first, subchelate, greatly developed in ♂, much smaller in ♀. Uropoda terminating in simple spines, those of the last pair with a

single ramus. Telson tubular.—*M. maculatus*, sp. n., Norman, *l. c.* p. 203, Shetland Islands.

COROPHIDÆ.

Amphithoë reinhardi (Kröy.), Goës, Crust. Amph. Œfvers. af Vet.-Akad. Förh. 1865, p. , Greenland.—*A. penicillata* (Costa), Heller, Amph. des adriatisch. Meer. p. 43, tab. iii. figs. 29–34.

Amphithoë bicuspis, sp. n., Heller, *l. c.* p. 44.—*A. brusina*, sp. n., Heller, *l. c.* p. 44.—*A. peregrina* (Dana), Sp. B., Naturalist in Brit. Columbia, vol. ii. p. 281, Esquimalt Harbour.—*A. orientalis* (Dana), Sp. B. *l. c.*, Esquimalt Harbour.—*A. filicornis* (Dana), Sp. B. *l. c.*, Esquimalt Harbour.

•*Podocerus anguipes* (*Ischyrocerus*) (Kröy.), Goës, *l. c.* p. , from Spitzbergen.—*P. pulchellus* (Leach), Heller, Amph. adriatisch. Meeres, p. 45.—*P. oculus* (Sp. B.), Heller, *l. c.* p. 45.

Podocerus monodon, sp. n., Heller, *l. c.* p. 45, tab. iv. figs. 4, 5.—*P. largimanus*, sp. n., Heller, *l. c.* p. 46, tab. iv. fig. 6.—*P. longicornis*, sp. n., Heller, *l. c.* p. 47, tab. iv. fig. 7.

Cerapus abditus (Templeton), Heller, Amph. adriatisch. Meeres, p. 49.

Erichthonius difformis (M.-Edwards), Goës, *l. c.* p. , from Spitzbergen. We think that there can be no doubt that this genus is identical with *Cerapus* of Say; and it is so named in the Brit. Sessile-eyed Crustacea.

Siphonæctus typicus (Kröy.), Goës, *l. c.* p. , from Greenland.

Cyrtophium lave, sp. n., Heller, Amph. adriatisch. Meeres, p. 49, tab. iv. figs. 9–11.

Cratipus pusillus (Grube), Heller, *l. c.* p. 50.

Cratipus crassimanus, sp. n., Heller, *l. c.* p. 50, tab. iv. figs. 12–13.

Corophium bonelli (Edw.), Heller, *l. c.* p. 51.

Corophium acheruzicum, sp. n., Heller, *l. c.* p. 51, tab. iv. fig. 14.

Glauconome leucopis (Kr.), Goës, *l. c.* p. , from Spitzbergen.

Autonoë macronyx (Lillj.), Goës, *l. c.* p. , Spitzbergen.

[*Autonoë depressa*, sp. n., Goës, pl. xli. fig. 32, Spitzbergen.

CHELURIDÆ.

Chelura cerebrans (Philippi), Heller, Amphipoden des adriatischen Meeres, p. 52.

HYPERIIDÆ.

Themista libellula (Mandt.), Goës, *l. c.*, Spitzbergen.

Themista compressa, sp. n., Goës, pl. xli. figs. 34, 34', Greenland.

Hyperia exulans (*Lestrigonus*) (Kröy.), Goës, *l. c.* p. , Spitzbergen. Under this specific name Herr Goës associates those forms which have been named in the 'Brit. Sessile-eyed Crustacea' as *Lestrigonus exulans*, *L. kinahani*, and *Hyperia galba*, which we are not at present prepared to accept; and certainly if *Hyperia galba* be the female of *Lestrigonus*, as is probable, it will have to take the name given to it first by Montagu, instead of that of Kröyer.—*H. medusarum* (*Metæcus*) (Kröy.), Goës, *l. c.* p. , from Spitzbergen.

Hyperia medusarum (Fabricius), T. Edward, Journ. Linn. Soc. vol. ix. pp. 143 and 166.—*H. galba* (Montagu), T. Edward, *l. c.* pp. 143 and 166.—*H. obliqua* (Kröyer), T. Edward, *l. c.* pp. 143 and 166.—*H. minuta*, sp. n., T. Edward, *l. c.* pp. 144 and 146, undescribed.

Lestrigonus kinahani (Sp. B.), T. Edward, *l. c.* pp. 143 and 166.—*L. exulans* (Kröyer), T. Edward, *l. c.* pp. 143 and 166.

AMPHIPODA ABERRANTIA.

DULICHIIDÆ.

Dulichia spinosissima (Kröy.), Goës, Crust. Amphip. Œfvers. Vet.-Akad. 1865, p. , from Spitzbergen.

Cyaneus ceti (Martens), Bate & Westwood, *l. c.* vol. ii. p. 85.—*C. ovalis* (Rousel de Vauzème), B. & W. *l. c.* vol. ii. p. 91.—*C. thompsoni* (Gosse), B. & W. *l. c.* vol. ii. p. 96.—*C. delphini* (Guérin), B. & W. *l. c.* vol. ii. p. 98, not British.

Caprella aspera, sp. n., Heller, *l. c.* p. 55, tab. iv. figs. 20, 21.—*C. leptonyx*, sp. n., Heller, *l. c.* p. 56, tab. iv. fig. 22.—*C. armata*, sp. n., Heller, *l. c.* p. 56, tab. iv. fig. 23.

CAPRELLIDÆ.

Caprella acutifrons (Latr.), Heller, Amphipoden des adriatischen Meeres, p. 53.—*C. acanthifera* (Leach), B. & W. *l. c.* vol. ii. p. 65.—*C. tuberculata* (Guérin), B. & W. *l. c.* vol. ii. p. 68.—*C. æquilibra* (Say), B. & W. *l. c.* vol. ii. p. 71.—*C. spinulata* (R. Q. Couch), B. & W. *l. c.* vol. ii. p. 74 (of this species there is no figure given).—*C. typica*, B. & W. *l. c.* vol. ii. p. 75.—*C. septentrionalis* (Kröy.), Goës, Œfvers. Vet.-Akad. 1865, p. 18, from Spitzbergen.—*C. spiniferu* (Bell), Goës, *l. c.* p. 19, from Spitzbergen.—*C. plasma* (vide genus *Protella*), Heller, Amphipoden adriatisch. Meeres, p. 56.

ISOPODA ABERRANTIA.

TANAIDÆ.

In the RECORD for 1864 (p. 264) we drew attention to a communication by Dr. Fritz Müller (Archiv für Naturg. 1864), in which he asserted that the cephalon in the genus *Tanais* is developed upon the type of the carapace of the Decapoda. To this conclusion we demurred, because his suggestion rested upon induction only. But it would not be just to that distinguished carcinologist if we did not take the earliest opportunity possible of withdrawing the objections we then made to his hypothesis, and state that, very recently, we have been enabled by actual observation to confirm his opinion. In some living specimens which we very recently procured we have seen not only the current of water to which Dr. F. Müller alludes, but the branchiæ existing in a position that induced the circulation of that current. They consist of a single branch on each side, attached to the coxæ of the large pair of claws (1st pair of gnathopoda), and lie diagonally forwards in a chamber formed by the lateral walls of the cephalon. The branchiæ are in constant play, waving to and fro. (We hope shortly in some other place to describe the structure and anatomy of these little creatures more fully.)

Tanais carolinii (Edw.), Heller, Carcin. des adriat. Meeres, Verhand. d. zool.-bot. Gesell. in Wien, p. 735. [In the 'British Sessile-eyed Crustacea' the authors have considered this species synonymous with *T. vittatus* (Rathke); vide Bate & Westwood, British Sessile-eyed Crustacea, vol. ii. p. 125.]—

T. dulongii (Audouin), B. & W. *l. c.* vol. ii. p. 129.—*T. loricatus*, Sp. B., Naturalist in Brit. Columbia, vol. ii. p. 282, Esquimault Harbour.

Tanais depressa, sp. n., Sars, *l. c.* p. 40.—*T. abbreviatus*, sp. n., Sars, *l. c.* p. 41.

Leptocheila edwardsii (Kröy.), B. & W. *l. c.* vol. ii. p. 184.

Paratanais forcipatus (Lillj.), B. & W. *l. c.* vol. ii. p. 138.

Paratanais rigidus (sp. n.), B. & W. *l. c.* vol. ii. p. 141.

Apsuedes talpa (Mont.), B. & W. *l. c.* vol. ii. p. 148; Heller, *l. c.* p. 736.—

A. latreillii (Edw.), B. & W. *l. c.* vol. ii. p. 158.

Anthura gracilis (Mont.), B. & W. *l. c.* vol. ii. p. 160.—*A. nigropunctata* (Lucas), Heller, Verhandl. zool.-bot. Gesell. Wien, p. 731.

Paranthura, g. n., B. & W. *l. c.* vol. ii. p. 163. Like *Anthura*, except in the structure of the pleon, which has the several segments distinctly articulated with each other, and carries the normal number of pleopoda. The authors think that this genus may possibly be synonymous with *Oliska* of Risso and Hope. *Paranthura costanca*, B. & W. *l. c.* vol. ii. p. 165: this is undoubtedly the animal mistaken by Prof. Milne-Edwards for *Anthura gracilis*.

ANCEIDÆ.

Anceus maxillaris (Mont.), Bate & Westwood, Brit. Sessile-eyed Crust. vol. ii. p. 187.—*A. halidaii*, B. & W. *l. c.* vol. ii. p. 203 (this species may possibly be *A. formica* of Hope).—*A. vorax* (Lucas), Heller, Verhandl. d. zool.-bot. Gesell. Wien, p. 749.

Anceus (*Praniza*) *fuscata* (Johnston), B. & W. *l. c.* vol. ii. p. 197.—*A.* (*Praniza*) *maculata*, B. & W. *l. c.* vol. ii. p. 199.—*A. edwardii* (Sp. B.), B. & W. *l. c.* vol. ii. p. 207.

BOPYRIDÆ.

Bopyrus squillarum (Latr.), Heller, Carcin. des adriat. Meeres, Verhandl. d. zool.-bot. Gesell. in Wien, p. 749.

Gyge branchialis (Corn. et Panc.), Heller, *l. c.* p. 749.

Ione thoracica (Mont.), Heller, *l. c.* p. 749 = *I. cornutus*, Sp. B., Naturalist in British Columbia, vol. ii. p. 283, on *Callianassa longimana*.

[*Cryptothiria*.] Dr. Buchholz, under the generic name of *Hemioniscus*, has given (*Zeitschrift für wissenschaftliche Zoologie*, p. 303, 1866) a full description of the development of an animal that was long since named *Liviope* by Rathke; this name having previously been used by Lesson for a genus of the *Medusæ*, the authors of the 'British Sessile-eyed Crustacea' have adopted that given by Dana to a closely allied South-American species:—

Hemioniscus, g. n. Femina adulta corpore in partes duas distinctas diviso; anterior pars caput et quatuor segmenta sequentia comprehendens cum posteriore continuo conjuncta, oculis simplicibus, quatuor antennis, ore suctorio et tribus paribus pedum uncigerorum triarticulorum instructa, cum iisdem partibus larvæ omnino congruens. Posterior corporis pars ex posterioribus thoracis [pereion] segmentis atque abdomine [pleon] formatum, anteriore multo major sacciformis lobata, appendicum nulla vestigia præbens. Tractus intestinalis pars media valde dilatata cum appendicibus duabus cæcis instructa, cum terminali parte tenuissima ac satis longa conjuncta. Anus terminalis. Appendices branchiales nullæ. Ovaria duo simplicia duobus oviductibus in superficie ventrali sese aperientibus. Larva capite ejusdem

formæ ac animal adultum, thorace [pereion] segmentis septem totidem pedibus uncigeris instructo, abdomine [pleon] segmentis sex, in quibus quinque paria pedum natatoriorum, ultimo appendicibus duabus simplicibus setigeris. Epimera [coxæ] in omnibus segmentis exceptis postremis, satis evoluta.

II. [*Cryptothiria*] *balani*, sp. n., Buchholz, l. c. p. 325, pls. xvi., xvii. figs. 1-18, on *Balanus ocellaris* (Lam.). This same species had previously received the same specific name from the Recorder, who considered, and still believes, that the figure of Buchholz of a young animal represents the perfect male. A complete history of this interesting and still imperfectly known genus is to be found in vol. ii. p. 257 of the 'British Sessile-eyed Crustacea.'

[*Cryptothiria*] *Peltogaster paguri* (male), Hesse, Ann. des Sc. Nat. t. xvi. pp. 323 & 358, pl. xi. figs. 1-14. This species, which undoubtedly belongs to the genus *Cryptothiria* (Dana), *Liriope* of Rathke & Lilljeborg, M. Hesse elaborately describes as the male of the parasitic *Peltogaster*, which he therefore proposes to remove from the *Cirripedia* and arrange with the Isopoda. But the larvæ, as figured by M. Hesse, demonstrate their relation to the former, while Professor Lilljeborg has shown that the young of the female *Cryptothiria*, which is parasitic on *Peltogaster*, and which M. Hesse has overlooked, contains the larvæ of true Isopoda, the young *Cryptothiria*.

CYMOTHOIDÆ.

SCHNÖDRE (Naturhist. Tidssk. pp. 168-206, 1866) gives an account of the sucking oral apparatus of Crustacea, the substance of which is indicated in the following paragraphs:—

1. The sucking-apparatus of the *Condylipoda* consists of a greater or less differentiation of the prehensile mouth; and the author considers it important to understand the correct homologies of the oral apparatus, in order to understand the nature of the mouth of Articulata in general. Savigny solved the problem in regard to Insecta; but with regard to Crustacea the author considers that there is almost everything to be done.

2. He commences with the parasitic Isopoda, because as to the structure of the mouth so little is known. He gives the opinions of previous authors.

3. Outline of the principal form of the prehensile mouth of Isopoda, which he illustrates, pl. x. fig. 3a, by the inferior aspect of the head of *Cirolana*.

4. The author considers that a fundamental distinction between the Crustacea and Insecta exists in the relation of the first pair of oral appendages to the lateral parts of the head.

In Crustacea the mandibles do not project beyond the other oral appendages, and have the flexor muscles attached to a hypostome, except when the cephalon is fused with the pereion.

In Insecta the appendages coalesce with the lateral walls of the head, and the muscles consequently disappear.

5. In the edriophthalmous Crustacea the first somite of the body [pereion], the author says, is united to the cephalon, while in the Insecta there is a distinct division between the head and

the body; and he explains the differentiation which takes place in the parts of the appendages in the structure of the mouth of Crustacea, as well as in the Insecta.

6. The prehensile mouths in Crustacea exhibit three types, which he illustrates in pl. x.:—1st, in *Oniscus*, *Asellus*, *Idotea*, and *Sphæroma*.

7. 2nd in *Cirolana*, which he considers to be the highest developed Isopoda.

8. 3rd in *Serolis*.

9. The author epitomizes the characters distinguishing the three different types.

10. He describes the sucking-mouth of the *Cymothoidæ*, which he illustrates in pl. xi., taking as typical forms those of *Æga psora* (L.) and *Cymothoa œstrum* (auct.), which he compares with that of *Anilocra leachii* (Kröy.), a new species, as also with that of one taken by Kröyer on some fish in the river Plate, and which forms the type of a new genus, *Artystone*, the characters of which are given further on in this Record.

11. Explains how the different parts of the mouth of *Cymothoa* are formed into sucking-instruments.

12. The author gives a long description of the mouth of *Æga*.

13. He gives a concise account of the mouth of *Cymothoa*.

14. On the structure of the intestinal region of *Cymothoa*, and some superstitions of the Icelanders and ancients in relation to these creatures.

15. The author gives a description of the larva of *Cymothoa œstrum* when it is first excluded from the ovisac, which, as it has not been previously described, we give here in full:—

When the young *Cymothoa œstrum* quits the ovisac, it has a sharp frontal edge, well developed, oblong, projecting black eyes, slender bristle-like antennæ, the posterior pair being so long that they reach to the middle of the pleon. It has the pereopoda slender, with long claws, curved at the extremity only; the three anterior pairs, directed forwards, are serrated along the under surface. Pleon quite free, and scarcely shorter than the pereon, cone-formed, with freely moving somites. Pleopoda furnished with long plumose cilia, the posterior pair nearly as long as the five anterior somites of the pleon, furnished at the extremity with long plumose cilia. The posterior pair of pereopoda, as in many of the larvæ of the Isopoda in their earliest condition, are wanting.

The author concludes with some remarks on the classification of these Crustacea, which cannot, he thinks, be satisfactorily determined until the oral organs be properly understood.

Serolis orbignyana (Milne-Edw.), Schiödte, *l. c.* p. 204, tab. x. fig. 2.

Cymothoa œstrum (L.), Heller, Verhandl. d. zool.-bot. Gesell. in Wien, p. 739.—*C. œstroides*, Heller, *l. c.* p. 737.—*C. parallela* (Otto), Heller, *l. c.* p. 738.—*C. audouini* (Edw.), Heller, *l. c.* p. 738.

Artystone trysibia, g. n. et sp., Schiödte, *l. c.* p. 206, tab. xi. fig. 4. Char. gen.—Pedes seni priores uncinati. Pedes septimi paris graciles, ambulatorii, ungue pusillo, subrecto.

Nerocila bivittata (Risso), Heller, *l. c.* p. 739.—*N. maculata* (Edw.), Heller, *l. c.* p. 740.

Anilocra mediterranea (Leach), *A. physodes* (L.), and *A. frontalis* (Edw.), Heller, *l. c.* p. 741.—*A. leachii* (Kr.), Schiödte, Naturhisk. Tidssk. 1866, p. 205, tab. xi. fig. 2.

ÆGIDÆ.

Æga psora (L.), Schiödte, Naturhisk. Tidssk. 1866, p. 204, tab. xi. fig. 1.—*Æ. bicarinata* (Leach), Heller, Carcin. des adriat. Meeres, *l. c.* p. 743.—*Æ. deshayesi* (Edw.), Heller, *l. c.* p. 744.

Eurydice pulchra (Leach), Schiödte, *l. c.* p. 204, tab. x. fig. 4.

Slabberina agata (Van Beneden) [*Eurydice pulchra*, Leach]. M. Hesse (Ann. des Sciences Nat. vol. v. p. 242), in a memoir entitled "Observations biologiques sur quelques Crustacés des Côtes de Bretagne," gives an account of the habits of this little animal, which he says burrows in the sand between high- and low-water marks.

Slabberina [*Eurydice*, Leach] *agilis*, sp. n., Sars, *l. c.* p. 36.

Acherusia dumerilii (Lucas), Heller, *l. c.* p. 744.—*A. ophthalmica* (Lucas), Heller, *l. c.* p. 745.

Cyrolana (Leach). M. Hesse (Ann. des Sciences Nat. t. v. p. 250) in a paper (Observ. biologiques sur quelques Crust. des Côtes de Bretagne) describes the habits of this genus, or rather of a species that he has not named, found on the coast of Brittany burrowing in the sand, and he has also taken it gorged with blood attached as a parasite on fish, to which many were agglutinated by a viscous secretion that they eject previously to the completion of deglutition.—*C. cranchii*? (Leach), Hesse, *l. c.* p. 257, found in sand on the coast of Brittany.—*C. borealis* (Filljeborg), Schiödte, *l. c.* p. 204, tab. x. fig. 3.—*C. solea*, n. sp., Hesse, *l. c.* p. 259, taken on a Sole, also on a Ray, upon which they were dead, and adhered by the viscosity of the fish.—*C. raia*, n. sp., Hesse, *l. c.* p. 260, taken on different Rays, where, with one exception, they were all dead, and stuck by the viscous secretion of the fish.—*C. molva*, n. sp., Hesse, *l. c.* p. 261, taken agglutinated to a *Lota molva*.—*C. elongata*, n. sp., Hesse, *l. c.* p. 262, found dead agglutinated to the body of different Rays.—*C. merlangi*, n. sp., Hesse, *l. c.* p. 264, found dead attached to a *Merlangus pollachius*.—*C. hirtipes* (Edw.), Heller, Carcin. des adriat. Meeres, Verhand. d. zool.-bot. Gesell. Wien, p. 742.

Anilocra leachii (Kr.), Schiödte, *l. c.* p. 205, tab. xi. fig. 2.

ASELLIDÆ.

Jara kroyeri (Edwards), Heller, Carcin. des adriat. Meeres, Verh. zool.-bot. Gesell. in Wien, p. 732.—*J. longicornis* (Lucas), Heller, *l. c.* p. 733.—*J. wakishiana*, Sp. B., Naturalist in Brit. Columbia, vol. ii. p. 282, Brit. Columbia.

Limmoria uncinata, sp. n., Heller, *l. c.* p. 734.

Muina limicola, sp. n., Sars, *l. c.* p. 29.

Pleuracantha rubicauda and *P. spinosissima*, sp. n., Sars, *l. c.* p. 30.

Paramuina, g. n., Sars, *l. c.* p. 31. Statura generi antecedenti non dis-

similis. Corpus supra visum forma subovata vix duplo longius quam latius. Segmenta thoracica [pereion] 4 anteriora sat magna inque lateribus non spinifera, sequentia 3 angusta processibus lateralibus acuminatis. Segmentum abdominale [pleon] rotundatum æque latum ac longum, marginibus lateralibus fortiter dentatis, parte ultima paulo exserta et inermi. Caput [cephalon] antice incisura mediana in lobos duos ad apicem truncatos et paulo divergentes divisum. Oculi distincti valde prominentes vel in pedunculis longis sed immobilibus siti. Antennæ breves structura fere exacte eadem ac in *Pleuracantha*, superiores inferioribus paulo breviores. . . . Pedes primi paris (primum par gnathopodum) robusti subcheliformes; ceteri breves et omnes inter se et structura et longitudine consimiles, articulo ultimo in unguem fortem producto. Appendices caudales brevissimæ, simplices, biarticulatæ, articulo primo extus in processum brevem excurrente.—*Paramunna bilobata*, sp. n., Sars, *l. c.* p. 31.

Eurycope producta, sp. n., Sars, *l. c.* p. 32.

Desmosoma tenuimanum, sp. n., Sars, *l. c.* p. 33.

Ischnosoma, g. n., Sars, *l. c.* p. 34. Corpus valde elongatum et angustatum, latitudine maxima in segmento primo thoracico [pleon] sita, parte postica segmenti quarti et antica quinti valde coarctatis et exsertis, subcylindricis et inter se firmiter conjunctis, quare segmenta hæc duo juncta faciem horologii pulverarii valde elongati dimidiam fere corporis longitudinem occupantis præbent. Caput [cephalon] parvum rotundatum, oculis nullis. Segmentum primum thoracicum [pereion] utrinque in spinam validam antice et ad latera vergentem excurrentem. Segmenta cetera mutica. Segmentum abdominale [pleon] multo longius quam latius ad basin constrictum apicem versus paulo dilatatum et obtuse rotundatum. Antennæ superiores parum extra medium articuli penultimi peduncularis inferiorum porrectæ, 6-articulatæ, articulo secundo sat elongato et angusto: inferiores graciles corporis longitudinem excedentes, flagello pedunculi longitudinem circiter æquante ex articulis circiter 19 composito. . . . Pedes primi paris [primum par gnathopodum] perbreves sed robustissimi, subcheliformes, articulo antepenultimo valde dilatato. Pedes sequentes gracillimi et elongati, omnes inter se consimiles, 6-articulati, articulo ultimo unguem imprimis in paribus posterioribus 3 valde elongatum formante. Appendices caudales simplices biarticulatæ vix dimidiam segmenti abdominalis [pleon] assequentes longitudinem.

Ischnosoma bispinosum, sp. n., Sars, *l. c.* p. 34.

ARCTURIDÆ.

Arcturus longicornis (Sowerby), Sars, *l. c.* p. 28.

IDOTHEIDÆ.

Idothea hectica (Pallas), Heller, Carcin. des adriat. Meeres, p. 727.—*I. tricuspidata* (Desmarest), Heller, *l. c.* p. 728.—*I. algerica* (Lucas), Heller, *l. c.* p. 728.—*I. prismatica* (Risso), Heller, *l. c.* p. 729.—*I. capito* (Rathke), Heller, *l. c.* p. 730.—*I. appendiculata* (Risso), Heller, *l. c.* p. 731.—*I. wosnesskii* (Brandt), Sp. B., Naturalist in Brit. Columbia, vol. ii. p. 281, Esquimalt Harbour.—*I. media*, Sp. B. *l. c.* vol. ii. p. 282, Esquimalt Harbour.—*I. stricta* (Dana), Sp. B. *l. c.* vol. ii. p. 282, Esquimalt Harbour.

Henoponus muticus (Kröy.), Sars, *l. c.* p. 28.

SPHÆROMIDÆ.

Sphæroma balticum, Schiödte, Naturhisk. Tidssk. 1866, p. 204, tab. x. fig. 1.—*S. serratum* (Fabr.), Carcin. des adriat. Meeres, Verhand. zool.-bot. Gesell. in Wien, p. 746.—*S. jurinii* (Savig. & Aud.), Heller, l. c. p. 746.—*S. granulatum* (Edw.), Heller, l. c. p. 747.—*S. tridentulum* (Grube), Heller, l. c. p. 747.—*S. gibbosum* (Edw.), Heller, l. c. p. 748.—*S. savignyi* (Edw.), Heller, l. c. p. 748.—*S. terebrans* (F. Müller), Sp. B., Ann. Nat. Hist. vol. xvii. p. 28, pl. ii. fig. 5, South America.

Sphæroma vastator, sp. n., Sp. B. l. c. p. 28, pl. ii. fig. 4, Madras.—*S. rissoi*, sp. n., Heller, l. c. p. 746, Adriatic Sea.

Cymadocea pilosa (Edw.), Heller, l. c. p. 748.

Nescea bidentata (Desmarest), Heller, l. c. p. 748.

ONISCIDÆ.

Ligia brandtii (Rathke), Heller, Carcin. des adriat. Meeres, Verhandl. zool.-bot. Gesell. in Wien, p. 734.

Tylos latreillii (Audouin), Heller, l. c. p. 732.

ENTOMOSTRACA.

PHYLLOPODA.

APODIDÆ.

Lepidurus angasii, sp. n., Baird, Proc. Zool. Soc. 1866, p. 122, pl. xii. fig. 1, South Australia. The author compares this species with *L. viridis* from Van Diemen's Land.

LIMNADIADÆ.

Etheria newcombii, sp. n., Baird, Proc. Zool. Soc. 1866, p. 122, pl. xii. fig. 2, California.

BRANCHIPODIDÆ.

Nebalia geoffroyi (Edw.), Heller, l. c. p. 750.

Cypridina mediterranea (Costa), Heller, l. c. p. 750.

CLADOCERA.

DAPHNIDÆ.

Hyalodaphnia, g. n. Schödler, Archiv für Naturgeschichte, 1866, p. 16. Animal perfectly hyaline, much resembles the species of the genus *Daphnia* in habits. Cephalon much compressed laterally, and produced in front into a helmet-like pointed or rounded crest, and terminates at the lower posterior extremity in a blunt rostrum or beak, which projects more or less over the anterior margin of shell or carapace. The shell or carapace is furnished posteriorly with a long spinous process, which in the male and young female projects almost in a line with the dorsal surface, but in the older females, in consequence of the increased development of the ovigerous cavity, it is depressed to near the centre of the posterior margin. This large terminal projection is furnished on either side with small denticular points, which are continued on the upper and under surfaces of the shell to some distance.

The shell-gland, as in the allied genera, is situated in the anterior portion of the valves, but the prehensile organ is wanting. The compound eye is

generally large and well developed, and lies near to the anterior margin of the cephalon, but is always more or less distant from the vertex of the helmet-like cephalon; it is very moveable, and furnished with numerous crystalline lenses. The antennæ are formed differently in the male and female. In the female the first pair are conical and covered by the beak, beyond which they protrude only to the extent of exposing a bundle of button-shaped hairs ("organs of touch"). In the male they are cylindrical, freely mobile, slightly curved at the base, and always united to the beak; the free extremity, besides the brush of button-shaped hairs, carries a special flagellum, and on the anterior margin a delicate bristle or hair. The other pair of antennæ, resembling those of *Daphnia*, are very largely developed, and freely protruded. The peduncle of the same is multiarticulate near the base, and one of the small joints is furnished with two hairs. The outer of the two branches of the rowing-organs is three-jointed, and a little longer than the inner, which is four-jointed*. The number of jointed hairs attached to this appendage is variable. There are five pairs of legs [pereopoda], which appear not to differ much from those of *Daphnia*. In the male, the last joint of the first pair is, as in *Daphnia* and *Ceriodaphnia*, armed with a hook and a long lash. The appendages of the pleon are three, but they appear to vary both in number and size in different species. The posterior portion of the pleon [postabdomen] reminds one both in form and movement of that of *Daphnia*, and when at rest is bent up under the pleon. At the caudal extremity exist two curved hooks; and on the dorsal surface, behind the last articulation, on a small lobe stand two long finely plumose cilia. The anal aperture, which opens posteriorly to the caudal hooks, is surrounded by several small curved spines, which increase in size as they approach the caudal extremity.

Hyalodaphnia kahlbergiensis, sp. n., Schödler, Archiv für Nat. 1866, p. 18, tab. i. figs. 1-3, from Kahlberg.—*H. berlinensis*, sp. n., Schödler, l. c. p. 24, tab. i. fig. 4, tab. ii. fig. 8, tab. iii. fig. 15, from the Plötzensee.—II. (*Daphnia cucullata* (Sars), Schödler, l. c. p. 28, from Kahlberg.—*H. cederstromii*, sp. n., Schödler, l. c. p. 31, from Kahlberg.—*H. (Daphnia) cristata* (Sars), Schödler, l. c. p. 29, from Kahlberg.—II. (*Daphnia longiremis* (Sars), Schödler, l. c. p. 30, from Kahlberg.

Sida crystallina (Müll.), Schödler, Archiv für Nat. 1866, p. 2, from Kahlberg.

Daphnella brachyura (Liév.), Schödler, l. c. p. 2, from Kahlberg.

Limnocyclus serrulatus (Koch), and *S. vetulus* (Müll.), Schödler, l. c. p. 2, from Kahlberg.

Scapholeberis cornuta (De Geer), Schödler, l. c. p. 2, from Kahlberg.

Eurycecrus lamellatus, Schödler, l. c. tab. i. fig. 6 only.

Bosmina gibbera, sp. n., Schödler, l. c. p. 36, tab. ii. fig. 9, and tab. iii. fig. 24, from Kahlberg.—*B. rotunda*, sp. n., Schödler, l. c. p. 40, tab. iii. fig. 13, from the Plötzensee.—*B. longicornis*, sp. n., Schödler, l. c. p. 42, tab. ii. fig. 10, from the Plötzensee.—*B. longirostris* (Müll.), Schödler, l. c. p. 45, tab. iii. figs. 16-23, from the Plötzensee.—*B. (Lynceus) longirostris* (Leydig), Schödler, l. c. p. 47, from Kahlberg.—*B. londinensis* (Baird), Schödler, l. c. p. 48, from Kahlberg.—*B. (Monoculus) cornuta* (Jurine), Schödler, l. c. p. 49, tab. iii.

* In the figure they are both given as four-jointed.

figs. 18-20, from the Plötzensee.—*B. curvirostris* (Fisch.), Schödler, *l. c.* p. 52, from the Plötzensee.

LYNCEIDÆ.

Acroperus leucocephalus (Koch), Schödler, Archiv für Nat. 1866, p. 2, from Kahlberg.

Peracantha truncata (Müll.), Schödler, *l. c.* p. 2, from Kahlberg.

Pleuroxus aduncus (Jurine), Schödler, *l. c.* p. 2, from Kahlberg.

Alona lineata (Fisch.), Schödler, *l. c.* p. 2, from Kahlberg.

OSTRACODA.

CYPRIDIDÆ.

Pontocypris acumpunctata, sp. n. (Brady), Norman, Brit. Assoc. Report, 1866 (1867), p. 198, Hebrides.

Cytherella scotica, sp. n. (Brady), Norman, *l. c.* p. 198, Hebrides.

Cytherella pulchra, sp. n., Brady, Trans. Zool. Soc. Lond. vol. v. p. 361, pl. lvii. fig. 1 *a-d*, Australia.—*C. punctata*, sp. n., Brady, p. 362, pl. lvii. fig. 2 *a, b*, Levant (sponge-sand).—*C. rugosa*, sp. n., Brady, p. 362, pl. lvii. fig. 4 *a, b*, Australia.

Cytherella beyrichi (Reuss), Brady, p. 362, pl. lvii. fig. 3 *a, b*, Norway.

Jonesia, gen. nov., Brady, p. 362. Limbs long and slender. Antennæ exceedingly small, slender, and destitute of spines. Carapace elongated, compressed, rounded in front, narrowed and acutely pointed behind. Shell thin and fragile, mostly without sculpture of any kind. Hinge-margins perfectly simple, consisting of two thin opposing edges held together by a ligamentous tissue; straight, or slightly sinuous towards each extremity. Lucid spots linear-oblong in shape, arranged in parallel series, those in the middle being the longest, the whole group forming an obliquely transverse oval patch near the centre of the valve. *Jonesia simplex* (Norman), Brady, p. 363, pl. lvii. fig. 11 *a-e*, North Briton.

Bairdia ovata, Brady, p. 364, pl. lvii. fig. 7 *a-c*, Abrolhos Bank.—*B. subdeltoidea* (Von Münster), Brady, p. 365, pl. lvii. fig. 8 *a-h*, Australia, West Indies, Turk's Island, Crete (360 fath.), Serpho.

Bairdia bosquetiana, sp. n., Brady, p. 364, pl. lvii. fig. 5 *a-e*, Atlantic Ocean, 470 fath.—*B. amygdaloides*, sp. n., Brady, p. 364, pl. lvii. fig. 6 *a-c*, Australia.—*B. fusca*, sp. n., Brady, p. 364, pl. lvii. fig. 9 *a-d*, Australia.—*B. crosskeiana*, sp. n., Brady, p. 366, pl. lvii. fig. 10 *a-d*, Levant (sponge-sand).

Bairdia complanata, sp. n. (Brady), Norman, *l. c.* p. 198, Hebrides.

Cytherideis gracilis (Reuss), Brady, p. 367, pl. lviii. fig. 1 *a-d*, Levant (sponge-sand).

Cytherideis decora, sp. n., Brady, p. 366, pl. lvii. fig. 13 *a-c*, Australia.—*C. maculata*, sp. n., Brady, p. 367, pl. lvii. fig. 12 *a, b*, Australia, West Indies, Turk's Island.—*C. (?) oryza*, sp. n., Brady, p. 368, pl. lviii. fig. 2 *a, b*, Iunde Islands.—*C. lata*, sp. n., Brady, p. 368, pl. lviii. fig. 4 *a, b*, Abrolhos bank.—*C. nobilis*, sp. n., Brady, p. 368, pl. lviii. fig. 9 *a-e*, Suda Bay, Crete.—*C. (?) pulchra*, sp. n., Brady, p. 368, pl. lviii. fig. 3 *a-c*, Iunde Islands.—*C. tigrina*, sp. n., Brady, p. 369, pl. lviii. fig. 5 *a-d*, Australia.

Cytheridea papillosa (Bosquet), Brady, p. 370, pl. lviii. fig. 8 *a-g*, Iunde Islands, Norway, and North Britain.—*C. mülleri* (Von Münster), Brady, p. 371, pl. lviii. fig. 11 *a-d*, Smyrna, Australia.

Cytheridea kirkbii, sp. n., Brady, p. 369, pl. lviii. fig. 14 *a-c*, Honduras.—

C. minima, sp. n., Brady, p. 370, pl. lviii. fig. 10 *a-d*, West Indies.—*C. margaritea*, sp. n., Brady, p. 370, pl. lviii. fig. 6 *a-d*: this species the author says resembles *C. aurantia* (Baird), and differs from *Cytherina ovulum* (Reuss) in having "no trace of pitting."—*C. curta*, sp. n., Brady, p. 370, pl. lviii. fig. 7 *a, b*, West Indies.

Cytheridea (?) *subflavescens*, sp. n. (Brady), Norman, *l. c.* p. 198, Hebrides.

Cythere setosa (Baird), Brady, p. 372, pl. lviii. fig. 12 *a-c*, fig. 13 *a-d*, fig. 15 *a-e*, Hunde Islands and Levant.—*C. jurinei* (Von Münster), Brady, p. 372, pl. lix. fig. 1 *a-f*, Levant (sponge-sand).—*C. canaliculata* (Reuss), Brady, p. 373, pl. lix. fig. 4 *a-f*, Australia.—*C. plicatula* (Reuss), Brady, p. 374, pl. lx. fig. 1 *a-c*, Levant.—*C. clathrata* (Reuss), Brady, p. 376, pl. lix. fig. 9 *a-c*, 10 *a-c*, 11 *a-d*, 12 *a-c*, 13 *a-c*, Hunde Islands and Norway.—*C. scabra* (Von Münster), Brady, p. 380, pl. lxi. fig. 8 *a-d*, Atlantic.—*C. latissima* (Norman), Brady, p. 381, pl. lxii. fig. 4 *a-e*, Hunde Islands.—*Cythere jurinei*, var. *costata*, Brady, p. 372, pl. lix. fig. 2 *a-d*, Levant (sponge-sand): the author thinks this is either a variety or the young of *C. jurinei*.—*C. hodgii*, sp. n., p. 373, pl. lix. fig. 3 *a, b*, Levant (sponge-sand).—*C.* (?) *mamillata*, sp. n., Brady, p. 373, pl. lix. fig. 6 *a-c*, Atlantic Ocean.—*C. oblonga*, sp. n., Brady, p. 373, pl. lix. fig. 5 *a-d*, Levant (sponge-sand).—*C. venata*, sp. n., Brady, p. 374, pl. lix. fig. 8 *a-c*, Australia.—*C. catenata*, sp. n., Brady, p. 374, pl. lx. fig. 2 *a-d*, Norway.—*C. septentrionalis*, sp. n., Brady, p. 375, pl. lx. fig. 4 *a-f*, Hunde Islands: the author thinks that this species may possibly be allied to the Eocene species *C. serobiculata* of Münster.—*C. costata*, sp. n., Brady, p. 375, pl. lx. fig. 5 *a-f*, Hunde Islands: this species is nearest relative to *C. neptuni* (Egger).—*C. lactea*, sp. n., Brady, p. 377, pl. lix. fig. 3 *a-c*, Australia; var. *rudis*, Brady, p. 378, pl. lx. fig. 6 *a-c*, Atlantic Ocean.—*C. pumila*, sp. n., Brady, p. 378, pl. lx. fig. 7 *a-d*, Australia.—*C. producta*, sp. n., Brady, p. 378, pl. lix. fig. 11 *a-d*, Honduras.—*C. pavonia*, sp. n., Brady, p. 378, pl. lxi. fig. 2 *a-d*, Levant (sponge-sand).—*C. pumicosa*, sp. n., Brady, p. 379, pl. lxi. fig. 3 *a-c*, Turk's Island.—*C. cribriformis*, sp. n., Brady, p. 379, pl. lxi. fig. 6 *a-d*, Levant (sponge-sand).—*C. normani*, sp. n., Brady, p. 379, pl. lxi. fig. 5 *a-d*, Abrolhos bank.—*C. parkeri*, sp. n., Brady, p. 380, pl. lxii. fig. 1 *a-e*, Australia.—*C. compacta*, sp. n., Brady, p. 380, pl. lxii. fig. 3 *a-d*, Turk's Island.—*C. areolata*, sp. n., Brady, p. 381, pl. lxii. fig. 2 *a-d*, Hunde Islands.—*C. rhomboidea*, sp. n., Brady, p. 381, pl. lxii. fig. 5 *a, b*, Atlantic Ocean.

Cythere tenera and *C. emaciata*, spp. n. (Brady), Norman, *l. c.* p. 198, Hebrides.

Normania, gen. nov., Brady, p. 382. Animal like *Cythere*: limbs long and slender; antennæ bearing long filaments, and quite devoid of spines. Outline of carapace flexuous, obliquely oval or subtetragonal ("peachstone"-shaped). Valves convex, produced round the whole, or at parts only, of their circumference into a flattened laminar border. Dorsal outline oval, tapering at both extremities, often strongly keeled. Hingement as in *Cythere* proper; the terminal processes somewhat feebly developed, with mostly an intervening finely crenulated bar. Surface smooth, punctate or papillose, the sculpturing having mostly a concentric arrangement.

Normania avellana, sp. n., Brady, p. 382, pl. lxi. fig. 15 *a-c*, West Indies.—*N. affinis*, sp. n., Brady, p. 382, pl. lxi. fig. 12 *a-d*, Levant (sponge-sand).—*N. glabra*, sp. n., Brady, p. 382, pl. lxi. fig. 11 *a-d*, Levant (sponge-sand).—*N. grisea*, sp. n., Brady, p. 383, pl. lxi. fig. 10 *a-c*, Smyrna.—*N. modesta*,

sp. n., Brady, p. 383, pl. lxi. fig. 13 *a, b*, Smyrna.—*N. dorsotuberculata*, sp. n., Brady, p. 383, pl. lxi. fig. 14 *a-g*, West Indies.

Cythereis subcoronata (Speyer), Brady, p. 384, pl. lx. fig. 9 *a-e*, Smyrna.

Cythereis batei, sp. n., Brady, p. 384, pl. lx. fig. 8 *a-d*, Levant (sponge-sand).—*C. cristatella*, sp. n., Brady, p. 384, pl. lxi. fig. 1 *a-d*, Australia.—*C. militaris*, sp. n., Brady, p. 385, pl. lxi. fig. 9 *a-d*, Australia.—*C. lacerata*, sp. n., Brady, p. 385, pl. lxi. fig. 4 *a-e*, Abrolhos bank.—*C. fungoides*, sp. n., Brady, p. 385, pl. lxi. fig. 7 *a-d*, Australia.—*C. spinosissima*, sp. n., Brady, p. 386, pl. lx. fig. 10 *a-e*, Norway.

Cytherura angulata and *C. producta*, spp. n. (Brady), Norman, *l. c.* p. 198, Hebrides.

Cytheropteron nodosum and *C. punctatum*, spp. n. (Brady), Norman, *l. c.* p. 198, Hebrides.

Paradoxostoma ensiforme, *P. flexuosum*, *P. normani*, and *P. hybernicum* are new species described by Norman, *l. c.* p. 198, from the Hebrides.

CYPRIDINIDÆ.

Cypridina japonica, sp. n., Brady, p. 386, pl. lxii. fig. 8 *a-d*, Japan.—*C. elongata*, sp. n., Brady, p. 386, pl. lxii. fig. 9 *a-d*, China.—*C. bairdii*, sp. n., Brady, p. 387, pl. lxii. fig. 7 *a-m*, China.

Heterodesmus, gen. nov., Brady, p. 387. Carapace subglobose. Dorsal margin slightly arched, forming at its extremities two largely developed hinge-processes; the anterior process somewhat waved and scroll-like; the posterior a truncate cone, projecting directly upwards. Ventral margin strongly arched. Animal unknown. *Heterodesmus adamsii*, sp. n., Brady, p. 387, pl. lxii. fig. 6 *a-h*, Japan.

COPEPODA.

Hersilia apodiformis (Philippi), Heller, *l. c.* p. 750.

Notopterophorus veranyi (Leuckart), Heller, *l. c.* p. 750.

Calanella mediterranea, Claus, Die Copepoden-Fauna von Nizza, p. 9.

Calanella hyalina, sp. n., Claus, p. 8.

Cetochilus helgolandicus (Claus) (*C. septentrionalis*, Goodsir), Claus, p. 9.

Calanus mastigophorus, Claus, p. 10, tab. i. fig. 1, tab. v. figs. 20 & 21.

Temosa armata, Claus, p. 11, tab. i. fig. 10.

Ichthyophorba denticornis, var. *nicaensis*, Claus, p. 11, tab. i. fig. 11.

Undina rostrata, sp. n., Claus, p. 11, fig. 2.

Euchæta prestandreæ (Philippi) = *atlantica* (Lubb.), Claus, p. 12.

Candace bispinosa, Claus, p. 12, tab. i. figs. 3-9.

Dias longiremis (Lillj.), Claus, p. 13, tab. i. figs. 12, 12'.

Leuckartia flavicornis, Claus, p. 13.

Pleuromana gracile, Claus, p. 13.

Oithona spinirostris and *O. similis*, Claus, p. 14.

Saphirina stylifera (Claus) (*Hyalophyllum*, Hæckel), Claus, p. 14.—*H. stylifera* (Claus) (*pellucida*, Hæckel), Claus, p. 17.—*S. vitrea* (= *Hyalophyllum vitreum*, Hæckel), Claus, p. 17.—*S. gegenbaueri* (Hæckel), Claus, p. 18.

Corycæus elongatus, Claus, p. 18.—*C. parvus*, Claus, p. 18.

Antaria mediterranea, Claus, p. 18.

Antaria cærulescens, sp. n., p. 19.

Copilia denticulata, Claus, p. 19.

Porcellidium tenuicaudata, Claus, p. 19.—*P. dentatum*, Claus, p. 19.

Oniscidium armatum, Claus, p. 19.

Eupelte gracilis, Claus, p. 19.

Scutellidium, g. n., Claus, p. 20. Corpus depressum, ovale, sicut in "*Zaus*." Antennæ anticæ 9-articulatæ; articulis medianis brevissimis. Antennarum secundi paris ramus secundarius 4-articulatus, perbrevis. Palpus mandibularis valde compositus, appendicem lamellarem gerens; palpus maxillaris in duas setas permagnas exiens. Pedes primi paris prehensiles, iisdem *Thisbe* haud dissimiles. Pedes postici foliacei, ramo externo tenui porrecto. Saccus ovigerus unicus.

Scutellidium thisboides, sp. n., Claus, p. 21, tab. iv. figs. 8–15.

Thisbe furcata (Baird), Claus, p. 21, tab. iv. figs. 16 & 17.

Liljeborgia, g. n., Claus, p. 22. Professor Claus adopts this name for a new genus established upon *Euterpe gracilis*, Claus; but in so doing he makes use of a name that has already been applied to a genus of Amphipod Crustacea. The following is the definition of his genus:—

"Corporis et antennarum habitus sicut in *Cleta*. Antennæ anticæ 4-articulatæ, magnopere armatæ. Pedum primi paris ramus internus biarticulatus, tenuis, externus triarticulatus. Pedum sequentium rami interni rudimentarii, rami externi triarticulati uncinati." *Liljeborgia linearis*, Claus, p. 22, tab. ii. figs. 1–8.

Cleta parvula, sp. n., Claus, p. 23, tab. ii. figs. 25–28.—*C. similis*, sp. n., Claus, p. 23, tab. v. figs. 13–16.—*C. forcipata*, sp. n., Claus, p. 23, tab. ii. figs. 9–11.

Tachideus minutus, sp. n., Claus, p. 24, tab. iv. figs. 1–7.

Jurinia, gen. nov., Claus, p. 24. Corpus lineare. Antennæ primi paris 7-articulatæ, breves, maris cheliformes. Palpi mandibularum et maxillarum simplices. Maxillipedes inferiores rudimentarii. Pedum quatuor parium ramus internus biarticulatus, externus triarticulatus.—*Jurinia armata*, sp. n., Claus, p. 25, tab. ii. figs. 15–24.

Dactylopus similis, sp. n., Claus, p. 25, tab. ii. figs. 29, 30: the author compares the detailed measurements of the parts of this species with those of *D. strœmii*.—*D. cinctus*, sp. n., Claus, p. 27, tab. iii. figs. 8–12.—*D. flavus*, sp. n., Claus, p. 28, tab. iii. figs. 13–16.—*D. brevicornis*, sp. n., Claus, p. 29, tab. iii. figs. 20–25.—*D. macrolabris*, sp. n., Claus, p. 29, tab. iii. figs. 26–29.—*D. longirostris*, Claus, p. 30, tab. v. figs. 17–19.—*D. thisboides*, Claus, p. 27, tab. iii. figs. 1–7.—*D. tenuicornis*, Claus, p. 28, tab. iii. figs. 17–19.

Canthocamptus parvulus, sp. n., Claus, p. 30, tab. v. figs. 1–6.—*C. setosus*, sp. n., Claus, p. 30, tab. v. figs. 7–12.

Haracticus nicænsis, sp. n., Claus, p. 31, tab. ii. figs. 12–14. This species is compared with *H. gracilis* and *H. chelifera*, from Heligoland.

Thalestris rufo-violascens, sp. n., Claus, p. 33, tab. iv. figs. 18–22.—*T. robustus*, Claus, p. 34.

Ircæus patersonii (Temp.), Claus, p. 34.

SIPHONOSTOMA.

Bomoculus belones (Burmeister), Heller, Carcin. des adriat. Meeres, l. c. p. 751, on *Belone rostrata*.

Nicothoë astaci (Edw.), Heller, p. 751, on *Astacus vulgaris*.

Caligus minutus (Otto), Heller, p. 751.—*C. diaphanus* (Nordmann), Heller, p. 752.—*C. vexator*, Heller, p. 753, on *Dentex vulgaris*.

- Caligus affinis*, sp. n., Heller, p. 752, on *Umbrina cirrhosa*.
- Elytrophora brachyptera* (Gerst.), Heller, p. 753, on *Thynnus vulgaris*.
- Perissopus dentatus* (Stnnt. & Lütken), Heller, p. 754, on *Mustelus vulgaris*.
- Cecropsina glabra*, Heller, p. 754.
- Cecrops latreillii* (Leach), Heller, p. 754, on *Thynnus vulgaris*.
- Cyenus gracilis*, Heller, p. 754, on unknown fish.
- Lernanthropus trigonocephalus*, Heller, p. 755, on *Serranus scriba*.—*L. kröyeri* (v. Beneden), Heller, p. 755, on *Labrax lupus*.
- Medesicaste triglae* (Blainv.), Heller, p. 755, on *Trigla adriatica*.
- Chondracanthus cornutus* (Müller), Heller, p. 755, on *Pleuronectes*.—*C. angustatus*, Heller, p. 756, on *Uranoscopus scaber*.—*C. merluccii* (Hotten), Heller, p. 755, on *Merluccius*, sp.—*C. gibbosus* (Kröy.), Heller, p. 756, on *Lophius piscatorius*.
- Staurosoma parasiticum* (Will.), Heller, p. 756.
- Brachiella thynni* (Cuvier), Heller, p. 756, on gills of *Thynnus vulgaris*.—*B. insidiosa*, Heller, p. 757, on gills of a *Gadus*.—*B. impudica* (Nord.), Heller, p. 757, on gills of *Trigla corax*.
- Anchorella hostilis*, Heller, p. 757, on gills of *Umbrina cirrhosa*.—*A. pagelli* (Kröy.), Heller, p. 757, on gills of *Pagellus erythrinus*.—*A. fallax*, Heller, p. 757, on gills of *Dentex vulgaris*.—*A. uncinata* (Müll.), Heller, p. 757, on gills of *Merluccius*.
- Lernaeolophus sultanus* (Nord.), Heller, p. 758, on *Serranus*.
- Lernaeonema gracilis*, Heller, p. 758, on the skin of *Lichia amia*.
- Leposiphilus*, n. g., Hesse, Ann. des Sc. Nat. t. v. p. 277. Body (entire animal) fusiform, consisting of ten segments, of which the first four form the pereion and are indistinct. Cephalon small, round, having a median eye; and beneath it is the oral aperture, which consists of a proboscoidiform organ furnished with denticulated mandibles, and supported laterally by three pairs of prehensile jaw-feet. Antennæ very small, rounded at the extremity and furnished with cilia. Pleon having the segments retractile, last segment terminating in two small appendages. Embryo oval, having three pairs of appendages. Ova agglutinated and forming a large flat mass on the dorsal surface of the pereion.—*L. labrei* ♀, n. sp., Hesse, l. c. p. 278, on the Green Wrasse, among the scales of which it secures a retreat. Length 10–12 mm., breadth 2 mm. The memoir of M. Hesse on this species likewise treats of the history of its discovery and its classification among *Lerneans*.
- Eucolomban pictus* (gen. et sp. nov.), Hesse, Ann. des Sciences Nat. t. v. p. 255. Cephalon round, without rostrum. Eyes distant. Antennæ long and slender. Pereionic segments subequal, except the first, which is nearly one-half longer than either of the succeeding. Pleon slightly narrower than the pereion, divided into six subequal segments, of which the ultimate is triangular and pointed at the caudal extremity. Internal ramus of the posterior pair of pleopoda truncate (*carrément*), denticulated, and fringed with long hairs. Pereiopoda slender, spinous, and terminated by a feeble claw. Mouth furnished with strong denticulated mandibles. Length 6 mm., breadth 3 mm. Taken in the mouth of the *Raiu batis* as well as in the sand on the shores of Brittany.—*E. ornatus*, Hesse, l. c. p. 256, taken on the body of *Raiu marginata*.
- This and the two preceding genera M. Hesse, l. c. p. 255, has tabulated in a modified arrangement of Milne-Edwards's classification of the tribe of the erratic *Cymothoidiens*.

M. Hesse, in his article (Ann. des Sciences Nat. t. vi. p. 51) numbered the ninth (but which is only the eighth, as labelled on the cover of the August number), gives his researches on the genera *Doropygus* and *Dyspontius* of M. Thorell, as well as the descriptions of four new genera of Entomostraca which inhabit simple and compound Ascidiæ. He treats first of the genus *Doropygus* (Thorell), which he divides into two groups, according to the termination of the pleon, and these again into sub-groups.

I. Pleon terminating in a rounded extremity. Appendages straight, unarmed, with or without hairs.

a. Posterior prolongation of the pereion *large*.

Doropygus curelio, Hesse, p. 54.—*D. pulcx*? (Thorell), Hesse, p. 55.—*D. propinquus*, sp. n., Hesse, p. 56.—*D. conicus*, sp. n., Hesse, p. 57, in *Cynthia microcosmus*.—*D. callipygus*, sp. n., Hesse, p. 58, in *Ascidia venosa*.—*D. deflexus*, sp. n., Hesse, p. 58, found under the cortical envelope of a zoophyte attached to the legs of *Maia squinado*.—*D. oblongus*, sp. n., Hesse, p. 59, in *Polychinium stellatum*.—*D. rotundus*, sp. n., Hesse, p. 60, in *Ascidia aspersa*.

b. Posterior prolongation of the pereion *nil*.

Doropygus verrucosus, sp. n., Hesse, p. 61, in *Ascidia venosa*.—*D. albidus*, sp. n., Hesse, p. 61, in *Ascidia intestinalis*.—*D. viridis*, sp. n., Hesse, p. 61, in *Cynthia microcosmus*.—*D. gibbosus*, sp. n., Hesse, p. 62, in *Ascidia intestinalis*.—*D. tumefactus*, sp. n., Hesse, p. 63, in a brown pustulated Ascidian attached to *Maia squinado*.

II. Extremity of the pleon terminated by a small cavity. Terminal appendages curved and sharp-pointed.

a. Posterior prolongation of the pereion *large*.

Doropygus gibber (Thorell), Hesse, p. 63, in *Ascidia canina*.

b. Posterior prolongation of the pereion *small*.

Doropygus acutus, sp. n., Hesse, p. 64, in a yellow Ascidian.—*D. reflexus*, sp. n., Hesse, p. 65, in *Ascidia venosa*.

c. Posterior prolongation of the pereion *nil*.

Doropygus macron, sp. n., Hesse, p. 66, in a green Ascidian.—*D. rufescens*, sp. n., Hesse, p. 67, in a *Eucælinus*.—*D. coceineus*, sp. n., Hesse, p. 67, in a yellow Ascidian.

Dyspontius striatus (Thorell), Hesse, p. 69, on a sponge and on *Rhodymenia palmata*.—*D. marginatus*, sp. n., Hesse, p. 71, at the base of a compound Ascidian.

Gastrodes viridis, gen. et sp. nov., Hesse, p. 73, pl. iv.* fig. B-B 4, in *Ascidia intestinalis*. Length 2 millimetres, and closely resembles *Botachus*. The cephalon is small and elongated. Basal joint of antennæ robust, supporting a cylindrical flagellum consisting of eight articuli. The frontal border of the cephalon is produced into a large rostral-like plate, which is rounded at the apex, and reaches as far as the distal extremity of the basal joint of the antennæ. The pereion consists of six somites, and gradually increases inferiorly and posteriorly, so as to form a large cavity in which the ova are lodged. The pleon is straight and cylindrical, and consists of five

* The reference to the plate, page 86, is erroneously given in the memoir as plate ii. instead of iv.

somites, of which the posterior is terminated by four small hooked spines which antagonize with each other so as to form pincers. The first pair of legs, situated at the base of the antennæ [these must be the second pair of antennæ], are long and robust, and terminate in a strong hook. These are followed by the short oral appendages and four pair of biramose appendages. Eye central, anterior, and single. Male and young unknown.

Ceratrichodes albidus, gen. et sp. nov., Hesse, p. 75, pl. iv. fig. A-A 11, in a social Ascidian. Male. Length scarcely a millimetre. Animal gradually decreasing from the cephalon to the extremity of the pereion. Cephalic buckler equal in length to the three following somites; the frontal margin is round; following the cephalon are six somites of equal length, of which the posterior is cordiform; behind this is the pleon, which consists of eight somites of subequal length, except the posterior, which is as long as the four preceding; the last somite supports a pair of long narrow flat appendages, furnished with two long and two short spines. On the inferior central margin is a small lobe that is surrounded by a projecting margin; in the centre of this is a point that is perhaps an eye, on each side of which is an antenna belonging to the first pair. They are very large, cylindrical, consisting of 7 or 8 articuli, of which the first, or basal, is the largest. At the base and beneath these antennæ are two broad flat ciliated plates [second pair of antennæ], the anterior margin of which is furnished with two or three single articuli, furnished with cilia. The oral apparatus is a little posterior to the antennæ, and the pereiopoda consist of four biramose pairs. Seen laterally the posterior somite of the pereion shows a large ovate opening on each side, of which the margins are furnished, one with two teeth, the other with one, that corresponds in position with the space between the two. These openings appear to be genital orifices, and are surrounded by a membrane which enlarges or contracts itself at need. The female is smaller than the male, and resembles it dorsally, except in the length of the pleon, which is reduced to two somites, and furnished with short stout caudal appendages.

Botryllophilus viridis, Hesse, p. 79, fig. E-E 7. The author here describes the male; the female will be found described *l. c. t. i.* 1864, found in a *Botryllus*.

Ophthalmopachus ruber, gen. et sp. nov., Hesse, t. vi. 1866, p. 80, fig. F-F 1, in a red compound Ascidian. This genus closely resembles *Biocryptes* and *Hypmodes*. The animal is robust, and gradually diminishes from the cephalon to the posterior extremity. In the male the cephalic buckler is less large and narrow anteriorly than posteriorly. The frontal border is round. The pereion consists of five nearly equal somites, followed by five other subequal somites, of which the last is the largest, and terminates in a pair of flat appendages. The eye is placed dorsally in the centre anteriorly. Antennæ very large, cylindrical, truncated at the extremity, consisting of three or four articuli furnished with flexible hairs. Immediately below the antennæ is a large flattened jaw-foot [second pair of antennæ], furnished at the extremity with rigid hairs. Pereiopoda four pairs, short, robust, biramose. Female shorter and stouter than the male.

Platythorax albidus, gen. et sp. nov., Hesse, p. 82, pl. iv. fig. D-D 1, in a brown pustulated compound Ascidian attached to *Maia squinado*. Female. Length 3 millimetres, breadth $1\frac{1}{2}$. Cephalic buckler short and rounded ante-

riorly. The first somite of the pereion is small, the next two are subequal, and the last is large and deep, equal in length to the three preceding. On each side is a transparent lobe containing the genital apparatus and intended for the reception of the ova. Pleon short and cylindrical. Antennæ short, cylindrical, consisting of 12 articuli. Cephalon small and rounded anteriorly and depressed. Perciopoda biramose, and much resembling in form and position those of *Notopterophores*.

LERNEOSIPHONOSTOMIDÆ.

Leposphilus, gen. nov., Hesse, Crust. nov. des côtes de France, Ann. des Sci. Nat. t. v. p. 277. Animal ("corps") fusiform, divided into ten distinct segments, of which four belong to the pereion and six to the pleon*. Cephalon small, having a central dorsal eye, and furnished inferiorly with a proboscisiform siphon, some denticulated maxillæ, and three pairs of prehensile maxillipeds. Antennæ very small, rounded at the extremity, and furnished with divergent hairs. Pleon retractile, the ultimate segment furnished with divergent appendages. Embryo oval, provided with three pairs of appendages. Ova agglutinate, and found in a large flat dorsal mass. Male unknown. *Leposphilus labrei*, sp. n., Hesse, p. 278, found on the Green Wrasse.

CIRRIPIEDIA.

Lepas anatifera (L.), Heller, Carcin. des adriat. Meeres, Verhand. d. zool.-bot. Gesell. Wien, p. 758.

Conchoderma gracile, sp. n., Heller, p. 758, a delicate little species, parasitic on the gills of *Maia squinado*.

Scalpellum vulgare (Leach), Heller, p. 759.

Chthamalus stellatus (Poli), Heller, p. 759.

Chelonobia testudinaria (L.), Heller, p. 759, on *Chelonia caretta*.

M. Hesse, whose industry and research are so largely adding to the history of the "Rare or new Crustacea of the Coasts of France," in his tenth article, in the Ann. des Sci. Nat. t. vi. p. 321, treats of the parasitical Cirripedes *Peltogaster* and *Sacculina*. He considers that he has discovered the male of the former genus in the character of an Isopod, and therefore asserts that *Peltogaster* belongs to that order and not to the Cirripedes. But Professor Lilljeborg has already shown (*vide* genus *Liriope*, 'Record,' 1864) that this Isopod is a parasite on *Peltogaster*, and that, while the parasite belongs to the family *Bopyridæ* among the Isopods, *Peltogaster* belongs to the Cirripedes. M. Hesse appears not to have remembered that Professor Lilljeborg, besides the male, also discovered the female parasitic on *Peltogaster*; and while the larvæ of the former were developed as those of an Isopod, those of the latter were developed on the type of the Cirripedes. To this conclusion M. Hesse's researches also add confirmation; for he both describes and figures the larvæ of *Peltogaster* upon the type of those of a Cirripede. But

* The author says "four are thoracic;" but, according to his figures, the cephalon is included in this expression.

M. Hesse says that this form is one that is common to the larvæ of all sucking Crustacea ("les pattes, qui sont, comme dans tous les embryons des Crustacés suceurs, au nombre de trois paires"). This assertion we most decidedly think is not in accordance with known facts. In the family to which M. Hesse assigns the genus *Peltogaster*, the *Bopyridæ*, this hypothesis is clearly negatived—nay, in the very genus *Cryptothiria* (*Liriope*, Rathke and Lilljeborg), to which indubitably M. Hesse's supposed male of *Peltogaster* belongs; for the larvæ of *Cryptoniscus*, *Cryptothiria*, *Entoniscus*, in which the females are almost as degraded as in *Peltogaster*, are those of true Isopoda of the Bopyroid type. We therefore think that Professor Lilljeborg's arrangement of these parasites as a suborder of Cirripedes is perfectly in accordance with our scientific knowledge of the subject.

Peltogaster paguri, female, Hesse, t. vi. pp. 327 & 359, pl. xi. figs. 15-26, (embryo) figs. 27-33.

Peltogaster paguri, male, *vide Cryptothiria*, p. 236.

Sacculina carcini (Rathke), Hesse, p. 332, pl. xii. figs. 1-24. Of this species the author describes and figures the larvæ in different progressive stages independently of the ovum.

ARACHNIDA

BY

W. S. DALLAS, F.L.S., C.M.Z.S., &c.

A. *Work in progress.*

KOCH, LUDWIG. Die Arachniden-Familie der Drassiden.
Hft. 1-6, pp. 1-304, Taf. 1-12. 8vo. Nürnberg: 1866.

Of this work, which is to be completed in eight parts, the Recorder has received six. It is a monograph of the Spiders belonging to the family *Drassidæ*, with analytical tables of the genera and species. The plates contain figures only of the epigynes and male palpi of the different species.

B. *Separate Work.*

STAVELEY, E. F. British Spiders: an Introduction to the Study of the Araneidæ of Great Britain and Ireland. 12mo.
London: Reeve, 1866, pp. xv. & 280, with 16 plates.

This is a popular history of British Spiders, derived chiefly from Blackwall's work on the same subject published by the Ray Society. As in that work, no attempt to characterize the families is made: the genera and species correspond precisely with those adopted by Blackwall; but in some of the larger genera, such as *Theridion*, *Linyphia*, *Epeira*, and others, the order of the species is changed, and the genera are broken up into sections, an arrangement which will facilitate the determination of the species. Without pretending to originality, the little book has evidently been compiled by a person acquainted with the subject; and the descriptions, with the aid of the excellent plates (which are drawn by Tuffen West), ought to enable any moderately intelligent reader to prosecute the study of our British Spiders. The Plates include coloured figures of one or more species of each genus; and two of them are devoted to a series of outline figures showing the arrangement of the eyes in the different genera. A few woodcuts are also scattered through the book, especially in the introductory portion, treating of the general structure of Spiders.

C. Papers published in Journals.

* Descriptive.

BECK, RICHARD. A short description of an *Acarus* and its agamic reproduction. Trans. Mier. Soc. Lond. vol. xiv. pp. 30-34, pl. 6 : 1866.

BLACKWALL, JOHN. A list of Spiders captured in the south-east region of Equatorial Africa, with descriptions of such species as appear to be new to arachnologists. Ann. & Mag. Nat. Hist. xviii. pp. 451-468 : December 1866.

CAPELLO, F. DE BRITO. Especies novas ou pouco conhecidas d'arachnidios d'África occidental. Jornal de Sciencias &c. da Acad. Real das Sciencias de Lisboa, vol. i. pp. 79-88, pl. 2 : November 1866.

ERBER, JOSEF. Ergebnisse der diessjährigen Reise nach Griechenland. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvi. pp. 825-828.

Contains notes on species of *Eresus*, *Androctonus*, and *Palpimanus*.

GREEFF, RICHARD. Untersuchungen über den Bau und die Naturgeschichte der Bärthierehen (*Arctiscoida*, C. A. S. Schultze). Archiv für mikrosk. Anat. ii. pp. 102-131, Tafeln 6 & 7.

Relates to the structure and natural history of the *Macrobiot*, and contains descriptions of the species of that genus.

GUÉRIN-MÉNEVILLE, —. Sur le développement de petits Acariens dans les pommes de terre. Comptes Rendus, lxiii. pp. 570-571 : October 1866. See Ann. & Mag. Nat. Hist. xix. p. 71 : January 1867.

LANDOIS, H. Eine Milbe (*Phytopus vitis*, mihi) als Ursache des Trauben-Misswachses. Zeitschr. für wissensch. Zool. xiv. pp. 353-364, taf. 30-32 : 1864.

LÖW, FRANZ. Zoologische Notizen. Erste Serie. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvi. pp. 944-945.

Notices of species of *Chelifer* and *Xysticus*.

LUCAS, H. Note sur une nouvelle espèce d'Arachnide Traehéenne (*Scotolemon querilhaci*) rencontrée dans une grotte du département du Tarn. Annales Soc. Ent. Fr. 4^e série, tome iv. pp. 213-218 : October 24, 1866.

MENGE, A. Preussische Spinnen. Erste Abtheilung. Schriften der naturforschenden Gesellschaft in Danzig, Neue Folge, Band i. 152 pp. and 28 plates : 1866.

In this first part of his most elaborate memoir on the Prussian Spiders, Menge only describes the species of the families *Epeiridae* and *Linyphiidae*, and a few of those belonging to the *eri diidae*. The species are described in great detail, and their

general habits indicated. They are all figured, with details of their structure, in the numerous plates (drawn by the author) with which the memoir is illustrated. These plates have been prepared by the process of photo-lithography. The author seems inclined to push the principles of generic division to their furthest limits. He adopts several of Koch's genera which have been discarded by other writers, and proposes many new genera founded upon the most minute sexual characters. In his introduction, the author gives a general review of the literature of arachnology, with brief remarks on the various works cited; he mentions Blackwall's 'British Spiders,' but adds that he is unacquainted with it. This bibliographical section is followed by a general description of the external and internal structure of Spiders, an account of the mode of life of these animals, and a brief notice of some of their parasites. These sections will be noticed hereafter.

NITZSCH, C. L. Beobachtungen über Vogelmilben. Zeitschrift für die gesammten Naturw. xxiii. pp. 366-371 (1864).

A posthumous publication by Giebel from Nitzsch's MSS.

PRACH, —. Monographie der Thomisiden (Krabbenspinnen) der Gegend von Prag, mit einem Anhang, das Verzeichniss der bisher in der Umgebung unserer Hauptstadt aufgefundenen Araneen enthaltend. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvi. pp. 597-638, Tafel 6.

In this posthumous memoir, which bears date December 1859, the author has described the species of the family *Thomisidæ* found within a radius of a mile and a half round Prague. He describes, in the first place, the external characters, then the anatomical structure, and, thirdly, the mode of life and development of the species of this family, and in the fourth section describes systematically the genera and species, the latter twenty-one in number, of which seven, as the author states, were new to the Austrian fauna, and one of these a new species. The plate contains figures of the palpi, and other details of species belonging to each of the genera. In an appendix to the paper, the author gives a list of all the species of Spiders found up to his day in the immediate environs of Prague.

ROBERTSON, CHARLES. Note on an undescribed species of *Acarus* found in the Pigeon (*Columba livia*). Journ. Microsc. Sci. n. s. vol. vi. pp. 201-203, cum fig. : April 1865.

SIMON, EUGÈNE. Monographie des espèces européennes du genre *Pholcus*. Ann. Soc. Ent. France, 4^e sér. tome vi. pp. 117-124, pl. 2: August 22, 1866.

———. Sur quelques Araignées d'Espagne. Ibid. pp. 281-292, pl. 4: October 24, 1866.

WILDER, BURT G. On the *Nephila plumipes*, or Silk-Spider.

Proc. Amer. Acad. Arts & Sci. vol. vii. pp. 52-57 (read Nov. 14, 1865).

† Anatomical.

CEFFINGER, HERMANN. Der feinere Bau der Spinnorgane von *Epeïra*. Eine vergleichend histologische Untersuchung. Archiv für mikrosk. Anat. Band ii. pp. 1-12, Tafel 1.

This paper contains a very elaborate description of the silk-producing glands of *Epeïra*, and of the structure of the minute tubes of the spinnerets.

GRÄFFE remarks (Verh. zool.-bot. Ges. in Wien, xvi. p. 590) upon the Arachnida of the Fiji Islands. A large species of Epeïrid occurs, forming a strong web often 30 feet or more in diameter. Fine large species of *Lycosa* and allied genera are found, and on the coast the net of a Water-Spider attached to stones in the sea. A large species of *Ixodes* lives on the pigs and among thickets, attaching itself sometimes to man and producing much pain and a persistent swelling.

ARANEIDA.

MENGE (Schr. naturf. Ges. in Danzig, Neue Folge, i. pp. 21-33) describes the external and internal structure of Spiders, the former chiefly with the view of establishing a terminology. The cephalothorax and abdomen are united by the *petiolus*; the head, or part bearing the eyes and buccal organs, is covered above by the *epicranium*; and the surface of the head is divided into face (*prosopum*), cheeks (*genæ*), forehead (*frons*), and *vertex*. The eyes require no notice. The falcæ or chelicera are denominated "claw-jaws" or mandibles (*mandibulæ unguolatae* or *mandibulæ*). The sternum bears anteriorly the clin (*mentum*), which, with the tongue, forms the lower lip (*labium*). The jointed members have 3 principal joints, a femur or *hypomerion*, a tibia or *mesomerion*, and a tarsus or *epimerion*. To these parts are added a *coxa*, a *trochanter*, and a *patella*. The maxillæ constitute the *coxæ* of the palpi, the tarsi of which in the ♂, dilated into spermatophorous organs, are described in great detail. The entire terminal segment of the ♂ palpi is denominated the club (*clava*); the membranous, usually spoon-shaped joint is the *cymbium*, its cavity is the basin (alveolus), and the various organs of transfer constitute the *stema*. This contains a spiral muscle, and consists of spirally twisted basal and apical parts (*pars basalis* and *terminalis*) to which various horny or membranous plates, teeth, hooks, or points are attached. Two of these parts are most essential, the spermophore (*spermophorum*) and the penetrant organ (*embolus*), the passage of which into the vagina of the ♀ has been observed by the author in *Tetragnatha* and *Pachygnatha*. The spermophore is membranous, usually linguliform, furnished

with small warts adapted to retain the spermatozoids; the *embolus* is horny and elastic, acicular or flagelliform. The precise offices of these parts the author has been unable to ascertain, but he seems to think it not improbable that the embolus may assist in passing the spermatozoids into the seminal pouches of the ♀. The other organs of the clavate palpus are regarded as *retinacula*. The remaining terminology proposed by the author may be passed over, except as regards the organs surrounding the genital orifice of the ♀. The opercular lobe is denominated *claustrum*, and the horn-like process which usually springs from it is the nail (*clavus*) = the *epigyne* of Savigny and Walckenaer. The genital region in the ♀ is called *sarum*.

On the parasites of Spiders Menge has the following observations (*l. c.* pp. 36–39):—Scarlet *Dermanyss* occur on many Spiders, especially of the genera *Micryphantes*, *Theridion*, and *Bolyphantes*. *Mermis albicans* has occurred on *Argyroneta aquatica*. From a specimen of *Clubiona putris* (Koch) Menge has bred *Henops marginatus* (Meig.) or *Oncodes pallipes* (Erichs.), of which the pupa and imago are described and roughly figured (*l. c.* pp. 37–38). Two other insect-larvæ, both footless and one at least probably hymenopterous, were found by the author on specimens of *Arctosa cinerea* and *Miranda adianta*, but he was unable to rear the perfect insects from them.

Menge (*l. c.* p. 40) indicates the following tribes as those into which he proposes to divide this order:—

1. *Orbitelæ*; 2. *Retiparæ* (*Retiariæ*, p. 94); 3. *Tubitelæ*; 4. *Saccicolæ*; 5. *Saltigradæ*; 6. *Laterigradæ*; 7. *Citigradæ*. The first of these groups includes the families *Epeiridæ* and *Tetragnathidæ*; the second the 3 families *Pachygnathidæ*, *Linyphiidæ*, and *Theridiidæ*.

BLACKWALL publishes (*Ann. & Mag. N. H.* 3rd ser. xviii. pp. 451–468) a list of Spiders collected in south-eastern tropical Africa, including in all 21 species, the majority of which are described as new. Of the described species (8), several are remarkable as being known only from America, such as *Orithyia williamsii* (Blackw.), *Olios leucosius* (Walck.), *Pholcus pallidus* (Blackw.), *Artema convexa* (Blackw.), and *Nephila geniculata* (Walck.). The others are the Indian *Gasteracantha frontata* (Blackw.) and the European *Epeira solers* (Walck.) and *Scytodes thoracica* (Walck.).

PRACH's list of Spiders inhabiting the vicinity of Prague (*Verli. zool.-bot. Ges. in Wien*, xvi. pp. 636–637) includes 119 species, distributed in families as follows:—*Epeirides* 20, *Theridiides* 23, *Agelenides* 6 (including *Argyroneta*), *Drassides* 10, *Pholcides* 1, *Lycosides* 18, *Thomisides* 21, *Attides* 16, and *Dysderides* 4.

MISS STAVELY calls attention to the presence of a comb-like row of teeth on the maxillæ of Spiders. She instances *Agelena labyrinthica*, *Saliciscenicus*, *Epeira callophylla*, *Tetragnatha extensa*, and two species of *Theridion*, and figures the maxilla of the *Agelena*. *Proc. Zool. Soc.* 1865, p. 673; *Ann. & Mag. N. H.* 3rd ser. xvii. p. 400.

The occurrence of a venomous black Spider at Berdiansk amongst the

wheat at harvest-time is noticed by Consul ZOHRAH in Foreign Office Commercial Reports, February 1866. See Proc. Ent. Soc. 1866, p. xiv.

SAUNDERS notices a leaf nest from New South Wales, supposed to be formed by a Spider. Proc. Ent. Soc. 1866, p. xi.

MYGALIDÆ.

LUCAS notices the third moulting of a *Mygale bicolor* in captivity. Bull. Soc. Ent. Fr. 1866, p. xlv.

LYCOSIIDÆ.

Oxyopes (Latr.) = *Sphasus* (Walck.). E. Simon (Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 289-292) characterizes this genus, and tabulates and describes the European species, namely *lineatus* (Latr.), *variegatus* (Latr.), *transalpinus* (Walck.), and a new species, *Oxyopes littoralis*, p. 287, pl. 4. fig. 13, from Carthage.

Ctenus vagus, sp. n., Blackwall, Ann. & Mag. N. H. 3rd ser. xviii. p. 451, from Tropical Africa.

Sphasus pulchellus, sp. n., Blackwall, *l. c.* p. 452, from Tropical Africa.

SALTICIDÆ.

Salticus cornutus, sp. n., Blackwall, Ann. & Mag. N. H. 3rd ser. xviii. p. 455, from Tropical Africa.

THOMISIDÆ.

PRACH, in his monograph of the *Thomisidæ* of the environs of Prague (Verh. zool.-bot. Ges. in Wien, xvi. p. 604), indicates the relations of the three genera admitted in this group by Sundevall and Walekenaer, to the six genera adopted by Koeh, and characterizes two groups in the family, namely *Cancroides* (= *Thomisus*, Walck.) and *Philodromi* (= *Philodromus* and *Sparassus*, Walck.). He tabulates the genera as follows (*l. c.* p. 605):—

- I. Two anterior pairs of legs much longer and stronger than the posterior; upper edge of head transverse, straight, and sharp (CANCROIDES, Prach).
 - A. All the eyes of nearly equal size; third pair of legs reaching but little beyond the knees of the second pair 1. *Thomisus*.
 - B. Lateral eyes of first row much larger than the intermediate ones; third pair of legs reaching nearly to apex of tibiæ of second pair.
 2. *Xysticus*.
- II. Legs differing but little in length, nearly of equal strength; upper edge of head obtuse (PHILODROMI, Prach).
 - A. Abdomen depressed, purse-shaped, or oval.
 1. Posterior row of eyes nearly straight; abdomen purse-shaped.
 3. *Artamus*.
 2. Posterior row of eyes convex anteriorly; abdomen more or less oval.
 4. *Philodromus*.
 - B. Abdomen elongate-cylindrical or ovate, and convex.
 1. Post. row of eyes strongly convex anteriorly . . . 5. *Thanatus*.
 2. Post. row of eyes strongly concave in front. . . . 6. *Sparassus*.

The number of species described is 21, namely 4 *Thomisus*, 9 *Xysticus*, 3

Artamus, 2 *Philodromus*, 1 *Tharatus*, and 2 *Sparassus*. Details are figured of the following species:—*Xysticus viaticus*, pl. 6, figs. 1, 2, & 10-12; *Sparassus virescens*, figs. 3-5, & 22-25; *Philodromus aureolus*, figs. 6 & 16-18; *Thomisus calycinus*, figs. 7-9; *Artamus levipes*, figs. 13-15; and *Thanatus trilineatus*, figs. 19-21.

Thomisus. E. Simon (Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 285-286) remarks with regard to this genus that the characters of its species pass so gradually from one to the other that its division is impossible, and indicates that *Philodroma* (Walck.) and *Monastes* (Lucas) are both to be suppressed. Of the latter, regarded as a section of *Thomisus*, he gives the characters, and describes a new species (*T. piochardi*, vide infra). The characters of *T. paradoxus* and *lapidarius* (Luc.) are also given (pp. 286-287).

F. Löw notices the occurrence of *Xysticus viaticus* (Linn.) in gossamer webs about Vienna. Verh. zool.-bot. Ges. in Wien, xvi. p. 944.

Thomisus piochardi, sp. n., E. Simon, l. c. p. 281, pl. 4, fig. 10, Granada.—*Thomisus candidus*, sp. n., Blackwall, Ann. & Mag. N. II. 3rd ser. xviii. p. 456, Tropical Africa.—*Thomisus bragantinus*, sp. n., Capello, Journ. Acad. Sci. Lisbon. i. p. 86, pl. 2, fig. 6, Braganza.

Sparassus abnormis, sp. n., Blackwall, l. c. p. 457, from Tropical Africa.

DRASSIDÆ.

Koch (Die Arachn.-Fam. der Drassiden) characterizes this family as follows:—Tarsi without accessory claws; eyes 8, in 2 or 3 rows (in the latter case 2, 4, 2); second pair of legs not longer than the rest. These characters exclude the *Agelenidæ* and *Dysderidæ*, those members of Blackwall's family *Ciniflonidæ* which have been placed by authors with the *Drassidæ*, and the genera *Sparassus* and *Argyroneta*, the latter referred to this family both by Simon and Blackwall, all of which the author considers to have nothing to do with the present family. Thus restricted, Koch's *Drassidæ* include the following genera, tabulated l. c. p. 2:—

I. Maxillæ with an excavation or transverse impression.

A. Maxillæ excavated throughout their length.

1. LATONA, g. n.

B. Maxillæ with a transverse impression.

1. A toothed plate on the hinder margin of the mandibular groove.

2. PYTHONISSA (C. Koch).

2. No toothed plate on the mandibles.

a. Median fissure wanting 3. MICARIA (Westr.).

= *Macaria* (C. Koch).

b. Median fissure present.

* Posterior row of eyes bent over and broader than the anterior.

4. DRASSUS (Walck.).

† Posterior row of eyes straight and not broader than the anterior 5. MELANOPHORA (C. Koch).

II. Maxillæ convex, without an impression.

A. Eyes in 3 rows (2, 4, 2) 6. STORENA (Walck.).

B. Eyes in 2 rows.

1. Posterior row of eyes curved, with the concavity forward.
 - a. A transverse fold on the lower surface of the abdomen.
 7. ANYPHÆNA (Sund.).
 - b. No transverse fold beneath the abdomen.
 - * Mandibles with a spine in front at the base.
 8. PHRUROLITHUS (C. Koch).
 - † Mandibles without a spine.
 - a. First pair of legs longest. 9. CHEIRACANTHIUM (C. Koch).
 - β. Fourth pair of legs longest.
 - a. Patellæ of 4 hinder legs spineless, or with only 1 spine behind.
 - ** Cephalothorax wrinkled.
 10. HYP SINOTUS, g. n.
 - †† Cephalothorax smooth.
 - aa. Labium about one-third shorter than maxillæ.
 11. CLUBIONA (Walck.).
 - ββ. Labium not more than half as long as maxillæ.
 12. LIOCRANUM.
 - b. Patellæ of 4 hinder legs spinous in front, or before and behind.
 - ** A spine in front on the patellæ.
 13. ÆGRÆCA.
 - †† A spine before and behind on the patellæ.
 14. LYCODRASSUS.
 2. Posterior row of eyes curved, with the convexity forward.
 - a. Legs without spines 15. TRACHELAS.
 - b. Legs with spines 16. ZORA (C. Koch).

Pythonissa. *Filistata femoralis* (Wider), referred by Blackwall to *Drassus lucifugus*, is again raised to specific rank by L. Koch, and said to be identical with *Pythonissa fusca* (C. Koch), *l. c.* p. 36, pl. 2. fig. 26; *Filistata maculata* (Wider) and *Drassus gnaphosus* (Walck.) = *P. nocturna* (Linn.), *l. c.* p. 37; *Clubiona fallax* (Walck.) probably = *P. lentiginosa* (Koch), *l. c.* p. 41.

Micaria. *Drassus lugubris* (Walck.) probably = *M. nitens* (C. Koch), Koch, *l. c.* p. 60; *D. micans* (Blackw.) and *Macaria formosa* (C. Koch) = *M. pulicaria* (Sund.), *l. c.* p. 62; *D. relucens* (Lat.), *Clubiona formicaria* (Sund.), and *M. fastuosa* (C. Koch) = *M. fulgens* (Walck.), *l. c.* p. 72.

Drassus. The following synonymic indications are given by L. Koch (*l. c.*):—*Filistata incerta* (Wid.) probably = *D. rubreus* (Walck.), p. 79; *D. cognatus* (Westr.) = *D. fuscus* (Lat. nec Walck.), from which *D. montanus* (Hahn) is distinct, p. 86; *D. clavator* (Cambr.) = *troglodytes* (C. Koch), p. 116; *Clubiona listeri* (Sav.) is distinct from *D. lividus* (Walck.) = *lutescens* (C. Koch), p. 120; *Filistata incerta* (Wid.) is again cited with no expression of doubt as = *D. lapidicola* (Walck.).

Melanophora. L. Koch (*l. c.*) furnishes the following synonymic indications:—*M. electa* (C. Koch) = *bicolor* (Hahn), p. 151; *M. subterraneu* (C. Koch) = *P. nigritus* (Hahn) = *Filistata atra* (Wid. vid. Latr.) = *D. ater* (Blackw.), p. 170; *Drassus ater* (Latr.) is distinct, p. 182.

Phrurolithus. *Drassus propinquus* (Blackw.) = *P. festivus* (C. Koch). L. Koch (*l. c.*) p. 229.

Clubiona virescens (Sund.) = *Cheiracanthium nutrix* (C. Koch), L. Koch,

l. c. p. 248; *C. dumetorum* (Hahn) = *C. carnifex* (Fab.) = *erratica* (Walck.), p. 258.

Philoica notata (C. Koch) is not = *Chubiona corticalis* (Walck.). L. Koch, *l. c.* p. 301.

Argyroneta aquatica. H. Coultas records the effects of the bite of this species, which produced a slight sensation of pain continued for several hours. *Entomologist*, iii. p. 84.

New species and genera :—

The species described by Koch under the new genera indicated in the above tabular analysis are as follows :—

Latona, g. n., L. Koch, *l. c.* p. 3. Sp. *L. cylindrata*, sp. n., L. Koch, *l. c.* p. 3, pl. 1. figs. 1-3, Australia.

Hypsinotus, g. n., L. Koch, *l. c.* p. 270. Known sp. *Drassus capito* (Luc.), p. 272, pl. 1. fig. 173. New sp. *H. raptor*, p. 274, pl. 11. figs. 174, 175, Mexico; *H. plumatus*, p. 276, fig. 176, New Granada; *H. bellator*, p. 278, figs. 177, 178, Bogota; *H. chalybeus*, p. 280, figs. 179-181, New Granada; *H. maculatus*, p. 283, pl. 12. fig. 182, Bogota; *H. rubripes*, p. 285, fig. 183, of unknown origin; *H. granadensis*, p. 287, fig. 184, New Granada; *H. macer*, p. 289, figs. 185, 186, Bogota.

The remaining genera, 4 of which appear to be new (*Liocranum*, *Agræca*, *Lycodrassus*, and *Trachelas*), are not treated of in the six parts of the work which have yet reached the Recorder.

Pythonissa. The following new species are described by L. Koch :—*P. muscorum*, *l. c.* p. 14, pl. 1. figs. 9, 10, Europe; *P. montana*, p. 18, fig. 11, South Germany; *P. rufida*, p. 20, figs. 12-14, Sarepta; *P. badia*, p. 22, fig. 15, Tyrol; *P. leporina*, p. 27, pl. 2. fig. 19, Transylvania; *P. helvetica*, p. 29, fig. 20, Engadine; *P. sericata*, p. 31, figs. 21, 22, Baltimore; *P. lapponum*, p. 33, figs. 23-25, Lapland; *P. molendinaria*, p. 47, figs. 34, 35, Caucasus and Dalmatia.

Micaria. L. Koch describes the following new species of this genus :—*M. cincta*, *l. c.* p. 53, pl. 3. figs. 36-38, Orsova; *M. nivosa*, p. 58, figs. 42, 43, Munich; *M. radiata*, p. 65, fig. 47, origin unknown; *M. romana*, p. 67, fig. 48, Rome.

Drassus. L. Koch describes the following new species of this genus :—*D. medius*, *l. c.* p. 82, pl. 4. fig. 56, Nuremberg, in houses; *D. viator*, p. 84, fig. 57, Europe and North Africa; *D. dalmatensis*, p. 89, fig. 59, Dalmatia; *D. hispanus*, p. 90, fig. 60, Spain; *D. scutulatus*, p. 93, fig. 61 (= *sericeus*, Wider, Walck., and C. Koch, *nec* Sund. + *lucifugus*, C. Koch, + *fuscus*, Westr.), Europe; *D. braccatus*, p. 97, fig. 63, Nuremberg; *D. tenuis*, p. 101, figs. 65, 66, Dalmatia; *D. similis*, p. 103, fig. 67, Sicily; *D. orientalis*, p. 106, pl. 5. fig. 68, Sarepta; *D. minusculus*, p. 110, fig. 70, South Europe; *D. unbratilis*, p. 113, fig. 71, Nuremberg; *D. striatus*, p. 114, fig. 72, Dalmatia; *D. lorricatus*, p. 131, figs. 82-84, Sarepta; *D. mandibularis*, p. 134, pl. 6. fig. 85, Sarepta.

Melanophora. Of this genus the following new species are described by L. Koch :—*M. caucasia*, *l. c.* p. 144, pl. 6. fig. 87, Caucasus; *M. longipes*, p. 147, figs. 88, 89, Germany; *M. conspicua*, p. 149, figs. 90-92, Dalmatia and Orsova; *M. longinqua*, p. 153, fig. 96, Sahara; *M. praticæ*, p. 155, figs. 97-99, Orsova and Dalmatia; *M. lutetiana*, p. 157, fig. 100, Paris; *M. barbata*, p. 161, figs. 101-103, South Europe and Sahara; *M. femella*, p. 176, fig. 114, Dalmatia

and Italy; *M. serotina*, p. 185, pl. 8. figs. 123-125, Germany; *M. fuscipes*, p. 189, figs. 127-129, Sicily; *M. spadix*, p. 187, fig. 126, Sahara.

Storena graeffei, L. Koch, *l. c.* p. 192, Australia.

Anyphaena. The following new species are described by L. Koch:—*A. pectorosa*, *l. c.* p. 198, pl. 8. figs. 131, 132, Baltimore; *A. keyserlingi*, p. 203, figs. 136-138, Bogota; *A. straminea*, p. 207, Bogota; *A. bogotensis*, p. 209, fig. 139, Bogota; *A. tenuis*, p. 211, pl. 9. fig. 140, St. Domingo; *A. subpallida*, p. 213, Bogota; *A. sabina*, p. 214, fig. 141, Sabina Mountains; *A. sericea*, p. 216, fig. 142, Bogota.

Pharolothus romanus, L. Koch, *l. c.* p. 225, Rome.

Cheiracanthium. Of this genus L. Koch describes as new species:—*C. auricomum*, *l. c.* p. 233, pl. 9. figs. 151, 152, Bogota; *C. meridlanum*, p. 235, fig. 153, Bogota; *C. tenuissimum*, p. 237, fig. 154, Dalmatia, Greece, and Algeria; *C. tropicum*, p. 239, fig. 155, Bogota; *C. lanipes*, p. 241, Bogota; *C. edentulum*, p. 247, fig. 157, Mauritius; *C. mildei*, p. 253, pl. 10. figs. 161-163, Tyrol, Dalmatia, and Caucasus; *C. mordax*, p. 262, pl. 11, figs. 167, 168, Upolu, Navigator's Islands; *C. scidlitzii*, p. 264, figs. 169-171, Italy; *C. insulare*, p. 268, fig. 172, Upolu.

Clubiona riparia, L. Koch, *l. c.* p. 294, pl. 12. fig. 187, Baltimore; *C. excepta*, L. Koch, *l. c.* p. 300, fig. 191, Baltimore; *C. abbotii*, L. Koch, *l. c.* p. 303, fig. 193 (North America?).

THERIDIIDÆ.

Pholcus. Eugène Simon has published (Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 117-124) a monographic revision of the European and Algerian species of this genus, in which he includes the six-eyed species (*Pholcus sex-oculatus*, Dugès) placed in the distinct genus *Rachus* by Walekenaer. He admits 8 species, namely, *P. sex-oculatus* (♂ characterized p. 119; ♂ palpus and general outline, pl. 2. figs. 8 & 9); *P. opilionoides* (Schrank) = *phalangioides* (Walck.), p. 120, figs. 1-7, details; *P. impressus* and *nemastoides* (Koch); *P. phuchii* (Scop.) = *rivulata* (Forsk.), p. 122, fig. 11, eyes; *P. barbarus* (Luc.); *P. caudatus* (L. Duf.), p. 123, figs. 12 & 13, back and side views; and 1 new sp.

Of this family, MENGE (Schr. naturf. Ges. in Danzig, Neue Folge, i.) characterizes only the genera *Ero* (Koch) and *Steatoda* (Sund.) in the published part of his memoir. Of the former genus he describes and figures *E. variegata* (Koch), p. 147, pl. 28. tab. 61, and *E. tuberculata* (De Geer), p. 149, pl. 28. tab. 62; and of *Steatoda*, *S. lunata* (Cl.), p. 150, pl. 28. tab. 63.

The female of *Artema convexa* (Blackw.) is described by Blackwall, Ann. & Mag. N. II. 3rd ser. xviii. p. 459.

Pholcus grossipalpus, sp. n., Simon, *l. c.* p. 121, pl. 2. fig. 10 (eyes and palpi), from Bar-sur-Seine.

Theridion trahax, sp. n., Blackwall, *l. c.* p. 458, from Tropical Africa.

LINYPHIIDÆ.

In this family, which he unites with the *Theridiidæ* in his Tribe *Retiariae*, and divides into the families *Pachygnathidæ* and *Linyphiidæ*, MENGE (Schr. naturf. Ges. in Danzig, Neue Folge, i.) characterizes the following known genera as including species found in the province of Prussia:—*Pachygnatha*

(Sund.), *Linyphia* (Walck.), *Bolyphantes* (Koch), and *Tapinopa* (Westr.). He also characterizes 6 new genera. The known species described and figured as belonging to the above genera are:—*Pachygnatha clevekkii* (Sund.), p. 95, pl. 16. tab. 28; *P. listeri* (Sund.), p. 96, pl. 16. tab. 29; *P. degeeri* (Sund.), p. 98, pl. 16. tab. 30; *LINYPHIA montana* (Cl.)=*resipina* (Wider &c.), p. 104, pl. 18. tab. 33; *L. clathrata* (Sund.)=*multiguttata* (Wider), p. 107, pl. 18. tab. 34; *L. hortensis* (Sund.)=*frutetorum* (Koch), p. 108; pl. 18. tab. 35; *L. pusilla* (Sund.)=*pratensis* (Wid.), p. 109, pl. 19. tab. 36; *BOLYPHANTES alticeps* (Sund.)=*alpestris* (Koch), p. 134, pl. 25. tab. 55; *B. stramineus* (Koch) = *L. index* (Thor.), p. 136, pl. 25. tab. 56; *B. fronsatus* (Wid.), p. 137, pl. 26. tab. 57; and *TAPINOPA longidens* (Wid.), p. 143, pl. 27. tab. 60. Other known species are cited as belonging to new genera, the total number of Prussian species described by the author being 33.

Argyrodes, g. n., E. Simon, Ann. Soc. Ent. Fr. 4^e sér. tome vi: p. 281. Eyes 8; 4 in a square in the middle, borne in the male by a large tubercle; lateral eyes small, connivent; abdomen very high; basal joint of footjaws narrow and long, with its sides parallel and not inclined upon the lip; genital joint in ♂ oval, style not prominent; 3rd pair of legs very short. Sp. *Linyphia zonata* and *argyrodes* (Walck.), *parasita*, *inavrata*, and *viridis* (Vinson), *Argyrodes epeira*, sp. n., Simon, l. c. p. 282, pl. 4. figs. 1-9 (with details), from Malaga, parasitic in the webs of *Epeira opuntia*.

Bathyphantes, g. n., Menge, l. c. p. 111. Allied to *Linyphia*; ♂ palpi with a hook-like, articulate process at base of cymbium. Known sp.:—*I. terricola* (Koch), p. 112, pl. 19. tab. 38; *Theridium pygmaeum* (Sund.) = *L. arcuata* (Thorell), p. 114, pl. 20. tab. 40; *Theridium comatum* (Wid.), p. 118, pl. 21. tab. 43; *Lin. angulipalpus* (Westr.), p. 119, pl. 21. tab. 44. New sp.:—*B. zebrius*, Menge, l. c. p. 113, pl. 20. tab. 39, *B. crucifer*, Menge, l. c. p. 115, pl. 20. tab. 41, *B. longipes*, Menge, l. c. p. 116, pl. 21. tab. 42, *B. inermis*, Menge, in expl. of plate (= *B. pallescens*, p. 120), pl. 22. tab. 45, *B. cristatus*, Menge, l. c. p. 121, pl. 22. tab. 46, *B. brevipalpus*, Menge, l. c. p. 122, pl. 22. tab. 47, and *B. setipalpus*, Menge, l. c. p. 124, pl. 23. tab. 48, Prussia.

*Pedina**, g. n., Menge, l. c. p. 125. Allied to preceding; ♂ palpi with a linguliform spermophore, and a long, filiform, bent, penetrant organ; genital opercular apparatus in ♀ consisting of a triangular process of skin and beneath a small rounded plate and a longish clavus. Sp. *P. cristata*, sp. n., Menge, l. c. p. 125, pl. 23. tab. 49, Prussia.

Helophora†, g. n., Menge, l. c. p. 126. Allied to preceding; spermophore short, filamentous at the end, subsidiary penetrant organ horny, curved, angulate in the middle, laminar and denticulate at apex; clavus of operculum in ♀ long, bacilliform, emarginate at apex. Sp. *Linyphia pallescens* (Westr.), p. 127, pl. 23. tab. 50.

Stylophora, g. n., Menge, l. c. p. 128. Allied to *Bathyphantes*; frontal eyes smaller and closer together than those of the vertex; ♂ palpal organs much developed, spermophore lanceolate, penetrant organ long, cylindrical, curved at the end, accompanied by styliform supplementary organs; ♀ with 2 seminal pouches and a long style. Sp. *Theridium concolor* (Wid.), p. 128, pl. 24. tab. 51, and *P. albomaculata*, sp. n., Menge, l. c. pl. 130, pl. 24. tab. 52, Prussia.

* Previously employed for a genus of *Echinoidea*.

† Too near *Helophorus* to be admissible.

Lepthyphantes, g. n., Menge, *l. c.* p. 131. Allied to *Bathyphantes*; ♀ clavus styliform, 4 times geniculate; ♂ spermophore styliform at base, foliaceous at apex. Sp. *Aranea crypticola* (Walck.), p. 133, pl. 25. tab. 54; and *L. muscicola*, sp. n., Menge, *l. c.* p. 131, pl. 24. tab. 53, Prussia.

Stemonyphantes, g. n., Menge, *l. c.* p. 138. Allied to *Bolyphantes*; ♂ penetrant organ filiform, spermophore elongato-triangular; ♀ with 2 elongato, sacciform seminal pouches; frontal eyes smaller than those of the vertex, but at the same distance apart. Sp. *Aranea trilineata* (Linn.) = *T. reticulatum* (Hahn) = *L. bucculenta* (Westr.), p. 139, pl. 26. tab. 58.

Drapetisca, g. n., Menge, *l. c.* p. 140. Allied to *Bolyphantes*; ♂ penetrant organ linear, spermophore broad, membranous, with a long process; ♀ with a soft, triangular, wrinkled opercular process, bearing a long style rounded at apex. Sp. *Linyphia socialis* (Sund.) = *tigrina* (Wid.), p. 141, pl. 27. tab. 59.

Linyphia macrognatha, Menge, *l. c.* p. 101, pl. 17. tab. 31, *L. micrognatha*, Menge, *l. c.* p. 103, pl. 17. tab. 32, *L. scalariferu*, Menge, *l. c.* p. 110, pl. 19. tab. 37, Prussia.

Linyphia lepida, sp. n., Blackwall, Ann. & Mag. N. H. 3rd ser. xviii. p. 460, from Tropical Africa.

EPEIRIDÆ.

In this family (which he divides into *Epeiride* and *Tetragnathide*) MENGE (Schr. naturf. Ges. in Danzig, Neue Folge, i.) characterizes the following genera:—*Epeira* (Walck.), *Singa*, *Zilla*, *Zygia*, *Miranda*, and *Meta* (Koch), and *Tetragnatha* (Walck.), besides 2 new genera, as including species found in the province of Prussia. Of these genera he describes and figures the following known species:—EPEIRA *diademata* (Clerck) = *diadema* (auct.), p. 42, pl. 1; *E. angulata* (Cl.), p. 47, pl. 2; *E. pyramidata* (Cl.) = *scalaris* (Walck.), p. 50, pl. 3; *E. marmorea* (Cl.), p. 51, pl. 4; *E. quadrata* (Cl.), p. 53, pl. 5; *E. umbratica* (Cl.), p. 55, pl. 6; *E. scolopetaria* (Cl.) = *sericata* (Koch), p. 57, pl. 7; *E. cornuta* (Cl.) = *apochisa* (Walck.), p. 58, pl. 8. tab. 8; *E. patagiata* (Cl.), p. 60, pl. 8. tab. 9; *E. lutea* (Koch), p. 61, pl. 9. tab. 10 (of which *E. bohémica* (Koch) ♂ is the male, the ♀ *E. bohémica* being probably a var. of *E. quadrata*); *E. solers* (Walck.), p. 63, pl. 9. tab. 11; *E. agalena* (Walck.), p. 65, pl. 10. tab. 12; *E. bicornis* (Walck.), p. 66, pl. 10. tab. 13; MIRANDA *cucurbitina* (Cl.), p. 68, pl. 10. tab. 14; *M. adianta* (Walck.), p. 69, pl. 11. tab. 15; *M. acalypha* (Walck.), p. 71, pl. 11. tab. 16; *M. ceropegia* (Walck.), p. 72, pl. 11. tab. 17 (♀); ZILLA *callophylla* (Koch), p. 78, pl. 12. tab. 19; ZYGIA *atraca* (Koch), p. 78, pl. 12. tab. 20; SINGA *hamata* (Cl.), p. 82, pl. 13. tab. 22; *S. herii* (Hahn) = *Phrurolithus trifasciatus* (Koch), p. 84, pl. 13. tab. 23 A-I; *S. albivittata* (Westr.), p. 84, pl. 13. tab. 23 K; *S. nigrifrons* (Koch), p. 85, pl. 13. tab. 23 L-N; META *segmentata* (Cl.) = *inclinata* (Walck.), p. 86, pl. 14. tab. 24; *M. muraria* (Koch), p. 88, pl. 14. tab. 25; TETRAGNATHA *extensa* (Linn.), p. 90, pl. 15. tab. 26; *T. obtusa* (Koch), p. 93, pl. 15. tab. 27. The total number of species described is 29.

Epeira decens, sp. n., Blackwall, Ann. & Mag. N. H. 3rd ser. xviii. p. 461, and *E. dorsuosa*, sp. n., Blackw. *l. c.* p. 462, from Tropical Africa.—*Epeira angolensis*, sp. n., Capello, Journ. Acad. Sci. Lisb. i. p. 79, pl. 2. fig. 4, Rio Quilo.

Eresus ctenoides (= *ctenizoides*, Koch). The habits of this species, as observed by him in Syria, are described by Erber (Verh. zool.-bot. Ges. in Wien, xvi. pp. 826-827). It is a very powerful species, and readily kills large insects, such as *Decticus verrucivorus* and even *Lucanus cervus*. The cocoon of

a Pompilido (*Ferreola distincta*, Smith?) was almost constantly found in its web. The webs are also haunted by *Palpmanus hæmatinus* (Koch) = *Chersis gibbulus* (Duf.), which probably attacks and sucks the juices of the large ♀ *Eresus*. Erber found it firmly attached to the abdomen of the latter in two instances.

Eresus africanus, sp. n., Blackwall, *l. c.* p. 453, from Tropical Africa.

Argyopes sericea (Sav.). Capello (Jorn. Acad. Sci. Lisbon. i. pp. 80-82) discusses the characters of various forms of *Argyopes* received by him from West Africa and the Cape Verde Islands, as compared with Portuguese specimens, and comes to the conclusion that they all constitute varieties of the above species. He admits two primary varieties, namely, var. A. *Cabo-verdiana* (from the Cape Verde and Bissau) = *A. clarkii* (Blackw.), *A. splendidus* (Sav.), *Epeira splendida* (Walck.); and var. B. *Zairiensis* (from the Niger and the Zambesi) = *A. caudatus* (Blackw.). The species is figured with the abdomen in various forms, pl. 2. fig. 1.

Argyopes flavipalpis (Luc.). Capello (*l. c.* pp. 83-84) describes some specimens which he refers to this species, and figures the young and adult females, pl. 2. fig. 2.

Argyopes gracilis, sp. n., Blackwall, *l. c.* p. 464, from Tropical Africa.

Nephila aubryi (Luc.) = *N. grayii* (Blackw.) =? *N. keyserlingii* (Blackw.). See Capello, *l. c.* pp. 85-86, pl. 2. fig. 3.

Eurysoma vicina, sp. n., Blackwall, *l. c.* p. 465, from Tropical Africa.

Tetragnatha festiva, sp. n., Blackwall, *l. c.* p. 467, Tropical Africa.—*Tetragnatha cabinda*, sp. n., Capello, *l. c.* p. 86, pl. 2. fig. 5, Cabinda.

Nephila plumipes. B. G. Wilder describes this species and its habits (Proc. Amer. Acad. vii. pp. 52-57). It produces a large, strong, yellow, geometric web, consisting chiefly of golden-yellow silk, but with portions of silver-white threads at intervals. The materials for these differently coloured threads, he says, are furnished by different spinnerets; and he describes his experiments in winding the silk from the body of the spider, which he thinks may lead to a new source of silk. See also Proc. Bost. Soc. Nat. Hist. x. pp. 200-210.

Cyclosa, g. n., Menge, *l. c.* p. 73. Allied to *Epeira*; forehead projecting in front; frontal eyes larger than the rest; club of ♂ palpi with an elongated, curved, obliquely truncated process at its base, and a tongue-shaped spermatophore with a whip-like penetrant organ at its extremity; clavus of genital operculum in ♀ lanceolate. Sp. *Aranea conica* (De G.), p. 74, pl. 12. tab. 18.

Cerceis, g. n., Menge, *l. c.* p. 80. Allied to *Singa*; digital joint of ♂ palpi with a short hooked process; basal joint of palpal organs with a short tooth with 2 awl-shaped points, its last joint with an awl-shaped penetrant organ and a boat-like, curved spermatophore; genital operculum in ♀ with a semicircular clavus. Sp. *Singa prominens* (Sund., Westr.), p. 80, pl. 13. tab. 21.

PEDIPALPI.

Androctonus peloponensis. The habits of this species, and especially the effects of its sting upon various animals, are briefly referred to by Erber, Verh. zool.-bot. Ges. in Wien, xvi. p. 827.

ADELARTHIROSOMATA.

PHALANGIDÆ.

LUCAS notices the discovery by Lespès in the cave of L'Herm, near Foix, of an Arachnide remarkable for the great development of its chelicera and the peculiar formation of the last joints of these organs. He proposes to describe it as forming a new genus under the name of *Lhermia spinipes*. Bull. Soc. Ent. Fr. 1866, p. xliv.

Scotolemon querillaci, sp. n., Lucas, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 216, pl. 3. fig. 1, from caverns in the department of the Tarn.

CHELIFERIDÆ.

F. LÖW notices his having found 2 specimens of *Chelifer wideri* (Koch) adhering symmetrically to the hind legs of a *Ulidia erythropthalma* (Fall.). One of them repeatedly resumed its position on the legs of the fly after being partially narcotized with ether. Verh. zool.-bot. Ges. in Wien, xvi. p. 944.

The occurrence of 6 and 8 *Chelifers* upon house-flies is noticed by S. STEVENS. Proc. Ent. Soc. 1866, p. xxvii.

ACARINA.

GIEBEL has published (Zeitschr. ges. Naturw. xxiii. pp. 366-371) Nitzsch's manuscript observations on the Acarina infesting the feathers of certain birds. The notices indicate the general characters of the parasites and the special mode of their occurrence, but none of the species are named. The number of species of birds referred to is 24, scattered through all orders.

C. ROBERTSON has described a minute parasitic species of this order found by him in the veins and other parts of the circulatory system of the pigeon. In general form the species somewhat resembles the parasite found by Montagu in the cellular tissue of the gannet, and named by him *Cellularia bassani*. Journ. Micr. Sci. n. s. vi. pp. 201-203, cum. figg.

BECK records the occurrence of an Acaride, probably a *Cheyletus*, which produces eggs agamically. He obtained three generations in about five months; all the individuals produced were females. Trans. Micr. Soc. Lond. xiv. pp. 30-34, pl. 6; also Zoologist, 1866, pp. 236-240.

EHRNBERG notices the occurrence of mites (*Tyroglyphus domesticus*) in abundance within vessels containing the strongest acetic acid. Sitzungsber. Ges. naturf. Freunde zu Berlin, February 16, 1864.

Hydrachna globosa. Lucas mentions the occurrence of pupæ of this species in considerable numbers attached to the abdomen of *Dyticus marginalis* beneath the wings. The beetles were taken near Metz, and as many as 12 of the *Hydrachnæ* were found attached to a single beetle. Bull. Soc. Ent. Fr. 1866, p. x.

Phytopus vitis, sp. n., H. Landois, Zeitschr. für wiss. Zool. xiv. p. 353, taf. 30-32, causing a peculiar deformity of the leaves of the vine.

TARDIGRADA.

R. GREEFF (Arch. mikrosk. Anat. ii. pp. 102-131) publishes an elaborate memoir upon the animals of the genus *Macrobiotus*, preceded by an historical summary of our knowledge of the Tar-

digrada in general. He characterizes the genus and the previously described species, *M. hufelandii* (C. A. Schultze), *M. oberhäuseri* (Doy.), and *M. macronyx* (Duj.), and also describes and figures 2 new species. The author discusses the subject of the revivification of the *Macrobieti* after desiccation, disposes of Ehrenberg's objections, and describes the natural history and anatomical structure of the animals.

The two plates (taf. 6 & 7) contain, besides detailed figures of the 2 new species:—illustrations of the anatomical structure &c. of the known species, such as feet and claws of *M. hufelandii*, *macronyx*, and *oberhäuseri*, figs. 3–5; œsophageal apparatus of *M. hufelandii* and *oberhäuseri*, figs. 6, 7; spermatozooids of *M. hufelandii*, fig. 10; egg of *M. oberhäuseri*, fig. 12; terminations of nerves among epithelium of skin, fig. 14; œsophageal ring and brain and blood-corpuscles of *M. hufelandii*, figs. 15–17.

Macrobotus schultzei, sp. n., Greeff, Arch. mikr. Anat. ii. p. 117, taf. 6. fig. 1, and anatomical details, figs. 3, 8, & 9, and egg, taf. 7. fig. 10; and *M. tetradactylus*, sp. n., Greeff, *l. c.* p. 119, taf. 6. fig. 2, claws, and taf. 7. fig. 13, cast skin with 4 eggs. Both in moss &c. on rocks, walls, and roofs.

MYRIOPODA

BY

W. S. DALLAS, F.L.S., C.M.Z.S., &c.

- BERGSÖE, V., and MEINERT, P. Danmarks Geophiler. Naturhistorisk Tidsskrift, 3rd ser. vol. pp. .
A monograph of the Danish species of *Geophilidæ*.
- LUBBOCK, Sir JOHN. On *Pauropus*, a new type of Centipede. Journ. Linn. Soc. vol. ix. pp. 179-180; January 30, 1867.
- MOTSCHULSKY, V. DE. See INSECTA.
- WOOD, H. C. New *Polyzoniidæ*, Gervais. Proc. Acad. Nat. Sei. Philad. 1865, pp. 172-173.
The species described belong to the *Glomeridæ*.

Both groups of the Myriopoda are represented in the Fiji Islands according to Gräffe (Verh. zool.-bot. Ges. in Wien, xvi. p. 589), and of both some very large forms occur. One *Geophilus* is luminous at night. A large Julide (*Spirobolus colubrinus*, Koch), which occurs only in one island, secretes a very abundant acrid fluid, which causes it to be dreaded by the natives.

CHILOPODA.

SCOLOPENDRIDÆ.

Scolopendra pentagramma, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. part i. p. 200, from Japan.

GEOPHILIDÆ.

BERGSÖE and MEINERT have published (Naturhist. Tidsskr. 3rd ser. vol. pp.) a monograph of the Danish species of this family. They describe the general structural characters of the family, of which they give the following Latin diagnosis:—
“Fam. Geophili: segmenta numerosa, inter se æqualia. Pedes breves, tarsi integris. Antennæ 14-articulatæ. Oculi nulli.”

The authors admit the following genera among the Danish *Geophilidæ*:—

1. *Geophilus* (= *Mecistocephalus* and *Arthronomalus*, Newp.). Sp. *G. ferrugineus* (Koch), *G. electricus* (Linn.), *G. longicornis* (Leach), *G. proximus* (Koch), and *G. truncorum*, sp. n., Bergsöe & Meinert, *l. c.* p. 14.

2. *Snipæus*, g. n.; Bergsöe & Meinert, *l. c.* p. 15. Body subdepressed, slightly attenuated before and behind; labrum free, divided, lacinated or denticulated in the middle, lacinated at the sides; mandibles with a long,

multidentate point; first pair of maxillæ with 2 membranaceous processes; claw of second pair of maxillary feet with tooth very small or 0; antennæ subfiliform, rather short, densely pilose. Sp. *S. foveolatus*, sp. n., Bergs. & Mein. *l. c.* p. 16 (= *G. humuli*, Newp. ?), and *S. sodalis*, sp. n., Bergs. & Mein. *l. c.* p. 17.

3. *Scolioplanes*, g. n., Bergsöe & Meinert, *l. c.* p. 18 (= *Linotenia* and *Stenotenia*, Koch). Body more or less fusiform; labrum free, entire, crenulated in the middle; mandibles with a long, multidentate point; first pair of maxillæ without processes; claw of second pair of maxillary feet with a strong basal tooth; antennæ filiform, short. Sp. *Geophilus maritimus* (Leach), *G. acuminatus* (Leach), and *G. (Linotenia) crassipes* (Koch).

4. *Schendyla*, g. n., Bergsöe & Meinert, *l. c.* p. 23. Body fusiform; labrum nearly united to the clypeus, dentate in the middle; mandibles with a short, paucidentate point; first pair of maxillæ without processes; claw of second pair of maxillary feet with a large basal tooth; antennæ filiform, rather long; anal feet much incrassated in both sexes. Sp. *G. (Linotenia) nemorensis* (Koch).

5. *Himantarium* (Koch). Sp. *G. subterraneus* (Leach).

Parfitt (Zoologist, 1865, p. 7) announces his rediscovery of *Geophilus maritimus* (Leach) at Plymouth under stones on the shore.

Arthronomalus crassicornis, sp. n., Parfitt, Zoologist, 1866, p. 7, under bark at Exeter.

CHILOGNATHA.

GLOMERIDÆ.

Oligaspis, g. n., Wood, Proc. Acad. Nat. Sci. Phil. 1865, p. 173. Allied to *Zephronia*; segments of body 9; antennæ very short, 5-jointed; eyes aggregated.—Sp. *O. puncticeps*, sp. n., Wood, *l. c.* p. 173, from Port Natal.

Glomeris bicolor, Wood, *l. c.* p. 172, Hongkong. With only 12 eyes.

POLYDESMIDÆ.

Strongylosoma carinulata, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. part i. p. 200, Japan.

PAUROPIDÆ.

Pauropus, g. n., Lubbock, Journ. Linn. Soc. ix. p. 179. Antennæ of 5 joints, bifid at apex, and bearing 3 long, jointed appendages; body of 10 segments, convex, with scattered hairs; legs 9 pairs. This genus includes two minute species, which are regarded by Lubbock as uniting the two orders of Myriopods, and also serving to ally them with the rest of the Arthropoda. The legs are equidistant, and last pair elongated; the mouth consists of 2 pairs of minute organs; and between the legs of the second pair there are two processes, which probably belong to the generative organs.

Sir J. Lubbock also notices this new Myriopod, in Proc. Ent. Soc. 1866, p. xxxii.

INSECTA

BY

W. S. DALLAS, F.L.S., C.M.Z.S., M.E.S.

A. *Works in progress.*

GERSTÄCKER, A. Dr. H. G. Bronn's Klassen und Ordnungen des Thier-Reichs, wissenschaftlich dargestellt in Wort und Bild. Band v., Gliederfüssler: Arthropoda. Lieferungen 1 & 2. Leipzig, 1866.

Dr. Gerstäcker has undertaken the treatment of the Arthropoda, in the continuation of the admirable work on general zoology commenced by the late Professor H. G. Bronn. The two parts published last year are devoted to the general characters of the Arthropoda; and from the mode in which the author has executed this portion of his task, we may feel confident that his work will stand worthily in the same rank with the excellent treatises of Bronn on the Protozoa, Radiata, and Mollusca.

L'ABELLE. Mémoires d'Entomologie, par S. A. de Marseul, avec la collaboration de plusieurs membres distingués de la Société Entomologique de France. Tome iii. livr. 1-6, and tome iv. livr. 1-3. 12mo.

Six parts (tome iii.) of this most chaotic periodical bear the date of 1866; but a seventh part, the first of tome iv. belonging to 1867, appears to have been published on 30th November 1866. Any attempt to quote the papers contained in this work in the volumes as they will ultimately stand seems to be hopeless, as the editor announces his intention of closing the volumes at his own convenience, that is to say, as the memoirs are concluded. In the 'Record' for 1865 the writer inferred from the period of its commencement that De Marseul's paper on the European *Buprestidæ* would form the third volume; but having been brought to a conclusion before any of the other memoirs, the editor has made it into the second volume, so that all the quotations in last year's 'Record' will have to be reversed as regards the numbers of the volumes. The contents of the seven livraisons of last year are all coleopterological; they embrace the conclusion of the monograph of the *Buprestidæ*, the continuation of that of the *Gallerucides*, and the commencement of a

monograph of the *Alticides* by Allard. A great part of livr. 5, and nearly all livr. 6, is occupied by a catalogue of European Coleoptera, which is also published separately.

VOLLENHOVEN, S. C. SNELLEN VAN. Essai d'une Faune Entomologique de l'Archipel Indo-Néerlandais. See LEPIDOPTERA.

B. *Papers published in Journals.*

* *Descriptive &c.*

BELKE, GUSTAVE. Notice sur l'histoire naturelle du district de Radomysl (Gouvernement de Kief). Bull. Soc. Nat. de Moscou, tome xxxix. 1. pp. 491-526.

This constitutes the second part of an elaborate memoir on the natural history of the district of Radomysl, of which the first part, including a general description of the district and a list of the plants indigenous to it, appeared in an earlier portion of the same volume (xxxix. 1. p. 214). This second part contains a systematic list of the animals inhabiting the district; the Insects occupy pp. 497-523.

DANA, J. D. On Cephalization. No. IV. Explanations drawn out by the statements of an Objector. Silliman's Amer. Journal, 2nd series, vol. xli. pp. 163-174.

In reply to Walsh's paper. See 'Record,' 1864.

DESMAREST, E. Paroles prononcées sur la tombe de M. Rouget, le 30 Décembre 1865. Annales Soc. Ent. Fr. 4^e sér. tome vi. pp. 135-138.

Contains a sketch of the life of Rouget, with a list of his published papers.

DOHRN, C. A. Antiloeale Bedenken. Stettiner entom. Zeitung, 1866, pp. 315-319.

A discussion of the relative advantages of the general or local study of entomology; decided against the latter.

——. Ueber entomogripische Aberrationen. Stettiner entom. Zeitung, 1866, pp. 364-368.

An amusing dissertation on the morality of insect-collectors.

——. Necrolog (von Heyden). Stettiner entom. Zeitung, 1866, pp. 212-213.

DOHRN, H. Reise. Stett. entom. Zeitung, 1866, pp. 302-309. (Schluss.)

The conclusion of Dr. Heinrich Dohrn's general account of his travels in the Cape de Verde Islands (see 'Record' 1865, p. 384). It contains little of entomological interest.

EUDES-DESLONGCHAMPS, —. Notes sur les Sphæria qui se développent sur les Chenilles. Bull. Soc. Linn. de Normandie, tome x. pp. 30-36. (See under LEPIDOPTERA.)

FRAUENFELD, GEORG VON. Zoologische Miscellen. X. Verhandl. zool.-bot. Gesellsch. in Wien, Band. xvi. pp. 961-981.

Notices principally on the natural history of various species of Coleoptera (chiefly *Curculionidæ*), Diptera, Rhynchota (*Psylla*), and Lepidoptera. A few new species are described.

— Ueber die bisher eingelangten diessjährigen Berichte von landwirthschaftlichen Insektenschäden. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvi. pp. 641-646.

Notices of insects injurious to agriculture observed in Austria.

GIRAUD, J. Mémoire sur les Insectes qui habitent les tiges sèches de la Roncc. Ann. Soc. Ent. de France, 4^e sér. tome vi. pp. 443-500: Dec. 31, 1866 (read June 27, 1866).

This paper, which is an amplification of that by L. Dufour and Perris, relates chiefly to the Hymenopterous Insects which select dry bramble-sticks as their dwelling-place, and to the parasites belonging to the same order which live at the expense of the former. Two or three species of Coleoptera (*Zonites mutica*, *Malachius bipustulatus*, *Dasytes flavipes* and *D. ceruleus*) are also referred to.

GRÄFFE, ED. Notizen über die Fauna der Viti-Inseln, eingesandt als vorläufiger Bericht über die zweite im Auftrage der Herren J. C. Godeffroy und Sohn in Hamburg dahin unternommene Explorationsreise. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvi. pp. 585-596.

The Insecta occupy pp. 588 & 589; and J. D. E. Schmeltz adds some notes on p. 593.

GRENIER, DR. Paroles prononcées sur la tombe de M. Achille Deyrolle, le 2 Janvier 1866. Annales Soc. Ent. Fr. 4^e sér. tome vi. pp. 132-134.

HAGEN, H. Ueber Léon Dufour. Stett. entom. Zeitung, 1866, pp. 57-63.

In this notice Hagen discusses the nature and qualities of the work done by Léon Dufour.

HENSCHKE, A. Bericht über die Bernsteinsammlung der königl. physik.-ökon. Gesellschaft. Schriften der königl. phys.-ökon. Gesellsch. zu Königsberg Jahrg. vi. pp. 210-215.

From this report it appears that Königsberg possesses an enormously rich collection of Insects and other objects preserved in amber; the total number appears to be about 9800, of which about 8300 are insect-remains. The author gives a list of the families of Coleoptera represented in the collection, with the number of species belonging to each.

KRAATZ, G. Necrolog. Carl Heinrich von Heyden. Berliner entom. Zeitschrift, 1866, pp. 305-316.

Contains a life of Von Heyden, with a list of his writings.

LÖW, FRANZ. Zoologische Notizen. Erster Seric. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvi. pp. 945-956.

Contains notices of species of Insects belonging to various orders.

LUBBOCK, SIR JOHN. 'On the Metamorphoses of Insects. (Proc. Royal Instit.) Ann. & Mag. Nat. Hist. 3rd ser. vol. xvii. pp. 375-381.

MOTSCHULSKY, V. DE. Catalogue des Insectes reçus du Japon. Bull. Soc. Nat. de Moscou, tome xxxix. part 1. pp. 162-200.

This paper includes a list of Insects of all orders collected in Japan by Madame Gaskevitch, with descriptions of new species.

MÜLLER, ALBERT. A Glance at a few Facts connected with Alpine Entomology. Zoologist, 1866, pp. 273-279.

PACKARD, A. S. On certain Entomological Speculations. A Review. Proc. Ent. Soc. Philad. vol. vi. pp. 209-218.

In this paper the author notices a paper by Walsh, "On certain Entomological Speculations of the New-England School of Naturalists" (see 'Record,' 1864, p. 332). He maintains the analogy of the larvæ and the pupæ of insects to the adult forms of worms and crustacea, and urges especially that the change from the form of the larva to that of the pupa and thence to the perfect insect is a gradual one, and not brought about "by suddenly moulting their skeletons," as stated by Walsh. Packard refers especially to the metamorphosis of the *Cecidomyia*, and maintains the correctness of the statements of Harris and Fitch, and the justice of the conclusions drawn from them. In the conclusion of the paper, the author remarks upon some resemblances of a mimetic nature and upon the general question of aberrant forms. The latter, he holds, "show a constant tendency to assume the forms of the higher groups, or, if degraded in a marked degree, revert to the archetypal articulate form."

PHILIPPI, R. A. Einige Insekten von Chile. Stettiner entom. Zeitung, 1866, pp. 109-117, taf. ii.

This, which is the first part only of a paper on Chilian Insects, contains descriptions of several new species and genera of various orders.

RONDANI, CAMILLO. Note Entomologiche. Archiv. Zool., Anat. &c. vol. iv. pp. 189-196, tav. 7: April 1866.

Notes on the Hymenopterous parasites of *Cecidomyia frumentaria*, and on the Italian species of *Triphæna*.

SICHEL, J. Considérations sur la fixation des limites entre l'espèce et la variété, tirées principalement de l'étude de

l'ordre des Insectes hyménoptères. Comptes Rendus, tome lxii, pp. 167-168 : January 1866.

In this paper the author merely lays down a few propositions, which he treats as axioms, upon the characters of species and the causes of variation, coming finally to the conclusion that "the species is immutable, but may become infinitely modified, as varieties, under the influence of climate, of the geological constitution of the soil, of other external agents, and of hybridization."

SIEBKE, H. Entomologiske Undersøgelser i Aarene 1864 og 1865. Christiania, 1866, pp. 48.

This pamphlet, which includes two papers, evidently reprinted from the 'Nyt Magazin for Naturvidenskabernes,' gives an account of two entomological journeys in Norway in the summers of 1864 & 1865. The second paper includes a long list of Diptera taken in the neighbourhood of the Christiania fjord.

STAUDINGER, O. Einige Worte über den verstorbenen O. Gruner in Leipzig. Stettin. entom. Zeitung, 1866, pp. 310-311.

WALSH, B. D. Prof. Dana and his Entomological speculations. Proc. Entom. Soc. Philad. vol. vi. pp. 116-121.

Contains a reply to some observations by Dana on the author's objections to the principle of "cephalization," as applied to the classification of insects.

——. On Phytophagic varieties and Phytophagic species, with remarks on the unity of Coloration in Insects. Proc. Entom. Soc. Philad. vol. v. pp. 194-216.

In this memoir Walsh argues further in support of his views on the origin of species and races by phytophagic isolation (see 'Reeord,' 1864, p. 332). He refers to:—*Datana ministra* (Drury) with its varieties, as he considers them, *D. contracta* (Walk.) and *D. conspicua* (Grote & Rob.); *Halesidota tessellaris* (Abb. & Sm.) = *antiphola* (Walsh), and *H. harrisii* (Walsh) = *tessellaris* (Havr.), which he regards as 2 phytophagic species; *Arhopalus (Clytus) pictus* (Drury) and *robinia* (Forst.), to which he now adds *A. infaustus* (Lee.); *Callidium antennatum* (Newm.) = *violaceum*? and *C. ianthinum* (Lcc.); *Conotrachelus nenuphar* (Herbst), of which a large form occurs on the Butter-nut and Walnut; *Doryphora 10-lineata* (Say) and *D. juncta* (Germ.). In connexion with the two last-mentioned species Walsh remarks upon the precise correspondenee in the arrangement of the 18 spots on the thorax of these insects, and points out that, should all the spots become confluent, the thoracic ornamentation occurring in various species of Chrysomelidæ (*C. bigsbyana*, Kirby, *elegans*, Oliv., &c.) would be produced. This leads him into a discussion of what he calls "unity of coloration" in insects, illustrated especially by reference to numerous

species of Ichneumons, in which the dark-coloured wings are adorned with lighter spots, or "bullæ," on several of the veins. The minute agreement of these spots in position throughout the insects which show them conspicuously, and the almost universal occurrence of certain pale spots, or "bullæ," throughout the family Ichneumonidæ, are adduced by the author as evidences of a unity of coloration, which, in his opinion, can only be accounted for by the assumption of a genetic connexion between the various species exhibiting these characters.

WOLLASTON, T. V. Notes on Alpine Entomology. Zoologist, 1866, pp. 313-317.

† *Anatomical and Physiological.*

BRANDT, ALEXANDER. Mittheilungen über das Herz der Insecten und Muscheln. Bull. Acad. Imp. St. Pétersb. tome x. pp. 552-561.

In this paper the author describes the action of the heart in certain common insects, and in *Anodonta* and *Unio*, and refers especially to the influence of external excitants upon it. The heart in both forms is automatic. The lateral muscles of the heart in Insects only play a subordinate part in pulsation, and are certainly not the sole agents of diastole. The heart in Insects and the ventricle in *Unio* and *Anodonta* stand, to a certain degree, in a physiological aspect, between the heart and intestine of Vertebrata.

CLAUS, C. Beobachtungen über die Bildung des Insecteneies. Zeitschr. für wissenschaft. Zoologie, Band xiv. pp. 42-54, Tafel 6 (1864).

[Observations on the formation of the egg in Insects.]

LANDOIS, H. Beobachtungen über das Blut der Insecten. [Observations on the blood of Insects.] Zeitschrift für wissenschaft. Zoologie, Band xiv. pp. 55-70, Tafeln 7-9 (1864).

LANDOIS, LEONARD. Ueber die Function des Fettkörpers. [On the function of the fatty body.] Zeitschrift für wissenschaft. Zoologie, Band xv. pp. 371-372.

LANDOIS, H. & L. Ueber die numerische Entwicklung der histologischen Elemente des Insectenkörpers. [On the numerical development of the histological elements of the Insect-body.] Ibid. pp. 307-327 (1865).

PLATEAU, FÉLIX. Sur la force musculaire des Insectes. Bull. Acad. Roy. Belg. 2^e sér. tome xx. pp. 732-757, and xxii. pp. 283-308; Ann. & Mag. Nat. Hist. 3rd ser. vol. xvii. pp. 139-141, and xix. pp. 95-99.

In this paper the author describes some experiments made by him on the force which various insects (chiefly beetles) are capable of exerting in traction, pushing; and flight. He de-
1866. [VOL. III.]

duces as a law that in the same group the force exerted varies from species to species in an inverse ratio to their weights.

COQUEREL, in some remarks on a paper by Signoret on the insects (*Thrips*, *Chermes*, and *Coccus*) which attack the orange and other trees in the south of France, maintains that such insects only attack trees and plants in formidable numbers when the latter are unhealthy. He refers especially to the insect enemies of the sugar-cane in the island of Bourbon. Gervais holds a similar opinion; and Deyrolle recommends the employment of sulphurous-acid vapours for the destruction of insects. Bull. Soc. Ent. Fr. 1860, pp. xix-xx.

E. GRÄFFE publishes (Verh. zool.-bot. Ges. in Wien, xvi. pp. 588-589) some observations on the general characteristics of the entomology of the Fiji Islands. The Insect-fauna of these islands is said to be remarkable for its poverty, and the Coleoptera especially are very scantily represented. The diurnal *Lepidoptera* are most plentiful, and in Samoa the relative abundance of *Lycanides* is remarkable. Of *Papilio* only 1 species occurs (*P. godeffroyi*, Semper). A *Cherocampa* occurs on *Colocasia antiquorum*, and *Sphinx convolvuli* is found in Ovalau, an island which is particularly rich in leaf-mining Microlepidoptera. Among the *Coleoptera* the Cerambycidae and Elateridae are most abundantly represented, the Phyllophagous Lamellicornia and Chrysomelidae are almost entirely deficient. The Curculionidae are rather more numerous, and a few littoral Melasomata occur. The *Orthoptera* are in proportion the most abundant in species and individuals, and include species of *Phasmida*, *Truxalis*, *Locusta*, and *Achetes*. The *Rhynchota* present a tolerable variety of forms, and especially a number of small *Cicadaria* with variegated wings. *Neuroptera* are represented in about the same proportion as in Europe. The *Hymenoptera* and *Diptera* are the poorest orders. There are about 10 species of Ants and several *Ichneumonidae* and *Fossoria*; but the *Siricidae* and *Tenthredinidae* are entirely wanting. The *Diptera* include a *Tipula* and some *Simuliæ*; the true *Muscidae* are represented only by a single species, resembling our *Musca domestica*; and the almost total absence of the members of this great order is one of the most remarkable and inexplicable phenomena connected with the entomology of these islands.

WESTWOOD exhibited to the Entomological Society a monstrous specimen of *Pieris pyrrha*, in which the "two wings on the left side of the body and the fore wing and costa of the hind wing on the right side were coloured as in the male, whilst the remainder of the right hind wing was coloured as in the female, thus resembling one of the *Heliconiidae*." Westwood regarded this specimen as affording some ground of opposition to the views lately put forth, in connexion with the Darwinian hypothesis, on the subject of mimetic resemblances among insects, and maintained especially by Bates in an

elaborate paper published in the Linnean 'Transactions.' He regarded the so-called mimetic resemblance as only "an exaggerated analogy" (Proc. Ent. Soc. 1866, pp. xxxvi-xxxviii). Wallace and Bates argued in opposition to Westwood (*l. c.* pp. xxxviii-xl), Bates maintaining that the case brought forward by Westwood was simply one of monstrosity, and had no bearing on the question at issue. Sharp also made some remarks on the subject (*l. c.* pp. xl-xli). A further discussion of the question took place at a subsequent meeting of the Society, in which Sharp, Wallace, and Westwood took part (*l. c.* pp. xlv-xlvii).

In connexion with this question, and in illustration of the aversion which birds may entertain to eating certain insects (the presumed cause of most mimetic resemblances), Stainton mentions the rejection by young Turkeys of a single specimen of *Spilosoma menthastri*, when mixed with numerous specimens of *Agrotis exclamatoris*, which they devoured greedily. Weir adds that cage-birds reject both *Spilosoma menthastri* and *S. lubricipeda*, which Westwood accounts for by saying that these insects emit a fluid of disagreeable odour from behind the collar. Bates says that some *Heliconiides* emit a disagreeable odour from the abdomen when that part of the body is pressed (Proc. Ent. Soc. 1866, p. xlv).

SIEBKE (Entomologische Untersögelser) has given lists of Insects of various orders captured by him in the summers of 1864 and 1865—in the former year at Bergen, Aalesund, Romsdal, Fladmark, and other localities on the west coast of Norway, in the latter in the vicinity of the Christiania fjord.

MACLACHLAN "On the similarity of the Insects of North America and England." Ent. M. Mag. iii. pp. 70-71. (See LEPIDOPTERA.)

A discussion on the sinking of insects into snow, in which Müller's remarks are commented on, and Pascoe, Westwood, Brayley, and Lubbock took part, is recorded in Proc. Ent. Soc. 1866, p. xix-xx.

A. MÜLLER has remarked (Zoologist, 1866, pp. 273-279) upon a few of the phenomena of Insect-life at great elevations, and especially upon the fact of many insects of alpine regions remaining for several seasons in their preparatory states, and upon the sinking of insects into the snow observed by Pascoe. With regard to the latter phenomenon, Müller quotes a passage from Tschudi's 'Thierleben der Alpenwelt' confirmatory of Pascoe's observations.

WOLLASTON (Zoologist, 1866, pp. 313-317) notices Müller's remarks, and mentions his having observed, at the Pass of St. Gothard, great accumulations of insects, chiefly Beetles, at the bottom of small rounded depressions in the snow. Wollaston suggests that the process of melting productive of these hollows, and of those observed by Pascoe, was probably commenced by the settling on the snow of insects brought up from the lower regions by currents of air &c. In contrast with the causes supposed by Müller to lead to the suspension of development of many alpine insects, Wollaston refers to his experience among the Cape Verde Islands, on some of which rain does not fall sometimes for several years; but on the recurrence of moisture, insects, like the vegetation, suddenly appear in abundance.

BRAUN remarks on the production of galls in various plants by insects of different families (Sitzungsber. Ges. naturf. Freunde zu Berlin, Dec. 20, 1864). His observations relate chiefly to the form and structure of the galls.

GIRARD notices the occurrence of other glutinous vegetable matters besides the pollinic masses of Orchids on the heads of insects, and mentions particu-

larly a case in which a female *Scolia bifasciata* had its antennæ and buccal organs incrustated with small masses of resinous matter. Bull. Soc. Ent. Fr. 1866, p. xxxvii.

Pir describes from personal observation the mode of occurrence of caterpillars infested by fungi in New Zealand. Tijdschr. voor Ent. 1866, pp. 16-21.

W. W. SAUNDERS notices the occurrence of a *Clavaria* growing from between the eyes in each of two larvæ of a *Cicadu* from Mexico. Proc. Ent. Soc. 1866, p. xxx.

Sphaeria growing from the head of the larva of a Lamellicorn Beetle from New South Wales, noticed by Saunders. Proc. Ent. Soc. 1866, p. viii.

Fungi growing in dead larvæ of *Hepialus humuli*, noticed by Newman. Proc. Ent. Soc. 1866, p. ix.

LUCAS notices the occurrence of several insects of various orders in fragments of the gum-resin of *Hymenæa verrucosa* from Zanzibar. Bull. Soc. Ent. Fr. 1866, p. xxviii.

COLEOPTERA.

A. Works in progress.

LACORDAIRE, T. Genera des Coléoptères, ou exposé méthodique et critique de tous les genres proposés jusqu'ici dans cet Ordre d'Insectes. Tome vii. 8vo. Paris, 1866. pp. 620.

This seventh volume of Professor Lacordaire's great work contains the completion of the family Curculionidæ, together with the other families of Rhynchophorous Beetles (the Scolytidæ, Brenthidæ, Anthribidæ, and Bruchidæ). The general treatment adopted by the author will be indicated hereafter under the different families. The work needs no further notice here.

LECONTE, JOHN. List of the Coleoptera of North America. Part i. Smithsonian Miscellaneous Collections, No. 140. Washington: March 1863 and April 1866. pp. 78.

Of this list, which includes the North-American Beetles as far as and including the Heteromorous forms, a considerable portion (viz. pp. 1-49) was published in 1863; the remainder (= 21 pages), with 7 pages of index and 1 of additions and corrections, appeared in 1866.

———. New Species of North-American Coleoptera. Part i. Smithsonian Miscellaneous Collections, No. 167. Washington, March 1863 and April 1866. pp. 177.

This work also has appeared at two periods with an interval of three years: pp. 1-86 date from 1863; and the remainder, pp. 87-168 and 9 pages of index, was published in April of last year. The contents of the latter portion will be indicated further on; they consist of descriptions of the new species and genera referred to in the preceding catalogue. It is much to be desired that the author may be able soon to complete these valuable works on the entomology of North America.

MULSANT, E. Monographie des Coccinellides. 1^{re} partie, Coccinelliens. 8vo, pp. 292. Paris: Savy & Deyrolle, 1866.

In this work Mulsant commences a monographic revision of the Coccinellidæ at large. The classification adopted is the same as in his former works on the same group; the species described in these are briefly characterized, and their more important synonyms are cited; the new species are described in detail. No new generic groups are proposed in the present part.

MULSANT, E., and REY, C. Histoire Naturelle des Coléoptères de France. Fossipèdes: Brévicolles. 8vo, pp. 124, 4 plates. Paris, 1865 (June?). Colligères. pp. 187, 3 plates. Paris, February 1866.

Separate impressions of papers published in the 'Annales de la Soc. Linn. de Lyon,' tomes xi. ? & xiii. (Sec p. 286.)

LINNÆA ENTOMOLOGICA. Sechzchnter Band. Zur Kenntniß der südamerikanischen Cryptocephalen. Von Dr. Suffrian. (Schluss.) pp. 488.

In this volume Suffrian concludes his admirable monograph of the South American *Cryptocephalides*. It includes in the first place some additions and corrections to the first volume, and then proceeds with the descriptions of the remaining genera and species belonging to the group. The supplementary matter consists partly of new species belonging to the groups described in the first volume, and partly of remarks on known species, including notices of new habitats and variations. The volume also contains a systematic index of all the species.

B. *Separate Works.*

BATES, H. W. Contributions to an Insect Fauna of the Amazons Valley. Coleoptera: Longicornes. 8vo. pp. 255. London, 1866.

A reprint of Bates's papers in the Ann. & Mag. Nat. Hist.

CROTCH, G. R. Catalogue of British Coleoptera. Second edition. 8vo, pp. 18.

In this list of British Beetles Mr. Crotch has brought together, in a remarkably complete manner (as might have been expected), all the species recorded as inhabitants of the British islands, indicating those whose claim to be regarded as indigenous seems doubtful by a bracket placed before their names. The species are numbered throughout the catalogue; and, when the addenda and species *incertæ sedis* are taken into consideration, the total number appears to be 3091, including what the author denominates *subspecies*, a term in classification indicating apparently a group of individuals of rank intermediate between the variety and the species. The doubtfully indigenous species marked are 109 in number, of which, however, 30 are said to have been undoubtedly taken in England; 54 are represented by

specimens in old collections, without indications of locality, but are very probably natives; whilst 25 are regarded as very doubtful. Naturalized species (amongst which are included *Calandra granaria* and several Tenebrionidæ) are marked by an asterisk. A list of "accidentally introduced species" is given on the last page. The genera indicated as of doubtful position are *Alexia*, *Murmidius*, and *Necrophorus*! The author has communicated to the 'Entomologist' and to the Entomological Society a long series of remarks upon the alterations of nomenclature introduced in this catalogue, as also indications and descriptions of new British species. These will be referred to hereafter.

RYE, E. C. *British Beetles: an introduction to the study of our indigenous Coleoptera.* pp. xv and 280, and 16 plates. 12mo. London, 1866: Reeve.

In this little handbook, Mr. Rye's object has been to furnish young entomologists with a general guide to the classification of Coleoptera, with sufficient notices of the characters and habits of the more abundant or remarkable British species to give some interest to the work and assist the beginner in his earlier progress in collecting. The determination of the general position of species in the system will also be facilitated by the very good coloured figures of characteristic forms contained in the 16 plates, by Robinson, with which the little volume is illustrated. The author commences with some observations on the position of the Coleoptera in the zoological scale, and on their general natural history, followed by a glossary of the most important terms used in describing insects, and a very clear account of the external anatomy of the Coleoptera. After chapters containing instructions for collecting and preserving Coleoptera, and a list of the descriptive works of most importance to the student of the British species of the order, Mr. Rye proceeds to his main task, of explaining the classification of Beetles, and describing the characters and manners of a large number of British species. In his general classification he adopts the system followed by Waterhouse in his catalogue, dividing the whole order into a few large groups, and subdividing these into a great number of small families. The last thirty pages of the text are occupied by a catalogue of the British Coleoptera, founded chiefly upon that of Waterhouse, but with the addition of the species detected since the publication of the latter work. This catalogue is printed in three columns on each page; the author's name is cited for each genus and species. The following genera are given by the author as being of uncertain systematic position:—*Phleophilus*, *Diphylus*, *Aspidophorus*, *Sphindus*, and *Myrmecoxenus*.

MARSEUL, S. A. DE. *Catalogus Coleopterorum Europæ et Confinium.* 12mo, pp. xii and 131. Paris (Deyrolle), London (Janson), and Berlin (Friedländer), 1866.

In this catalogue, which was also published in the 'Abeille,' the author has endeavoured to furnish entomologists with a cheap and handy list of the Coleoptera inhabiting Europe and the regions surrounding the Mediterranean, extending, however, some considerable distance eastward into Asia. It includes the names of a great number of species not cited in De Marscul's former catalogue; but all notices of localities are omitted, and the names are printed in treble columns on each page, for the purpose of saving space, the little work being intended chiefly as a list for marking off the species possessed by the collector, and to be circulated for exchanges. The synonymy is also omitted, but the named varieties of many species are indicated.

C. *Papers published in Journals.*

ALLARD, ERNEST. Monographie des Alticides, Tribu de la Famille des Phytophages. L'Abeille, tome iii. (livr. 2, 5, and tome iv. livr. 1-3), pp. 169-417 (not completed).

A monograph of the European and Mediterranean species of the group *Halticides*. From p. 321 to p. 417 belongs properly to the year 1867; but it contains descriptions of new species of *Thyamis*, the distinctive characters of which were indicated in the table of that genus given in the November number; the Recorder has therefore cited them here.

AUBÉ, C. Description de nouvelles Espèces de Coléoptères de France. Annales Soc. Ent. France, 4^e série, tome vi. pp. 161-164: October 24, 1866.

— . Nouveaux matériaux pour servir à l'étude des Apion. Ibid. pp. 165-168.

This paper relates chiefly to the habits of various known species of *Apion*.

BATES, H. W. On a Collection of Coleoptera from Formosa, sent home by R. Swinhoc, Esq., H.B.M. Consul, Formosa. Proc. Zool. Soc. 1866, pp. 339-355.

Consists chiefly of descriptions of new species.

— . Contributions to an Insect Fauna of the Amazons Valley. COLEOPTERA: LONGICORNES. Ann. & Mag. Nat. Hist. 3rd series, vol. xvii. pp. 31-42 (January), 191-201 (March), 288-303 (April), 367-373 (May), and 425-435 (June 1866).

In these papers Bates concludes his description of the *Lamiides* obtained by him during his residence on the Amazons.

BECKER, R. See EICHHOFF.

BELLIER DE LA CHAVIGNERIE, —. Note sur les mœurs de l'*Acmaodera ovis*, Chev. Annales Soc. Ent. France, 4^e série, tome vi. pp. 125-126.

BETHE, —. *Platyderus* oder *Haptoderus nemoralis* Graells?
Haptoderus oder *Platyderus montanellus* Graells? *Stettiner entom. Zeitung*, 1866, pp. 196–202.

——. *Sammelbericht* von 1865. *Ibid.* pp. 202–204.

BRENDEL, EMIL. *New Species and Corrections in the family Pselaphidae*. *Proc. Ent. Soc. Philad.* vol. v. pp. 255–260.

——. *Synopsis of the Genera and Species of the family Pselaphidae*. *Proc. Ent. Soc. Philad.* vol. vi. pp. 31–38.

BRISOUT DE BARNEVILLE, CHARLES. *Coléoptères nouveaux trouvés en Espagne pendant l'Excursion de la Société en 1865*. *Annales Soc. Ent. de France*, 4^e série, tome vi. pp. 355–426: Dec. 31, 1866 (read June 13, 1866).

BRISOUT DE BARNEVILLE, H. *Notes supplémentaires, rectificatives et synonymiques sur les genres Gymnetron, Bagous, et Acalles; avec la description d'une nouvelle espèce d'Acalles*. *Annales Soc. Entom. de France*, 4^e série, tome v. pp. 619–626: May 26, 1866.

BUTLER, A. G. *Description of a New Species of Cetonia, with remarks on the allied species*. *Proc. Zool. Soc.* 1865, p. 729.

(CANDÈZE, E. *Elatérides nouveaux*. *Mém. Couronnés de l'Acad. Roy. de Belgique*, 8vo, tome xvii. pp. 1–63: June 1865.

This paper originally appeared as a separate publication in 1864, and was noticed in the 'Record' for that year.)

(CHAPUIS, F. *Monographie des Platypides*. *Mém. Soc. Roy. Sci. de Liège*, tome xx. 1866.

This memoir was noticed as an independent publication last year. See 'Record' 1865, pp. 389 and 498.)

CHAUDOIR, BARON DE. *Monographie du genre Platyderus*. *Annales Soc. Ent. Fr.* 4^e série, tome vi. pp. 105–114: August 22, 1866.

——. *Corrections et additions à la Révision du genre Agra*. *Annales Soc. Ent. France*, 4^e série, tome vi. pp. 77–104: August 22, 1866.

In this memoir Chaudoir introduces into the list of species recognized in his revision of the genus *Agra* those described by other authors, especially by Bates in his paper on the *Agra* of the Amazons region. He also remarks on the synonymy of some of the species, and describes some new ones. The total number of species admitted by Chaudoir as probably distinct seems to be 141 (*Agridia* 6, *Agra* 135).

——. *Description d'une Anthia inédite et de quatre nouvelles Polyhirna*. *Revue et Magasin de Zoologie*, 1866, pp. 70–73: February.

CHAUDOIR, BARON DE. Supplément à la monographie du genre *Pelecium*. Ibid. pp. 108-110.

Contains descriptions of new species.

CHEVROLAT, AUG. Descriptions de Coléoptères d'Espagne nouveaux ou peu connus. Suite. Revue et Mag. de Zoologie, 1866, pp. 24-29, 100-108, 321-326: January, March, and September.

COQUEREL, CHARLES. Faune de Bourbon (Ile de la Réunion). Coléoptères. Annales Soc. Ent. de France, 4^e série, tome vi. pp. 293-340, pl. vii: Dec. 31, 1866 (read July 11, 1866).

This portion contains descriptions of the Coleoptera of the island of Bourbon as far as the Lamellicornia. The author, in a short preface (pp. 293-298), indicates the general characters of the island and its climate, and the changes which have taken place in its condition, especially by the destruction of the forests, since its discovery in 1513. Nearly all the indigenous birds and the large Tortoises have disappeared. The Insect-fauna is poor, and partakes of the characters of the faunas of India and Madagascar, although a few peculiar species occur. Of the Coleoptera, the *Carabidæ* are small, but include some peculiar forms. The *Staphylinidæ* are neither numerous nor remarkable. Of the *Lucanidæ* some peculiar forms occur; the Lamellicorns are pretty well represented; and the *Curculionidæ* are numerous and interesting. The *Eucnemidæ* include a peculiar genus allied to the genus *Fornax*; the *Buprestidæ* and *Elateridæ* are few in number. The *Tenebrionidæ* include one peculiar genus, *Hypocalis*. Of the Longicorns there are several peculiar and remarkable species. *Phytophaga* and *Coccinellidæ* are not abundant. No *Pselaphidæ*, *Paussidæ*, or *Cantharidæ* occur. The author gives diagnoses of all the species, several of which seem to have been introduced. The numbers described in this paper are:—*Cicindelidæ* 2, *Carabidæ* 22 (11 new), *Staphylinidæ* 9 (6 new), *Eucnemidæ* 2 (new), *Lucanidæ* 3 (1 new), *Scarabæidæ* 14 (2 new).

COQUEREL, C. See FAIRMAIRE.

CORNALIA, EMILIO. Sopra i caratteri microscopici offerti dalle Cantaridi e da altri Colectteri facili a confondersi con esse. Memorie della Soc. Ital. di Sci. Nat. tomo i. No. 10, pp. 39, with 4 plates.

This memoir includes the results of what the author denominates some "investigations in legal zoology"—namely, a description of the microscopic characters of the dermal skeleton of the common Blister-fly (*Cantharis vesicatoria*), as compared with those presented by numerous species of green Beetles, which might be ground up and used for the adulteration of powdered Cantharides. The latter include *Cicindela campestris*, *Drypta emarginata*, *Lebia cyanocephala*, *Carabus auratus*, *Calosoma sycophanta*, several species of *Chlænium* and *Anthaxia*, 2 *Agrili*,

Ludii and *Malachii*, *Dasytes viridis*, *Geotrupes vernalis*, several species of *Anomala* and *Cetonia*, 2 of *Hoplia*, *Cerocoma schreibersii*, *Rhynchites betuleti*, *Aromia moschata*, *Cryptocephalus sericeus*, *Lina aenea*, 3 *Oreinae*, *Chrysomela menthae*, and 4 *Donaciae*. The characters presented by fragments of the elytra of these Beetles on both surfaces, and those of the surface of the pronotum, are represented in the numerous figures contained in the 4 plates illustrating the memoir.

CROUCH, G. R. Observations on the genus *Anaspis*, Geoff. Entomologist, vol. iii. pp. 30-34.

——. Further Notes on Telephoridae. Ibid. pp. 47-48.

——. Observations on the concluding portion of the Curculionidae, &c. Ibid. pp. 63-65.

——. Revision of the 'Catalogue of British Coleoptera.' Ibid. pp. 105-112, 119-127, 133-137, and 173-177.

DEYROLLE, HENRI. Description de Lucanides nouveaux. Annales Soc. Ent. de Belgique, tome ix. pp. 23-36, pls. 1 & 2 (read March 1866).

DOHN, C. A. Note zu *Homalocerus nigripennis*, Schönh. Stettiner entom. Zeitung, 1866, pp. 356-357.

EICHHOFF, W. Ueber einige Bostrichiden. Berliner entom. Zeitschrift, 1866, pp. 275-278.

EICHHOFF, W., and BECKER, R. Zur Entwicklungsgeschichte der *Hadrotoma corticalis*. Berliner entom. Zeitschrift, 1866, pp. 279-281, taf. i. fig. 1.

FAIRMAIRE, LÉON. Notice sur les Coléoptères récoltés par M. Lédérer sur le Bosz-Dagh (Asie Mineure). Annales Soc. Ent. France, 4^e série, tome vi. pp. 249-280: October 24, 1866.

Contains a list of known species, with occasional notes on their variations, and descriptions of several new species. He remarks that their general aspect is that of the Beetles of Turkey and Greece. The number of Syrian forms is small.

FAIRMAIRE, LÉON, and COQUEREL, C. Essai sur les Coléoptères de Barbarie. Quatrième partie. Annales Soc. Ent. France, 4^e série, tome vi. pp. 17-74: August 22, 1866.

FAUVEL, A. Etudes sur les Staphylinides de l'Amérique centrale, principalement du Mexique. (Suite.) Bull. Soc. Linn. de Normandie, x. (1866) pp. 9-22.

Includes descriptions of the *Phlæocharini*, *Omalini*, and *Oxytelini* of Central America, with lists of the species found in other parts of the world. The paper also contains the characters of the groups and genera.

——. Faune du Chili. Insectes Coléoptères. Staphylinides. Ibid. pp. 250-353, pl. iv.

A monographic revision of the species of the subfamilies *Aleocharini*, *Tachyporini*, and *Staphylinini* found in Chili, with characters and tables of the groups and genera.

FERRARI, COUNT. Drei neue Käfer aus der österreichischen Monarchie. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvi. pp. 367-372 (read February 7, 1866).

GAUTIER DES COTTES, —. Nouvelles entomologiques, ou recueil synonymique de descriptions d'espèces et genres nouveaux; monographique, de mœurs et remarques sur des Insectes Coléoptères de la faune européenne et Méditerranéenne. Revue et Magasin de Zoologie, 1866, pp. 174-180, 277-293, and 363-374: May, August, and October, 1866.

——. Descriptions d'espèces nouvelles de Carabiques propres à la faune Méditerranéenne, suivies de quelques observations. Mittheil. Schw. entom. Gesellsch. Band ii. pp. 107-109: August 1866.

——. Descriptions d'espèces nouvelles de Carabiques d'Europe, suivies d'observations synonymiques sur deux *Pæderus* décrits par moi dans les Annales Soc. Ent. France. Ibid. pp. 110-114.

GERHARDT, J. Ueber die grösseren deutschen Arten des genus *Limnebius*. Berliner entom. Zeitschrift, 1866, pp. 395-404.

GIRAUD, J. See INSECTA.

GOUREAU, COLONEL. Notes sur les larves de quelques Insectes et sur les lieux qu'elles habitent. Annales Soc. Ent. Fr. 4^e série, tome vi. pp. 169-174.

HAMPE, CLEMENS. Beschreibung einiger neuen Käfer. Berliner entom. Zeitschrift, 1866, pp. 371-375.

HAROLD, E. VON. Beiträge zur Kenntniss einiger coprophagen Lamellicornien. (Sechstes Stück.) Berliner entom. Zeitschrift, 1866, pp. 92-127.

Descriptions of numerous species of *Aphodius* and *Cnemargus*.

HEEGER, ERNST. Beiträge zur Naturgeschichte der Insecten (19te Fortsetzung). Sitzungsberichte der Akad. der Wiss. in Wien, Band liii. Abth. i. pp. 533-542, Tafeln 1-4: May 1866.

HELMUTH, C. A. New Species of *Mordellidae* collected in Illinois. Proc. Acad. Nat. Sci. Phil. 1865, p. 96.

HEYDEN, L. VON. Bemerkungen über die von Dr. Staudinger und Dr. Wocke in Finmarken gefundenen Coleopteren. Stettiner entom. Zeitung, 1866, pp. 250-259.

This paper consists chiefly of remarks on Schneider's identi-

cations of the Beetles collected in Finmark by Staudinger and Woelke. Its more important references will be noted hereafter.

HORN, G. H. Descriptions of some new Cicindelidæ from the Pacific coast of the United States. Proc. Acad. Nat. Sci. Philad. 1866, pp. 394-397.

——. Descriptions of some New Genera and Species of Central-American Coleoptera. Proc. Acad. Nat. Sci. Philad. 1866, pp. 397-401.

JEKEL, H. Essai sur la Classification naturelle des *Geotrupes* Latreille et Descriptions d'Espèces nouvelles. Annales Soc. Entom. de France, 4^e série, tome v. pp. 513-618 : May 26, 1866.

JOANNIS, L. DE. Galléruces, Tribu de la Famille des Phytophages, ou Chrysomélines. (Completed.) L'Abeille, tome iii. (livr. 2) pp. 145-168, planche ii.

The first portion of this memoir, published last year, was referred by the Recorder to tome ii. of the 'Abeille;' as now arranged by the Editor it will form the commencement of tome iii., and the references in last year's 'Record' must be altered accordingly (see *antè*, p. 268).

KIESENWETTER, H. VON. Beiträge zur Käferfauna Spaniens. (Erstes Stück.) *Malacodermata, Melyridæ*. Berliner entom. Zeitschrift, 1866, pp. 241-274, taf. 1. figs. 2-7.

This is the first instalment of the more detailed report on the results of the Spanish entomological excursion of 1865, of which the author gave a general account (as regards the Coleoptera) in the Berliner entom. Zeitschrift, 1865 (see 'Record,' 1865, p. 400). In the present paper Kiesenwetter gives a list of the species of *Malacodermata* and *Melyridæ* collected, with remarks on their distribution, mode of occurrence, &c., detailed descriptions of the species of which diagnoses were published last year, and the characters of some new species.

KIRSCH, THEODOR. Beiträge zur Käferfauna von Bogotá. Zweites Stück. (See 'Record,' 1865.) Berliner entom. Zeitschrift, 1866, pp. 173-216.

——. Ueber die Larve des *Cossonus ferrugineus*, Clairv. Berliner entom. Zeitschrift, 1866, pp. 282-283.

KRAATZ, G. Ueber die Bockkäfer-Gattungen *Dolocerus* (Muls.) und *Brachypteroma* (Heyden). Berl. ent. Zeitschrift, 1866, p. 370.

LANSBERGE, — DE. Description de deux espèces nouvelles du genre *Agra*, originaires de l'intérieur de la Guyane Hollandaise. Annales Soc. Ent. France, 4^e série, tome vi. pp. 75-76 : August 22, 1866.

- LECONTE, JOHN L. Note on the species of *Myodites* (Latr.) inhabiting the United States. Proc. Acad. Nat. Sci. Phil. 1865, pp. 96-98.
- . Notes on the species of *Harpalus* inhabiting America north of Mexico. Ibid. pp. 98-104.
- . On the species of *Galeruca* and allied genera inhabiting North America. Ibid. pp. 204-222.
- . Prodrômus of a Monograph of the species of the tribe *Anobiini*, of the family *Plinidae*, inhabiting North America. Ibid. pp. 222-244.
- . List of Coleoptera collected in the mountains of Lycoming County, Pa. Proc. Acad. Nat. Sci. Phil. 1866, pp. 346-348.
- . List of Coleoptera collected near Fort Whipple, Arizona, by Dr. Elliott Coues, U.S.A., in 1864-65. Ibid. pp. 348-349.
- . Revision of the *Dasytini* of the United States. Ibid. pp. 349-361.
- . Additions to the Coleopterous Fauna of the United States. No. I. Ibid. pp. 361-394.
- LENTZ, —. Zweiter Nachtrag zum neuen Verzeichniss der preussischen Käfer, Königsberg, 1857. Schriften der königl. phys.-ökon. Gesellsch. zu Königsberg, Jahrg. vii. pp. 85-98: 1866.
- This paper contains a list of additions to the coleopterological fauna of the province of Prussia, with remarks on the characters and synonymy of some of them.
- LEREBOULLET, —. Observations sur les métamorphoses et le genre de vie des larves de Baridies. Mém. Soc. Sci. Nat. Strasbourg, tome vi. pp. 22, with 1 plate: 1866.
- LUCAS, H. Note sur une nouvelle espèce de *Carabus* qui habite les environs de Mogador. Annales Soc. Ent. France, 4^e série, tome vi. pp. 225-228, pl. 3. fig. 2: October 24, 1866.
- . Un mot sur le genre *Prinobius*, Coléoptère de la famille des *Prionides*, et sur les espèces qui le composent. Revue et Magasin de Zoologie, 1866, pp. 441-445: December.
- MARSEUL, S. A. DE. Monographie des Buprestides, famille des Sternoxes de Latreille. (Concluded.) L'Abeille, tome ii. (tome iii. livr. 1, 3, 4) pp. 289-540.
- The references to this memoir in the 'Record' for 1865 must all be altered from tome iii. to tome ii. for the reason stated at p. 268. The memoir is completed by an index.
- MATTHEWS, A. Descriptions of several species of *Trichopterygida* found by Dr. H. Schaum in various parts of North America

and Brazil. *Ann. & Mag. Nat. Hist.* 3rd series, vol. xvii. pp. 141-149, pl. 5 : February 1866.

MATTHEWS, A. Notes on some species of *Trichopterygidae* new to Britain, and of various alterations of nomenclature in the same family. *Ent. Monthly Mag.* vol. ii. pp. 241-245 : April 1866.

MENGE, A. Ueber ein Rhipidopteron und einige andere im Bernstein eingeschlossene Tiere. *Schriften der naturf. Gesellschaft in Danzig, neue Folge, Band i.* (1866), pp. 8 (*cum figg.*).

MILLER, L. Neue Käfer-Arten. *Verhandl. zool.-bot. Gesellschaft in Wien, Band xvi.* pp. 817-820 (read Aug. 1, 1866).

MOTSCHULSKY, VICTOR. Énumération des nouvelles espèces de Coléoptères rapportées de ses Voyages. 4^e article, suite. *Bull. Soc. Nat. de Moscou, tome xxxviii. pt. 2.* pp. 227-313. (See 'Record,' 1865, p. 402.)

The species here described all belong to the Carabidae. The paper includes characters of numerous (so-called) genera formed by the dismemberment of *Carabus* and *Calosoma*.

—, Essai d'un Catalogue des Insectes de l'île de Ceylan. Supplément. *Bull. Soc. Nat. de Moscou, xxxix. part 1.* pp. 393-446.

Contains descriptions of numerous new species.

MULSANT, E., and GODART, —. Description de quelques Coléoptères nouveaux ou peu connus. *Annales Soc. Linn. de Lyon, tome xii.* pp. 447-456 : January 6, 1866.

Descriptions of Algerine species.

[MULSANT, E., and REY, CL. Tribu des Térédiles. *Annales Soc. Linn. de Lyon, tome xii.* pp. 1-284, pls. 1-10 : Jan. 9, 1866.

This contains the concluding portion of the volume on the "Térédiles" of the 'Coléoptères de France,' published in 1864, and noticed in the 'Record' for that year (p. 339). Its commencement corresponds with p. 133 of the separate issue.]

MULSANT, E., and REY, CL. Tribu des Colligères. *Ann. Soc. Linn. de Lyon, tome xiii.* pp. 89-282, 3 plates : June 30, 1866. (See also p. 277.)

In this tribe the authors include the families *Pédilides* and *Anthicides* of Lacordaire. This volume also includes the genus *Agnathus*, removed from the *Pythidae* to form, with *Salpingus*, the tribe *Simplicitarses*. The references to pagination further on refer to the separate work, but they will accord with the 'Annales' by the addition of 88.

PASCOE, F. P. Notes on *Sphæron* and *Mallocera*. *Ann. & Mag. Nat. Hist.* 3rd ser. vol. xviii. pp. 477-484 : December 1866.

PASCOE, F. P. List of the *Longicornia* collected by the late Mr. P. Bouchard at Santa Marta. Trans. Ent. Soc. London, 3rd series, vol. v. pp. 279-296, plate 20 : June 1866.

Contains a list of 53 species, 25 of which are described as new.

——. *Longicornia Malayana*; or, a descriptive Catalogue of the species of the three Longicorn families collected by Mr. A. R. Wallace in the Malay Archipelago. (Continued.) Trans. Ent. Soc. London, 3rd series, vol. iii. pp. 225-336, pls. 10-13 : September 1866.

——. On the Longicornia of Australia, with a list of all the described species, &c. Journ. Linn. Soc. vol. ix. pp. 80-142, pls. 3 & 4 : October 1866, and January 1867.

This paper includes a catalogue of the known species of Australian Longicornia, with descriptions of numerous new species. The latter were all published in October 1866.

——. Notices of new or little-known genera and species of Coleoptera. Part v. Journal of Entomology, vol. ii. pp. 443-493, pls. 18 & 19 : June 1866.

The majority of the genera and species here characterized belong to families of the great tribe *Heteromera* of Latreille.

——. List of described species of Australian Heteromera. Ibid. pp. 493-499 : June 1866.

In this paper Pascoc furnishes a list of the known species of the families of Heteromeric Beetles found in Australia, many of them characterized by himself in the preceding paper*. The total number of species is 270, referred to 96 genera.

——. Catalogue of Longicorn Coleoptera, collected in the Island of Penang by James Lamb, Esq. Proc. Zool. Soc. 1866, pp. 222-267 & 504-536, pls. 26-28 & 41-43.

In this paper Pascoc gives a catalogue of 212 species of Longicorn Beetles collected in Penang, with synonymic observations on many of them, and descriptions of numerous new species and genera. With regard to the multiplication of the latter by modern naturalists, the author makes some remarks intended to justify the practice. In the author's opinion neither genus nor species has any actual existence in nature, these terms being used only to express "categories of thought;" hence they cannot be defined with absolute certainty. In this view genera and groups of higher systematic value can only be regarded as matters of convenience; and the question at once arises, whether it is more convenient to the naturalist (considering that it is admitted that none of these groups can be accurately defined) to have a moderate number of genera with some-

* The Javan *Cholipus brevicornis* (Pasc.) is cited by mistake in place of *C. punctipennis* (Pasc.).

what elastic limits, or, by striving after a confessedly unattainable accuracy of definition, to get an enormous mass of generic names, many of which represent only single species. From the author's theoretical stand-point as to the non-existence of genera in nature, it is evident that this is the chief question at issue, not whether the genera proposed are differentiated by characters of primary or secondary value. To the writer it seems that a small number of genera is more convenient in every respect than a large one, even though some of them may contain a few somewhat incongruous or questionable species; on the other hand, in order to obtain these minute divisions, the characters given to the genera are drawn so tight that newly discovered forms can hardly find a resting-place ready prepared for them, and thus each new genus proposed may be regarded as almost necessarily the direct parent of more. When Pascoe maintains, in opposition to certain objectors, that it is unnecessary that every genus should be defined or family broken up by means of characters of equal structural importance, we fully agree with him; indeed the maxim is as old as the time of Linnæus, who, however, arrived at it from the opposite belief of the actuality of genera. But, on the other hand, during the prevalence of the analytical mode of thought and treatment which at present pervades nearly every department of zoology, we find, unfortunately, that while an author is led by this notion of what we may call the semi-naturalness of genera to admit certain groups of species to that rank, perhaps justly, upon very slight characters, he will be only too prone, in other cases, to accept characters of the same small importance as grounds of division when in point of fact no such process is called for. To these causes in operation on every side, and especially to that analytical habit of mind which is at present almost universal among naturalists, leading them to rejoice rather in the detection of a difference, however minute, than in the far more philosophical recognition of an agreement, is due the excessive multiplication of genera, and, as a consequence of this, of other subordinate groups (subfamilies, &c.), which is rapidly bringing nearly every department of zoology into a chaotic state.

PERRIS, EDOUARD. Descriptions de quelques Insectes nouveaux. Annales Soc. Ent. France, 4^e sér. tome vi. pp. 181-196: October 24, 1866.

———. Descriptions de quelques nouvelles espèces de Coléoptères, Rectifications et Notes. Ann. Soc. Ent. de France, 4^e sér. tome v. pp. 505-512: May 26, 1866.

PHILIPPI, R. A. See INSECTA.

POWER, J. A. Rediscovered or new British Coleoptera: *Nemosoma elongatum*, *Helophorus nanus*, *Phytobius 4-nodosus*, *Ilybius subaneus*, &c. Entomologist, vol. iii. pp. 77-80.

PUTZEYS, J. Révision des Clivinides de l'Australie. Stettiner entom. Zeitung, 1866, pp. 33-43.

———. Coléoptères trouvés en Espagne pendant l'excursion de la Société en 1865. Amarides et Clivinides. Ann. Soc. Ent. de France, 4^e sér. tome vi. pp. 349-354: December 31, 1866 (read May 23, 1866).

REICHE, L. Etude des espèces de Mylabridés de la Collection de L. Reiche, suivie d'une Note sur le genre *Trigonurus*, Mulsant, et description d'une espèce nouvelle. Ann. Soc. Entom. de France, 4^e sér. tome v. pp. 627-642.

ROJAS, M. A. Etudes entomologiques. Ann. Soc. Ent. France, 4^e sér. tome vi. pp. 229-235: October 24, 1866.

This paper includes notices of the Coleoptera living on the maize, of the hour of fecundation of some Coleoptera, and of the migrations of *Golofa porteri*.

———. Catalogue des Longicornes de la province de Caracas, République de Vénézuéla, avec quelques observations sur leurs habitudes. Ibid. pp. 236-248.

RYE, E. C. Abstract of M. de Barneville's Monograph of the genus *Orchestes*, with reference to the British species. Ent. Monthly Mag. vol. ii. pp. 224-227.

———. Description of a new species of *Cryptophagus*, and note on the occurrence of another species of that genus new to Britain. Ent. Monthly Mag. vol. iii. pp. 101-102: October 1866.

———. Descriptions of new species &c. of *Brachelytra*. Ent. Monthly Mag. vol. iii. pp. 121-125: November 1866.

———. Coleoptera. New British species, corrections of nomenclature, &c., noticed since the publication of the Entomologists' Annual, 1866. Entom. Annual, 1867, pp. 43-126.

In this article Mr. Rye as usual brings together references to all the scattered notices relating to the Coleoptera of Britain published during the past year, with many corrections of synonymy, &c. He states that the total number of new species introduced into the British List in 1866 was 123, besides 19 described as previously quite unknown to entomologists. He estimates that about 120 of these species are undoubted natives.

SAUNDERS, EDWARD. Catalogue of *Buprestidæ* collected by the late M. Mouhot in Siam, &c., with Descriptions of New Species. Trans. Ent. Soc. London, 3rd series, vol. v. pp. 297-321, pl. 21: June 1866.

SCHAUFUSS, L. W. Monographische Bearbeitung der Sphodrini. Sitzungsbericht der Gesellschaft "Isis" zu Dresden, 1865, pp. 1-128: January 27, 1865.

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SCHAUFUSS, L. W. Coleopterorum Europæorum species novæ. Revue et Magasin de Zoologie, 1866, pp. 180-181 : May.

— . Coleopterorum species novæ. Ibid. pp. 412-420 : November.

Descriptions of Curculionidæ from New Granada and Venezuela.

SCHJÖDTE, J. C. De tunnelgravende Biller *Bledius*, *Heterocerus*, *Dyschirius*, og deres danske Arter. Naturhist. Tidsskr. 3rd ser. Bd. iv. pp. 141-167. Translated in Annals & Mag. N. H. 3rd ser. vol. xx. pp. 30-43. [On the Tunnelling Coleopterous genera *Bledius*, *Heterocerus*, *Dyschirius*, and their Danish Species.]

[— . On the Classification of *Buprestidæ* and *Elateridæ*, with special regard to the Danish Fauna. Translated in Ann. & Mag. Nat. Hist. 3rd series, vol. xviii. pp. 173-212 and 327-338. See 'Record,' 1865, pp. 405, 446.]

SCRIBA, W. Die Käfer im Grossherzogthum Hessen und seiner nächsten Umgebung. (Fortsetzung.) Elfter Bericht der oberhessischen Gesellsch. f. Natur- und Heilkunde, pp. 1-59 : August 1865.

— . Beitrag zur Kenntniss der Staphylinen Unteritaliens. Berliner entom. Zeitschrift, 1866, pp. 376-378.

A list with descriptions of 3 new species.

— . Ueber *Homalota languida*, Er., und *H. longicollis*, Muls. Ibid. pp. 379-380.

STIERLIN, G. Uebersicht der in Europa und den angränzenden Ländern einheimischen Arten der Gattung *Corymbites*. Mittheil. schweiz. ent. Gesellsch. 1865, pp. 293-299.

— . Zweiter Nachtrag zur Revision der europäischen Otiorhynchus-Arten. Berliner entom. Zeitschrift, 1866, pp. 129-135.

SUFFRIAN, G. Synonymische Miscellaneen, xxvii. Stettiner entom. Zeitung, 1866, pp. 97-99.

This paper relates to the synonymy of two species of *Chrysomela* (*Oreina*).

— . Synonymische Miscellaneen, xxviii. Stettiner entom. Zeitung, 1866, pp. 158-165.

Contains an abstract of the results obtained by Waterhouse in his examination of the *Chrysomelidæ* of the Linnean and Banksian Collections, with notes upon the identification of some of the species.

— . Synonymische Miscellaneen, xxix. Stettiner entom. Zeitung, 1866, pp. 205-210.

Relates to *Chrysomelidæ*, and contains descriptions of two new species.

SUFFRIAN, G. Verzeichniss der von Dr. Gundlach auf der Insel Cuba gesammelten Chrysomelinen. Archiv für Naturgeschichte, 1866, pp. 281-337. (Not completed.)

Contains a list of the species of Phytophagous Coleoptera collected by Gundlach in Cuba, with remarks upon the variations and synonymy of the previously described species, and descriptions of many new ones. The portion here referred to includes 78 species.

[THOMSON, JAMES. Systema Cerambycidaarum, &c. Mém. Soc. Roy. Sci. de Liège, tome xix. 1866.

This work was noticed as an independent publication in the 'Records' for 1864 & 1865, which see.]

TOZZETTI, TARGIONI. Come sia fatto l'organo che fa lume nella Lucciola volante dell' Italia centrale (*Luciola italica*), e delle Fibre museolari in questo ed altri Insetti ed Artropodi. Mem. Soc. Ital. di Sci. Nat. tomo i. no. 8. pp. 28, 2 plates: 1866.

This memoir is divided into three parts. In the first the author describes the luminous organ of *Luciola italica*; in the second the same organ in the female and larva of *Lampyris noctiluca*, and also a peculiar organ in the latter, consisting of a sort of fringe composed of numerous retractile filaments, which are emitted from the last segment of the abdomen about the anus, spread out in the form of a disk, and adhere to anything to which the animal applies them; and in the third the muscular fibres of *Luciola italica* are compared with those of certain species of other orders of insects and also with those of the Scorpion and of some Cirripedes.

VUILLEFROY, FÉLIX DE. Coléoptères nouveaux trouvés en Espagne pendant l'Excursion de la Société en 1865. Annales Soc. Ent. de France, 4^e série, tome vi. pp. 345-348: December 31, 1866 (read June 27, 1866).

All Carabidæ.

SCHIÖDTE (Naturh. Tidsskr. 3rd ser. iv.) treats of the tunnelling Coleoptera *Bledius*, *Heterocerus*, and *Dyschirius* as presenting a common mode of life although systematically wide apart. The *Dyschirii* and their larvæ are specially destined to pursue and destroy the others; and Schiödte refers to them as representing the Mole and the Shrew among Carabidæ.

DE MARSEUL (L'Abeille, pp. xxv-lxvi) continues to give translations of descriptions of Coleoptera from various journals, including:—from Wiener entom. Monatschrift, 1864, *Otiorhynchus schaufussi* and *ferrarii* (Miller),

Leptusa puellaris, *Trichonyx adnexus*, *Bryaxis tristis*, *Bythinus curvipes* and *bajulus*, *Claviger nitidus*, *Microrhagus brevis*, and *Clytus apicalis* (Hampe); from Costa's 'Nuovi Studii,' 1863, *Nanophyes 4-virgatus* and *centromaculatus* (Costa), and *Leptura excelsa* (Costa); from the Denkschr. Akad. Wiss. in Wien, 1850, diagnoses of the new species and genera from Redtenbacher's "Coleoptera Persica;" descriptions of new species of *Halticoides* from Kütsehers's monograph in the Wiener entom. Monatschrift for 1864, and of *Athous proximus* and *spectabilis*, *Typhlophorus deplanatus*, *Acalles validus*, *Nemosoma fascicolle* (Hampe), and *Homalota glacialis* (Mill.), from the same journal; and the anonymous analysis of the species of *Calobius* (Woll.) and descriptions of *Doreadion cretosum* and *saturatum* (Ferrari), also published in Wiener ent. Mon. 1864. De Marseul also describes a species of *Coscinia* from the Algerian Sahara, which he identifies with *C. semelederi* (Chaud.), l. c. p. xxxiii.

BATES (Proc. Zool. Soc. 1866, pp. 339-340) makes some general remarks upon a collection of Coleoptera sent from Formosa by Swinhoe. The collection includes 285 species, of which about half are well-known Malayan forms; the groups most largely represented are the Phytophaga (62 sp.), the Lamellicornia (47), the Longicornia (31), the Heteromera (32), and the Rhynehophora (27). The species present no peculiarity of type, the strongest relations being with the Chinese fauna. *Damaster* was recorded by Swinhoe (*in epist.*); but the specimen was not found in the boxes. Of the new species 38 are described in the present paper.

PASCOE notices the contents of a small collection of Coleoptera from Fremantle (West Australia). Proc. Ent. Soc. 1866, p. xvi.

FAIRMAIRE & COQUEREL have continued their "Essai sur les Coléoptères de Barbarie" (Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 17-74). This part includes notices and descriptions of species belonging to the following families:—*Carabidæ*, *Paussidæ*, *Nitidulidæ*, *Peltidæ*, *Cleridæ*, *Scarabæidæ*, *Buprestidæ*, *Cebrionidæ*, *Lampyridæ*, *Helopidæ*, *Cantharidæ*, *Ælemeridæ*, *Curculionidæ*, *Cerambycidæ*, *Chrysometidæ*, and *Coccinellidæ*.

ROJAS publishes some remarks upon the Coleoptera living on the maize-plant in the province of Caraccas. Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 229-232.

The same writer (l. c. pp. 232-233) details some observations made by him upon the period of the day at which fecundation is usually effected by various species of this order. *Trachyderes succinctus* and *Ancylosternus scutellaris* copulate about noon, *Aerocinus longimanus* in the morning, *Ancistroma farinosum* (Sallé) in the twilight. Some species vary the time of their fecundation according to the climate of the localities in which they live. Further details on this subject occur in the author's Catalogue of Longicorns.

Two larva-cases of Beetles from Brazil are noticed by W. W. Saunders. Proc. Ent. Soc. 1866, p. xxx.

TASCHENBERG notices the occurrence of a slight movement in the tips of the antennæ of two specimens of an *Anchomenus* on being pinned, after re-

maining for four months in spirits. In one specimen the movement persisted for 16 hours. *Zeitschr. ges. Naturw.* xxiii. Corr.-Bl. p. 424.

Dr. JOSEPH has published some notes on the Carinthian caves and their beetles. *Jahresber. schles. Gesellsch. für vaterl. Cultur.* 1866, p. 8.

C. A. DOHRN publishes a short note on collecting cave-beetles. He describes the succession of species in advancing from the entrance of the caves, and recommends the setting of traps containing meat &c. for the purpose of attracting the insects. *Stett. ent. Zeit.* 1866, pp. 63-64.

LECONTE (*Proc. Acad. Nat. Sci. Phil.* 1866, pp. 346-349) publishes lists of Coleoptera collected in the mountains of Lycoming and in the neighbourhood of Fort Whipple.

RYE (*Ent. M. Mag.* iii. pp. 63-67) gives an account of the results of his collecting Coleoptera at Rannoch, Perthshire, with notes upon the mode of occurrence of many species, and notices of 3 species of *Brachelytra* new to Britain (one described as a new species). T. Blackburn also publishes notes on the same excursion (*l. c.* pp. 93-94).

W. KLOTZE indicates the species of Coleoptera collected by him in the neighbourhood of Geesthacht, a village on the Elbe about five miles above Hamburg. To a few of the species are appended notices of their mode of occurrence. *Berl. ent. Zeits.* 1866, pp. 405-409.

J. GERHARDT also gives a list (*l. c.* pp. 409-411) of the rarer or more remarkable species collected by him in Silesia, with remarks upon the occurrence of some of them.

SCRIBA has continued his Catalogue of the Coleoptera of Hesse and its neighbourhood to the conclusion of the Heteromerous families. *Ber. xi. oberh. Ges. Nat.-Heilk.* pp. 1-59.

Numerous new species of Coleoptera collected in Spain during the excursion of the French Entomological Society in 1865 are described by Brisout de Barneville (*Annales*, vi. pp. 355-426), and a few belonging to the family Carabidæ by de Vuillefroy and Putzeys (*l. c.* pp. 345-354).

DESBROCHENS DES LOGES records the capture of several species of Coleoptera new to the French fauna, and the occurrence of several rare species in abundance. *Bull. Soc. Ent. Fr.* 1866, pp. xxxiii-xxxiv.

Reports on the results of collecting in various parts of Germany are published in the *Berliner entom. Zeitschrift*, 1866, pp. 292-299. The authors are W. SCRIBA (*Staphylinidæ*), EICHHOFF, J. GERHARDT, E. SCHWARZ (from Silesia), and KELLNER. A few remarks on slight variations are scattered through these notices.

BETHE records some of the results of his collecting Coleoptera during the year 1865. *Stett. ent. Zeit.* 1866, pp. 202-204.

L. VON HEYDEN remarks upon the species of Coleoptera collected in Finmark by Staudinger and Wocke, and corrects some points in their nomenclature as recorded by Schneider in the *Stettiner entom. Zeitung* for 1861. *Stett. ent. Zeit.* 1866, pp. 250-259).

CICINDELIDÆ.

Cicindela. Leconte (*Proc. Acad. Nat. Sci. Phil.* 1866, pp. 362-363) refers to various North-American species of this genus, noticing especially varieties of the following:—*C. obsoleta* and *longilabris* (Say), *C. nigrocarulea* (Lec.) and *C. rugifrons* (Dej.). He also refers to *C. saulcyi* (Guér.), which he regards

as distinct from *C. dorsalis* (Say); *C. obliquata* (Kirby) is said to be a distinct species, and one elytron is figured; *C. texana* (Lec.)=*C. rectilatera* (Chaud.). The species described by Leconte under the name of *C. viatica* (Chevr.) is distinct, and Leconte proposes for it the name of *C. pimeriana* (l. c. p. 363).

Horn (Proc. Acad. Nat. Sci. Phil. 1866, pp. 396-397) remarks upon the local occurrence or variations of the following species:—*C. vulturina* (Lec.), *vulgaris* (Say), *oregona* (Lec.), *hirticollis* (Say), *duodecimguttata* (Dej.), *hy-perborea* (Lec.), *pusilla* (Say), *hæmorrhagica* (Lec.), *imperfecta* (Lec.), *guttifera* (Lec.), and *Tetracha carolina* (Hope).

A curious variety of *Cicindela campestris*, with the elytra short and flat, and the humeral lunule interrupted, is noticed by Fairmaire as brought from Asia Minor (Bosz-Dagh) by Lederer. Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 249.

Cicindela campestris. Tuuly records the capture of specimens of this beetle with a rose-like scent. Entomologist, iii. p. 104.

Crotch (Entomologist, iii. p. 105) remarks on *Cicindela campestris*, var. *nigrita*, of authors,=*funebris* (Steph.), and on the so-called *C. hybrida* of Britain.

Omus lævis, sp. n., Horn, Proc. Acad. Nat. Sci. Phil. 1866, p. 394, California.

Cicindela senilis, sp. n., Horn, l. c. p. 395, and *C. gabbi*, Horn, ibid., California; *C. vibex*, Horn, ibid., Oregon.

Cicindela kalcea, sp. n., Bates, Proc. Zool. Soc. 1866, p. 340, and *C. psilica*, Bates, l. c. p. 341, Formosa.

Collyris formosana, sp. n., Bates, l. c. p. 341, Formosa.

CARABIDÆ.

GAUTIER DES COTTES (Rev. et Mag. de Zool. 1866, pp. 174-180) publishes the following remarks on the synonymy of insects of this family:—*Carabus linderi* (Tourn.)=*fabricii* (Panz.); *C. chevrolatii* (Cristof.)=*Procrustes impressus* (Klug); *Procrustes thiirkii* (Schaum)=*Carab. assimilis* (Cristof.); *Nebria lareynii* (Fairm.)=*orsinii* (Villa) as stated by Schaum; *Pæcilus beticus* (Ramb.)=*decipiens* (Waltl); *Pterostichus planipennis* (Sahlb.)=*rapax* (Motsch.)=*niger*, var. *eschschoitzii*; *IIaptoderus nemoralis* (Graells) is a *Platyderus* and distinct from *lusitanicus* (Dej.); *II. cantabricus* (Schauf.)=*montanellus* (Graells); *Dyschirius micans* (Gaut.)=*misellus* (Schaum); *Ditomus tomentosus* (Dej.)=*Carterus t.* (Fairm. & Coq.) is an *Apatelus*; *Ophonus columbinus* (Gerin.)=*sabulicola* (Panz.).

Of the results of the excursion of the French Entomological Society into Spain in 1865, portions have formed the subject of papers since read before the Society; of this family several new species have been described by De Vuillefroy (Ann. vi. pp. 345-348); and Putzeys has given lists of the species of *Amarides* and *Chivnides* collected, with descriptions of some new forms (ibid. pp. 349-354).

T. E. Gunn records (Entomologist, iii. p. 130) a remarkable case of the destruction of a canary bird by the larva of some carabideous insect. The larva had eaten through the back of the skull into the brain of the bird.

Carabides.

Procrustes. Gautier des Cottés has published (Rev. et Mag. de Zool. 1866; pp. 279-293 and 363-374) a monograph of this genus, which he regards as sufficiently distinguished from *Carabus*. He characterizes the genus, and indicates its differences from *Carabus* in detail. The species described by authors are 33 in number; the author describes 11, and cites 4 which he has not seen; the remainder are regarded as identical with, or varieties of, those described. The species admitted by Gautier des Cottés are:—*P. coriaceus* (Linn.), incl. *spretus* (Dej.); *P. rugosus* (Dej.), incl. *excavatus* (Charp.), *græcus* (Dej.), *kindermanni* (Waltl), *vicinus* (Ménétr.), and *caraboides* (Waltl); *P. cerisyi* (Dej.), incl. *foudrasii* (Dej.) and *punctulatus* (Reiche); *P. talyschensis* (Fald.)=*luctuosus* (Zubk.); *P. assimilis* (Cristof.)=*thürkii* (Schaum); *P. punctatus* (Lap.)=*duponchelii* (Barthél.); *P. impressus* (Klug)=*chevrolatii* (Cristof.); *P. asperatus* (Muls.); *P. clypeatus* (Adams)=*fischeri* (Fald.); *P. banonii* (Dej.); and *P. anatolicus* (Chaud.)=*olympicus* (Redt.). The species unknown to the author are *P. mopsucrenae* (Peyron.), *P. obtritatus* (Chaud.), and *P. deplanatus* and *abhasicus* (Motsch.). Gautier des Cottés also describes and names the following forms as varieties of known species:—*P. sphodrinus*=*rugosus*, var.; and *P. nitens* and *impudicus*=*cerisyi* vars.

Motschulsky (Bull. Soc. Nat. Mosc. xxxviii. pt. 2) gives descriptive and synonymic notes on the species of the restricted genus *Carabus* in his collection (pp. 285-294), and refers to the following genera of this group, or to species belonging to them:—*Alpæus* (*macrocephalus*, Motsch.), p. 273; *Megadontus* (Sol.), p. 298; *Procerus* (*scabrosus* and allies), p. 299; *Callisthenus* and *Callisphæna* (Motsch.), p. 300; *Calosoma* (as restricted by him; see his new genera, p. 295), p. 309; *Damaster* (*rugipennis*, Motsch., ♂, with 3 joints of anterior tarsi dilated), p. 310; *Cychnus* (*torulosus*, Fisch.), *ibid.*; and *Irichroa* (Newm.), p. 312.

Crotch (Entomologist, iii. p. 106) treats *Notiophilus palustris* as a "subspecies" of *N. aquaticus*, and *N. 4-punctatus* as similarly related to *N. biguttatus*. *N. substriatus* (Wat.) belongs to the type of *N. geminatus* (Dej.). *Calosoma sycophanta* is regarded by Crotch as accidentally introduced into Britain. *Carabus auratus* and *cancellatus* are treated as doubtful British species.

Lucas notices what he regards as the ♀ of *Damaster blaysoides* (Köll.). Bull. Soc. Ent. Fr. 1866, p. xxv.

According to Gautier des Cottés (Bull. Soc. Ent. Fr. 1866, p. xvii.) the *Carabus whitei* (Deyr.) from the south of Spain = *C. splendens*, var. *troberti* (Dej.).

Peze Arcas states that previously to Gautier des Cottés he had united *Carabus macrocephalus* (Dej.) and *C. cantabricus* (Chevr.), and had also joined to these *C. brabeus* (Schauf.). Bull. Soc. Ent. Fr. 1866, p. xxxiv.

L. von Heyden remarks on several species of this subfamily from Finmark, and notes their variations. The species referred to are *Elaphrus cupreus*, var. *arcticus*, *Carabus catenulatus* and *glabratus*, *Nebria gyllenhalii*, var. *arctica*, and *Leistus rufescens*. Heyden also notices a very convex variety of the ♀ of *C. glabratus* = *C. gibbosus* (Ziegl.). Stett. ent. Zeit. 1866, pp. 250-251.

Carabus lucasii (Fairm. et Coq.) is distinct from *C. lucasii* (Deyr.); the

authors propose to call it *C. favieri*. Fairmaire, Ann. Soc. Ent. Fr. 4e sér. tome vi. p. 18.

Blethisa multipunctata (Dej.) is recorded as found at Ottawa by Leconte. Proc. Acad. Nat. Sci. Phil. 1866, p. 363

New genera :—

Pachystus, g. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxviii. 2. p. 294. Allied to *Carabus*; form heavy, oval, convex; head large, inflated behind, ligature of clypeus distinct; pronotum large, widely margined; elytra soldered; 4 joints of anterior tarsi dilated in ♂. Sp. *C. perforatus* (Fisch.), *cribellatus* (Adams), *scythus* (Motsch.), *mingens* (Stev.), *maotis* (Stev.), and *hungaricus* (Dej.).

Sphodristus, g. n., Motschulsky, l. c. p. 295. Allied to *Carabus*; form very elongate-ovate; head large, inflated behind; pronotum as in *Sphodrus*; scutellum transverse; elytra soldered; 4 joints of anterior tarsi dilated in ♂. Sp. *C. acuticollis* (Motsch.).

Lipaster, g. n., Motschulsky, l. c. p. 296. Allied to *Carabus*; elongate-ovate, convex; head large, inflated behind; pronotum cordiform, widely margined; elytra soldered; 4 joints of anterior tarsi dilated in ♂. Sp. *C. humboldtii* (Fald.), *stjernvalli* (Mann.), *boschniaki* (Fald.), and *bartholomeii* (Mann.).

Lamprostus, g. n., Motschulsky, l. c. p. 297. Allied to *Carabus*; form elongate-elliptical, convex; head inflated behind, but forming a slight neck; clypeus angularly excavated; pronotum almost ovate, narrowly margined; elytra soldered; 3 joints of anterior tarsi dilated in ♂. Sp. *C. spinolæ*, *mæstus* (Crist.), *nordmanni*, *lanprus*, *renardi* (Chaud.), *luxuriosus*, *thermarum*, *nigrinus* (Motsch.), *chalcocnotus* (Mann.), *prasinus* (Ménéf.), *calleyi* (Fisch.), *hemprichii*, *ehrenbergii* (Klug), *torosus* (Friv.), *prevorstii* (Gory), *brandtii* (Fald.).

Callitropa, g. n., Motschulsky, l. c. p. 300. Allied to *Calosoma*; elongate-elliptical; pronotum widely margined; each elytron with sixteen punctate striæ, and a long subscutellar striola; legs long, tibiæ straight, four joints of anterior tarsi dilated in ♂. Sp. *C. externum* (Say).

Castrida, g. n., Motschulsky, l. c. p. 300. Allied to *Calosoma*; elongate; pronotum widely margined, much narrower than elytra; intermediate tibiæ strongly curved; 2 joints of anterior tarsi dilated in ♂. Sp. *C. sayi* (Dej.).

Charmosta, g. n., Motschulsky, l. c. p. 301. Allied to *Calosoma*; legs short and stout, tibiæ straight; pronotum transversely cordiform, slightly margined, posterior angles prominent; each elytron with 20–24 granulated striæ, subscutellar striola indistinct; 3 joints dilated in anterior tarsi of ♂. Sp. *C. investigator* (Ill.)=*denticolle* (Geb.), *C. sibiricum*, *rugulosum*, and *danicum* (Motsch.).

Caminara, g. n., Motschulsky, l. c. p. 303. Allied to *Calosoma*; elongate; pronotum transverse, sides rounded and narrowly margined; each elytron with fifteen deep striæ and a distinct subscutellar striola; anterior tarsi with 3 dilated joints in ♂. Sp. *C. imbricatum* (Klug), *frigidum* (Kirby), *calidum* (Fab.), *alternans* (Say); *C. arabica*, sp. n., Motsch. l. c. p. 304, Arabia.

Camehula, g. n., Motschulsky, l. c. p. 304. Allied to preceding; head without a neck; pronotum transversely cordiform; elytra finely punctate striate, with the intervals smooth. Sp. *C. glabrata* and *rufipennis* (Dej.).

Campalita, g. n., Motschulsky, *l. c.* p. 304. Allied to *Calosoma*; head with no neck or impression behind the eyes; pronotum transversely cordiform, narrowly margined; each elytron with 16 punctate striæ; 4 posterior tibiæ strongly curved, anterior tarsi with 3 dilated joints in ♂. Sp. *C. azoricum* (Heer), *parallellum*, *tauricum*, *turcomanicum*, *tectum*, and *leviusculum* (Motsch.), *maderæ*, *indagator*, *sericeum* (Fab.), and *dsungaricum* (Gehl.).

Cosmoplata, g. n., Motschulsky, *l. c.* p. 305. Allied to preceding; elytra very finely rugulose and granulose, without striæ, except a trace of the subscutellar striola and a few indications at the base. Sp. *C. æneum* (Motsch.).

Ctenosta, g. n., Motschulsky, *l. c.* p. 306. Allied to *Calosoma*; head small, with a slight neck; pronotum transversely cordiform, not bordered; each elytron with 16 deep striæ, subscutellar stria deep; 4 posterior tibiæ slightly curved; anterior tarsi with 3 dilated joints in ♂. Sp. *C. senegalense* (Dej.), *semaariense* (Koll.), and *helena* (Hoepf.).

Callistrata, g. n., Motschulsky, *l. c.* p. 306. Allied to preceding; striæ of elytra shallower and less regular. Sp. *C. granulatum* (Motsch.).

Callistriga, g. n., Motschulsky, *l. c.* p. 307. Allied to *Calosoma*; broadly elliptical; head without a neck; pronotum transverse, sides strongly arched, narrowly margined, not bordered; elytra nearly twice as wide as pronotum, each with 15 deep crenulated striæ and a very distinct subscutellar striola, foveoles forming distinct chains; 4 posterior tibiæ slightly curved, anterior tarsi with 3 dilated joints in ♂. Sp. *C. armata* (Lap.), *covalis* (Motsch.) = *armatum* (Reiche), *C. laterale* (Kirby), *alternans* (Fab.), *bonariense* (Dej.), *curvipes* (Kirby), *retusum* (Fab.), and *vagans* (Esch.).

Calamata, g. n., Motschulsky, *l. c.* p. 307. Allied to preceding; intermediate tibiæ curved, posterior straight; clypeus deeply excavated; elytra without foveoles, intervals convex, alternately more elevated. Sp. *C. rugata*, sp. n., Motsch. *l. c.* p. 308, South America.

Callipara, g. n., Motschulsky, *l. c.* p. 308. Allied to *Calosoma*; short and wide; head with no neck; pronotum transverse, sides very strongly arched, margined and slightly bordered, posterior angles acute and salient; elytra nearly twice as wide as pronotum, each with 16 punctate striæ and a subscutellar striola; anterior tarsi with 3 dilated joints in ♂. Sp. *C. sycophanta* (Linn.); *C. rapax*, sp. n. (Kind. MS.), Motsch. *l. c.* p. 309, Asia Minor.

Calodrepa, g. n., Motschulsky, *l. c.* p. 310. Allied to preceding; 4 posterior tibiæ arched, and anterior tarsi with 4 dilated joints in ♂. Sp. *C. scrutator*, (Fab.), *macleani* (Kirby), and probably *C. splendidum* (Dej.).

Brennus, g. n., Motschulsky, *l. c.* p. 311. Allied to *Cychrus*; anterior tarsi with 3 joints dilated in ♂; head with a slight impression between eyes; pronotum flat, base and margins depressed, a longitudinal impression on each side at base; elytra ovate, convex, shining, narrowly keeled, with 16 deep punctate striæ. Sp. *C. ovalis*, *crenatus*, *reticulatus* (Motsch.), *punctato-striatus* (Chaud.), *ventricosus*, *marginalis* (Esch.), *interruptus* (Méné.), and *punctatus* (Leconte).

Pemphus, g. n., Motschulsky, *l. c.* p. 312. Allied to preceding; pronotum scarcely bordered; elytra strongly keeled, each with 16 shallow striæ and a row of large foveoles on the margin. Sp. *C. velutinus* (Méné.) and *debilis* (Esch.).

New species :—

Carabus stenocephalus, Lucas, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 226, pl. 3. fig. 2, and Rev. et Mag. de Zool. 1866, p. 111, from Mogador.

Carabus. Motschulsky describes the following as new species :—*C. subvirescens*, l. c. p. 287, Idria; *C. turcicus* (Kind.), l. c. p. 288, Asia Minor; *C. congruus*, ibid., Asia Minor; *C. anglicus*, l. c. p. 291, near London; *C. rufifemoratus*, ibid., Switzerland; *C. interstinctus*, l. c. p. 292, banks of the Irtysh; *C. erosus*, l. c. p. 294, Songaria.

Procrustes cordicollis, Motschulsky, l. c. p. 298, Carniola.

Cychnus anatolicus, Motschulsky, l. c. p. 310, Anatolia.

Cychnus guyotii, Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 363, North Carolina.

Sphæroderus palpalis, Motschulsky, l. c. p. 312, Hudson's Bay Territory.

Leistus magnicollis, Motschulsky, l. c. p. 272, Greece; *L. tibialis*, Motsch. ibid., Amur.

Alpæus alpicola (Kinderm.), Motschulsky, l. c. p. 273, Asia Minor.

Nebria vullefroyi, Chaudoir, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 116, from Spain.

Nebria vullefroyi, Gautier des Cottés, Mitth. schw. ent. Ges. ii. p. 110, La Granja.

Nebria obliqua, Leconte, l. c. p. 363, Colorado.

Nebria. Motschulsky describes the following species of this genus :—*N. molbis*, l. c. p. 274, and *N. elias*, l. c. p. 276, Russian America; *N. unicolor*, l. c. p. 275, Altai; *N. femorata*, ibid., *parvicollis*, p. 276, *promota*, p. 280, and *subdilata*, ibid., Siberia; *N. angustula*, p. 277, Kamtschatka; *N. parallelo-pipeda*, p. 277, Caucasus; *N. protensa*, p. 278 (= *anthracina*, Moraw.), Siberia and Kamtschatka; *N. baltica*, p. 279, shores of the Baltic; and *N. jamata*, p. 281, Japan, Kurile Islands.

Ceroglossus dorsiger, Motschulsky, l. c. p. 284, and *C. carinulatus*, Motsch. ibid., Chili.

Platys congruus, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. part 1. p. 164, Japan.

Brachinides.

Agra. Chaudoir publishes (Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 77-104) a list of additions and corrections to his revision of the genus *Agra* (incl. *Agridia*). The following are the chief alterations of nomenclature, &c. :—*Agridia batesii* (Chaud.) = *Agra formicaria* (Thomis.); *Agra stictica* (Klug, Chaud.) = *cyanosticta* (Klug); *A. maculitarsis* (Chaud.) = *viridisticta* (Chaud.), var.; *A. pachycnema* (Chaud.) = *brentoides* (Dej.); *A. scrutatrix*, (Bates) = ? *macrens* (Chaud.), var.; *A. subcæna* (Chaud.) = *gracilis* (Luc.); *A. chevroletii* (Gory) = *catenulata* (Klug); *A. quadriceps* (Chaud.) = *lycisca* (Buq.), of which *serobiculata* (Klug, Chaud.) is the ♂; *A. sculpturata* (Luc.) = *attenuata* (Klug); *A. humilis* (Putz.) = *variolosa* (Klug); *A. biseriata* (Chaud.) = *immersa* (Klug); *A. elegans* (Chaud.) = *chalcoptera* (Klug); *A. ignipennis* (Luc.) = *phenoptera* (Chaud.); *Carabus tridentatus* (Oliv.) = *atelaoides* (Fab.); *A. subinterrupta* (Chaud.) = *multiplicata* (Klug); *A. optima* (Bates) is perhaps *A. splenlida* (Dej.) ♀; *A. hypolasia* (Chaud.) = *cancellata* (Dej.) ♂; *A. cæruleipennis* (Chaud.) = *feisthamelii* (Buq.). The characters of many of the recently described species are given; and the references to

others are accompanied by notes, of which the most important are on the sexual characters of *A. erythropus* and *latipes*, p. 78; on *A. megera* (Thoms.), p. 79; on the colour-variation of *A. sahlbergii*, p. 81; on the sexual differences of *A. oxyptera*, p. 82; on the ♀ of *A. ovicollis* and *vicina*, p. 82; on Bates's supposed varieties of *A. subcneea*, p. 84; on the sexes of *A. scrobipennis*, p. 88, *A. chalcona*, p. 96, *A. cupripennis*, p. 99, and *A. cicatricosa*, p. 101; and on a variety of *A. cancellata*, p. 101.

Cymindis henonii (Fairm.) = *Glycia unicolor* (Chaud.), Fairmaire & Coquerel, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 17.

Brachinus hispanicus (Dej.) = *africanus* (Dej.), var. geogr., according to Fairmaire and Coquerel, l. c. p. 17.

Brachinus eximius and *Lebia hæmorrhoidalis* are regarded by Crotch as doubtful British species (Entomologist, iii. p. 107). *Drypta emarginata* is Olivier's name, and at least as old as Rossi's; *Dromius unipunctatus* (Germ.) = *D. monostigma* (Leach), and the latter name must stand; *D. maurus* is treated as a subspecies of *D. glabratus*, the characters of which are indicated by Crotch.

Blechnus mauritanicus occurs in Sicily. Gautier des Cottés, Mitth. schw. ent. Ges. ii. p. 108.

Rhombodera bicolor (Lec.). A variety noticed by Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 364.

New species:—

Cymindis minima, Vuillefroy, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 345, Granada.

Cymindis monticola (Chaud.), Chevrolat, Rev. et Mag. de Zool. 1866, p. 109, Escorial.

Agra. Chaudoir (Ann. Soc. Ent. Fr. 4^e sér. tome vi.) describes the following 16 new species of this genus:—*A. phæarthra*, p. 81, from Rio; *A. macrodera*, p. 83, from French Guiana; *A. santarema*, p. 84, from Santarem; *A. pulla*, p. 85 (= *vicina* ♀, Chaud. Rev.), from Rio and Cantagallo; *A. striato-punctata*, p. 86, from Peru; *A. bifaria*, p. 88, and *A. longula*, p. 89, from Rio; *A. soror*, p. 93, from Cayenne; *A. bicreisa*, p. 95, from Ega; *A. smaragdina*, p. 97, from Minas-Geraës; *A. fryi*, *ibid.*, from St. Catherine; *A. truquii*, p. 98, from Mexico; *A. resplendens*, *ibid.*, of unknown origin; *A. metallica*, p. 100, from Rio; *A. bouquolirii*, *ibid.*, from Rio Grande (Prov. des Mines); *A. foveipennis*, *ibid.*, from Bahia.

Agra surinamensis, Lansberge, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 75, and *A. quadriseriata*, Lansb. l. c. p. 76, from Surinam.

Metabletus valladolensis, Gautier des Cottés, Mitth. schw. ent. Ges. ii. p. 107, Valladolid.

Apenes nebulosa, Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 364, Lower California.

Anthiides:—

Polyhirma circumcincta (Chaud.) = *divisa* (Boh.) and *P. scutellaris* (Chaud.) = *opulenta* (Boh.), according to Chaudoir, Rev. et Mag. de Zool. 1866, p. 73.

Anthia omostigma, sp. n., Chaudoir, l. c. p. 70, Benguela.

Polyhirma semisuturata, Chaudoir, l. c. p. 71, and *P. suturella*, Chaud. l. c. p. 72, Zambesi; *P. brevivittis*, Chaud. l. c. p. 71, and *P. mouffletii*, Chaud. l. c. p. 72, Benguela.

Scaritides :—

Dyschirius. Schiödte (Naturh. Tidsskr. 3rd ser. iv. pp. 160–161) remarks on the characters of this genus, and compares them with those of allied genera. He indicates especially the presence of a sharp spine, or *onychium*, between the claws, the truncate apex of the inner lobe of the maxillæ; and the divergence of the two labial bristles. In the terminal joint of both pairs of palpi of the males a peculiar structure is met with, the hard chitinous integument of the lower surface being deficient, and its place supplied by a soft membrane, thickly covered with small, black, polygonal warts, arranged quincuncially. These are regarded by Schiödte as secondary or inferior palparia, and furnish the only known external sexual distinction in this genus. The Danish species of *Dyschirius* characterized by Schiödte (*l. c.* pp. 162–163) are *D. thracicus* (Fab.), *obscurus* (Gyll.), *aneus* (Dej.), *salinus* (Erichs.), *gibbus* (Fab.), *inermis* (Curt.), *politus* (Dej.), and *impunctipennis* (Daws.).

Clivines. Putzeys has published (Stett. ent. Zeit. 1866, pp. 33–43) a revision of the Australian species of *Clivina* and *Scolyptus* (Putz.), of which he now recognizes 21 species. *Scolyptus* includes only 2 species, *S. planiceps* (Putz.) and *S. foveiceps* (MacL.). The *Clivinae* are divided by Putzeys into 5 groups, of which the first includes 2 new species; the second *C. elegans* (Putz.); the third *C. atrata* (Putz.); the fourth *C. australasiae* (Boh.), *C. basalis* (Chaud.), *C. suturalis* (Putz.), and 11 new species; and the fifth 1 new species. *C. ephippiata* (Putz.) from Celebes stands in the midst of the fourth group. Of the species referred to as Australian, two, namely *C. elegans* and *atrata*, were described as American, and are placed here only on account of the agreement of their general characters with those of Australian forms; one of the new species is from New Zealand.

New species :—

Scarites lantzii, Cöquerel, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 301 (not described), Bourbon.

Clivina. Putzeys (Stett. ent. Zeit. 1866) describes the following 14 new species of this genus:—From AUSTRALIA (chiefly Melbourne and New South Wales):—*C. procera*, p. 34; *C. prominens*, p. 35; *C. juvenis*, p. 37; *C. lepida*, *vagans*, and *cava*, p. 38; *C. dimidiata*, p. 39; *C. sellata* and *verticalis*, p. 40; *C. melanopyga* (Chaud.) and *heterogena*, p. 41; *C. angustula* (Chaud.), p. 42; and *C. biplagiata*, p. 43. From NEW ZEALAND:—*C. rugithorax*, p. 37.

Dyschirius hispanus, Putzeys, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 352, and *D. immarginatus*, Putz. *l. c.* p. 353, from Spain.

Dyschirius obesus, Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 363, San Francisco.

Chlaniides :—

Rembus ægyptiacus (Dej.) is described from Morocco by Fairmaire and Cöquerel, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 18.

Stolonis, g. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxviii, 2. p. 230. Allied to *Stomis*, but pronotum as in *Leistus*; tooth of mentum obtuse; labrum

transversely quadrate; joint 1 of antennæ equal to 2 and 3 together. Sp. *S. notula*, sp. n., Motsch., l. c. p. 231, Venezuela.

Chlanius (*Diapheropsophus*) *swinhoci*, sp. n., Bates, Proc. Zool. Soc. 1866, p. 342, Formosa.

Peleciium. Chaudoir (Rev. et Mag. de Zool. 1866) describes the following new species of this genus:—*P. humeratum*, l. c. p. 108, Brazil; *P. foveicolle*, ibid., Brazil; *P. micropthalmum*, ibid., Mexico; *P. globipenne*, p. 109, Mexico; *P. subdentatum*, ibid., Mexico; *P. striatipenne*, ibid., Brazil; and *P. subcæcum*, p. 110, Brazil.

Harpalides:—

Leconte (Proc. Acad. Nat. Sci. Phil. 1865, p. 98) has some remarks on the classification of *Harpalini* proposed by Schiödte, which he finds liable to important exceptions among the American forms. This applies also to the division of the species of *Harpalus* into 2 primary groups by characters derived from the setæ of the abdomen and femora, as these appear to be, to a certain extent, sexual. Leconte's primary divisions of the species of the genus *Harpalus* are characterized as follows (l. c. pp. 99–101):—

- A. Elytra very deeply sinuate at tip, outer angle acute and dentiform in ♀, third interval without a dorsal puncture; abdomen finely punctured and pubescent towards base. Body elongate. Sp. *H. erraticus* (Say) and *retractus* (Lec.).
- B. Elytra truncate or deeply sinuate at tip; anterior tibiæ with outer angle prolonged behind, forming a small tooth; abdomen sparsely punctured and pubescent. Sp. *H. amputatus* (Say) and *viridicæneus* (Pal. B.).
- C. Elytra obliquely but slightly sinuate at tip; abdomen without accessory setæ*, finely punctured and pubescent towards base. Ex. *H. caliginosus* (Say), *longicollis* (Lec.), *pleuriticus* (Kirby), and *herbivagus* (Say).
- D. Elytra very slightly sinuate at tip; abdomen with accessory ambulatorial setæ proceeding from distinct punctures. Ex. *H. oblitus*, *obesus*, *varicornis*, and *testaceus* (Lec.).

The total number of North American species of *Harpalus* known to Leconte is 42, of which 7 are described as new. The author also cites 8 described species with which he is unacquainted, namely:—*H. longior* (Kirby), perhaps = *vagus* (Lec.); *H. basilaris* (Kirby), probably allied to *H. obesus* (Lec.); *H. ochropus* (Kirby), perhaps = *desertus* (Lec.); *H. albionicus* (Mann.), probably immature *H. cautus* (Dej.); *H. eurtatus* (Mann.); *H. dulcicollis* (Laferté), perhaps immature *Anisodaetylus ellipticus* (Lec.); and *H. depressicollis* and *alternans* (Motsch.). Of other known species Leconte remarks upon *H. longicollis* (Lec.), *H. erythropus* (Dej.), and *H. fraternus*, *oblitus*, and *funestus* (Lec.).

Harpalus melancholicus (Dej.) is said by Gautier des Cottés to be a parasite (?) of *Forficula auricularia*, Rev. et Mag. de Zool. 1866, p. 278.

Crotch (Entomologist, iii. pp. 108–109) refers to the following species of this group in connexion with his new catalogue:—*Harpalus obscurus* (Fab.),

* Leconte applies this term to some long bristles placed "midway between the ambulatorial setæ and the side of the abdomen."

for which he adopts Dejean's name *monticola*, there being already an *Anchomenus obscurus* (Herbst); *H. diffinis* (Dej.), distinct from *rotundicollis* (Fairm.); *H. puncticollis*; *H. griseus*; *H. attenuatus* (Steph.), suppressed for *consentaneus* (Dej.); *Stenolophus dorsalis*; *Bradycellus rufulus* (Dej.); *B. colaris*, to which *B. harpalinus* is referred.

Amblystomus. Gautier des Cottés (Mitth. schw. ent. Ges. ii. p. 109) gives a list of 6 species of this genus belonging to the fauna of the Mediterranean basin. He refers *Stenolophus niger* (Heer) as a synonym to *A. metallescens* (Dej.).

Curicus, g. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 394. Allied to *Stenolophus*; elytra shorter and more ovate, their striae deeper, and no metallic lustre; characters (of the mouth?) of *Anoplojenius*; last joint of palpi conical and pointed. Sp. *C. testaceipes*, Motsch. l. c. p. 394, Colombó.

New species:—

Harpalus bonvouloiri, Vuillefroy, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 348, and *H. castillanus*, Vuillefroy, *ibid.*, from Spain.

Harpalus meticulous (Dej.), Coquerel, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 302, *H. duponti* (Dej.), Coq. l. c. p. 304, and *H. sericeus* (Chaud.), Coq. *ibid.*, Bourbon.

Harpalus. Leconte (Proc. Acad. Nat. Sci. Phil. 1865) describes the following new North American species of this genus:—§ C. *H. convexus*, p. 102, New York; *H. vagans*, *ibid.*, Western States; *H. montanus*, *ibid.*, Colorado; *H. lewisii*, p. 103, Lake Superior; *H. vilvius*, *ibid.*, Illinois. § D. *H. furtivus*, p. 103, Colorado; and *H. lucidus*, p. 104, Nebraska.

Selenophorus subinctus, Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 365, Louisiana.

Amblystomus escorialensis, Gautier des Cottés, Mitth. schw. ent. Ges. ii. p. 108, Escorial.

Stenolophus dumainii, Coquerel, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 311, Bourbon.

Acupalpus corsicus, Perris, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 183, from Corsica.

Feroniides.

Sphodrini. Schaufuss has published (Sitzungsber. der Gesellsch. Isis, 1865, pp. 1–128) a monograph of the group containing the genus *Sphodrus* and its allies, which he characterizes as follows (l. c. p. 9):—

Mentum dente medio emarginato vel exciso. Palpi articulo ultimo truncato. Antennarum articuli primi tres glabri. Oculi plus minusve convexi. Caput elongatum vel majus, inter oculos punctis piliferis. Prosternum et metasternum distincta. Trochanteres postici appendiculati. Tibiæ anticæ emarginatæ vel excisæ. Tarsi antiqui maris plus minusve dilatati subtus glabri vel squamuloso-papilloso. Unguiculi simplices vel serrati.

The genera included by Schaufuss in this group are indicated in the following table:—

I. *Sphodri spurii*. Tarsi of the males smooth beneath.

A. Apterous; head large; tarsi naked. I. ΤΑΡΙΠΟΧΕΝΟΣ (Motsch.).

B. Apterous; head elongate; tarsi pubescent beneath.

- 1. Posterior trochanters acuminate. 2. *ÆCHMITES*, g. n.
- 2. Posterior trochanters obtuse 3. *PSEUDOPRISTONYCHUS*, g. n.
- C. Winged; all the tarsi above and first 4 joints of the posterior beneath pilose. 4. *PLATYNOMERUS* (Fald.).
- II. *Sphodri genuini*. Tarsi of the males squamuloso-pilose beneath.
- A. Apterous; head large; tarsi naked. 5. *PSEUDOTAPHOXENUS*, g. n.
- B. Apterous; head elongate; tarsi pubescent beneath. 6. *CRYPTOTRICHUS*, g. n.
- C. Winged; posterior trochanters acuminate.
- 1. Tarsi smooth 7. *SPHODRUS* (Clairv.).
- 2. Tarsi pubescent above 8. *SPHODROIDES*, g. n.
- D. Winged; posterior trochanters obtuse. 9. *LÆMOSTHENES*, g. n.
- E. Apterous; all the tarsi above, first 4 joints of posterior beneath, pilose.
- 1. Body and elytra testaceous or picco-ferruginous, subhyaline. 10. *ANTISPHODRUS*, g. n.
- 2. Body nigro-piceous or black, elytra blue or black. 11. *PRISTONYCHUS* (Dej.).

The genus *Sphodrus* as restricted includes only *S. leucophthalmus* and *S. indus* (Chaud.).

MOTSCHULSKY (Bull. Soc. Nat. Mosc. xxxviii. 2. pp. 232-233) gives the following tabular arrangement of the genera adopted by him for his new species. As many of them will have to be referred to hereafter as new genera, it may save some trouble to reproduce the table here:—

- A. Nine striæ on each elytron.
 - a. No small subscutellar stria at the base of each elytron.
 - Genera: *Microcephalus*, *Nirus*, *Omalosoma*, *Percus*, *Pseudopercus*, *Stomis*, *Loxandrus*, *Logarus*, *Pedius*, *Alogus*, *Amastus*, and *Fortar*.
 - b. Small subscutellar stria distinct.
 - † This striola placed between the suture and the first stria.
 - Genera: *Orbitus*, *Platyderus*, *Nortes*, and *Megadromus*.
 - †† This striola placed between first and second striæ.
 - 0. Pronotum with a single impression on each side.
 - Genera: *Blenmidus*, *Trirammatas*, *Platysma*, *Argutor*, &c.
 - 00. Pronotum with 2 impressions on each side of the base.
 - Genera: *Derus*, *Dysidius*, *Sogines*, *Pocilus*, *Orthomus*, *Pseudorthomus*, *Pledarus*, *Badistrinus*, *Ecarthrus*, &c.
- B. Ten striæ on each elytron.
 - a. No subscutellar striola.
 - Genus: *Rhagadus*.
 - b. Subscutellar striola more or less distinct.
 - † Striola between suture and first stria.
 - Genera: *Parhypates*, *Neuropates*, *Sarticus*, *Euryperis*, *Diorychoderus*, *Malops*, *Cheporus*, &c.
 - †† Striola between first and second striæ.
 - Genera: *Pseudoeryobius*, *Ternox*, &c.

Motschulsky (*l. c.*) tabulates the species contained in his collection belonging to the following genera of this group:—*Percus* (Bon.), pp. 237-240;

Ecarthrus (Lec.), pp. 260–261; *Antarctia* (Dej.), pp. 269–272; *Apotomopterus* (Hope), pp. 282–283; and *Ceroglossus* (Sol.), pp. 283–285. Motschulsky also characterizes the following genera, or refers to species belonging to them:—*Logarus* (Chaud.), p. 243; *Platyderus* (*rubricollis*, Marsh., said to be distinct from *depressa*, Dej.), p. 248; *Trirammatatus* (Sol.), p. 252; *Derus* (Motsch.), p. 255; *Pæcilus* (Bon.), p. 256; *Sogines* (Steph.), p. 257; *Euryperis* (Motsch.), p. 266; *Pseudocryobius* (Motsch.), p. 267; and *Molops* (*græcus*, Chaud.), p. 269.

Crotch (Entomologist, iii. pp. 107–108) refers to the following British species of this subfamily:—*Calathus flavipes* = *fulvipes* (Gyll.); *C. mollis* = subspecies of *melanocephalus*; *C. rotundicollis* (Dej.) = *piceus* (Marsh. nec Linn.); *Tiphria vivalis* (Ill.); *Anchomenus junceus* (Scop.); *A. pusillus* (Schaum); *A. thoreyi* (Dej.); *Pterostichus cupreus*, of which *affinis* and *versicolor* are varieties; *P. orinomum* = *vitreus*, var.; *Amara eurynota* (Dej.) = *acuminata* (Payk.); and *A. obsoleta*.

Amara alpina (Fab.) is indicated as a British species by T. Blackburn, Ent. M. Mag. iii. p. 92.

Platyderus. Chaudoir publishes (Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 105–114) a monographic revision of the species of this genus (= *Lisso-tarsus*, Chaud.), of which he indicates the characters, and calls attention to the fact that *Lovandrus* (Leconte) differs from it only in the absence of the ridge round the posterior extremity of the prosternum between the anterior coxæ. This character, he thinks, will be found insufficient, and then the *Lovandri* must be united with *Platyderus*. Chaudoir recognizes 19 species of *Platyderus*, including *P. varians* (Schauf.), *Argutor umbratus* (Ménétr.), and *nemoralis* (Graëlls); *Arg. cincticollis* (Chevr.) = *lusitanicus* (Dej.); *A. depressa* (Dej.); and *Feronia jugicola* (Fairm.) = *ruficollis* (Marsh.); *Feronia sicana* (Fairm.) = *canaliculatus* (Chaud.); and *P. minuta* (Reiche) = *napolitana* (Reiche), var. A variety of *P. nemoralis*, or distinct species, is indicated (p. 110), for which, if established, Chaudoir proposes the name of *sub-punctatus*. *Lisso-tarsus reticulatus* (Chaud.) is a species allied to *P. ruficollis*; but the unique specimen has been nearly destroyed (p. 114).

Perez Arcas indicates that *Haptoderus cantabricus* (Schauf.) = *Argutor nemoralis* (Graëlls), and *Platyderus varians* (Schauf.) = *A. montanellus* (Graëlls). Bull. Soc. Ent. Fr. 1866, p. xxxv.

Bethe (Stett. ent. Zeit. 1866, pp. 196–202) discusses the systematic position of *Argutor nemoralis* and *A. montanellus* (Graëlls), placed by different authors in the genera *Platyderus* and *Haptoderus*. He indicates as a further distinction between these genera the presence in *Platyderus* of a well-marked scutellar stria, which is either entirely wanting or quite rudimentary in *Haptoderus*, and comes to the conclusion that *A. montanellus* is a species of *Platyderus* distinct from *lusitanicus* (Dej.) and *varians* (Schauf.), and that *A. nemoralis* belongs to *Haptoderus*. Diagnoses of these species and of *H. cantabricus* (Schauf.) are given.

Trechus obtusus (Erichs.) is regarded by Crotch (Entomologist, iii. p. 109) as an alpine form of *T. minutus* (Fab.). Crotch also remarks on the genus *Perileptus*.

Pterostichus superciliosus (Say). Characters indicated by Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 364.

The following species from Finmark are noticed by L. von Heyden (Stett.

ent. Zeit. 1866, pp. 251-252):—*Omascus nigrita*, var. *rheticus*, *Platysma vitrea* (winged, perhaps distinct from Dejean's species and = *orinomum*, Steph.), *Leirus torridus* (Ill.) = *Platysma angustata* (Schneid. nec Duft.), *Amara apricaria*, *A. quenseli*, and *Bradycellus placidus* (Gyll.) = *B. cognatus* (Schneid. nec Gyll.).

Zabrus gibbus. Künstler notices the natural history of this species, and indicates the means to be employed for its destruction when it exists in injurious abundance. These consist in deep-ploughing at the end of May for the destruction of the pupæ, and in collecting the beetles after their emergence in June. Verh. zool.-bot. Ges. in Wien, xvi. pp. 645-646.

New genera:—

Motschulsky characterizes the following new genera of this group (see also table, p. 303):—

Nurus, g. n., Motschulsky, *l. c.* p. 234. Allied to *Eucamptognathus*; last joint of labial palpi scarcely triangular, of maxillary cylindrical and shorter than the preceding one; form short and stout, head very large.—Sp. *N. brevis*, sp. n. Motsch. *l. c.* p. 235, Australia.

Pseudopercus, g. n., Motschulsky, *l. c.* p. 240. Allied to *Percus*, but the 7th interval of the elytra not elevated.—Sp. *P. glabrellus*, sp. n., Motsch. *l. c.* p. 241, Pyrenees.

Alogus, g. n., Motschulsky, *l. c.* p. 245. Allied to *Stomis* (?); pronotum with a large and a small furrow within each posterior angle; mentum with a broad rounded tooth; joint 3 of antennæ as long as 1.—Sp. *A. monachicus* sp. n., Motsch. *l. c.* p. 245, New Zealand.

Amastus, g. n., Motschulsky, *l. c.* p. 246. Allied to preceding; pronotum nearly square; mentum with a bilobed tooth.—Sp. *A. nigricolor*, sp. n., Motsch. *l. c.* p. 246, Australia.

Fortax, g. n., Motschulsky, *l. c.* p. 246. Allied to preceding; pronotum cordiform, with a deep oblong foveole on each side at base; striæ of elytra more or less obliterated; mentum with a broad, notched tooth; joint 3 of antennæ quite as long as 1, 4 equal to it; last joint of palpi oval.—Sp. *Feronia morio* and *meticulosa* (Dej.).

Orbitus, g. n., Motschulsky, *l. c.* p. 247. Allied to *Steropus*; form more depressed; pronotum rounded, with a furrow on each side at base; joint 3 of antennæ as long as 1; last joint of max. palpi cylindrical, truncated, of labials elongated, triangular; mentum with a broad, obtuse tooth.—Sp. *O. purpuripennis*, sp. n., Motsch. *l. c.* p. 248, Australia.

Nortes, Motschulsky, *l. c.* p. 248 = *Pachymorphus* (Chaud.), this name having been previously employed both in the *Carabidæ* and for a genus of birds.—Sp. *N. subæneus*, sp. n., Motsch. *l. c.* p. 249, Valdivia.

Megadromus, g. n., Motschulsky, *l. c.* p. 249. Allied to *Steropus*; pronotum wider than head, transversely quadrate, each posterior angle with a large and a small fovea united by a transverse impression; joint 3 of antennæ shorter than 1; mentum with a broad and strongly bilobed tooth.—Sp. *M. viridilimbatus*, sp. n., Motsch. *l. c.* p. 251, New Zealand.

Blennidus, g. n., Motschulsky, *l. c.* p. 251. Allied to *Trirammatus*; form of *Calathus*; pronotum nearly square, narrowed in front, with a single impression on each side at base; labrum sinuated; joints of antennæ not keeled, 3 as long as 1; last joint of palpi ovate and broadly truncate; mentum with

a broad emarginate tooth.—Sp. *B. ferrugineicornis*, sp. n., Motsch. *l. c.* p. 252, Callao.

Pledarus, g. n., Motschulsky, *l. c.* p. 254. Allied to *Argutor*; but thorax with 2 impressions on each side at base.—Sp. *Argutor punctatostriatum* (= *Pter. crassicollis*, Moraw.), *orientalis*, and *gibbicollis* (Motsch.).

Badistrinus, g. n., Motschulsky, *l. c.* p. 258. Allied to *Orthomus*; pronotum square, with 2 distinct, punctate impressions on each side at base; joint 3 of antennæ a little shorter than 1; tooth of mentum broad, and scarcely margined.—Sp. *Omascus laticollis* (Motsch.); *B. sagax*, sp. n., Motsch. *l. c.* p. 259, Amur.

Rhagadus, g. n., Motschulsky, *l. c.* p. 261. Allied to *Argutor*; no subscutellar stria; pronotum nearly square, with 1 basal impression on each side head small.—Sp. *Argutor? microcephalus* (Motsch.).

Parhypates, g. n., Motschulsky, *l. c.* p. 262. Allied to *Molops*; pronotum cordiform, posterior angles salient, each with a single elongated impression; tooth of mentum broad and bifid; head large, triangular.—Sp. *P. tenuistriatus*, sp. n., Motsch. *l. c.* p. 262, and *P. profundestriatus*, Motsch. *l. c.* p. 263, Chili.

Neuropates, g. n., Motschulsky, *l. c.* p. 263. Allied to preceding; impressions of pronotum deep, foveiform; last joint of palpi more cylindrical; elytra with 3 foveoles on 3rd interval.—Sp. *N. pristonchoides* and *N. dyscoloides*, sp. n., Motsch. *l. c.* p. 264, Australia.

Sarticus, g. n., Motschulsky, *l. c.* p. 265. Allied to *Molops* and *Steropus*; pronotum ovate, with an impression on each side at base, and a smaller median one; joint 3 of antennæ nearly as long as 1; last joint of max. palpi short, nearly cylindrical, truncate, of labials somewhat triangular; elytra soldered together.—Sp. *S. ovicollis*, sp. n., Motsch. *l. c.* p. 265, and *S. orbicollis*, Motsch. *l. c.* p. 266, Australia.

Ternox, g. n., Motschulsky, *l. c.* p. 268. Allied to *Molops*; pronotum quadrato-cordiform, with one impunctate impression on each side at base; joint 3 of antennæ as long as 1; last joint of palpi elongate-ovate, truncated; tooth of mentum bifid; elytra soldered, striæ 9 and 10 approximated. Sp. *Feronia chalybea* (Lat.); *T. obsoletus*, sp. n. (Chaud. MS.), Motsch. *l. c.* p. 268, Australia.

Echmites, g. n., Schaufuss, *l. c.* p. 20 (see table, p. 303). Sp. *Pristonychus conspicuus* (Waltl).

Pseudopristonychus, g. n., Schaufuss, *l. c.* p. 22 (see table, p. 303). Sp. *Sphodrus cimmerius* (Fisch.).

Pseudotaphoxenus, g. n., Schaufuss, *l. c.* p. 25 (see table, p. 303). Sp. *Sphodrus ovalis* (Motsch.), *S. milleri* (Schauf.), *S. subcostatus* (Ménétr.), *S. rugipennis* (Fald.), *S. tilesii* (Fisch.), *S. dauricus* (Fisch.), *S. angusticollis* (Fisch.), *S. laticollis* (Dej.), *S. rufitarsis* (Fisch.), *S. thoracicus* (Gebl.), and ? *S. gracilipes* (Moraw.). New sp. *P. motschulskyi*, Schauf. *l. c.* p. 25, Kirghise Desert (= *Taph. elongatus*, Motsch.); *P. collaris*, Schauf. *l. c.* p. 30, Kirghise Desert (= *S. tilesii*, Dej.); *P. originis*, Schauf. *l. c.* p. 31, Mongolia.

Cryptotrichus, g. n., Schaufuss, *l. c.* p. 42 (see table, p. 303). Sp. *Prist. alpinus* (Dej.), *Car. janthinus* (Dufts.), *P. dalmatinus* (Dej.), *Cryptotrichus sturmi*, sp. n., Schauf. *l. c.* p. 44, Greece (= *janthinus*, Sturm).

Sphodroides, g. n., Schaufuss, *l. c.* p. 49 (see table, p. 303). Sp. *Prist. punctato-striatus* (Fairm.); *Sph. picicornis* (Dej.) = *melitensis* (Fairm.); and *S. deneveni* (Fairm.).

Læmosthenes, g. n., Schaufuss, l. c. p. 53 (see table, p. 303). Sp. *S. cordicollis* (Chaud.), *P. complanatus* (Dej.) = *chilensis* (Gory), *rufitarsis* (Curt.), and *alatus* (Woll.); *S. venustus* (Clairv.) = *cæruleus* (Bon.) and *crenatus* (Redt.); and *S. atrocyanus* (Fairm.).

Antispodrus, g. n., Schaufuss, l. c. p. 58 (see table, p. 303). Sp. *S. schmidtii*, *dissimilis*, *fairmairei*, *peleus*, and *erberii*, (Schauf.); *S. schreibersii* (Küst.); *S. æacus* (Mill.) = *modestus* (Schauf.); *S. cavicola* and *ghilianii* (Schauf.); *Prist. elegans* (Dej.); and *P. macropus* (Chaud.). New sp. *A. ledereri*, Schauf. l. c. p. 61, Spain; *A. redtenbacherii*, Schauf. l. c. p. 66, Dalmatia (= *gracilipes*, Schauf. olim); *A. pseudapostolus*, Schauf. l. c. p. 67, Italy?

New species :—

Pterostichus montenegrinus, Miller, Verh. zool.-bot. Ges. in Wien, xvi. p. 817, Montenegro. Forms a new subgenus *Stenochoromus* (Mill.).

Argutor gyrosus, Motschulsky, l. c. p. 253, *A. arcuaticollis*, Motsch. ibid., Kirghise Steppes; *A. ripensis*, Motsch. ibid., Amur.

Feronia (*Argutor*) *rufonitens*, Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 251, and *F. (Tapinopterus) insidiosa*, Fairm. l. c. p. 252, from Asia Minor.

Feronia (Orthomus) varinii, Gautier des Cottés, Rev. et Mag. de Zool. 1866, p. 178, Sardinia.

Feronia (Haptoderus) carradei, Gautier des Cottés, l. c. p. 277, Armenia.

Platyderus dilalalus, Chaudoir, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 111, from the south of France and Spain; *P. rotundatus*, Chaud. (= *Arg. depressus*, Ramb.), ibid., from near Granada; and *P. quadricollis*, Chaud. l. c. p. 113, from the Asturias. A fourth supposed species, allied to the last mentioned, is indicated and named provisionally *subcrenatus* (see also *subpunctatus*, anté, p. 304).

Anchomenus dohrnii, Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 250, from Asia Minor.

Zabrus punctifrons, Fairmaire, l. c. from Asia Minor.

Taphoxenus interstitialis, Schaufuss, Sitzungsber. Isis, 1865, p. 19, Mongolia.

Pristonychus. Schaufuss describes the following new species :—*P. ausonius*, l. c. p. 75, Syria?; *P. nitidus* (Motsch. MS.), l. c. p. 96, Daghestan; *P. recticollis*, l. c. p. 105, "terra Berberorum."

Culathus. The following new Spanish species are described by Vuillefroy (Ann. Soc. Ent. Fr. 4^e sér. vi.) :—*C. lugens*, *C. sublevis*, and *C. uniseriatus*, l. c. p. 346; *C. asturiensis*, *C. liotrachelus*, and *C. granatensis*, l. c. p. 347.

Culathus intermedius, Gautier des Cottés, Mitth. schw. ent. Ges. ii. p. 110, Escurial; *C. minutus*, Gaut. l. c. p. 111, Gallicia; *C. brevis*, Gaut. l. c. p. 112, Gallicia and Portugal; *C. depressus*, Gaut. ibid., south of Spain.

Culathus angularis, Chevrolat, Rev. et Mag. de Zool. 1866, p. 100, Reinosa.

Olisthopus anomalus, Perris, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 182, from Corsica.

Patrobis nebrionides, Vuillefroy, l. c. p. 345, Asturias.

Colpodes salazianus, Coquerel, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 307, *C. arecarum*, Coq. l. c. p. 308, and *C. æreus*, Coq. l. c. p. 310, from Bourbon.

Distrigodes rufulus, Motschulsky, l. c. p. 227, Burma.

Cælostoma (= *Cælostomus*?) *flavipes*, Motschulsky, l. c. p. 228, East Indies.

Distrigodes picipes, Motschulsky, l. c. p. 228, East Indies.

Astygis equicollis, Motschulsky, *l. c.* p. 229, Algeria; *A. stenoderus*, Motsch. *ibid.*, Egypt; *A. dorsalis*, Motsch. *ibid.*, East Indies.

Microcephalus obliquecollis, Motschulsky, *l. c.* p. 233, and *M. angustatus*, Motsch. *l. c.* p. 234, Brazil?

Omalosoma carbonicolor, Motschulsky, *l. c.* p. 235, Australia.

Percus oblongus and *depressus*, Motschulsky, *l. c.* p. 240, Corsica; and *P. ovatus*, Motsch. *l. c.* p. 241, Sardinia.

Loxandrus iris, Motschulsky, *l. c.* p. 242, and *L. commutabilis*, Motsch. *l. c.* p. 243, North America.

Logarus kalhys, Motschulsky, *l. c.* p. 243, Mongolia; *L. chameleon* (sic), Motsch. *l. c.* p. 244, Eastern Siberia.

Sogines indicus, Motschulsky, *l. c.* p. 257, East Indies.

Orthomus antipodus, Motschulsky, *l. c.* p. 257, Australia.

Evarthrus. Motschulsky describes *E. perseverus* and *nimius*, *l. c.* p. 260, and *E. basilaris*, *licinoides*, and *texanus*, *l. c.* p. 261, from North America.

Antarctia. Motschulsky describes the following species:—*A. antiqua* and *laticollis*, *l. c.* p. 270, and *A. amaroides*, *l. c.* p. 271, Chili; *A. nigra*, *l. c.* p. 270, Brazil; *A. isthmica*, *l. c.* p. 271, Panama; *A. picipes*, *ibid.*, and *A. nigrita*, *l. c.* p. 272, Venezuela.

Trechus curticollis, Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 18, from Constantine.

Perileptus humidus, Coquerel, Ann. Soc. Ent. Fr. vi. p. 312, Bourbon.

Bembidiides :—

CROTCH (Entomologist, iii. pp. 109–110) remarks upon several species of this group with reference to changes made in his new catalogue:—*Bembidium ceneum* (Germ.) = subspecies of *biguttatum*; *B. clarkii* is similarly related to *B. assimile*, and *B. velox* to *B. lampros*; *B. stephensi*, Crotch (*l. c.* p. 110) = *affine* (Steph.), the latter name being preoccupied by Say; *B. tibiale*.

L. VON HEYDEN (Stett. ent. Zeit. 1866, p. 253) notes the variations of specimens of *Bembidium bipunctatum* from Finmark.

Bembidium (*Notaphus*) *guadarramense*, sp. n., Gautier des Cottés, Mitth. schw. ent. Ges. ii. p. 109, Spain.

Bembidium (*Peryphus*) *luridipes*, sp. n. (Reiche, MS.), Gautier des Cottés, *l. c.* p. 113, Corsica.

Bembidium alsium, sp. n., Coquerel, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 312, and *B. (Tachys) bibulum*, Coq. *l. c.* p. 313, from Bourbon.

Scotodipnus revelieri, sp. n., Perris, Ann. Soc. Ent. Fr. 4^e sér. v. p. 505, Corsica.

DYTISCIDÆ.

Cylyster ræselii (Fab.), a variety of the ♀ with smooth elytra found in Spain is described by Gautier des Cottés, Rev. et Mag. de Zool. 1866, p. 179.

PERRIS remarks that his *Hydroporus hyphyroides* is identical with *H. ferrugineus* (Luc.). Ann. Soc. Ent. Fr. 4^e sér. v. p. 511.

CROTCH (Entomologist, iii. pp. 110–111) has the following remarks on British species of this family in connexion with his new catalogue:—*Hydroporus sanmarkii* = *rivalis* subspecies?; *H. ferrugineus* (Steph.) gives way to *victor* (Aubé) on account of the existence of *Hyphydrus ferrugineus* (Linn.); *H. oblongus* (Steph.) is older than *nitidus* (Sturm); *H. piceus*

(Steph.) must stand; *H. tinctus* (Clark) = *palustris*; *Agabus* is divided by Thomson into sections, here characterized; *Agabus uliginosus* (Payk.) changed to *dispar* (Bold) on account of *Ilybius uliginosus* (Linn.).

POWER (Entomologist, iii. pp. 79-80) remarks upon the occurrence of several species of this family near London, including *Ilybius subcaneus* (Erichs.) new to Britain. Power also remarks upon the sexual characters presented by some species of *Ilybius*, the ♂ having a series of longitudinal plicæ on the lower surface of the abdomen, the ♀ a notch and ridge on its last segment. The differences of these sexual characters will serve, in Power's opinion, for the discrimination of some doubtful species.

Hydroporus brevis (Sahlb.) is recorded as British by Crotch (Cat. Brit. Col.), and *H. neglectus* (Schaum) by Power (Ent. M. Mag. iii. p. 43).

Hydroporus vitiosus (Lec.). Variety noticed by Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 365.

Colymbetes notatus (Sturm) recorded as North American by Leconte, l. c. p. 366.

Hydroporus obesus, sp. n., Leconte, l. c. p. 365, California; *H. sellatus*, Leconte, ibid., Dakota.

Colymbetes tostus, sp. n., Leconte, l. c. p. 366, Northern States.

GYRINIDÆ.

Gyrinus colymbus (Erichs.) and *opacus* (Sahlb.) are recorded as British by Crotch. See Rye, Ent. Ann. 1867, p. 58.

Gyrinus curtus, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 165, Japan.

PALPICORNIA.

CROTCH (Entomologist, iii. pp. 111-112) remarks upon the following species of this family chiefly with regard to their synonymy:—*Helophorus granularis*, probably divisible into 3 or 4 species; *H. mulsanti* (Rye); *Hydrana sieboldi*, name preferred to *pygmeus* (Wat.) on account of *Ochthebius pygmeus* (Fab.); *H. flavipes* (Sturm); *Hydrobius atricapillus* (Payk.); *Hydrobius globulus* (Payk.); *Berosus signaticollis* (Charp.), older than *B. æriceps* (Curt.); *Limnebius picinus* (Marsh.) = *nitidus* (Marsh.); *Cercyon marinum* (Thoms.); *C. plagiatum* (Erichs.); *C. centromaculatum* (Sturm); and *Megasternum boletophagum* (Erichs.).

Limnebius. Of the larger species of this genus Gerhardt (Berl. ent. Zeits. 1866, pp. 395-404) records the occurrence in Germany of 2 hitherto unnoticed. These raise the number to 4; and, as their distinctive characters have hitherto been but imperfectly indicated, Gerhardt describes them in detail. The 4 species are:—*L. truncatellus* (Thunb.), l. c. p. 395; *L. papposus* (Redt.), l. c. p. 398; *L. truncatulus* (Thoms.), l. c. p. 400; and *L. nitidus* (Marsh.), l. c. p. 402. On p. 404 the author gives schematic tables for the determination of the species.

Limnebius suturalis, sp. n., Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 366, Northern States.

Helophorus dorsalis (Muls. nec Marsh.) is named *H. mulsanti* by Rye, Cat. British Beetles.

Helophorus nanus (Sturm). Power records the reappearance of this species in Britain, Ent. M. Mag. iii. p. 79.

Helophorus fortis, sp. n., Leconte, l. c., San Francisco.

Hydræna palustris (Erichs.), *angustata* (Sturm), and *pulchella* (Germ.) are recorded as British by Crotch (Cat. Brit. Col.). See Rye, Ent. Ann. 1867, pp. 77-78.

Pachysternum hæmorrhoum, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 168, Japan.

Megasternum gibbulum, sp. n., Motschulsky, l. c. p. 169, Japan.

BRACHELYTRA.

FAUVEL has commenced (Bull. Soc. Linn. Norm. x. pp. 250-353) a monographic revision of the Chilean Staphylinidæ, of which he has completed the first 3 subfamilies, the *Aleocharini*, *Tachyporini*, and *Staphylinini* of Erichson. He remarks on the small size of the species generally, the largest measuring only 10 millims. No true *Staphylinus* or *Ocyopus* occurs. The general type of the insects of Chili is European in its aspect; and this is particularly striking in the Staphylinidæ. Of European species 9 occur, namely *Aleochara lata* (Grav.), *Homalota lividipennis* (Mann.), *Oligota pusillima* (Grav.), *Philonthus sordidus* (Grav.), *varians* (Fab.), and *nigritulus* (Grav.), *Lithocharis ochracea* (Grav.), *Oxytelus sculptus* (Grav.), and *Trogophilæus riparius* (Lac.). One species found in Madagascar (*Isomalus semirufus*, Erichs.) is met with. There are only 3 Peruvian and 1 North American species; and no examples occur of the characteristic Brazilian genera *Coproporus*, *Pinophilus*, *Cryptobium*, *Osorius*, *Lispinus*, *Apocellus*, &c.

Aleocharides.

FAUVEL (Bull. Soc. Linn. Norm. x. pp. 22-23) gives the following notes on the synonymy of species of this subfamily:—*Falagria elegans* (Baudi) = *F. formosa* (Rosenh.); *Oxyopoda amicta* (Erichs.) is a *Leptusa*; *Leptusa rupestris* (Fauv.) = *Oxyopoda incrassata* (Muls.); *Aleochara senilis* (Muls.) = *A. grisea* (Kraatz); *A. brunnipennis* (Motsch.), name previously employed by Kraatz; *Chilopora colorata* (Fairm.) = *Tachyusa exarata* (Mann.); *Homalota flavipes* (Thoms.), name previously employed by Gravenhorst; *H. pallens* (Redt.) = *indocilis* (Heer). *H. pallens* (Muls.) is a species nearly allied to *macella* (Erichs.), but distinct; *Oligota obscuricornis* (Motsch.) = *O. pusillima* (Grav.).

FAUVEL also notes (l. c. p. 246) that *Ocalca rivularis* (Mill.) = *castanea* (Erichs.); *Leptusa chlorotica* (Fairm.) = *globulicollis* (Muls.); *Aleochara frigida* (Fauv.) = *ligæa* (Kraatz); the genera *Chilopora* (Kraatz), *Ischnoglossa* (Kraatz), and *Encephalus* (Westw.) are to be united respectively with *Calodera* (Mann.), *Stichoglossa* (Fairm.), and *Gyrophæna* (Mann.).

Mecorhopalus (Solier) is referred by Fauvel to *Aleochara* (Bull. Soc. Linn. Norm. x. p. 285). The same author also unites *Euthorax* (Sol.) and *Myrmecochara* (Kraatz) with *Oxyopoda* (l. c. p. 301). *Anomognathus fliiformis* (Sol.) is a *Homalota*, scarcely differing from the European *H. cuspidata* (Fauvel, l. c. p. 313). *Holobus* (Sol.) is referred by Fauvel to *Oligota* (l. c. p. 324).

Besides the species referred to hereafter, Fauvel figures the details of *Polylobus bicolor* (Sol.), l. c. pl. 4. figs. 32-35; *Homalota fuscitipennis* (F. & G.), figs. 36, 37; and the posterior tarsus of *Euryusa parallela* (F. & G.), fig. 23.

KRAATZ (Berl. ent. Zeits. 1866, pp. 413 and 416) cites Fauvel's results, and

makes the following remarks upon some of them:—*Ocalea rivularis* and *castanea* are in his opinion distinct; *Chilopora* differs from *Cabodera* in habit and mode of life sufficiently to justify its maintenance; *Ischnoglossa* and *Stichoglossa* are quite distinct, especially in the structure of the mentum; and *Encephalus* also is distinct from *Gyrophæna*.

Falagria. Leconte (Proc. Acad. Nat. Sci. Phil. 1866, p. 372) tabulates the North American species of this genus, and characterizes *Aleochara bilobata* (Say), *l. c.* p. 370.

Homalota atricilla (Er.) and *H. puncticeps* (Thoms.) are distinct species according to Scriba, who gives their distinctive characters. Berl. ent. Zeits. 1866, p. 290.

Scriba (Berl. ent. Zeits. 1866, p. 379) maintains that *Homalota languida* (Erichs.) and *H. longicollis* (Muls.) are distinct species, of which he gives the characters.

Homalota. Rye, following Scriba, indicates the synonymy of *H. puncticeps* (Thoms.) and *H. atricilla* (Erichs.). Ent. M. Mag. iii. p. 122. He also refers to *H. picea* (Motsch.), which he says, curiously enough, is "attributed to Britain only in De Marseul's catalogue," although he quotes Motschulsky's description in which "Angleterre" is given as the sole habitat of the species.

Ilyobates rufus (Kraatz) = *I. propinquus* (Aubé); and *Myllæna glauca* (Aubé) is described from immature specimens of *M. elongata* (Kraatz). Scriba, Berl. ent. Zeits. 1866, p. 303.

Euryusa wockii (Schneid.) = *Haploglossa prætextata* (Erichs.). *Euryusa sinuata* (Erichs.) occurs in Finmark. *Homalota fungi* (Schneid. nec Grav.) = *H. orbata* (Erichs.). L. von Heyden, Stett. ent. Zeit. 1866, p. 253.

Oxygoda umbrata (Erichs.). Crotch (Cat. Brit. Col.) proposes the name of *erichsoni* for this species = *O. humidula* (Kraatz) (see Record, 1865, p. 431).

СРОТЧИ (Entomologist, iii. pp. 175–176) refers to the following species of this group:—*Phytosus nigriventris* (Chevr.); *Euryusa kirbii* (Jans.), distinct from *Thiasophila inquilina* (Märk.); *Cratæva erythroceras* (Steph.) = *prætexta* (Erichs.); *Aleochara obscurella* (Grav.); *Oxygoda umbrata* and its synonyms; *O. sericea* (Heer) = *nigrina* (Wat.); *O. incrassata* (Muls.) = *aterima* (Wat.); *Homalota algæ* (Hardy) = *maritima* (Wat.); *H. depressa* (Fab.); and *Oligota parva* (Kraatz).

СРОТЧИ, RYE, and SHARP have added the following species of this group to the British list:—*Phytosus balticus* (Kraatz), *Aleochara grisea* (Kr.), *Homalota hypnorum* (Kies.), *H. crassicornis* (Gyll.), *H. subtilissima* (Kraatz), *H. pallens* (Ferrari), and *Placusa complanata* (Erichs.). See Rye, Ent. Annual, 1867, pp. 59–61.

Oxygoda soror (Thoms.) is recorded as a British species by Rye (Ent. M. Mag. iii. p. 66), and *Haploglossa pulla* (Gyll.) by Bold (*l. c.* ii. p. 234).

Gymnusa brevicollis (Mann.) recorded from Ottawa by Leconte, *l. c.* p. 373.

New genera:—

Eudera, g. n., Fauvel, Bull. Soc. Linn. Norm. x. p. 257, pl. 4. figs. 1–4 (details). Allied to *Autalia*; labial palpi biarticulate; ligula elongate, bifid. Sp. *E. sculptilis*, sp. n., Fauv. *l. c.* p. 258, Chili.

Ophioglossa, g. n., Fauvel, *l. c.* p. 259, pl. 4. figs. 5–9 (details). Allied to preceding; ligula short, bifid; labial palpi triarticulate, joint 1 longer than

2, 3 slightly thickened at apex; joint 1 of posterior tarsi slightly elongate. Sp. *G. araucana*, sp. n., Fauv. *l. c.* p. 260, Chiloe.

Brachyglossa, g. n., Fauvel, *l. c.* p. 276, pl. 4. figs. 19–22, details. Allied to *Phleopora*; inner lobe of maxillæ with long spines; ligula very short, subtriangular; labial palpi triarticulate, joint 2 shortest; tarsi 5-jointed, joint 1 scarcely longer than 2. Sp. *B. varicolor*, sp. n., Fauv. *l. c.* p. 277, Chillan.

Microglossa, g. n., Fauvel, *l. c.* p. 282, pl. 4. figs. 24–27 (details). Allied to *Aleochara*; ligula elongate, entire; labial palpi biarticulate; tarsi 5-jointed, joint 1 a little elongated. Sp. *M. chilensis*, Fauv. *l. c.* p. 283, and *M. andina*, Fauv. *l. c.* p. 284, from Chillan.

Dasymera, g. n., Fauvel, *l. c.* p. 290, pl. 4. figs. 28–31 (details). Allied to *Oxygota*; ligula very short, subtriangular, entire; labial palpi short, 3-jointed; tarsi 5-jointed, pilose beneath, first 2 joints in posterior tarsi elongated. Sp. *D. chillana*, sp. n., Fauvel, *l. c.* p. 291, Chillan.

Euryglossa, g. n., Fauvel, *l. c.* p. 326, pl. 4. figs. 38–41 (details). Allied to *Ducopsis* and *Myllæna*; inner lobe of maxillæ short, with irregularly distributed spinules; ligula very large, dilated and sinuate at apex; labial palpi biarticulate, joint 2 short; tarsi 4-jointed, joint 1 of posterior much elongated. Sp. *Hopländria anthracina* (Fairm. & Germ.). N. sp. *E. apicalis*, Fauv. *l. c.* p. 328, and *E. pictipennis*, Fauv. *ibid.*, from Chili.

New species :—

Falagria. Leconte (Proc. Acad. Nat. Sci. Phil. 1866) describes the following new species of this genus:—*F. scutellaris*, p. 370, New York; *F. cingulata*, *ibid.*, New York, Pennsylvania, Illinois; *F. leviuscula*, p. 371, California; *F. quadriceps*, *ibid.*, New York; *F. partita*, *ibid.*, Florida and Louisiana; *F. vaga*, *ibid.*, Lake Superior; and *F. cavipennis*, p. 372, California.

Leptusa rugatipennis, Perris, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 183, and *L. civilis*, Perris, *l. c.* p. 184, from Mont de Marsan.

Leptusa levigata, Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 355, La Granja.

Haploglossa bicolor, Perris, Ann. Soc. Ent. Fr. 4^e sér. v. p. 506, Madrid.

Myrmedonia bituberculata, Brisout, *l. c.* p. 357, Escorial; *M. punctatissima*, Bris. *l. c.* p. 358, Reynosa.

Bolitochara arcuata, Fauvel, Bull. Soc. Linn. Norm. x. p. 263, Chili.

Calodera pedestris, Fauvel, *l. c.* p. 270, *C. inflata* (Fauv.), *ibid.*, pl. 4. fig. 11 (ant. tarsus), *C. spectrum*, Fauv. *l. c.* p. 271, pl. 4. fig. 12 (ant. tarsus), from Chili.

Phleopora tristis, Fauvel, *l. c.* p. 274, pl. 4. figs. 13–16, *P. chilensis*, Fauv. *ibid.* figs. 17, 18, and *P. cinctella*, Fauv. *l. c.* p. 275, from Chili.

Tachyusa andicola, Fauvel, *l. c.* p. 279, Santiago, Chili.

Homaxusa expansa, Leconte, *l. c.* p. 373, Washington.

Oligota pedalis, Leconte, *l. c.* p. 372, Columbia.

Myrmedonia rudis, Leconte, *l. c.* p. 372, Washington.

Euryusa obtusa, Leconte, *l. c.* p. 373, Pennsylvania.

Euryusa montana, Fauvel, *l. c.* p. 280, Chillan.

Aleochara humilis, Fauvel, *l. c.* p. 286, Santiago, Chili.

Aleochara punctatissima, Scriba, Berl. ent. Zeits. 1866, p. 377, Capri.

Silusa rufipennis, Fauvel, *l. c.* p. 290, Chillan.

Polylobus. The following 7 new Chilian species are described by Fauvel:—*P. marginalis*, *l. c.* p. 295; *P. brevicornis* and *luctuosus*, *l. c.* p. 296; *P. attenuatus* and *laticollis*, *l. c.* p. 298; *P. varius*, *l. c.* p. 299; and *P. antennarius*, *l. c.* p. 301.

Oxyroda. The following 8 new Chilian species are described by Fauvel:—*O. nigerrima*, *l. c.* p. 302; *O. andina*, *l. c.* p. 303; *O. cordilheræ*, *l. c.* p. 304; *O. infauusta*, *l. c.* p. 305; *O. fumaria*, *l. c.* p. 306; *O. egena*, *l. c.* p. 307; *O. puberula*, *l. c.* p. 308; and *O. microptera*, *l. c.* p. 309.

Oxyroda rupicola, Rye, Ent. M. Mag. iii. p. 66, Perthshire.

Homalota saundersi, Rye, Ent. M. Mag. iii. p. 121, from Reigate; *H. eremita*, Rye, *l. c.* p. 123, from Scotland.

Homalota glacialis, Brisout, *l. c.* p. 356, Guadarrama and Pyrenees.

Homalota platycephala (Fauv.), Coquerel, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 314, Bourbon.

Homalota subtilis, Scriba, *l. c.* p. 128, from Seligenstadt.

Homalota. Five new Chilian species of this genus are described by Fauvel, namely:—*H. sculpticollis*, *l. c.* p. 314; *H. hispidula*, *l. c.* p. 316; *H. ambigena*, *l. c.* p. 317; *H. andicola*, *l. c.* p. 318; and *H. merula*, *l. c.* p. 319.

Placusa chilensis, Fauvel, *l. c.* p. 323, Chillan.

Gyrophæna poweri, Crotch. A new species indicated by Crotch, Cat. Brit. Col. = *Gyrophæna* sp. ? 6*, Waterhouse. See Rye, Ent. Ann. 1867, p. 48.

Tachyporides.

FAUVEL (Bull. Soc. Linn. Norm. x. pp. 246, 247) has the following synonymic notes on this group:—*Cilea* (Duv.) has the priority of *Leucoparyphus* (Kraatz); the genus *Bryoporus* (Kraatz) is to be reunited with *Mycetoporus* (Erichs.). The specific synonyms referred to by him are all anticipated in De Marseul's Catalogue.

KRAATZ (Berl. ent. Zeits. 1866, p. 417) remarks on the results published by Fauvel, and affirms the distinction of his genus *Bryoporus* from *Mycetoporus*.

Bryoporus castaneus (Hardy and Bold) is altered to *B. hardii* by Crotch (Cat. Brit. Col.), the former name being preoccupied.

Bryoporus rufus (Erichs.) is recorded as a British species by Rye, Ent. M. Mag. iii. p. 66.

Tachinus frigidus (Erichs.) and *Mycetoporus tenuis* (Muls.) are added to the British list by Sharp. See Rye, Ent. Ann. 1867, pp. 62 and 63.

Tachinus elongatus has occurred on the Altwater above the level of trees; and *T. latiusculus* was obtained on the Carinthian Alps and not on the Riesengebirge. Kiesenwotter, Berl. ent. Zeits. 1866, p. 288.

Bryoporus multipunctus, sp. n., Hampe, Berl. ent. Zeits. 1866, p. 371, Croatia.

Tachyporus maculicollis, sp. n., Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 374, Quebec; *T. maculipennis*, sp. n., Leconte, *ibid.*, Louisiana.

Conosoma knoxii, sp. n., Leconte, *l. c.* p. 374, Pennsylvania.

Staphylinides.

FAUVEL (Bull. Soc. Linn. Norm. x. pp. 23-24) gives the following synonymic notes on species of this group:—*Quedius simplicifrons* (Fairm.) = *molechinus* (Grav.), var.; *Ocyppus olympicus* (Baudi) = *rubripennis* (Reiche); *Ocyppus siculus* (Stierl.) probably = *melanarius* (Heer), and name already employed (see also *l. c.* p. 248); *Philonthus maritimus* (Motsch.) = *thermarum*

(Aubé); *P. truquii* (Peyr.) = *micans* (Grav.); *Xantholinus atratus* and *longiventris* (Heer) are varieties respectively of *punctulatus* (Payk.) and *linearis* (Fab.).

FAUVEL also gives (*l. c.* pp. 247-248):—*Philonthus bicolor* (Redt.) = *Quedius fulgidus* (Fab.); *Quedius crassus* (Fairm.) = *curtus* (Erichs.); *Ocyppus brachypterus* (Brullé) = *olens* (Müll.); *O. siculus* (Aubé) = *pedator* (Grav.). Fauvel regards the genera *Creophilus*, *Emus*, *Leistotrophus*, and *Ocyppus* as insufficiently characterized, and proposes to revert to the genus *Staphylinus*, with 2 great subgenera *Staphylinus* and *Ocyppus*.

KRAATZ (Berl. ent. Zeits. 1866, pp. 414 and 417) refers to Fauvel's results, and states that *Xantholinus atratus* and *longiventris* appear to be distinct from *punctulatus* and *linearis*, and objects to the proposed reestablishment of the great genus *Staphylinus*, and to the union of *Ocyppus brachypterus* with *O. olens*.

SCRIBA has given (Berl. ent. Zeits. 1866, pp. 376-378) a list of the species of this family collected in Southern Italy by W. Fuchs. He enumerates 47 species, 3 of which are described as new.

Ocyppus velutinus (Cristof.) = *italicus* (Géné) according to Gautier des Cottés, Rev. et Mag. de Zool. 1866, p. 178.

CROTCH (Entomologist, iii. pp. 176-177) remarks on *Quedius semiobscurus* (Erichs.), *Philonthus concinnus* (Grav.), *Xantholinus linearis* (Oliv.), and *Leptacinus pusillus* (Steph.).

Philonthus tenuicornis (Muls.) is recorded as a British species by Rye, Ent. M. Mag. iii. p. 139.

Quedius brevicornis (Thoms.) is added to the British list by Sharp; also *Philonthus concinnus* (Grav.), *Xantholinus lentus* (Grav.), and *Othius myrmecophilus* (Kies.) by Crotch (Cat. Brit. Col.). See Rye, Ent. Ann. 1867, pp. 64 and 65.

New species:—

Staphylinus (Creophilus) coquerelii (Fauv.), Coquerel, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 317, Bourbon.

Philonthus peregrinus (Fauv.), Coquerel, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 315, and *P. fauveli*, Coq. *l. c.* p. 316, from Bourbon.

Philonthus graciosus, Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 359, Spain.

Philonthus addendus, Sharp. A new species indicated in Crotch's Cat. Brit. Col., and described by Sharp before the Entomological Society. See Rye, Ent. Ann. 1867, p. 48.

Quedius fuchsii, Scriba, Berl. ent. Zeits. 1866, p. 378, Rome.

Quedius pineti, Brisout, *l. c.* p. 359, Escorial.

Quedius consors, Fauvel, Bull. Soc. Linn. Norm. x. p. 340, Santiago.

Xantholinus elongatus (Germ. MS.), Fauvel, *l. c.* p. 349, and *X. andinus*, Fauvel, *l. c.* p. 350, Santiago.

Pæderides.

FAUVEL (Bull. Soc. Linn. Norm. x. pp. 24-25) gives the following synonymic notes on species of this group:—*Lathrobium decipiens* (Reiche) = *lusitanicum* (Grav.); *L. volgense* (Hochh.) = *boreale* (Hochh.), var.; *Cryptobium brevipenne* (Muls.) = *fracticornis*, var. *jacquelinei*; *Lithocharis ægyptiaca* (Motsch.) = *debilicornis* (Woll.); *Stenius rutilipennis* (Chevr.) = *filum* (Aubé); *Pæderus ventricosus* (Gaut.) = *baudii* (Fairm.); *P. minutus* (Gaut.) = *limnophilus*

(Erichs.); *P. carbonarius* (Gaut.) = *longicornis* (Aubé); *Pæderomorphus peduncularius* (Gaut.) = *Pæderus littoralis* (Grav.) disjuncto collo! Fauvel also remarks that all Erichson's exotic species of *Cryptobium* must be referred to *Homocotarsus* (Hochh.) if that genus be maintained.

FAUVEL adds (*l. c.* pp. 248-249):—*Achenium caucasicum* (Lap.) = *Scymbalium anale* (Nordm.); *Lathrobium concinnum* (Bris.) = *anale* (Luc.); *Lithocharis aveyronensis* (Math.) = *seminigra* (Fairm.); *L. ruficollis* (Kraatz) = *melanocephala* (Fab.); *Sunius brunniceps* (Fairm.) = *Lithoch. ochracea* (Grav.); *S. biguttatus* (Baudi) = *bimaculatus* (Erichs.).

KRAATZ (Berl. ent. Zeits. 1866, pp. 414-415) cites Fauvel's results, upon some of which he remarks as follows:—*Homocotarsus* may be united with *Cryptobium*; but the latter includes several East-Indian species described by Kraatz; *Lithocharis ruficollis* is quite distinct from *melanocephala*.

Pæderus longicollis (Gaut.) = *ruficeps* (Baudi), and *P. ventricosus* (Gaut.) = *baudii* (Fairm.). Gautier des Cottés, Mitth. schw. ent. Ges. ii. p. 114.

Lithocharis ferruginæa (Erichs.). Crotch remarks on the characters of this species, which he records as British (Entomologist, iii. p. 177).

Lathrobium jansoni, Crotch. A new species indicated by Crotch, Cat. Brit. Col. See Rye, Ent. Ann. 1867, p. 49.

Lathrobium gracile, sp. n., Hampe, Berl. ent. Zeits. 1866, p. 371, Agram.

Lithocharis monticola, sp. n., Hampe, *l. c.* p. 372, Agram.

Stenides.

On the synonymy of *Stenus opacus* (Erichs.) and *S. debilis* (Dietr.). See Rye, Ent. M. Mag. ii. p. 258.

Stenus elevatus (Motsch.) = *S. ossium* (Steph.) according to Rye, Ent. M. Mag. iii. p. 124.

Stenus aceris (Boisd.). On the characters of this species see Fauvel, Bull. Soc. Linn. Norm. x. p. 25.

Stenus major (Muls.) is recorded as a British species by Sharp, Proc. Ent. Soc. 1866, p. xlii.

Stenus shepherdi and *S. annulatus*, Crotch. Indicated in Cat. Brit. Col. See Rye, Ent. Ann. 1867, pp. 49-50.

Stenus pygmaeus (sic), sp. n., Perris, Ann. Soc. Ent. Fr. 4^e sér. v. p. 506, Escorial.

Sticoeranius, g. n., Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 374. Allied to *Enæsthetus* and *Edaphus*; head broader than long, very coarsely punctured, transversely impressed in front, with the anterior margin elevated, Sp. *S. puncticeps*, sp. n., Leconte, *l. c.* p. 374, Washington.

Oxytelides.

SCHIÖDTE (Naturh. Tidsskr. 3rd ser. iv. pp. 142-143) discusses the characters of the genera of the *Oxytelini genuini* (Erichs.), and indicates that *Bledius* has been erroneously placed in the vicinity of *Oxytelus* and *Platystethus*, its true relation being with *Carpalinus*, of which it represents the type modified for tunnelling-purposes. He considers that the *Oxytelini genuini* may be divided into 2 main groups, characterized by the structure of the eyes and the position of the coxæ, these parts being modified in their character according as the species are destined

to live on the surface or underground. The following tabular view of the proposed arrangement is given by Schiödte (*l. c.* p. 143):—

- I. Eyes finely granulated, naked. Middle coxæ distant . . . *Oxytelus*.
Platystethus.
- II. Eyes coarsely granulated, hairy. Coxæ approximate.
1. No antennal grooves.
- a. Legs organized for rooting; anterior tibiæ with only 1 row of spines, emarginate at apex; lateral costa of elytra close to margin *Haploderus*.
- b. Cursorial legs; tibiæ with fine hairs, entire; lateral costa of elytra far from margin *Carpalinus*.
2. Antennal grooves in front of eyes. Legs fossorial; anterior tibiæ entire, with a double row of spines; lateral costa distant from margin *Bledius*.

The old genus *Bledius* thus characterized is divided by Schiödte into five genera, two of which are characterized as new. These are tabulated as follows (*l. c.* pp. 144–145):—

- I. Apical portion of mandibles thick, with a strong sharp tooth (with other characters).
- A. Anterior acetabula open without; lobes of ligula with 3 elongated branches, profusely subdivided, the innermost very long; spinulose ridges of anterior tibiæ distant *Bledius*, s. str.
 [Danish sp.:—*B. tricornis* (Herbst), *bicornis* (Ahr.), and a new species.]
- B. Anterior acetabula closed; lobes of ligula with only 1, long, much subdivided branch; spinulose ridges of anterior tibiæ approximate *Tadunus*, g. n.
- II. Terminal part of mandibles attenuated; lobes of ligula fringed on the outside (with other characters).
- A. Inner lobe of maxilla spinulose, terminal spines strong, blunt; lobes of ligula rounded, spines lobate at their points. *Bargus*, g. n.
- B. Inner lobe of maxillæ not spinose; lobes of ligula elongate, pointed.
- a. Anterior acetabula open externally; apical portion of mandibles with 1 tooth; mentum deeply bifid; spines of ligula serrate.
Astycops (Thoms.).
 [Danish species:—*A. talpa* (Gyll.) and *subterraneus* (Erichs.).]
- b. Anterior acetabula closed; apical portion of mandibles with 2 teeth; anterior margin of mentum straight; spines of ligula blunted *Hesperophilus* (Steph.).
 [Danish sp.:—*H. arenarius* (Payk.).]

The known genera are fully characterized in the following pages, where the Danish species are also briefly described:—*Bledius*, p. 145; *Astycops*, p. 149; *Hesperophilus*, p. 150.

Bledius mulsanti (Rosenh.) = *debilis* (Erichs.), and *Oxytelus perrisii* (Fauv.) = var. *oceanus* (Fauv.) according to Fauvel, Bull. Soc. Linn. Norm. x. p. 249.

Bledius diota, sp. n., Schiödte, *l. c.* p. 146, Denmark.

Trogophlaus subtilis (Erichs.) is recorded as British by Crotch (Cat. Brit.

Col.), and *Thinobius linearis* (Waltl) by Sharp. See Rye, Ent. Ann. 1867, pp. 66-67.

Tadunus, g. n., Schiödte, l. c. p. 147 (see table, p. 316). Sp. *T. fracticornis* (Payk.), *crassicollis* (Boisd. and Lac.), *atricapillus* (Germar).

Bargus, g. n., Schiödte, l. c. p. 148 (see table, p. 316). Sp. *B. erraticus* (Erichs.), *opacus* (Erichs.), *pallipes* (Grav.); *B. rastellus* and *B. tercbrens*, sp. n., Schiödte, l. c. p. 149, Denmark.

Deleaster concolor, sp. n., Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 375, San Francisco.

Oxyporus mexicanus, Fauvel, Bull. Soc. Linn. Norm. x. p. 21, Oaxaca.

Omaliiides.

REICHE (Ann. Soc. Ent. Fr. 4^e sér. v. p. 642) maintains that *Trigonurus* (Muls.) forms a distinct subfamily (*Trigonurides*), most nearly allied to the *Picstides*.

FAUVEL (Bull. Soc. Linn. Norm. x. p. 25) notes that *Anthophagus transversus* (Motsch.) = *austriacus* (Erichs.); *Anthobium cineticolle* (Chevr.) = *maculicolle* (Fairm.); *A. alpestris* (Motsch.) = *montanum* (Erichs.); *A. obliquum* (Muls.) = *rhododendri* (Baudi).

REICHE mentions, on the authority of De Sauley that *Boreaphilus velox* (Heer) and *angulatus* (Fairm.) = *B. henningianus* (Sahlb.). Bull. Soc. Ent. Fr. 1866, p. xxiii.

Micracalymma (sic) *marina* (Ström) = *brucipennis* (Gyll.), and the former name has the priority. Crotch, Entomologist, iii. p. 177.

Omalium pineti (Thoms.). Sharp remarks on the synonymy of this species. Ent. M. Mag. ii. p. 255.

Anthophagus verticalis (Say) and *Lesteva fusconigra* (Motsch.) noticed by Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 375.

The following species are recorded as British:—*Omalium septentrionis* (Thoms.) by W. Henderson, Ent. M. Mag. ii. p. 205; *O. heervi* (Heer) and *Anthophagus pyrcnæus* (C. Bris.) by T. Blackburn, Ent. M. Mag. iii. pp. 93 and 139; *Deliphrum crenatum* (Erichs.) by Crotch, Ent. M. Mag. iii. p. 60; and *Anthobium lapponicum* (Mann.) by Crotch, Cat. Brit. Col., and Rye, Ent. Ann. 1867, p. 69.

New species :—

Lesteva sharpi, Rye, Ent. M. Mag. iii. p. 124, from Scotland.

Omalium xanthopterum, Fauvel, Bull. Soc. Linn. Norm. x. p. 14, Venezuela, Mexico (= *Phlaconomus præustus*, Motsch. ?); and *O. atomarium*, Fauv. l. c. p. 16, Mexico.

Omalium foraminosum, Scriba, Berl. ent. Zeits. 1866, p. 378, Pompeii.

Amphichroum levicolle, Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 375, Pennsylvania.

Anthobium aucupariae, Kiesenwetter, Berl. ent. Zeits. 1866, p. 288, from the Altvater.—*Anthobium obscurum*, Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 361, Madrid; *A. hispanicum*, Bris. l. c. p. 362, Escorial.

Trigonurus asiaticus, Reiche, Ann. Soc. Ent. Fr. 4^e sér. v. p. 642, Batoum.

Proteinides.

Megarthus bellevoiyii (Saulcy) is recorded by Crotch as British (Cat. Brit. Col.).

Pseudopsis columbica, sp. n., Fauvel, Bull. Soc. Linn. Norm. x. p. 11, Caraccas.

Piestides.

Prognatha punctata, sp. n., Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 376, Pennsylvania and Canada.

Laspinus levicauda, sp. n., Leconte, *l. c.* p. 376, Illinois.

Laspinus parvipennis, sp. n. (Fauv.), Coquerel, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 318, and *L. microcephalus* (Fauv.), Coq. *l. c.* p. 319, from Bourbon.

Micropeplides.

Micropeplus marietti (Duv.)=*fulvus* (Erichs.), according to Fauvel, Bull. Soc. Linn. Norm. x. p. 26.

PSELAPHIDÆ.

BRENDEL publishes (Proc. Ent. Soc. Phil. vi. pp. 31-38) a synoptical table of the North American species of *Pselaphides*, in which he adopts the general classification of Leconte, and briefly characterizes the species and genera. Dividing them into *Pselaphini* and *Euplectini*, he further divides the former into *Pselaphi* and *Bryaxes*,—the *Pselaphi* including the genera *Ceophyllus*, *Cedius*, *Tmesiphorus*, *Ctenistes*, *Tyrus*, *Cercocerus*, *Pselaphus*, and *Tychus*; and the *Bryaxes* the genera *Bythinius* (*B. carinatus* and *zonatus*, Brend.), *Bryaxis*, *Decarthron* (Brend.), *Eupsenius*, *Arthmius*, and *Batrisus*. The North American *Euplectini* form 4 genera:—*Trinium*, *Euplectus*, *Rhexius*, and *Faronus*.

LECONTE (Proc. Acad. Nat. Sci. Phil. 1866, pp. 108-109) remarks on the *Clavigerides*, in which group he establishes a new genus, as shown in the following table:—

A. Eyes wanting.

* Antennæ 6-jointed *Claviger*.

† Antennæ with a long homogeneous club and two short basal joints.

Adranes.

B. Eyes distinct, composed of a few aggregated lenses.

* Antennæ with 1 short basal joint and a long club, having traces of transverse sutures *Fustiger*, g. n.

† Antennæ (? without basal articulation) with a broad club of homogeneous structure *Articerus*.

BRENDEL states (Proc. Ent. Soc. Phil. v. pp. 256-288) that *Bryaxis velutina* (Lec.)=*Decarthron formiceti* (Lec.), *Batrisus cristatus* (Lec.)=*B. ferox* (Lec.), *B. aculeatus* (Lec.)=*♀ albionicus* (Aubé), and *B. striatus*=*globosus* var.

GRENIER mentions the capture, by sweeping, of a species of *Claviger*. The net contained a great quantity of ants, which leads to the supposition that the beetle was being carried with them on a migration. Bull. Soc. Ent. Fr. 1865, p. lxii.

Fustiger, g. n., Leconte (see *ante*). Sp. *Articerus brasiliensis* (Westw.) and *A. syriacus* (Saulcy); also a new species from Tennessee.

New species:—

Bryaxis illinoensis, Brendel, Proc. Ent. Soc. Phil. v. p. 257, Illinois; *B. floridana*, Brend. *ibid.*, Florida; *B. congener*, Brend. *ibid.*, Long Island; *B.*

inornata, Brend. l. c. p. 258, South Carolina. Brendel also describes (l. c. p. 256), under the name of *conjuncta*, what he believes to be the northern form of *B. clavata*.

Batriscus juvenescens, Brendel, Proc. Ent. Soc. Phil. v. p. 258, Illinois.

Tychus bythinoides, l. c. p. 259, New York.

Trinium impunctatum, Brendel, l. c. p. 289, habitat not stated.

Euplectus crinitus, Brendel, l. c. p. 260, Northern States.

Claviger saulcyi, Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 363, Escorial.

Adranes lecontei, Brendel, l. c. p. 255, Illinois and Chicago.

PAUSSIDÆ.

FAIRMAIRE and COQUEREL (Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 19) remark on the geographical range of *Paussus olcese* (Fairm.) = *klugii* (Westw.).

Ectrephes, g. n., Pascoe, Proc. Ent. Soc. 1866, p. xvi. Head inserted, forehead deeply excavated; mandibles rostriform; antennæ 3-jointed, joint 2 minute; 3 elongate, compressed, obliquely truncate; elytra covering the whole abdomen. Sp. *E. formicarum*, sp. n., Pasc. l. c. from Western Australia, in ants' nests. Pascoe is doubtful of the position of this insect; and Westwood (l. c. p. xxii) says that it does not belong to the *Paussidæ*, and differs in the structure of the mouth from anything with which he is acquainted. It has enormous mandibles, with a moveable triangular or conical lobe.

Articerus odewalnyi, sp. n., Pascoe, Proc. Ent. Soc. 1866, p. xv, from South Australia; *A. bostockii*, sp. n., Pasc. ibid., from Western Australia.

SCYDMENIDÆ.

Chevrolatia amana, sp. n., Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 370, Washington and New York.

SILPHIDÆ.

Leptinus. Leconte (Proc. Acad. Nat. Sci. Phil. 1866, p. 368) remarks upon the characters of this genus, which he regards as differing from the Silphidæ by, "1st, the form of the head and the insertion of the antennæ; 2nd, the form of the mentum; 3rd, the form and arrangement of the anterior coxæ; 4th, the structure of the fourth joint of the tarsi." With the Hydrophilidæ it agrees "in the form of head, insertion of antennæ, general arrangement of mentum, gula, and prosternum, but differs by the regular antennæ, not prominent anterior coxæ, and structure of the fourth joint of the tarsi." He infers "that *Leptinus* is a highly specialized type, representing a distinct family, having less affinity with Silphidæ than with Hydrophilidæ."

The following North American species of this family are noticed by Leconte (Proc. Acad. Nat. Sci. Phil. 1866, p. 377):—*Necrophorus hecate* (Bland); *N. confessor* (Lec.) = var. *N. maritimus* (Mann.); *N. pygmaeus* (Kirby); *N. defodiens* (Mann.); and *Silpha opaca* (Linn.).

Michow (Berl. ent. Zeits. 1866, pp. 411-412) remarks upon the occurrence of forms intermediate between *Necrophorus ruspator* (Erichs.) and *microce-*

phalus (Thoms.), which he is consequently inclined to combine. He suggests also that the same may apply to *N. gallicus* and *fossor*.

Crotch remarks on the synonymy of *Choleva longula* (Kelln.) and *Silpha dispar* (Herbst). Entomologist, iii. p. 119.

Choleva punctata, sp. n., Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 364, Reynosa.

Leptinus americanus, sp. n., Leconte, l. c. p. 367, Iowa.

ANISOTOMIDÆ.

Amphicyllis picipennis (Lec.) belongs to the genus *Cyrtusa* (Er.). Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 369.

Crotch (Entomologist, iii. pp. 119-120) remarks on the synonymy of species of *Anisotoma*, *Cyrtusa*, *Agathidium*, *Clambus*, and *Liodes*, with reference to the changes made in his new Catalogue of British Coleoptera.

Anisotoma litura (Steph.) is changed to *ornata* (Fairm.) on the ground of imperfect description.

On *Anisotoma ornata*, see Rye, Ent. Ann. 1867, p. 111.

Anisotoma silesiaca (Kraatz) and *Clambus punctulum* (Gyll.) are recorded as British by Sharp. See Rye, Ent. Ann. 1867, pp. 99 & 98. The former is figured in frontispiece, fig. 4.

Sphærius. Kolenati's name *Microsporus* is adopted by Crotch for this genus on the ground of the former being employed elsewhere. Entomologist, iii. p. 120.

Liodes serricornis (Gyll.). The occurrence of this species in France (Allier) is recorded by Desbrochers des Loges. Bull. Soc. Ent. Fr. 1866, p. xxxiii.

Anisotoma cinnamomea. Remarks on the larva by Laboulbène. Bull. Soc. Ent. Fr. 1866, p. xlii.

New genera and species :—

Anogdus, g. n., Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 369. Allied to *Anisotoma*; body broad, convex; antennæ 10-jointed, club large, of 4 joints, joint 10 narrower than preceding. Sp. *A. capitatus*, sp. n., Leconte, l. c. p. 369, Florida.

Aglyptus, g. n., Leconte, l. c. p. 369. Allied to *Colenis* and *Agaricophagus*; upper surface impunctate; forehead finely margined throughout. Sp. *Colenis impunctata* and *C. ? levis* (Lec.).

Anisotoma conferta, Leconte, l. c. p. 368, Illinois.

Agathidium politum, Leconte, l. c. p. 370, Pennsylvania.

Agaricophagus præcellens, Hampe, Berl. ent. Zeits. 1866, p. 372, Agram.

Sacium picipenne, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 426, and *S. luridum*, Motsch. ibid., Ceylon.

Sericoderus infuscatus, Motschulsky, l. c. p. 426, Ceylon.

Mononillus orientalis, Motschulsky, l. c. p. 427, Ceylon.

Hydnobius tropicus, Motschulsky, l. c. p. 397, Ceylon.

TRICHOPTERYGIDÆ.

MATTHEWS (Ent. M. Mag. ii. pp. 241-242) remarks upon the confusion produced in the nomenclature of these Beetles by the

neglect of Allibert's descriptions on the part of Erichson and Gillmeister. He maintains that Allibert's descriptions are quite recognizable, and that in accordance with the rule of priority his names must be adopted. The synonymy of the following species is indicated:—

Trichopteryx chevrolatii (Al.) = *pygmæa* (Erichs.) = *parallelogramma* (Gillm.); *T. montandonii* (Al.) = *similis* (G.); *Ptilium rugulosum* (Al.) = *fuscum* (Er.); *P. spencei* (Al.) = *angustatum* (Er.) = *oblongum* (G.); *P. excavatum* (Al.) = *canaliculatum* (Er.); *P. myrmecophilum* (Al.) = *inqualinum* (Er.); and *P. foveolatum* (Al.) = *exaratum* (Er.). The following species are noticed as new to Britain (*l. c.* pp. 242–243):—*T. chevrierii* (Al.), *T. littoralis* (Thoms.), and *P. elongatum* (Thoms.).

The following American species of this group are described and figured by Matthews (*Ann. & Mag. N. H.* 3rd ser. xvii. pl. 5):—*Trichopteryx glabricollis* (Matth.) = *rotundata* (Hald.), p. 143, fig. 2; *T. cursitans* (Nietn.) = *fuscipennis* (Hald.), p. 144, fig. 3, from New York; *T. fascicularis* (Herbst) = *intermedia* (Gillm.) = ? *abrupta* (Hald.), p. 145, fig. 5; *T. discolor* (Hald.), p. 145, fig. 6; *T. scricans* (Heer), p. 145, fig. 7; *T. montandonii* (Allib.) = *similis* (Gillm.), p. 146, fig. 8; *T. ambigua* (Matth.), p. 146, fig. 9; *T. aspera* (Hald.), p. 147, fig. 10; *Micrus filicornis* (Fairm.), p. 147, fig. 11; *Ptenidium bollani* (Mann.) = *canadense* (Lec.), p. 148, fig. 13; *P. macrocephalum* (Nietn.), p. 148, fig. 14 (from New York); and *P. apicale* (Erichs.) = ? *terminale* (Hald.), p. 149, fig. 15.

Bæocrara littoralis (Thoms.), Sharp, *E. M. M.* ii. p. 230. Sharp discusses the characters of Thomson's genus *Bæocrara*, which he thinks insufficient, the species belonging to *Trichopteryx*, in which case he proposes to change the specific name to *thomsoni*, Motschulsky having already a *T. littoralis*. The latter, however, belongs to *Ptenidium*.

CROTCH remarks on the synonymy of several species of this family, with reference to his new Catalogue. He adopts the name *Acrotrichis* in place of *Trichopteryx*. *Entomologist*, iii. p. 120.

Ptilium saxonicum (Gillm.) is recorded as a British species by Crotch (*Cat. Brit. Col.*). See Rye, *Ent. Ann.* 1867, p. 100.

Trichopteryx. Matthews (*Ann. & Mag. N. H.* 3rd ser. xvii.) describes the following new species:—*T. schaumii*, p. 143, pl. 5. fig. 1, and *T. crassicollis*, Matth. *l. c.* p. 144, pl. 5. fig. 4, from Louisiana. BRITISH SPECIES:—*T. saræ*, Matthews, *Ent. M. Mag.* ii. p. 243; *T. waterhousii*, Matth. *l. c.* p. 244; and *T. jansonii*, Matth. *l. c.* p. 245.

Nephanes leviusculus, sp. n., Matthews, *Ann. & Mag. N. H.* 3rd ser. xvii. p. 148, pl. 5. fig. 12, from Louisiana.

Ptilium concolor, Sharp. A new species. See Rye, *Ent. Ann.* 1867, p. 55.

HISTERIDÆ.

CROTCH indicates *Saprinus punctulatus* (Thoms.) as a British species, and that *Paromalus 14-striatus* (Steph.) = *P. pumilio* (Erichs.). *Entomologist*, iii. p. 123.

Hister integer, sp. n., Brisout, *Ann. Soc. Ent. Fr.* 4^e sér. vi. p. 365, Madrid.

Eretmotes ibericus, sp. n., Brisout, *l. c.* p. 366, Escorial.

Hæterius (sic) *marseulii*, sp. n., Brisout, *l. c.* p. 367, Escorial.

Phelister interpunctatus, sp. n., Kirsch, Berl. ent. Zeits. 1866, p. 173, from Bogotá.

Epiurus frontalis, sp. n., Kirsch, Berl. ent. Zeits. 1866, p. 173, from Bogotá.

Acrilus littoralis, sp. n., Ferrari, Verh. zool.-bot. Ges. in Wien, xvi. p. 367, Venice.

Puctolinus jamatus, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 169, Japan.

PHALACRIDÆ.

Olibrus liquidus. The synonymy of this species is referred to by Crotch, Entomologist, iii. p. 120.

Olibrus bicolor (Fab.). The habits of the larva of this species are noticed by F. Löw. Verh. zool.-bot. Ges. in Wien, xvi. p. 955.

Phalacrus antennatus, *rufipes*, and *affinis*, spp. nn., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 427, and *P. rugipennis*, Motsch. l. c. p. 428, Ceylon.

Olibrus minusculus and *O. flavotestaceus*, spp. nn., Motsch. ibid., Ceylon.

Augasma magna, sp. n., Motschulsky, l. c. p. 428, Ceylon.

NITIDULIDÆ.

Lobiopa guttulata (Lec.) belongs to *Soronia* (Erichs.) according to Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 377.

CROUCH (Entomologist, iii. p. 121) refers to the synonymy of *Cercus pedicularius*, *Nitidula obscura* (= *rufipes*), *Meligethes ochropus*, and *M. ebeninus* (Forst.), and also cites *M. marrubii* (Bris.) and *M. obscurus* (Erichs.) as additions to the British list. Crotch also adds *Epuræa immunda* (Erichs.) in Cat. Brit. Col. See also Rye, Ent. Ann. 1867, pp. 70-73.

The following species have also been recorded as British:—*Epuræa variegata* (Herbst) by T. Blackburn (Ent. M. Mag. iii. p. 93); *Meligethes ochropus* (Schüp.) by Bold (l. c. p. 47); and *M. kunzei* (Erichs.) by Rye (l. c. p. 47).

Nitidula ciliata (Erichs.) is described as an Algerian species, on the authority of De Marseul, by Fairmaire and Coquerel, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 20. They also state (ibid.) that *Xenostromylylus obsoletus* (Chevr.) = *X. hirsutus* (Fairm.).

Meligethes æneus. The larva is injurious to the rape-crops by feeding on the flowers. Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvi. p. 643.

New species:—

Nitidula maculosa, Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 19, from Constantine.

Colastus murrayi, Kirsch, Berl. ent. Zeits. 1866, p. 174, from Bogotá.

Amphotis ulkei, Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 376, Washington and Massachusetts.

Cyllodes biplagiatus, Leconte, l. c. p. 377, Massachusetts.

Pityophagus cephalotes, Leconte, l. c. p. 377, Pennsylvania.

Rhizophagus cylindricus, Leconte, l. c. p. 377, Tennessee; *R. approximatus*, Leconte, l. c. p. 378, New York; *R. remotus*, Leconte, ibid., Pennsylvania.

Meligethes subtilis, Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 368, Aranjuez.

Cybocephalus atomus, Brisout, l. c. p. 369, Escorial.

Cybocephalus smaragdicolis, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 398, Ceylon.

TROGOSITIDÆ.

Nemosoma elongatum. Power has taken this species with its larva in some abundance in decayed elm-rails in Warwickshire. The insects occurred in company with *Hylesinus vittatus*, on which he thinks the *Nemosoma* probably feeds. The larva of the *Hylesinus* burrowed longitudinally in the bark; the galleries of the *Nemosoma* were all transverse, so as continually to intersect the others. Entomologist, iii. pp. 77-78.

COLYDIIDÆ.

Ditoma laticollis (Lec.) belongs to *Synchita* (Hellw.) according to Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 379.

Crotch remarks on *Cerylon ferrugineum* (Steph.) and its relation to *C. angustatum* (Erichs.), adopting the latter name. Entomologist, iii. p. 121.

Cerylon semistriatum (Perris) is recorded as British by Sharp. See Rye, Ent. Ann. 1867, p. 73.

The larvæ of *Bothrioderes* have been found at Guadeloupe living as parasites in the interior of the larvæ of *Lagocheirus araneiformis*. Moufflet, Bull. Soc. Ent. Fr. 1865, p. lxii.

New species :—

Enarsus, g. n., Pascoe, Journ. of Ent. ii. p. 444. Allied to *Rechodes*, but with the prothorax and elytra ciliated and not denticulated at the margins; tibiæ ciliated; maxillary palpi gradually thickened, not securiform. Sp. *E. bakewellii*, sp. n., Pasc. l. c. p. 445, pl. 19. fig. 1, New Zealand.

Tarphius humerosus, Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 20, and *T. oblongulus*, Fairm. l. c. p. 21, from Algeria.

Cerylon attenuatum, Fairmaire, l. c. p. 21, from Constantine.

Cerylon semistriatum, Perris, Ann. Soc. Ent. Fr. 4^e sér. v. p. 507, Algeria.

Rhysodes punctatostriatum, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 400, Ceylon.

Philothermus brevis, Motschulsky, l. c. p. 401, Ceylon.

Lasconotus laqueatus, Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 378, Arizona; *L. simplex*, Leconte, ibid., Lower California.

Aulonium longum, Leconte, l. c. p. 378, Arizona.

CUCUJIDÆ.

Silvanus bidentatus (Fab.) is recorded as a British species by M. Young (Ent. M. Mag. ii. p. 181).

Astilpnus, g. n., Perris, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 184. Allied to *Ætraphilus* (Redt.); antennæ with joint 1 thick, 2 thinner and longer, last 2 large, rounded, forming a distinct club. Sp. *A. multistriolatus*, sp. n., Perr. l. c. p. 185, from Bone.

Ochrosanis, g. n., Pascoe, Journ. of Ent. ii. p. 443. Allied to *Hemipeplus*; antennæ with basal joint shorter than the following 5 taken together; joints gradually thickening from 2; last joint large, appendiculate at apex; elytra elongate, but not reaching apex of abdomen. Sp. *O. dohrni*, sp. n., Pasc. l. c. p. 444, pl. 18. fig. 7, West Indies.

Nausibius repandus, Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 379, California.

Læmophlæus angustulus, Leconte, l. c. p. 379, Washington.

CRYPTOPHAGIDÆ.

Cryptophagus. Rye records a British species of this genus, which he believes to be *C. fuscicornis* (Sturm). Ent. M. Mag. iii. p. 102.

CROTCH (Entomologist, iii. pp. 122-123) remarks upon the synonymy of various species of *Cryptophagus*, *Atomaria*, *Epistenus*, *Lathridius*, and *Corticaria*; also upon *Monotoma angusticollis* (Aubé), l. c. p. 121.

Hypocoprus latridioides (Motsch.), *Atomaria longicornis* (Thoms.), *Epistenus globulus* (Payk.), and *Lathridius angulatus* (Mann.) and *consimilis* (Mann.) are recorded as British by Crotch (Cat. Brit. Col.). See Rye, Ent. Ann. 1867, pp. 75 & 100-101.

Lathridius filum (Aubé) is recorded as a British species by W. R. McNab, Ent. M. Mag. iii. p. 46.

Murmidius ovalis (Beck.), or a nearly allied species, is recorded by Leconte from Florida. Proc. Acad. Nat. Sci. Phil. 1866, p. 376.

Cnecosa, g. n., Pascoe, Journ. of Ent. ii. p. 446. Allied to *Telmatophilus*; antennæ with joints 4-8 subtruncate, club oblong, 3-jointed, last joint largest; maxillary palpi with last joint very large and transverse; lobes of maxillæ nearly equal, ciliated; legs short; tarsi subpentamerous; mesosternum declivous, posteriorly bilobed. Sp. *C. fulvida*, sp. n., Pasc. l. c. p. 447, pl. 18. fig. 2, New South Wales.

New species:—

Cryptophagus waterhousei, Rye, Ent. M. Mag. iii. p. 101, and Ent. Ann. 1867, fig. 1, from Sydenham.—*Cryptophagus ceylonicus*, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 396, Ceylon (Nura-Ellia).—*Cryptophagus ampli-collis*, Brisout, Ann. Soc. Ent. Fr. 4° sér. vi. p. 369, Escorial.

Diplocelus indicus, Motschulsky, l. c. p. 397, Ceylon (Nura-Ellia).

Atomaria wollastoni, Sharp. A new species indicated by Sharp before the Entomological Society. See Rye, Ent. Ann. 1867, p. 52.

Stenotarsus ceylonicus, Motschulsky, l. c. p. 398, Ceylon.

Typhæa (sic) *maculata*, Perris, Ann. Soc. Ent. Fr. 4° sér. v. p. 507, Madrid.

Corticaria angusta and *C. pinguis*, Aubé, Ann. Soc. Ent. Fr. 4° sér. tome vi. p. 162, France.—*Corticaria pinicola*, Brisout, l. c. p. 370, Escorial.

Murmidius depressus, Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 376, Northern States.

Murmidius bifasciatus, Motschulsky, l. c. p. 397, Ceylon.

DERMESTIDÆ.

EICHHOFF and BECKER (Berl. ent. Zeits. 1866, pp. 279-281, taf. i. fig. 1) have described the metamorphoses of *Hadrotoma corticalis*, the larvæ of which they found under the dead bark of old maples. The larva belongs to the third type distinguished by Erichson, having a long tuft of hairs at the posterior extremity, no anal foot (Nachschieber), and tufts of elegant barbed, jointed hairs on the thoracic segments and the penultimate segment of the abdomen. The food of the larvæ consisted of dead insects; but they also ate

boiled white of egg and potatoes, and gnawed the scales of bark among which they were kept. The larvæ were found at the beginning of February, along with newly emerged perfect beetles; they changed to the pupa-state in July and August, according to their position; and some perfect insects emerged before the end of the latter month. Hence the authors infer that there are two broods of this beetle in the year.

W. W. SAUNDERS mentions a case in which the larvæ of *Dermestes lardarius* attacked cork. Proc. Ent. Soc. 1866, p. viii.

Dermestes frischii (Kugel.). On the larva of this species see F. Löw, Verh. zool.-bot. Ges. in Wien, xvi. p. 955.

Dermestes chinensis, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 168, Japan.

Hadrotoma sulcata, sp. n., Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 371, Spain and France.—*H. bifasciata*, Perris, *ibid.* p. 186, Bone.

Megatoma ruficornis, Aubé, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 161, from the south of France.

BYRRHIDÆ.

Byrrhus pustulatus (Forst.) and *Cytilus scriceus* (Forst.) are substituted by Crotch as British species (Catal. & Entomologist, iii. p. 123) for *dorsalis* and *varius* (Fab.) respectively.

Byrrhus nigrosparsus, sp. n., Chevrolat, Rev. et Mag. de Zool. 1866, p. 101, Reynosa.

Simplocaria striata, sp. n., Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 372, Reynosa.

PARNIDÆ.

SCHIÖDTE (Naturh. Tidsskr. 3rd ser. iv. pp. 151-157) discusses the position and characters of the *Heterocerini*, which he regards as forming, with the *Byrrhi*, *Georyssii*, and *Parnidæ* of Erichson and Lacordaire, a single family (exhibiting a close similarity in the structure of the mouth and in all stages of their development), their distinctive characters being "merely expressive of the different requirements of movement and respiration in different localities and different media." *Heterocerus* and its allies occupy the same position in this series of forms as the *Bledii* among the Brachelytra and the *Scaritides* among Carabidæ, and exhibit the fossorial modification of the type. Schiödte refers at some length to the peculiar arched ridge on each side of the first apparent ventral segment, and the straight ridge on the inside of the posterior femora in *Heterocerini*, which were regarded by Erichson as constituting an organ of sound. This view is confirmed by Schiödte, who, however, completes and modifies the description of the structure of these parts, and indicates that, whilst some of the peculiarities regarded by Erichson as furnishing characters for the distinction of species or for the recognition of the sex of individuals fall to the ground, the ventral ridges may still present characters useful in the discrimination of some species. The most important of these, in the author's opinion, seems to be a continuation of the

arch in the form of a very thin sharp ridge as far as the apex of the posterior coxæ, which occurs in *H. sericans* and *intermedius* and in *Phyrites aureolus* and *Augyles hispidulus* (vide infra).

Heterocerus. Schiödte proposes to divide the Danish species of the genus *Heterocerus* of authors into the following 3 genera:—

1. *Heterocerus* (*l. c.* p. 157). Antennæ 11-jointed, with an abrupt club, joints 3 and 4 very small; maxillary lobes spinulose; inner lobe of mandibles membranaceous, with a membranaceous comb. Danish sp.:—*H. femoralis* (Kies.), *sericans* (Kies.), *obsoletus* (Curt.), *lævigatus* (Panz.), *fuscus* (Kies.), *marginatus* (Kies.), and *intermedius* (Kies.).

2. *Phyrites*, *g. n.*, Schiödte, *l. c.* p. 159. Antennæ 11-jointed, club increasing gradually from joint 3; maxillary lobes spinulose; inner lobe of mandibles bifid, lower division membranaceous, with a membranaceous comb, outer one horny, fringed, with 5 or 6 very thick horny spines. Sp. *P. aureolus*, *sp. n.*, Schiödte, *l. c.* p. 159, Denmark.

3. *Augyles*, *g. n.*, Schiödte, *l. c.* p. 159. Antennæ 10-jointed, club abrupt, joints 3 and 4 very small; maxillary lobes setulose; mandibles as in *Heterocerus*. Sp. *A. hispidulus* (Kies.).

Macronychus quadrituberculatus (Müll.). Janson records this as a native of Britain. Proc. Ent. Soc. 1866, p. xxxvi.

Heterocerus arenarius (Kies.) and *Elmis troglodytes* (Gyll.) are recorded as British by Crotch (Cat. Brit. Col.) and *Parnus nitidulus* by Sharp. See Rye, Ent. Ann. 1867, pp. 76-77. Rye also figures *Macronychus 4-tuberculatus* (Müll.), *op. cit.* Frontisp. fig. 2.

Heterocerus punctatus, *sp. n.*, Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 373, Reynosa.

Elmis latiusculus, *sp. n.*, Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 380, Pennsylvania; *E. nitidulus*, Leconte, *ibid.*, New York.

LUCANIDÆ.

Cyclommatus metallifer (Boisd.). Deyrolle figures the head and mandibles of this species. Ann. Soc. Ent. Belg. ix. pl. 2. fig. 1.

Cladognathus lateralis (Hope) is also figured by Deyrolle, *l. c.* pl. 1. fig. 3.

Dorcus costatus (Lec. Cat.)=*D. parallelus*, var., according to Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 380.

New species:—

A new species of *Ceratognathus* (*C. setiger*, Howitt), from Hobarton, and a new species of *Lissotes* (*L. furcicornis*, Howitt), from Victoria, are indicated by Janson among other Australian Coleoptera. Proc. Ent. Soc. 1866, p. xxxi.

Amneidus, *g. n.*, Coquerel, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 325. Allied to *Agnus*; mentum very large, emarginate in front; joint 1 of labial palpi long and slender, 3 twice as long as 2; anterior tibiæ much curved and furrowed in ♂, nearly straight in ♀, with two teeth outside, and a small recurved spine inside at the apex, and with 2 small teeth before the middle inside in ♂, which are larger and sometimes 3 or 4 in number in ♀. Sp. *A. godefroyi*, *sp. n.*, Coq. *l. c.* p. 326, pl. 7. fig. 1 (with details), from Bourbon.

Neolucanus swinhoi, Bates, Proc. Zool. Soc. 1866, p. 346, fig. 2, Formosa.

Odontolabis duivenbodei, Deyrolle, Ann. Soc. Ent. Belg. ix. p. 25, pl. 1. fig. 1, Menado.

Cladonathus lorquini, Deyrolle, l. c. p. 26, pl. 1. fig. 2, Menado; *C. vittatus*, Deyr. l. c. p. 28, pl. 1. fig. 4, Philippines; and *C. dentifer*, Deyr. l. c. p. 29, pl. 1. fig. 5, India.

Cyclommatus kaupii, Deyrolle, l. c. p. 30, pl. 2. fig. 2, Celebes.

Eurytrachelus castelnaudii, Deyrolle, l. c. p. 31, pl. 2. fig. 3, Bengal.

Ægus philippinensis, Deyrolle, l. c. p. 32, pl. 2. fig. 4, Philippines; *Æ. ogivus*, Deyr. l. c. p. 33, pl. 2. fig. 5; *Æ. amictus*, Deyr. l. c. p. 35, pl. 2. fig. 7, Malacca; and *Æ. gracilis*, Deyr. l. c. p. 34, pl. 2. fig. 6, Amboyna.

Ægus formosæ, Bates, l. c. p. 347, Formosa.

Nigidius parryi and *N. formosanus*, Bates, l. c. p. 347, Formosa.

SCARABÆIDÆ.

Coprides.

Canthon indigaceus, sp. n., Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 383, Arizona; *C. puncticollis*, Leconte, l. c. p. 381, Lower California.

Copris remotus, sp. n., Leconte, l. c. p. 381, Texas.

Onthophagus minax, sp. n., Kirsch, Berl. ent. Zeits. 1866, p. 215, from Bogotá.

Aphodiides.

VON HAROLD has continued his descriptions of species of this subfamily (Berl. ent. Zeits. 1866, pp. 92-127). He describes *Aphodius suarius* (Fald.), l. c. p. 92, and *A. hepaticus* (Roth), l. c. p. 94, as belonging to the groups containing *A. dawricus* (Harold) and *A. desertorum* (Klug) respectively. He also tabulates and describes the species (18 in number) forming the group of which *A. sordidus* (Fab.) may be regarded as the type. The known species are *A. rugosiceps*, *procerus*, *chinensis*, and *wollastonii* (Harold), *sordidus*, *rufescens*, *hydrocharis*, and *nitidulus* (Fab.), *punctipennis* (Steven), *lugens* and *immundus* (Creutz.), and *lætus* (Wiedem.). Von Harold also describes (l. c. pp. 123-126) three species of Motschulsky's genus *Cnemargus*, namely *Aphodius fimbriolatus* (Mann.) and two new ones. The author also remarks upon the synonymy of *Aphodius suturalis* (Fald.) and *A. rhenonum* (Zett.), and maintains his former opinion in opposition to that of Von Heyden (l. c. pp. 126-127).

Aphodius borealis (Schneid. nec Gyll.), from Finmark=*nemoralis* (Erichs.). L. von Heyden, Stett. ent. Zeit. 1866, p. 254.

Crotch (Entomologist, iii. p. 123) remarks upon the characters of *Aphodius niger* (Panz.) and *A. pubescens* (Steph.), and on the probable occurrence of species of *Rhyssemus* in Britain (l. c. p. 124).

Aphodius nemoralis (Erichs.) is recorded as British by Sharp, and by Crotch under the name of *A. piceus* (Gyll.). Crotch also records *A. conspectus* (Creutz.). See Rye, Ent. Ann. 1867, pp. 78-79.

Aphodius. The following new species of this genus are described by Von Harold (Berl. ent. Zeits. 1866):—*A. splendidulus*, p. 100, *A. ardens* (= *A. gilvus*, Sturm), p. 103, *A. lineellus*, p. 106, *A. capensis* (Dej.), and *A. binodulus*, p. 116, from South Africa; *A. lepidulus*, p. 119, and *A. ornatulus*, p. 121, from Asia Minor.

Antrisis, g. n., Pascoe, Journ. of Ent. ii. p. 447. Allied to *Ryparus*; posterior

coxæ widely separated. Sp. *A. saundersii*, sp. n., Pasc. *l. c.* p. 448, pl. 18. fig. 5, Sarawak.

Ammæcius frigidus, sp. n., Brisout, Ann. Soc. Ent. Fr. 4° sér. vi. p. 374, Spain.

Cnemargus levicollis, sp. n., Harold, *l. c.* p. 123, from Egypt; *C. curtulus* (Motsch. MS.), Harold, *l. c.* p. 125, from South Russia.

Melinopterus nigrotessellatus, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 170, Japan.

Calamostemus rectus, sp. n., Motschulsky, *l. c.* p. 169, and *C. brevisculus*, sp. n., Motsch. *l. c.* p. 170, Japan.

Chilothorax vitta, sp. n., Motschulsky, *l. c.* p. 170, Japan.

Geotrupides.

Geotrupes. Jekel has published (Ann. Soc. Ent. Fr. 4° sér. v. pp. 513-618) an elaborate memoir on this genus, in which, after discussing the previous attempts at the classification of the insects composing it, he proposes a division of them into subgenera, in a table of which the following is an abridgement (*l. c.* pp. 521-526):—

DIVISION I. Second leaf of antennal club free; club more or less elongated.

A. Thorax at least uneven in front in both sexes.

1. Ocular canthus angular laterally above the eyes.

* Canthus oblique, narrowing the head a little above the eyes.

1. *Ceratophyus* (Fisch.).

† Canthus parallel, widening the head a little above the eyes.

2. *Ceratotrupes* (Jek.).

2. Canthus circularly rounded and reentering below the eye.

* Antennæ with joint 2 very short, subglobular, not longer than wide 3. *Minotaurus* (Muls.).

† Antennæ with joint 2 subcylindrical, longer than wide.

4. *Chelotrupes* (Jek.).

B. Thorax unarmed and even in front, ♂ ♀.

1. Apical tooth of anterior tibiæ in ♂ either broad but not deeply emarginate at apex, or narrowed towards its extremity as in ♀, but larger, when the ♂ tibia has its lower keel armed with at least two teeth more prominent than the crenulations.

5. *Thorectes* (Muls.).

2. Apical tooth of tibiæ simple, ♂ ♀ 6. *Phelotrupes* (Jek.).

3. Apical tooth of anterior tibiæ in ♂ broad and obliquely truncate, emarginate or sinuated at apex, with a thin obtuse lamella within.

* Intermediate tarsi normal in both sexes.

7. *Cnemotrupes* (Jek.).

† Intermediate tarsi abnormal in ♂, very short and thick; in ♀ shorter than in preceding, inner apical spine of tibia reaching nearly the apex of joint 4. 8. *Onychotrupes* (Jek.).

DIVISION II. Second leaf of antennal club abbreviated, narrowed and emarginate on its inner edge so as to be concealed by the first; club short, thick, semiglobular.

A. Canthus much developed laterally, angular in front, acute in ♂, obtuse in ♀ 9. *Canthotrupes* (Jek.).

B. *Canthus* circularly rounded.

1. Apical tooth of anterior tibiæ simple, ♂ ♀.

* Lower keel of anterior tibiæ angularly elevated from base to middle, multidentate..... 10. *Geotrupes* pr.† Lower keel of anterior tibiæ obsolete crenulated in ♀, more distinct and shortly denticulated in ♂. 11. *Anoplotrupes* (Jek.).

2. Apical tooth of anterior tibiæ deeply emarginate, and almost bifurcate at its extremity 12.
- Sternotrupes*
- (Jek.).

Jekel afterwards (*l. c.* pp. 526–527) gives a table showing how these groups, treated as genera, would take their place in a general classification of the *Geotrupides*. He then describes in detail the characters of most of his subgenera, and nearly all the species belonging to them, the known species thus treated being the following:—

CERATOPHYUS:—Type *Scarab. ammon* (Pall.); *G. hoffmannseggi* (Dej.). CERATOTRUPES:—*G. fronticornis* (Klug), type. MINOTAURUS:—*S. typhaeus* (Linn.), type; *G. typhaeoides* (Fairm.); *G. fossor* (Waltl); *G. subarmatus* (Dej., Erichs.); *G. quadrigeninus* (Fairm.). CHELOTROPES:—*S. momus* (Fab.), type; *M. levipennis* (Muls.); *G. inermis* (Ménétr.); *G. hostius* (Géné). THORECTES:—*S. levigatus* (Fab.), type; *G. chalconotus* (Chevr.); *S. hemisphericus* (Oliv.); *G. hoppei* (Sturm); *G. sardous* (Erichs.); *G. geminatus* (Géné); *Ateuchus marginatus* (Poiret); *G. latus* (Sturm); *G. puncticollis* (Luc.). PHELOTROPES:—*G. orientalis* (Hope), type; *G. lavistriatus* (Motsch.); *G. auratus* (Motsch.). CNEMOTRUPES:—*S. Blackburnii* (Fab.), type; *G. egeriei* (Germ.); *G. opacus* (Hald.). ONYCHOTRUPES:—*S. splendidus* (Fab.); type; *G. microphagus* (Say). CANTHOTRUPES:—*G. douii* (Gory), type. GEOTRUPES:—*S. stercorarius* (Linn.), type; also *putridarius*, *nutator*, and *hypocrita*. ANOPLOTRUPES:—*G. sylvaticus* (Panz.), type; also *molestus* (Fald.). STERNOTRUPES:—*G. vernalis* (Linn.), type; also *alpinus*, *pyrenæus*, *amedei*, *coruscans*, and *purpureus*.

Taurocerastes, g. n., Philippi, Stett. ent. Zeit. 1866, p. 115. Allied to *Geotrupes*; wingless; elytra soldered, embracing the body; scutellum none; antennæ 10-jointed, joint 2 very long; prothorax bicornute. Sp. *T. patagonicus*, sp. n., Phil. *l. c.* p. 116, taf. ii. fig. 4, from South Patagonia.

New species :—

Geotrupes. Jekel describes the following new species of this genus:— (*Ceratophyus*) *G. dauricus* (Motsch. MS.), *l. c.* p. 538, Eastern Siberia; *G. rossii*, p. 539, South Europe; (*Ceratotrupes*) *G. sturmi*, p. 543, Mexico; *G. mniszewski*, p. 544, Mexico; (*Thorectes*) *G. brullei*, p. 554 (= *hemisphericus*, Br.), Greece, Algeria; *G. anatolicus*, p. 556, Anatolia; *G. rugosicollis*, p. 557, Portugal; *G. sericeus*, p. 558, France, Spain, Asia Minor; *G. nitidus*, p. 559, Portugal; *G. rugatulus*, p. 562, Algeria; *G. lusitanicus*, p. 563, Portugal; *G. semisericeus*, p. 564, Algeria; *G. punctulatus*, p. 565, Anatolia; *G. reflexus* (Chevr. MS.), p. 568, Algeria; *G. punctatissimus* (Chevr. MS.), p. 571, Spain; *G. escorialensis*, p. 572, Spain; *G. silphoides*, p. 573, Spain; (*Phelotrupes*) *G. henrici*, p. 579, East Indies; *G. sylveticus*, p. 580, Silhet; *G. levifrons* (Chevr. MS.), p. 581, East Indies; *G. amethystinus*, p. 582, North India; *G. japonicus* (Dupont, MS.), p. 585, Japan; *G. deyrollei*, p. 586, Manchuria; (*Cnemotrupes*) *G. conicollis*, p. 591, *G. lecontei*, p. 592, *G. haldemani*, p. 593, *G. chevrolati*,

p. 595, North America; *G. sallei*, p. 596, Mexico; *G. saundersii*, p. 598, Peru; *G. viridiobscurus* (Deyr. MS.), p. 599, *G. rufoclavatus* (Chevr. MS.), p. 601, *G. sobrinus*, p. 602, and *G. herbeus* (Sturm, MS.), p. 604, Mexico: (*Onychotrupes*) *G. gilnickii*, p. 608, Hayti; *G. starkii*, p. 609, *G. semiopacus*, p. 612, *G. melsheimeri*, p. 613, North America; *G. ovalipennis*, p. 614, Hayti: (*Anoplotrupes*) *G. balyi*, p. 617, Canada, Hayti?; *G. similis*, *ibid.*, North America.

Jekel also indicates as varieties, or possibly new species:—*syriacus* (*levigatus*), p. 554; *italicus* (*hemisphaericus*), p. 561; *siculus* (*marginatus*), p. 570; *falsus* (*sallei*), p. 598.

Geotrupes (*Thorectes*) *asperifrons*, Fairmaire, Ann. Soc. Ent. Fr. 4° sér. tome vi. p. 256, from Asia Minor.

Geotrupes retusus (MacLeay), Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 382, Southern States. Forms a group distinct from any of those proposed by Jekel, and for which Leconte proposes the name of *Mycotrupes*, in allusion to its being found under decomposing fungi.

Lethrus macrogathus, Fairmaire, *l. c.* p. 255, and *L. rotundicollis*, Fairm. *l. c.* p. 256, note, from Asia Minor.

Melolonthides.

Melolontha vulgaris. Observations on the occurrence of this species late in the autumn, by Reiche, Lucas, Doué, and Desmarest, Bull. Soc. Ent. Fr. 1865, p. lvii.

The occurrence of *Amphimallus assimilis* (Herbst) in France is recorded by Desbrochers des Loges, Bull. Soc. Ent. Fr. 1866, p. xxxiii.

Serica moreli, sp. n., Coquerel, Ann. Soc. Ent. Fr. 4° sér. vi. p. 330, Bourbon.

Serica? *grisea*, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 171, Japan.

Pachydema aphodioides, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4° sér. tome vi. p. 257, Asia Minor.—*P. distinguenda*, Fairmaire, *l. c.* p. 22, from Algeria.

Rhizotrogus pallescens and *R. marginiceps*, spp. nn., Fairmaire, *l. c.* p. 23, Algeria.—*Rhizotrogus signatitarsis*, Chevrolat, Rev. et Mag. de Zool. 1866, p. 102, Valladolid.

Rutelides.

G. H. HORN, in characterizing a new genus (*Macropnus*) of this group, states (Proc. Acad. Nat. Sci. Phil. 1866, p. 398) that he regards it as forming a third section of the *Rutelidæ veræ* of Lacordaire. He tabulates these sections as follows:—

Epistome not distinct from front *Pelidnotæ*.

Epistome separate from front.

Mandibles tridentate; outer claws forked *Macropni*.

Mandibles simple; outer claws simple. *Areodæ*.

DOHRN remarks (Stett. ent. Zeit. 1866, p. 352) that Burmeister has needlessly changed the name of Perty's *Rutela cærulea* into *R. spherica*, and cited it as *R. chalybæa*. He indicates that there is no reason for the change, and that Perty's name must be revived.

Anomala donovani (Marsh.) = *A. binotata* (Burm.) from North America, according to Crotch, Entomologist, iii. p. 124.

Anomala ferruginea, sp. n., Marseul, L'Abeille, p. xxxvi, Algeria.—*Anomala*

corrugata and *A. inconcinna*, spp. nn., Bates, Proc. Zool. Soc. 1866, p. 343, Formosa.

Euchlora expansa, sp. n., Bates, *l. c.* p. 343, fig. 1, *E. castaneiventris* and *E. trachypyga*, Bates, *l. c.* p. 344, Formosa.

Minela simplex, *M. ignicauda*, and *M. chryseis*, spp. nn., Bates, *l. c.* p. 345, Formosa.

Rhombonyx lucidulus, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 171, Japan.

Rhinoplia geniculata, sp. n., Motschulsky, *l. c.* p. 171, Japan.

Macropmus, g. n., Horn, Proc. Acad. Nat. Sci. Phil. 1866, p. 397. See table, *suprà*. Sp. *M. crassipes*, sp. n., Horn, *l. c.* p. 397, Honduras.

Dynastides.

LECONTE (Proc. Acad. Nat. Sci. Phil. 1866, p. 382) notices the characters of *Ligyrrus rugiceps* (Lec.), and affirms the identity of *Phileurus vitulus* with *P. illatus* (Lec.), *l. c.* p. 383.

ROJAS (Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 234–235) records his observation during several successive years of a migration of *Golofa porteri* (Hope) in considerable numbers. The migration took place at 5 or 6 o'clock P.M., and always in the month of May. The exact date is not given.

COQUEREL mentions that the larvæ of *Oryctes tarandus* (Oliv.) and *insularis* (Coq.) do much injury to the coco-nut trees in the island of Réunion. Ann. Soc. Ent. Fr. 4^e sér. vi. p. 334.

Marronus, g. n., Coquerel, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 336. Allied to *Lonchotus*, but with only nine joints in the antennæ. Sp. *M. borbonicus*, sp. n., Coq. *l. c.* p. 337, pl. 7. fig. 2 (with details), from Bourbon.

Coptognathus lefranci, sp. n., Muls. & God. Ann. Soc. Linn. Lyon, xii. p. 448, Algeria.

Cylocephala manca, sp. n., Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 382, Arizona.

Strategus cessus, sp. n., Leconte, *l. c.* p. 382, Arizona.

Cetoniides.

Cetonia aurata. Bellier de la Chavignerie notices a remarkable monstrosity in a specimen of the black variety of this species; the left anterior tibia is deficient, and the tarsus springs immediately from the femur. Bull. Soc. Ent. Fr. 1865, p. lxi.

Schizorhina ebenina, sp. n., Butler, Proc. Zool. Soc. 1865, p. 729, Oceania. Figured p. 730, with fig. of *S. nortoni* and outline of posterior margin of thorax of *S. flammula*.

BUPRESTIDÆ.

DE MARSEUL (L'Abeille, iii. pp. 289–540) has concluded his monograph of the European and Mediterranean species of this family, the analysis of which was carried in the 'Record' for 1865 as far as the commencement of the genus *Acmaødera* in his fourth tribe *Polycestides*. This genus receives 17 species in addition to the 39 included in the tabular synopsis, thus raising the number described to 56. The number given in De Marseul's new catalogue is 59. *A. arabica* (Lap. & Gory) and *A. polita* (Klug) are regarded by the author as presenting characters jus-

tifying the formation for their reception of a new genus, for which he proposes the name of *Ptychomus* (*l. c.* p. 322). This generic group is not recognized in the catalogue. *A. mimonti* and *reichei* (Boield.) are referred by De Marseul as varieties to *A. taniata* and *crinita*.

The *Sphenopterides*, including only the genus *Sphenoptera*, are represented here by 86 species, a number raised to 88 in the catalogue. Of these, 16 are described as new. The *Chrysobothrines*, in like manner, include only one genus, *Chrysobothrys*, of which 8 species are noticed, 1 of them new. The *Agrilides* include *Coræbus*, *Agrilus*, and *Cylindromorphus*—the first with 19 species, divided into the subgenera *Coræbus* and *Melibæus*; the second with 58 species (8 new); and the last with 7 species. The eighth and last tribe, *Trachydes*, is composed of the genera *Trachys* and *Aphanisticus*, with De Marseul's genus *Ianthe*—the former with 11 species (1 new), the second with 7, and the last with 1 species.

As a sort of Appendix to the elaborate memoir of H. Deyrolle on the Buprestidæ of the Malasian region (see 'Record' 1865, p. 397), E. SAUNDERS has published a catalogue of the species of this family collected by Mouhot in Siam. The species are 44 in number, of which 33 are described as new. Of the remainder, 6 are identical with species collected by Wallace in the Eastern Islands; but the general character of the forms is said by the author to be Indian.

Schizopus. Leconte (Proc. Acad. Nat. Sci. Phil. 1866, pp. 385-386), in describing a new genus (*Dystaxia*) nearly allied to *Schizopus*, indicates that its characters are those of a Buprestide, and therefore suppresses his family *Schizopodidæ*, referring it to the Buprestidæ to form a subfamily (*Schizopini*) following his *Buprestini*.

SCHIÖDTE's paper on the *Buprestidæ* and *Elateridæ* is translated in Ann. Mag. N. H. 3rd. ser. xviii. pp. 173-212 and 327-338.

Julodis onopordi (Guér.) = *onopordinis* (Fab.), according to Goureau, Bull. Soc. Ent. Fr. 1865, p. lix.

FAIRMAIRE redescribes his *Ancylocheira flavo-angulata*, from Tangier, and *Polycesta ægyptiaca* (Fab.). He also states that the *Buprestis rustica* recorded by Lucas as occurring in Algeria = probably *Ancylocheira punctata* (Fab.), and that *A. mauritanica* (Luc.) = *octoguttata* (Linn.). Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 24-26.

Agrilus eupalamus (Gory) is described by Kirsch, Berl. ent. Zeits. 1866, p. 178.

Catoxantha gigantea. A variety (*brunnea*) of this species is described and figured by E. Saunders, Ent. Trans. 3rd ser. v. p. 300, pl. 21. fig. 1.

Castalia bipustulata (Boisd.). A green variety of this insect, with the spots almost obliterated, is indicated by E. Saunders, *l. c.* p. 308.

Chrysobothris dyopatra (Gory), a variety noticed by Kirsch, Berl. ent. Zeits. 1866, p. 178.

BELLIER DE LA CHAVIGNERIE describes the habits of *Acmæodera ovis* (Chevr.) as observed by him in Corsica (Ann. Soc. Ent. Fr. 4^e sér. tome vi.

pp. 125-126). He found the males most abundantly on the flowers of *Elychrysum angustifolium*, and the females clinging to the stems of *Ferula communis*, in which they deposit their eggs.

FRAUENFELD refers to the different action of the larvæ of *Trachys pumila* (Ill.) and *Coleophora auricella* (Fab.) upon the leaves of *Stachys recta*, which are mined by both. Verh. zool.-bot. Ges. in Wien, xvi. pp. 555-556.

New genera :—

Cardiaspis, g. n., E. Saunders, Ent. Trans. 3rd ser. v. p. 306. Allied to *Dicercomorpha* (H. Deyr.); scutellum large, heart-shaped; epistome carinated and produced on each side beneath the antennary cavities. Sp. *C. mouhotii*, sp. n., E. Saund. l. c. p. 307, pl. 21. fig. 9, from Siam.

Engycera, g. n., E. Saunders, l. c. p. 308. Allied to *Melobasis*; head broad; eyes minute, remote, prominent; antennary cavities minute, above the epistome, which is emarginate; posterior margin of elytra denticulate. Sp. *E. rufimarginata*, E. Saund. l. c. p. 308, pl. 21. fig. 4; *E. purpuriceps*, E. Saund., and *E. aenea*, E. Saund. l. c. p. 309, from Siam.

Oncomæa, g. n., E. Saunders, l. c. p. 320. Allied to *Pachyscelus* (Sol.); head minute; epistome emarginate; antennæ short, serrated; prothorax very wide behind; elytra very convex; tibiæ dilated. Sp. *O. cærulea*, sp. n., E. Saund. l. c. p. 321, from Siam (perhaps = *Galbella violacea*, Westw.).

Xenorhipis, g. n., Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 384. Allied to *Anthaxia*; antennæ long, pectinated externally. Sp. *X. brendeli*, sp. n., Leconte, l. c. p. 384, Illinois.

Dystaxia, g. n., Leconte, l. c. p. 385. Allied to *Schizopus*; antennæ slightly serrated (♀); abdomen with 5 ventral segments, 1 and 2 connate, 5 rounded at apex; prothorax with straight sides, margins distinct behind the middle (see ante, p. 332). Sp. *D. murrayi*, sp. n., Leconte, l. c. p. 385, California.

New species :—

(*Julodides*.)

Stenocera æquisignata (H. Deyr.), E. Saunders, Ent. Trans. 3rd ser. v. p. 298, *S. punctatofoveata*, E. Saund. ibid., and *S. ruficornis*, E. Saund. l. c. p. 299, from Siam.

(*Chalcophorides*.)

Chrysochroa rugicollis, E. Saunders, l. c. p. 300, pl. 21. fig. 2, and *C. saundersii* (H. Deyr.), E. Saund. l. c. p. 301, from Siam.

Chrysodema aurostriata, E. Saunders, l. c. p. 302, pl. 21. fig. 8, from Siam.

Iridotania igniceps, E. Saunders, l. c. p. 302, from Siam.

Lampetis. Of this genus E. Saunders describes the following new species from Siam :—*L. puncticollis*, l. c. p. 303; *L. psilopteroides*, p. 304, pl. 21. fig. 10; *L. viridicuprea*, p. 304; *L. affinis*, p. 305.

Halecia monticola, Kirsch, Berl. ent. Zeits. 1866, p. 174, Bogotá.

(*Buprestides*.)

Buprestis marseuli, Garbiglietti, L'Abeille, p. lxxvii, Egypt.

Dicercomorpha cupreomaculata, E. Saunders, l. c. p. 306, pl. 21. fig. 7, from Siam.

Stigmodera brevicollis, Kirsch, l. c. p. 175, from Bogotá.

Polycesta cotti, Fairmaire, *l. c.* p. 25, from Algeria.

Acmæodera cerasina, Marseul, *l. c.* p. 293, Asia Minor; *A. philistina*, Mars. *l. c.* p. 298, Syria; *A. decorata*, Mars. *l. c.* p. 299, Armenia; *A. levati*, Mars. *l. c.* p. 306 (= *chevrolati*, Levr.), Sicily.

Acmæodera amplicollis, Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 383, and *A. decipiens*, Leconte, *ibid.*, Arizona.

Sphenoptera. De Marseul (*l. c.*) describes the following new species of this genus:—*S. mniszehi*, p. 332, Persia; *S. elamita*, p. 338, Persia; *S. lobicolis* (Latr. MS.), p. 339, Syria; *S. encausta*, p. 340, Asia Minor; *S. babel*, *ibid.*, Turkey, Syria; *S. clauda*, p. 341, Caucasus; *S. cunea*, p. 346, Persia; *S. fissifrons*, p. 350, Turcomania; *S. 4-foveolata*, p. 356, Syria; *S. demissa*, p. 365, Caucasus; *S. bifoveolata*, p. 382, Algeria; *S. tappesi*, p. 387, Turkey, Syria; *S. puta*, p. 388, Algeria; *S. aciculata*, p. 395, Turcomania; *S. viridiflua*, p. 397, Asia Minor; *S. cylindricollis*, p. 401, Algeria; and *S. fairmairei*, p. 528, Asia Minor.

Sphenoptera beckeri, Dohrn, Stett. ent. Zeit. 1866, p. 249, from Astrakhan.

Sphenoptera henoni, Fairmaire, *l. c.* p. 26, from Biskra.

Colobogaster erythrogonus, Kirsch, *l. c.* p. 176, from Bogotá.

Chrysobothris curifera, Kirsch, *l. c.* p. 177, from Bogotá.

Chrysobothrys spuria, Marseul, *l. c.* p. 411 (= *chalcophana*, Lap. & Gory nec Klug), Egypt.

Coræbus. The following 4 new species of this genus from Siam are described by E. Saunders (*l. c.*):—*C. aurofasciatus*, p. 312, pl. 21. fig. 6; *C. cupreomarginatus*, *ibid.*; *C. denticollis*, p. 313; and *C. violaceipennis*, *ibid.*

Coræbus quadrimdulatus, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 165, Japan.

Discoderes tricolor, E. Saunders, *l. c.* p. 310, pl. 21. fig. 5, from Siam.

Cryptodactylus cæruleus, E. Saunders, *l. c.* p. 311, from Siam.

Melibæus cupricollis, E. Saunders, *l. c.* p. 314, pl. 21. fig. 3, from Siam.

Agrilus. Of this genus, E. Saunders (*l. c.*) describes the following 8 new species from Siam:—*A. ornativentris* and *longicollis*, p. 315; *A. octonotatus*, p. 316; *A. leucostictus* and *æneicollis*, p. 317; *A. æreus*, p. 318; *A. cærdicollis* and *viridicupreus*, p. 319.

Agrilus. De Marseul (*l. c.*) describes 8 new species of this genus, namely:—*A. hemiphanes*, p. 467, south of France; *A. turcicus*, *ibid.*, Turkey; *A. linderi*, p. 468, south of France; *A. croceivestis*, p. 472, Kabylia; *A. zigzag*, p. 478, South Russia; *A. ecarinatus*, p. 484, Eastern Siberia; *A. asperrimus*, p. 492, Italy; and *A. minusculus*, p. 493, Austria.

Agrilus couësi, Leconte, *l. c.* p. 384, Arizona; *A. cuneus*, Leconte, *ibid.*, Texas.—*Agrilus sericellus*, Fairmaire, *l. c.* p. 27, from Biskra.

Brachys carbo, Kirsch, *l. c.* p. 179, from Bogotá.

Trachys fasciunculus, E. Saunders, *l. c.* p. 320, from Siam.

Trachys hipponensis, Marseul, *l. c.* p. 513, Algeria.

Ianthe felix (Truq.), Marseul, *l. c.* p. 504, Cyprus.

ELATERIDÆ.

SCHIÖDTE'S paper on the *Buprestidæ* and *Elateridæ* is translated in Ann. & Mag. N. H. 3rd ser. xviii. pp. 173-212 & 327-338.

LECONTE (Proc. Acad. Nat. Sci. Phil. 1866) has the following notes on known species of this family:—*Alaus naja* (Cand.) = *A. melanops* (Lec.), *l. c.*

p. 389; *Cryptohypmus 4-pustulatus* (Germ.) occurs near Washington (ibid.); *Limonius infernus* (Lec.) = *Elater nimbatus* (Say) according to types in Melsheimer's collection (*l. c.* p. 391); *Athous undulatus* (De G.) occurs in Hudson's Bay Territory (*l. c.* p. 391); *Corymbites brunripes* (Bland) = *C. morulus* (Lec.), *l. c.* p. 392.

Corymbites. Stierlin has published a tabular synopsis of the European species of this genus, founded on the monograph of the Elateridæ of Candèze. Mitth. schweiz. ent. Ges. 1865, pp. 293-299.

Semiatus. Kirsch (Berl. ent. Zeits. 1866) remarks on the characters and variation of *S. fulvicollis* (Blanch.), p. 179, and *S. sommerii* (Cand.), p. 180.

Smilecerus bitinctus, variations noticed by Kirsch, *l. c.* p. 183. Kirsch also indicates a variety of *Tomicephalus sardioderus* (Cand.), *l. c.* p. 183, and describes the ♀ of *Octinodes capillatus* (Cand.), p. 184.

CROTCH (Entomologist, iii. p. 124) remarks on the synonymy of several species of this group:—*Cryptohypmus scotus* (Cand.) = *maritimus* (Curt.); *Melanotus niger* receives the name of *M. punctolineatus* (Pel.) on account of *Athous niger*; *Ctenonychus* (Steph.) is substituted for *Synaptus* (Esch.), the latter name being preoccupied. *Cardiophorus thoracicus* is regarded as a doubtful British species by Crotch, who also doubts whether *Cryptohypmus dermestoides* and *4-pustulatus* are distinct.

Athous subfuscus (Müll.) and *Limonius parvulus* (Panz.) are recorded as British by Crotch (Cat. Brit. Col.). See Rye, Ent. Ann. 1867, p. 80.

The occurrence of *Agriotes sordidus* (Ill.) and *Corymbites affinis* (Payk.) in France is recorded by Desbrochers des Loges. Bull. Soc. Ent. Fr. 1866, p. xxxiii.

Anamesus, g. n., Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 393. Allied to *Aplastus*; 5th ventral segment truncate at apex and exposing the 6th. Sp. *A. convexicollis*, sp. n., Leconte, *l. c.* p. 393, Nevada and California.

New species :—

Semiatus. Kirsch (Berl. ent. Zeits. 1866) describes the following new species from Bogotá :—*S. candezæi*, p. 180; *S. superbus*, *fusiformis*, and *quadriceollis*, p. 181.

Lacon formosanus and *L. setiger*, Bates, Proc. Zool. Soc. 1866, p. 348, Formosa.

Adelocera pyrsolepis, Leconte, *l. c.* p. 389, New Mexico; *A. maculata*, Leconte, *ibid.*, Philadelphia and Washington.

Cryptohypmus gentilis, Leconte, *l. c.* p. 389, Nebraska.

Megapenthes angularis, Leconte, *l. c.* p. 390, Missouri.

Anchastus bicolor, Leconte, *l. c.* p. 390, Lower California.

Melanotus gradatus, Leconte, *l. c.* p. 390, Maryland; *M. opacicollis*, Leconte, *ibid.*, Illinois.

Melanotus umber and *M. tamsuyensis*, Bates, *l. c.* p. 349, Formosa.

Limonius pectoralis, Leconte, *l. c.* p. 391, Hudson's Bay Territory.

Athous limbatus, Leconte, *l. c.* p. 391, California; *A. montanus*, Leconte, *ibid.*, Montana Territory.

Athous. The following new Spanish species are described by C. Brisout de Barneville (Ann. Soc. Ent. Fr. 4^e sér. vi.) :—*A. reynosa*, *l. c.* p. 376, *A. nigricornis*, *l. c.* 377, from Reynosa; *A. lateralis*, *l. c.* p. 378, *A. tenuis*, *l. c.* 379, from Madrid; and *A. elongatus*, *l. c.* p. 380, from Toledo and Córdova.

Athous acutangulus, Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 261, from Asia Minor.—*Athous subcaneus*, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 166, Japan.—*Athous impressifrons*, Hampe, Berl. ent. Zeits. 1866, p. 373, Agram.

Ampedus cuneiformis, Hampe, l. c. p. 373, Styria.

Dolerosomus? sericarius, Motschulsky, l. c. p. 166, Japan.

Agriotes ferrugineipennis, Motschulsky, l. c. p. 166, Japan.

Agriotes nuceus, Fairmaire, l. c. p. 260, from Asia Minor.

Selatosomus puncticollis, Motschulsky, l. c. p. 167, Japan.

Corymbites kiesewetteri, C. Brisout, l. c. p. 375, Escurial and La Granja.

Corymbites teres, Leconte, l. c. p. 392, California; *C. trapezium*, Leconte, ibid., Texas; *C. opaculus* and *C. macrens*, Leconte, ibid., Oregon.

Silesis mutabilis, Bates, l. c. p. 349, Formosa.

Anoplischius obscurus, Kirsch, l. c. p. 182, from Bogotá.

Triplonychus amabilis, Kirsch, l. c. p. 183, from Bogotá.

Plastocerus frater, Leconte, l. c. p. 393, California.

EUCNEMIDÆ.

Fornax calceatus (Say) belongs to the genus *Dromæolus* (Kies.), which is identical with *Isarthrus* (Lec.). Leconte does not consider this group generically distinct from *Fornax*. Proc. Acad. Nat. Sci. Phil. 1866, p. 387. *Eucnemis frontosus* (Say) is regarded by Leconte as belonging to *Hypocælus* rather than *Nematodes* (l. c. p. 388).

JANSON notices the occurrence of *Throsacus elateroides* (Heer) in Britain, and gives diagnoses of the known British species, *T. dermestoides*, *elateroides*, and *obtusus*. Proc. Ent. Soc. 1866, pp. x and xi.

Plesiofornax, g. n. (Bonvouloir), Coquerel, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 320. Allied to *Fornax*; but the antennary groove of the propectus has no raised line on its outer edge. Sp. *P. bonvouloiri*, Coq. l. c. p. 321, and *P. insularis* (Bonv.), Coq. l. c. p. 322, from Bourbon.

Stethon, g. n., Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 386. Allied to *Otho*; antennæ not pectinated, joint 3 longer than 4; hinder coxæ broad, dilated internally, obtusely angulated. Sp. *S. pectorosus*, sp. n., Leconte, l. c. p. 386, Illinois.

Fornax basalis, sp. n., Leconte, l. c. p. 387, California.

Microrhagus rufiolus, sp. n., Leconte, l. c. p. 387, Ohio; *M. pectinatus*, Leconte, ibid., Pennsylvania.

Hypocælus terminalis, sp. n., Leconte, l. c. p. 387, Ottawa.

Nematodes simplex, sp. n., Leconte, l. c. p. 388, New York.

Cerophytum convexicolle, sp. n., Leconte, l. c. p. 388, California.

CEBRIONIDÆ.

Under the name of *Fossipèdes*, MULSANT & REY describe the characters and natural history of the French species of this family (Col. de France, Fossipèdes), of which they admit only 2, viz. *C. gigas* (Fab.) and *fabricii* (Leach). They also describe *C. dubius* (Rossi). The ♂ and ♀ of *C. gigas*, the antenna of the ♀, and its larva are also figured by them on the first plate of this volume.

FAIRMAIRE describes the known North African species of *Cebrio*, of which he distinguishes twenty-six. Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 27-44. The following are new:—

C. obtusangulus, p. 28; *C. melas*, p. 29; *C. numida*, p. 31; *C. longipennis*, ibid.; *C. xanthopus*, p. 32; *C. patruelis*, p. 33; *C. xanthoderes*, p. 34; *C. distinguendus* and *confusus*, p. 36; *C. decipiens*, p. 37; *C. amplicollis* and *lucasii*, p. 39; *C. capitatus*, p. 40; *C. marginipennis*, p. 43.

Cebrio fossulatus, sp. n., Perris, Ann. Soc. Ent. Fr. 4^e sér. v. p. 508, Corsica.

RHIPICERIDÆ.

Ennometes, g. n., Pascoe, Journ. of Ent. ii. p. 445. Allied to *Callirhipis*; antennal joints somewhat elongated; tarsi filiform, last joint shorter than the rest taken together; onychium distinct; 5 abdominal segments. Sp. *E. lacordairei*, sp. n., Pasc. l. c. p. 445, pl. 19. fig. 2, Queensland.

Pscus, g. n., Pascoe, l. c. p. 446. Antennæ 11-jointed, short, scape subglobose, joint 2 short, 3 large, triangular, remainder flabellate; onychium wanting; form of *Attagenus* or *Dermestes*. Sp. *P. attagenoides*, sp. n., Pasc. l. c. p. 446, pl. 18. fig. 4, South Australia.

DASCILLIDÆ.

The French *Dascillidæ* and their natural history are described by MULSANT & REY (Col. de France, Brévicolles). They divide their tribe *Brévicolles* into the 2 groups *Dascillidæ* and *Eucinétidæ*, the former including 3 families, namely *Dascilliens* (genus *Dascillus*), *Cyphoniens* (genera *Elodes*, *Microcara*, *Cyphon*, *Hydrocyphon*, *Prionocyphon*, and *Scirtes*), and *Eubriens* (genus *Eubria*); whilst the *Eucinétidæ* include only a single family, *Eucinétiens*, and genus, *Eucinetus*. Details of the following species are figured by Mulsant & Rey:—*Dascillus cervinus* (Linn.), l. c. pl. 1. figs. 1-6; *Elodes pallida* (Fab.), ibid. figs. 7-17; *E. marginata* (Fab.), ibid. figs. 18-21; *Microcara livida* (Fab.), l. c. pl. 2. figs. 1-6 and 8-10; *Cyphon*, sp., post. tarsus and head, ibid. figs. 7 & 11; *Cyphon nigriceps* (Kies.), ibid. figs. 12, 13, 20, & 25; *C. fuscicornis* (Thoms.), ibid. figs. 14 & 17; *C. coarctatus* (Payk.), fig. 15; *C. nitidulus* (Thoms.), fig. 16; *C. variabilis* (Thunb.), fig. 18; *C. pallidulus* (Boh.), figs. 19 and 24; *C. padi* (Linn.), fig. 21; *C. putoni* (Bris.), fig. 22. (Figs. 15-22 represent the base of the antennæ in the various species.) Also details of the genera *Hydrocyphon*, l. c. pl. 3. figs. 1-6, and *Prionocyphon*, ibid. figs. 7-14, and of *Scirtes hemisphæricus* (Linn.), l. c. pl. 4. figs. 1-8; *Eubria palustris* (Germ.), ibid. figs. 9-12; *Eucinetus hæmorrhoidalis* (Germ.), ibid. figs. 13-17 & 19; and *E. meridionalis* (Lap.), figs. 18 & 20.

Cyphon coarctatus (Schneid. nec Payk.) from Finmark = *variabilis* (Thunb.). L. von Heyden, Stett. ent. Zeit. 1866, p. 254.

Helodes trilineatus (Chevr.) is probably identical with *H. marginatus* (Fab.) according to Kiesenwetter, Berl. ent. Zeits. 1866, p. 243.

Microcara bohemanii (Mann.), *Cyphon pallidiventris* (Thoms.), and *C. nigriceps* (Kies.) are recorded as British by Crotch (Cat. Brit. Col.). See Rye, Ent. Ann. 1867, pp. 80-81.

Crotch (Entomologist, iii. p. 124) indicates the differences between *Microcara bohemanii* (Mann.) and *livida* (Fab.), which, however, he regards as probably forming one species. Crotch also remarks on the characters of 1866. [VOL. III.]

Cyphon coarctatus and *nigriceps*, and on the species founded by Thomson and Kiesenwetter at the expense of the former (*l. c.* p. 125).

Cyphon variabilis. The larva and pupa of this species are described and figured by Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvi. pp. 969-970.

New species :—

Pseudodactylus, *g. n.*, Hampe, Berl. ent. Zeits. 1866, p. 374. Tarsi 4-jointed, stout, joints 1-3 equal in length, 3 with a long, bilobed, membranaceous appendage; abdomen of 5 segments; last joint of palpi compressed, rounded at apex; prosternum with a keeled process. Sp. *P. cribratus*, *sp. n.*, Hampe, *l. c.* p. 379, from the Abruzzi.

Artematopus (Perty). Kirsch (Berl. ent. Zeits. 1866) describes the following species from Bogotá as belonging to this genus, although differing in some characters from Lacordaire's definition of the genus:—*A. urbanus*, p. 185; *A. caniceps* and *guerini*, p. 186; and *A. gracillipes*, p. 187.

Cyphon kinckeli, Mulsant & Rey, Col. de France, Brévicollés, p. 73, Monte Rosa; *C. sulcicollis*, Muls. & Rey, *l. c.* p. 87, pl. 2. fig. 23, Marseilles; *C. depressus*, Muls. & Rey, *l. c.* p. 89, pl. 2. fig. 23, Lyons.

Ptilodactyla scrutata, Kirsch, *l. c.* p. 187, and *P. cruciata*, Kirsch, *l. c.* p. 188, from Bogotá.

Prionocephon limbatus, Leconte, Col. N. Amer. i. p. 87, Middle States.

Helodes apicalis, Leconte, *l. c.* p. 87, California; *H. explanata*, Lec. *ibid.*, Canada; *H. ? brevicollis*, Lec. *l. c.* p. 88, Oregon.

Eucinetus oviformis, Leconte, *l. c.* p. 88, Illinois; and *E. testaceus*, Lec. *ibid.*, Pennsylvania.

Lycides.

MALACODERMATA.

Digrapha divisa (Newm.) probably = *apicalis* (Lec.). Leconte, List Col. N. Am. p. 51, note.

Lampyrides.

Theobald confirms the statement that eastern Fireflies sometimes emit and stop their light simultaneously (see 'Record,' 1865, p. 464). His observation was made in Pegu. Journ. Asiatic Soc. Beng. 1866, p. 73; Proc. Ent. Soc. 1866, p. xxvii.

Lampyris splendidula (Linn.). A male of this species has been taken near Baltimore. Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 394.

Targioni-Tozzetti has described the luminous organ, &c., of *Luciola italica* and *Lampyris noctiluca*. (See p. 291.)

Lampyris maculicollis, *sp. n.*, Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 262, from Asia Minor (larva also described); *L. berytensis*, Fairm. *l. c.* p. 263, note, from Syria; *Lampyris obtusa*, Fairmaire, *l. c.* p. 44, from Tangier.

Microphotus, *g. n.*, Leconte, Col. N. Amer. i. p. 89. Allied to *Phausis*; antennæ 11-jointed; prothorax without hyaline spots. Sp. *M. dilatatus*, *sp. n.*, Lec. *l. c.* p. 90, California.

Pleotomus pallens, *sp. n.*, Leconte, *l. c.* i. p. 88, Texas.

Telephorides.

Notes on the occurrence in the south of Spain of numerous species of this subfamily are given by KIESENWETTER, Berl. ent. Zeits. 1866, pp. 245-263. He more fully characterizes the species indicated in his former paper (see

'Record,' 1865, p. 465), figures *Malthinus cincticollis* (Kies.), taf. i. fig. 2, and remarks on the characters and synonymy of the following:—*Cantharis abdominalis* (Fab.), *annularis* (Ménétr.)=*illyricus* (Muls.), *reichei* (Muls.), *atratus* (Mars.), *pulicaria* (Fab.) ♀ =? *brevipennis* (Fald.), *livida* (Linn.)=*eremita* (Rosenh.), *palliata* (Gyll.), *oralis* (Germ.), *ariasi* (Muls.), *bivittata* (Mars.), *ericeti* (Kies.), *fulva* (Scop.)=*melanura* (auct.), *gilvipennis* (Rosenh.), *opaca* (Muls.), *quadricollis* (Kies.)=*limbipennis* (Mars.), *hesperica* (Baudi), *plagiella* (Mars.), *varians* (Rosenh.), *nigricollis* (Motsch.)=*guadarramensis* (Graells?), *fairmairei* (Mars.); *Malthinus seriepunctatus* (Kies.), *balteatus* (Suffr.), *scutellaris* (Rosenh.) =? *flicornis* (Kies.), *scriptus* (Kies.) = *flicornis*, var. *ornatus* (Rosenh.); *Malthodes validicornis* (Suffr.)=*hispanicus* (Baudi), *forcipifer* (Kies.).

СНОТЧ (Entomologist, iii. pp. 47–48) indicates the characters furnished by the presence of impressed linear foveæ on certain joints of the antennæ in species of *Telephorus*, and tabulates the British species in accordance therewith. The species determined by Crotch on the authority of De Marseul as *T. assimilis* (Payk.) = *T. figuratus* (Mann.).

СНОТЧ (Entomologist, iii. p. 125) refers to the synonymy of various species of *Telephorus*:—*T. lituratus* (Fall.) substituted for *rufus* (Linn.); *T. lateralis* (Linn.); *T. translucidus* (Kryn.)=*unicolor* (Curt.), the latter preoccupied; *T. fulvus* (Linn.); and *T. limbatus* (Thoms.).

Telephorus fuscus. Observations on the occurrence of larvæ of this species on snow in Switzerland and elsewhere were communicated by HEEB to the Société des Sciences Naturelles de Neuchâtel (Bulletin, tome vii. pp. 304–306). He accounts for the phenomenon by supposing that the trees among the roots of which the larvæ were hibernating had been torn up and the insects carried away by violent winds.

Malachius aneus has been charged with injuring the corn-crops in the district of Gewitsch by devouring the anthers. Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvi. p. 644.

Malachius bipustulatus. Giraud describes the larva of this species found by him in a narrow passage in a bramble stick. Ann. Soc. Ent. Fr. 4^e sér. vi. p. 497.

New species:—

Chauliognathus opacus, Leconte, Col. N. Amer. i. p. 90, Arizona.

Omethes marginatus, Leconte, l. c. p. 90, Middle and Southern States.

Podabrus fayi, Leconte, l. c. p. 91, Ohio; *P. protensus* and *P. cinctipennis*, Lec. ibid., Pennsylvania.—*Podabrus pattoni*, Leconte, Proc. Acad. Nat. Sci. Phil. 1866, p. 394, Pennsylvania.

Telephorus scopus, Leconte, Col. N. Amer. i. p. 92, and *T. oregonus*, Lec. ibid., Oregon.

Telephorus darwinianus, Sharp. A new species indicated by Sharp before the Entomological Society. See Rye, Ent. Ann. 1867, p. 52, frontisp. figs. 3 & 3*.

Telephorus scoticus, Sharp = *assimilis* (Crotch nec Payk.) = *figuratus* (Crotch nec Mann.). See Rye, l. c.

Telephorus teinturierii, Muls. & God. Ann. Soc. Linn. Lyon, xii. p. 447, Algeria.

Cantharis instabilis, Kiesenwetter, Berl. ent. Zeits. 1866, p. 246, C. fr

ciana, Kies. *l. c.* p. 248, and *C. (Rhagonycha) oliveti*, Kies. *l. c.* p. 251, from the south of Spain.

Malthinus stigmatius, Kiesenwetter, *l. c.* p. 255, and *M. obscuripes*, Kies. *l. c.* p. 256, from the south of Spain.

Malthodes. The following new species from the south of Spain are described by Kiesenwetter:—*M. genista*, *l. c.* p. 260; *M. berberidis*, *l. c.* p. 261; *M. cruciferarum*, *ibid.*; *M. rosmarini*, *ibid.*; *M. stylifer*, *l. c.* p. 262; *M. arbustorum*, *ibid.*

Malthodes fuliginosus, Leconte, *l. c.* p. 93, Lake Superior; *M. spado*, Lec. *ibid.*, Pennsylvania.

Malchinus nigrinus, Schaufuss, Rev. et Mag. de Zool. 1866, p. 180, Dalmatia.

Malachius lippus, Chevrolat, Rev. et Mag. de Zool. 1866, p. 102, Valladolid.—*Malachius prolongatus*, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 167, Japan.

Lichnuris biplagiata, Motschulsky, *l. c.* p. 167, Japan.

Drilides.

The new genus *Paradrilus* and its species *P. opacus* (see 'Record,' 1865, p. 466) are characterized in more detail by Kiesenwetter, Berl. ent. Zeits. 1866, pp. 244–245, taf. i. fig. 3.

Melyrides.

LECONTE publishes (Proc. Acad. Nat. Sci. Phil. 1866, pp. 349–361) a revision of the North-American *Dasytini*, tabulating and characterizing the genera belonging to the group and the species composing each genus. The following is his table of genera:—

- I. First joint of tarsi not shorter than second (claws equal in length; joints 2 & 3 of tarsi not dilated; last joint of palpi not securiform).
 - A. Anterior tibiæ with an external row of spines.
 1. PRISTOSCELIS (Lec.).
 - B. Anterior tibiæ without spines.
 - a. Membranous appendages equal, nearly as long as claws, in great part connate 2. LISTRUS (Motsch.).
 - b. Appendages connate, one long, the other shorter.
 3. DOLICHOSOMA (Ste.).
 - c. One appendage long, connate, the other dentiform.
 4. ALLONYX (Lec.).
 - d. Both appendages short, connate, usually dentiform.
 5. DASYTES (Fab.).
 - e. Membranous appendages long, equal, free to the base.
 6. ESCHATOCREPIS (Lec.).
 - II. First joint of tarsi shorter than second. 7. MELYRIS (Fab.).

Pristoscelis includes *Byturosomus*, *Trichochrous*, and *Emmenotarsus* (Motsch.).

KIESENWETTER (Berl. ent. Zeits. 1866, pp. 264–274) notices the occurrence in the south of Spain of numerous species of this family, and describes the new species briefly indicated by him in his former paper (see 'Record,' 1865,

p. 467). Figures are given by him of the antennæ of *Malachius bipustulatus* (Linn.), var. *ætolicus* (Kies.), and of the typical form, taf. i. figs. 4 & 5, of *M. lusitanicus* (Er.), fig. 6, and *M. græcus* (Kraatz), fig. 7. The characters and synonymy of the following species are discussed:—*Apalochrus flavolimbatus* (Muls.)=*tricolor* (Kies.), *Malachius græcus* (Kraatz), *bipustulatus* (Linn.), *lusitanicus* (Er.), *limbifer* (Kies.)=*semilimbatus* (Fairm.)=*hilaris* (Rosenh.), *affinis* (Er.)=*laticollis* (Rosenh.), *Anthocomus fenestratus* (Linder), *Attalus (Ebcæus) cyaneus* (Rosenh.), *varitarsis* (Kraatz)=*jocosus* (Kies.), *ulicis* (Er.), *pictus* (Kies.).

Dasytes cæruleus was bred by Giraud from a gall of *Diastrophus rubi*, in which the larva had inhabited a tortuous gallery. *D. flavipes* was also found by him in the bramble. Ann. Soc. Ent. Fr. 4^e sér. vi. p. 498.

New genera and species:—

Acanthocnemus, g. n., Perris, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 187. Allied to *Dasytes*; tibiæ spinose; joints 2 and 3 of labial palpi nearly equal. Sp. *A. ciliatus*, sp. n., Perris, l. c. p. 188, from Corsica.

Intybia, g. n., Pascoe, Journ. of Ent. ii. p. 448. Allied to *Collops*; eyes very prominent, subpedunculate; joint 2 of antennæ very large; tarsi pentamerous, last joint triangular. Sp. *I. guttata*, sp. n., Pasc. l. c. p. 448, pl. 18, fig. 6, Batchian.

Haplocnemus coreyricus, Miller, Verh. zool.-bot. Ges. in Wien, xvi. p. 818, Corfu.

Atelestus peragallonis, Perris, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 186, from Nice and Mentone.

Acinotarsus tristiculus, Kiesenwetter, Berl. ent. Zeits. 1866, p. 267, from Spain.

Pristoscelis. Leconte (Proc. Acad. Nat. Sci. Phil. 1866) describes the following new species of this genus:—*P. oregonensis*, p. 351, Oregon and California; *P. atricornis* and *convergens*, p. 352, Arizona; *P. umbratus*, *ibid.*, California; *P. brevipilosus* and *P. hirtellus*, p. 353, *P. tejonicus*, p. 354, *P. punctipennis*, *P. grandiceps*, and *P. pedalis*, p. 355, California; *P. cruralis*, p. 355, Oregon; *P. texanus*, *ibid.*, Texas; *P. serricollis*, p. 356, New Mexico and Colorado; and *P. serrulatus*, *ibid.*, Arizona.

Listrus motschulskii, Leconte, l. c. p. 357, California and Oregon (= *Dasytes canescens*, Lec. nec Motsch.); *L. interruptus*, Lec. *ibid.*, Nebraska.

Allonyx plumbeus, Leconte, l. c. p. 359, Colorado.

Dasytes hudsonicus, Leconte, l. c. p. 360, Hudson's Bay Territory; *D. seminudus*, Lec. *ibid.*, California.

Collops limbatus, Leconte, Col. N. Amer. i. p. 94, Nebraska; *C. insulatus*, Lec. *ibid.*, California.

Attalus humeralis, Leconte, l. c. p. 94, Illinois.

Attalus pectinatus, Kiesenwetter, l. c. p. 268, from Spain.

Ebcæus mendax, Kiesenwetter, l. c. p. 270, from Spain.

Anthodromius tricolor, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 395, and *A. cornifrons*, Motsch. l. c. p. 396, Ceylon (Nura-Ellia).

CLERIDÆ.

Clerus substriatus (Gebl.). Variations of this species, both in colour and size, are indicated by Mühl, Berl. ent. Zeits. 1866, p. 292.

LENTZ remarks on the variations and larva of *Clerus rufipes* (Brahm).
Schriften kön. phys.-ökon. Gesellsch. Königsb. vii. pp. 97-98.

New species :—

Tillus fabellicornis, Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 22,
from Guelma.

Cymatodera fascifera, Leconte, Col. N. Amer. i. p. 95, and *C. pilosella*, Lec.
ibid., California.

Clerus tantillus, Leconte, l. c. p. 96, Washington.

Hydnocera subfasciata, Leconte, l. c. p. 97, Nebraska; *H. pedalis* and *H.*
schusteri, Lec. ibid., Illinois.

Cregya mixta, Leconte, l. c. p. 98, Maryland and Kentucky.

Enoplium scabripenne, Leconte, l. c. p. 98, California.

Lebasiella janthina, Leconte, l. c. p. 99, California; *L. nigripennis*, Lec. ibid.,
Pennsylvania.

Laricobius rubidus, Leconte, l. c. p. 99, Washington.

LYMEXYLONIDÆ.

Atractocerus? *valdivianus*, sp. n., Philippi, Stett. ent. Zeit. 1866, p. 113,
taf. ii. fig. 4, from Chili.

PTINIDÆ.

Anobiides. Leconte (Proc. Acad. Nat. Sci. Phil. 1865, pp.
222-244) publishes a sketch of a monograph of the North-Ame-
rican species of this group, which is especially valuable as bring-
ing together most of the genera indicated in the works of Duval,
C. G. Thomson, and Mulsant and Rey. Leconte proposes (l. c.
p. 223) to divide his subfamily *Anobiini* (excl. *Ptilinus*) into the
following secondary groups :—

- A. Head received in repose upon the under surface of the prothorax.
 - Group ANOBIA.
 - Prothorax not excavated beneath; head free .. Subgroup *Dryophilii*.
 - Prothorax excavated beneath for the reception of head.
 - Subgroup *Anobia*.
 - B. Mandibles in repose resting against mesosternum.
 - Group XYLETINI.
 - Head excavated beneath for reception of antennæ.
 - Subgroup *Xyletini*.
 - Antennæ received between coxæ Subgroup *Dorcatomata*.
- The *Dryophilii* include the following 3 genera :—
- I. Anterior coxæ contiguous, prominent, conical. . ERNOBIUS (Thoms.).
 - II. Anterior coxæ separated by prosternum.
 - Prosternum moderate; tarsi narrow. OZOGNATHUS (Lec.).
 - Prosternum very short; tarsi dilated XESTOBIUM (Motsch.).
- The *Anobia* embrace twelve genera, which are tabulated by Leconte as follows (l. c. p. 227) :—
- I. First ventral segment not excavated for reception of hind feet.
 - A. Metasternum not excavated in front.
 - 1. Antennæ not received between coxæ.

- a. Anterior coxæ contiguous; antennæ 9- or 10-jointed.
 - 1. OLIGOMERUS (Redt.).
- b. Anterior coxæ nearly contiguous; antennæ 11-jointed.
 - 2. SITODREPA (Thoms.).
- 2. Antennæ received between coxæ, which are distant.
 - a. Antennæ subpectinated 3. CTENOBIUM, g. n.
 - b. Antennæ not pectinated.
 - * Thighs strongly clavate; tarsi dilated.
 - 4. PTINODES (Lec.).
 - † Thighs not clavate; tarsi dilated.
 - a. Claws armed with a broad tooth.
 - 5. TRICHODESMA (Lec.).
 - β. Claws not toothed 6. NICOBIUM (Lec.).
 - ‡ Tarsi slender; thighs not clavate.
 - 7. HADROBREGMUS (Thoms.).
- B. Metasternum deeply excavated in front.
 - 1. Antennæ not serrate, last joints elongated.
 - 8. ANOBIUM.
 - 2. Antennæ serrate, last joints scarcely longer.
 - 9. TRIPOPITYS (Redt.).
- C. Metasternum produced in front into a large lobe.
 - 10. PETALIUM (Lec.).
- II. First ventral segment excavated.
 - A. Mesosternum carinate; epipleuræ foveate at middle.
 - 11. THECA (Muls.).
 - B. Mesosternum emarginate; epipleuræ not foveate.
 - 12. EUPACTUS (Lec.).

The American *Xyletini* constitute five genera, thus tabulated:—

- I. Elytra striated; antennæ serrated. 1. XYLETINUS (Latr.).
- II. Elytra not striated; first ventral segment not excavated.
 - A. Antennæ serrated 2. LASIODERMA (Steph.).
 - B. Antennæ with last 3 joints large. 3. CATORAMA (Guér.).
- III. First ventral segment excavated.
 - A. Epipleuræ not foveate at middle. 4. HEMIPTYCHUS (Lec.).
 - B. Epipleuræ foveate at middle 5. PROTHECA (Lec.).

Lasioderma=*Pseudochina*, subg. *Hypora* (Muls.); *Hemiptychus*=*Dorcatoma* (Lec.).

Lastly, the *Dorcatomata* form only 2 genera:—*Dorcatoma* (Herbst, Thoms.) with the prosternum produced behind; and *Cænocara* (Thoms.)=*Tylistus* (Lec.)=*Enneatoma* (Muls.), with the prosternum truncate. The species belonging to all these genera are described and generally tabulated by the author.

LECONTE (List Col. N. Am. pp. 56 and 57, notes) remarks as follows on the synonymy of genera of *Anobiides*:—*Philoxyton* (Lec.)=*Lioxoum* (Muls.)=*Ernobius* (Thoms.); *Cnceus* (Thoms.)=*Xestobium* (Motsch.); *Sitodrepa* (Thoms.)=*Anobium*, subg. *Artobium* (Muls.); *Cacotennus* and *Hemicælus* (Lec.)=*Hadrobregmus* (Thoms.); *Tylistus* (Lec.)=*Enneatoma* (Muls.)=*Cænocara* (Thoms.).

CROTCH (Entomologist, iii. p. 126) remarks on the recent subdivision of the old genus *Anobium*, and on the synonymy of some species of this group.

Lasioderma testaceum (Steph.)=*serricornis* (Fab.) belongs to *Pseudochina*. Crotch also remarks on the genera *Cænocara* and *Anitys*, and on the synonymy of *C. bovistæ*, changed to *subalpina* by Mulsant.

Xestobium velutinum (Muls. & Rey)=*Anobium declive* (Duf.), according to Perris, Ann. Soc. Ent. Fr. 4^e sér. v. p. 512.

On the ticking of *Anobium*, see Doubleday, Proc. Ent. Soc. 1866, p. iv, also Groser & Jenyns, *l. c.* p. v. Alex. Wallace states that, in the roof of an old church, the timber attacked by *Anobium* was chiefly towards the south. *L. c.* p. iv.

New species :—

Pinus timidus, Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 382, Madrid.

Trigonogenius farctus, Leconte, Col. N. Amer. i. p. 100, California.

Sphindus americanus, Leconte, *l. c.* p. 104, Eastern States.

Ernobius debilis, Leconte, Proc. Acad. Nat. Sci. Phil. 1865, p. 225, California; *E. granulatus*, Leconte, *ibid.*, Florida; *E. tenuicornis*, Leconte, *ibid.*, Pennsylvania.

Ozognathus misellus, Leconte, *l. c.* p. 226, California.

Oligomerus obtusus, Leconte, *l. c.* p. 228, Vermont; *O. alternans*, Leconte, *ibid.*, New Jersey.

Ctenobium, g. n., Leconte, Proc. Acad. Nat. Sci. Phil. 1865, p. 229 (see Table, p. 343). Sp. *C. antennatum*, sp. n., Leconte, *l. c.* p. 230, Virginia.

Hadrobregmus linearis, Leconte, *l. c.* p. 232, Saskatchewan; *H. pumilus*, Leconte, *ibid.*, New Jersey.

Theca profunda, Leconte, *l. c.* p. 235, Pennsylvania and Lake Superior.

Eupactus nitidus, Leconte, *l. c.* p. 236, Western States; *E. punctulatus*, Leconte, *ibid.*, Louisiana.

Xyletinus mucoreus, Leconte, *l. c.* p. 237, Louisiana; *X. fucatus*, Leconte, *l. c.* p. 238, Lake Superior; *X. pallidus*, Leconte, *ibid.*, Lower California.

Lasioderma dermestinum, Leconte, *l. c.* p. 238, California.

Catorama? *simplex*, Leconte, *l. c.* p. 239, Kentucky.

Hemiptychus. Leconte describes the following new species :—*H. punctatus*, *l. c.* p. 240, Louisiana and Georgia; *H. borealis*, *ibid.*, Lake Superior; *H. ventralis*, *ibid.*, Illinois; *H. obsoletus*, *ibid.*, California; *H. nigrifulus*, *l. c.* p. 241, Pennsylvania.

Protheca puberula, Leconte, *l. c.* p. 241, Pennsylvania and Georgia; *P. hispida*, Leconte, *ibid.*, Georgia.

Dorcatoma setulosum, Leconte, *l. c.* p. 242, Lake Superior to Georgia; *D. incomptum*, Leconte, *l. c.* p. 243, South Carolina and Pennsylvania.

Cænocara scymnoides, Leconte, *l. c.* p. 244, Vermont.

CISSIDÆ.

Cis. Crotch (Entomologist, iii. pp. 126–127) refers to the genera which have been recently formed at the expense of this genus, of which he seems to think only *Octotemnus* (Mell.) well founded. He also remarks on the synonymy of several species of *Cis*.

Cis regulosus (Mellié), *C. punctulatus* (Gyll.), and *C. jacquemartii* (Mellié) are recorded as British by Crotch (Cat. Brit. Col.). See Rye, Int. Ann. pp. 81–82.

Lyctus opaculus, sp. n., Leconte, Col. N. Amer. i. p. 103, Pennsylvania; *L. cavicolis*, Lec. *ibid.*, California.

Trogoxylon punctatum, sp. n., Leconte, *l. c.* p. 104, California.

BOSTRICHIDÆ.

Sinoxylon quadrispinosum, Leconte, Col. N. Amer. i. p. 101, California.

Bostrichus armiger, Leconte, *l. c.* p. 100, Middle and Southern States; *B. truncaticollis*, Lec. *l. c.* p. 101, Alabama and Kentucky.

Amphicerus fortis, Leconte, *l. c.* p. 101, California.

Dinoderus porcatus, Leconte, *l. c.* p. 101, Eastern States; *D. cribratus*, Lec. *l. c.* p. 102, Middle States; *D. densus*, Lec. *ibid.*, New York.

Polycaon pubescens, Leconte, *l. c.* p. 102, *P. punctatus*, Lec. *ibid.*, and *P. confertus*, Lec. *l. c.* p. 103, California.

Apate zickeli, Marseul, L'Abeille, p. xxxiv, Algeria; *A. reichei*, Marseul, *l. c.* p. xxxv, Egypt.

MELASOMATA.

Erodiides.

Erodius pellucidus, sp. n., Muls. & God. Ann. Soc. Linn. Lyon, xii. p. 450, Algeria.

Adesmiides.

Adesmia eburnea, sp. n., Pascoe, Journ. of Ent. ii. p. 449, Lake N'gami.

Tentyriides.

Cirta striaticollis (Luc.). Lucas remarks on the variations of this species. Bull. Soc. Ent. Fr. 1866, p. xviii.

Triphalus perforatus, sp. n., Leconte, Col. N. Amer. i. p. 104, California.

Eurymetopon punctulatum, sp. n., Leconte, *l. c.* p. 105, California; *E. serratum*, Lec. *l. c.* p. 106, Arizona.

Enmenastus. Leconte describes the following new species of this genus:—*E. punctatus*, *l. c.* p. 106, *E. pinguis* and *obtusus*, *l. c.* p. 107, California; *E. convexus*, *ibid.*, New Mexico and Nebraska; and *E. texanus*, *l. c.* p. 108, Texas.

Epitragides.

Schœnicus, g. n., Leconte, Col. N. Amer. i. p. 109. Allied to *Epitragus*; prosternum not produced behind; genæ but slightly prominent, obliquely rounded. Sp. *S. puberulus* (Dej.), Lec. *l. c.* p. 110, Georgia.

Epitragus. Of this genus Leconte describes:—*E. acutus*, *l. c.* p. 108, Texas, Kansas, and Mexico; *E. arundinis*, *ibid.*, Middle States; *E. plumbeus*, *l. c.* p. 109, Kansas; and *E. tomentosus*, *ibid.*, Georgia and Florida.

Epitragus aurulentus, Kirsch, Berl. ent. Zeits. 1866, p. 189, from Bogotá.

Himatismus ferrugineus, Marseul, L'Abeille, p. xxxviii, and *H. perraudieri*, Mars. *l. c.* p. xxxix, Algeria.

Zopherides.

Ageonoma, g. n., Pascoe, Journ. of Ent. ii. p. 487. Allied to *Nosoderma*; mandibles entire at apex; prothorax with grooves for the antennæ. Type *Nosoderma diabolicum* (Leconte). See Lac. Col. v. p. 92, note.

Nosoderma furcatum, sp. n., Kirsch, Berl. ent. Zeits. 1866, p. 189, from Bogotá.

Adelostomides.

Zygus, g. n., Pascoe, Journ. of Ent. ii. p. 487. Allied to *Steira*; joint 3 o

antennæ longer than 1; elytra applied to base of prothorax. Type *Eurychora cimicoides* (Quens.). See Lac. Col. v. p. 98, note.

Stenosides.

Stenosis villosa, sp. n., Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 382, Escorial.

Scaurides.

Emear, g. n., Pascoe, Journ. of Ent. ii. p. 450. Allied to *Psammetichus*; mandibles bifid; mentum transverse, rounded in front and at the sides; antennæ with joint 3 shorter than 4; tibiæ subtrigonal, bicalcarate; inter-femoral process quadrate, broadly angulated at apex. Sp. *E. sculpturatus*, sp. n., Pasc. l. c. p. 450, pl. 19. fig. 7, New South Wales.

Scaurus elongatus, sp. n., Muls. & God., Ann. Soc. Linn. Lyon, xii. p. 452. Algeria.

Eulabis grossa, sp. n., Leconte, New Col. N. Amer. i. p. 118, California.

Blaptides.

Eleodes. Of this genus Leconte describes the following new species:—*E. luceæ* and *E. innocens*, New Col. N. Amer. i. p. 114, and *E. granosa*, l. c. p. 116, California; *E. aspera*, l. c. p. 115, and *E. planipennis*, l. c. p. 116, New Mexico; *E. subaspera*, l. c. p. 115, Colorado Territory.

Prosodes ledereri, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 263, from Asia Minor.

Gnaptor prolixus, sp. n., Fairmaire, l. c. p. 264, from Asia Minor.

Asidides.

The *Asididae* (Lec.), modified by the removal and addition of certain forms, are divided by Horn into the following subordinate groups (Proc. Acad. Nat. Sci. Phil. 1866, pp. 399-400):—

I. Head rhomboidal, narrowed behind.

A. Labrum prominent; thorax emarginate *Aksini*.

B. Labrum partially concealed; thorax scarcely emarginate.

Cryptoglossini.

II. Head short, not narrowed.

A. Last joint of maxillary palpi securiform *Asidini*.

B. Last joint of maxillary palpi not securiform.

1. Gula sulcate.

a. Antennæ slender, last 3 joints broader *Branchini*.

b. Antennæ robust, last joint generally smaller.. *Nycteliini*.

2. Gula not sulcate.

a. Maxillæ unarmed. *Physogasterini*.

b. Maxillæ with a corneous hook.

* Scutellum large. *Molurini*.

† Scutellum small, or absent.

a. Mesosternum and intercoxal process of abdomen broad.

Praocini.

β. Mesosternum and abdominal process narrow, triangular.

Conionini.

Anectus, g. n., Horn, Proc. Acad. Nat. Sci. Phil. 1866, p. 399. Allied to *Branchus* (Lec.); antennæ more slender, joint 9 rather suddenly dilated;

mentum trapezoidal; gular peduncle smaller, median notch indistinct; anterior tibiæ slightly emarginate at apex, outer angle not prolonged; abdominal process truncate. Sp. *A. vestitus*, sp. n. Horn, *l. c.* p. 399, Honduras.

Dysarchus, g. n., Pascoe, Journ. of Ent. ii. p. 449. Allied to *Asida*; clypeus confounded with the forehead, concealing labrum and mandibles; antennæ with joint 3 longest, 8-10 transverse and compressed; posterior angles of prothorax not much produced; anterior tibiæ compressed. Sp. *D. odewalnu*, sp. n., Pasc. *l. c.* p. 449, South Australia.

Asida tropica, sp. n., Kirsch, Berl. ent. Zeits. 1866, p. 190, from Bogotá.

Pelecyphorus convivens, sp. n., Leconte, New Col. N. Amer. i. p. 110, California.

Euschides puncticollis, sp. n., Leconte, *l. c.* p. 111, Oregon.

Branchus floridanus, sp. n., Leconte, *l. c.* p. 111, Florida; *B. woodii*, Lec. *ibid.* note, Bahamas.—*Branchus obscurus*, sp. n., Horn, Proc. Acad. Nat. Sci. Phil. 1866, p. 398, Nicaragua.

Nycteliides.

Ectatocnemis, g. n., Horn, Proc. Acad. Nat. Sci. Phil. 1866, p. 400. Allied to *Gonopus* and *Anomalipus*; epistome rounded triangularly; epipleuræ indistinct; body very convex. Sp. *E. multilincatus* (Melly), Horn, *l. c.* p. 400, Coquimbo.

Pimeliides.

Pimelia dayensis, sp. n., Muls. & God., Ann. Soc. Linn. Lyon, xii. p. 451, Algeria.

Mohurides.

Ossiporis, g. n., Pascoe, Journ. of Ent. ii. p. 450. Allied to *Phlagra*; eyes small, produced, almost pedicellate. Sp. *O. terrena*, sp. n., Pasc. *l. c.* p. 451, Natal.

Coniontides.

Eusattus robustus, sp. n., Leconte, New Col. N. Amer. i. p. 112, and *E. laevis*, Lec. *l. c.* p. 113, California.

Coniontis lata, sp. n., Leconte, *l. c.* p. 113, California.

Crypticus kraatzii, sp. n., Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 383, Escorial.

Pedinides.

Onosterrhus, g. n., Pascoe, Journ. of Ent. ii. p. 451. Allied to *Pedinus*; eyes not divided; anterior tibiæ not trigonate; joint 1 of posterior tarsi nearly equal to all the rest together. Sp. *O. laevis*, sp. n., Pasc. *l. c.* p. 451, Western Australia.

Heliopathes batuensis, sp. n., Muls. & God. *l. c.* p. 455, Algeria.

Blapstinus obliquus, sp. n., Leconte, New Col. N. Amer. i. p. 117, California.

Notibiis opacus, sp. n., Leconte, *l. c.* p. 118, California.

Opatrides.

Idisia, g. n., Pascoe, Journ. of Ent. ii. p. 452. Allied to *Leichenum*?; antennæ with the club 3-articulate, joint 11 small; anterior tibiæ trigonate, unarmed; body slender, squamulose. Sp. *I. ornata*, sp. n., Pasc. *l. c.* p. 452, pl. 18. fig. 8, Mantchuria.

Melambius teinturierii, sp. n., Muls. & God., Ann. Soc. Linn. Lyon, xii. p. 454, Algeria.

Philar (sic) *incertus*, sp. n., Muls. & God. *l. c.* p. 453, Algeria.

Melanesthes pilosellus, sp. n., Marseul, L'Abeille, p. xxxvi, Algeria.

Gonocephalum reticolle, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 173, Japan.

Trachyscelides.

Phaleria cadaverina. Fairmaire figures the larva of this species, with the details of its structure and remarks upon its characters. Ann. Soc. Ent. Fr. 4^e sér. v. p. 657, pl. 11. figs. 1-9.

Seymena, g. n., Pascoe, Journ. of Ent. ii. p. 455. Allied to *Phaleria*; clypeus deeply quadrately excised; antennæ shorter than head; interfemoral process acute at apex. Sp. *S. variabilis*, sp. n., Pasc. *l. c.* p. 455, Australia.

Ecripsis, g. n., Pascoe, *l. c.* p. 456. Allied to *Ammobius*; maxillary palpi securiform; antennæ longer; last joint of tarsi elongate. Sp. *E. pubescens*, sp. n., Pasc. *l. c.* p. 456, Tasmania.

Istarida, g. n., Pascoe, *l. c.* p. 456. Allied to *Ammobius*; eyes exposed; prothorax lobate at base; intermediate and posterior tibiæ linear, ciliated, their tarsi elongated; prosternum declivous, not lanciform, distinct from mesosternum. Sp. *I. testacea*, sp. n., Pasc. *l. c.* p. 456, India.

Hyois, g. n., Pascoe, *l. c.* p. 457. Allied to *Phaleria*; antennæ short, joints 2-8 shortly obconic, transverse; eyes prominent, rounded; anterior tibiæ triangular, all the tibiæ spinulose externally; prosternum not produced. Sp. *H. bakewelli*, sp. n., Pasc. *l. c.* p. 457, Victoria.

Emypsara, g. n., Pascoe, *l. c.* p. 460. Allied to *Phaleria*; margin ciliated; anterior and intermediate tarsi with joints 2 & 3 dilated. Sp. *E. adamsii*, sp. n., Pasc. *l. c.* p. 461, pl. 19. fig. 3, and *E. flexuosa*, Pasc. *l. c.* p. 461, Mantchuria.

Phaleria pilifera, sp. n., Leconte, New Col. N. Amer. i. p. 125, and *P. debilis*, Lec. *l. c.* p. 126, California; *P. longula*, Lec. *l. c.* p. 125, Mississippi Island.

Bolitophagides.

Phellidius (Lec.) = *Boletotherus* (Cand.). Leconte, List. Col. N. Amer. p. 62, note.

Ilyxerus, g. n., Pascoe, Journ. of Ent. ii. p. 458. Antennæ 11-jointed, clavate, club large, of 3 joints; eyes half-divided. Sp. *I. asper*, sp. n., Pasc. *l. c.* p. 458, pl. 18. fig. 3, New South Wales.

Ozolais, g. n., Pascoe, *l. c.* p. 457. Allied to preceding; antennæ clavate, but only 10-jointed. Sp. *O. scruposa*, sp. n., Pasc. *l. c.* p. 458, pl. 18. fig. 1, Amazons (Ega).

Byrsax macleayi and *B. egenus*, spp. nn., Pascoe, *l. c.* p. 459, Australia.

Diaperides.

Ceropria peregrina, sp. n., Pascoe, Journ. of Ent. ii. p. 460, Queensland.

Pentaphyllus pallidus, sp. n., Leconte, New Col. N. Amer. i. p. 126, Pennsylvania and Maryland.

Metaclisa atra, sp. n., Leconte, *l. c.* p. 127, Eastern States.

Utomides.

LECONTE (Col. N. Amer. i. p. 130, note) gives the following table of the genera into which he proposes to divide his tribe *Hypophlæini*:—

I. Antennæ dilated and perfoliate; (epipleuræ not reaching tip of elytra).

A. Pygidium not exposed; anterior tibiæ dilated, serrate.

1. *EVOPUS*, g. n.

B. Pygidium exposed; anterior tibiæ slightly dilated, not serrate.

2. *HYPOPHLÆUS*.

II. Antennæ slender, joint 5 not dilated.

A. Outer joints of antennæ gradually larger.

1. Pygidium partly exposed; anterior tibiæ slightly dilated, very obliquely truncate at tip.

* Anterior tibiæ finely denticulate externally; epipleuræ slightly abbreviated. 3. *DELOPYGUS*, g. n.

† Anterior tibiæ not serrate; epipleuræ extending to the tip.

4. *EUTOCHIA*.

2. Pygidium entirely covered by elytra.

* Tibial spurs distinct; epipleuræ not extending to tip.

5. *SITOPHAGUS*.

† Tibial spurs obsolete; epipleuræ extending to tip.

6. *PRATEUS*.

B. Last two joints of antennæ suddenly larger 7. *DIÆDUS*.

Delopygus, g. n., Leconte, *l. c.* p. 129 (see Table above). Sp. *D. crenatus*, sp. n., Lec. *l. c.* p. 130, Texas and New York?

Evopus, g. n., Leconte, *l. c.* p. 128 (see Table above). Sp. *E. ferruginea*, sp. n., Lec. *l. c.* p. 128, Louisiana.

Pteroctenus, g. n., Kirsch, Berl. ent. Zeits. 1866, p. 193. Allied to *Cataphronctis* (Lucas); last joint of labial palpi fusiform, of maxillary palpi fusiform-cylindrical; eyes reniform, strongly granulated; antennæ with joint 2 a little shorter than 3, 9–11 very large, forming a loose perfoliate club. Sp. *P. pecus*, sp. n., Kirsch, *l. c.* p. 194, from Bogotá.

Toxicum punctipenne, sp. n., Pascoe, Journ. of Ent. ii. p. 454, Australia; *T. brevicorne*, Pasc. *ibid.*, Victoria.

Tharsus seditiosus, sp. n., Leconte, *l. c.* p. 122, Southern States.

Ulama imberbis, sp. n., Leconte, *l. c.* p. 123, New York to Kansas; *U. cava*, Lec. *l. c.* p. 124, Louisiana; *U. punctulata*, Lec. *ibid.*, Middle and Southern States.—*Ulama depressa*, sp. n., Pascoe, Journ. of Ent. ii. p. 454, Queensland.

Hypophlæus cavus, sp. n., Leconte, *l. c.* p. 129, Kentucky.

Prateus fusculus, sp. n., Leconte, *l. c.* p. 131, New York.

Peneta obtusicornis, sp. n., Kirsch, *l. c.* p. 191, from Bogotá.

Antimachus triangulifer, sp. n., Kirsch, *l. c.* p. 192, from Bogotá.

Helæides.

Sympetes, g. n., Pascoe, Journ. of Ent. ii. p. 464. Allied to *Helæus*; head free; anterior angles of prothorax not produced; labrum concealed. Sp. *Encephalus tricostellus* (White); *S. macleayi*, sp. n., Pasc. *l. c.* p. 465, Australia.

Ospidus, g. n., Pascoe, *l. c.* p. 467. Allied to *Cilibe*; clypeus distinct; antennæ 11-jointed, last four forming a compressed club; metasternum rather elongate. Sp. *O. chrysomeloides*, sp. n., Pasc. *l. c.* p. 468, Queensland.

Saragus. The following new Australian species of this genus are described by Pascoe (*l. c.*):—*S. magister* and *asidoides*, p. 465; *S. duboulaii*, *exulans*, and *infelix*, p. 466; and *S. odewalmsii*, p. 467.

Pterohelæus. Of this genus Pascoe describes the following 5 new species:—*P. pruinosus*, *l. c.* p. 461, North Australia; *P. agonus*, *ibid.*, and *P. membranous*, *l. c.* p. 462, South Australia; *P. servus*, *ibid.*, Victoria; and *P. bulbatus*, *ibid.*, Queensland.

Helæus consularis, sp. n., Pascoe, *l. c.* p. 463, Western Australia; *H. monitiferus*, Pasc. *ibid.*, and *H. castor*, Pasc. *l. c.* p. 464, South Australia; and *H. falcatus*, Pasc. *ibid.*, Kangaroo Island.

Cossyphides.

Cossyphus odewalmsii, sp. n., Pascoe, *l. c.* p. 468, South Australia.

Eutelides.

Cyrtotyche, g. n., Pascoe, Journ. of Ent. ii. p. 469. Allied to *Eutelus*; head retracted; elytra with the epipleuræ obsolete in front; tibiæ elongate, slender, much curved, anterior produced within; body smooth. Sp. *C. satanas*, sp. n., Pasc. *l. c.* p. 469, Natal (= *Eutelus nodosus*, Lac. pl. 55. fig. 5, nec Solier).

Byzacrus, g. n., Pascoe, *l. c.* p. 469. Allied to *Eutelus*; prothorax subquadrate, even and rather convex above, sides a little rounded, with a distinct lateral keel; elytra elevated, declivous from the middle, epipleuræ linear. Sp. *B. picticollis*, sp. n., Pasc. *l. c.* p. 470, pl. 19. fig. 6, Natal.

Eutelus ovatus, sp. n., Pascoe, *l. c.* p. 468, Natal.

Tenebrionides.

Weir notices the attacks of a larva, apparently the common mealworm, upon wine-corks. Proc. Ent. Soc. 1866, p. viii.

Dechius, g. n., Pascoe, Journ. of Ent. ii. p. 455. Allied to *Tenebrio*; labrum obtected; inner lobe of maxillæ unarmed; joints 8–10 of antennæ transverse. Sp. *D. aphodioides*, sp. n., Pasc. *l. c.* p. 455, Queensland.

Taphrosoma, g. n., Kirsch, Berl. ent. Zeits. 1866, p. 195. Allied to *Iphthimus* (Truq.); last joints of palpi securiform; labrum truncate. Sp. *T. dohrnii*, sp. n., Kirsch, *l. c.* p. 196, from Bogotá.

Rhinandrus, g. n., Leconte, New Col. N. Amer. i. p. 119. Allied to *Polypleurus*; head larger, epistome with an obsolete trapezoidal suture, truncate in front in ♀, deeply emarginate in ♂; apical joints of antennæ compressed, porous. Sp. *R. gracilis*, sp. n., Lec. *l. c.* p. 120, California.

Rhinandrus elongatus, sp. n., Horn, Proc. Acad. Nat. Sci. Phil. 1866, p. 400, Yucatan and Nicaragua.

Polypleurus nitidus, sp. n., Leconte, *l. c.* p. 118, Florida.

Xylopinus ænescens, sp. n., Leconte, *l. c.* p. 120, Middle and Western States.

Haplândrus concolor, sp. n., Leconte, *l. c.* p. 121, Lake Superior and Canada.

Iphthimus opacus, sp. n., Leconte, *l. c.* p. 121, Northern States and Canada.

Zophobas maculicollis, sp. n., Kirsch, *l. c.* p. 196, and *Z. rugipes*, Kirsch, *l. c.* p. 197, from Bogotá.

Goniaderæ dissipata, sp. n., Kirsch, *l. c.* p. 197, from Bogotá.

Nyctobates orcus, sp. n., Pascoe, *l. c.* p. 453, Western Australia; *N. feromoides*, Pasc. *ibid.*, New South Wales.

Cyphaleides.

Oremasis, g. n., Pascoe, Journ. of Ent. ii. p. 470. Allied to *Prophanes*;

anterior angles of prothorax not produced; elytra gibbous, not wider than base of prothorax and closely applied to it, acuminate at apex. Sp. *Adeium cupreum* (Gray).

Lygestira, g. n., Pascoe, *l. c.* p. 470. Allied to *Prophanes*; clypeus emarginate; anterior angles of prothorax not emarginate; apices of elytra unarmed. Sp. *Prophanes simplex* (Westw.), and *L. funerea*, sp. n., *Pasc. l. c.* p. 471, South Australia.

Hemicychus punctulatus, sp. n., Pascoe, *l. c.* p. 472, South Australia.

Platyphanes cyaneus, sp. n., Pascoe, *l. c.* p. 472, North Australia.

Cnodalides.

Eucyrtus, g. n. (Dej.), Pascoe, *Journ. of Ent.* ii. p. 473. Allied to *Scotæus*; head exserted; clypeus transverse, truncated at base of antennæ; antennæ not serrated; legs stout; anterior and intermediate femora hairy beneath; tibiæ villous within at apex; tarsi somewhat dilated, claw-joint shorter than the rest taken together. Sp. *E. pretiosus* (Dej.), briefly characterized by Lacordaire, *Col. v.* p. 417, note.

Gauromaia, g. n., Pascoe, *l. c.* p. 473. Allied to preceding; clypeus produced; inner lobe of maxillæ dentate; mentum nearly semicircular, produced into a triangular process at base; femora sublinear; anterior tibiæ attenuated, curvèd. Sp. *G. dives*, sp. n., *Pasc. l. c.* p. 474, Malacca.

Phædis, g. n., Pascoe, *l. c.* p. 474. Allied to *Eucyrtus*; clypeus produced; mentum less transverse, carinated in the middle; antennæ shorter, joints more transverse; prothorax slightly produced at apex; femora incrassated, toothed in the middle beneath. Sp. *P. elysius*, sp. n., Pascoe, *l. c.* p. 474, Sarawak.

Elixota, g. n., Pascoe, *l. c.* p. 475. Allied to *Damatris*; claw-joints of moderate size; epipleuræ entire, gradually narrowed to apex. Sp. *E. cuprea*, sp. n., *Pasc. l. c.* p. 475, North China.

Nautes, g. n. (Deyr. MS.), Pascoe, *l. c.* p. 475. Allied to preceding; anterior tarsi with joints 1-3 dilated, 3 subbilobed, 4 small. Sp. *N. fervidus*, sp. n., *Pasc. l. c.* p. 476, Mexico.

Sycophantes, g. n., Kirsch, *Berl. ent. Zeits.* 1866, p. 198. Allied to *Cnodalon*; last joint of labial palpi oval, of maxillaries securiform; clypeus prominent; mentum strongly carinated; prosternum narrow behind. Sp. *S. dentipes* and *rusticoxis*, sp. n., Kirsch, *l. c.* p. 199, from Bogotá.

Camaria femoralis and *C. alternans*, sp. n., Kirsch, *l. c.* p. 200, from Bogotá.

Helopides.

Adelphinus, g. n., Fairmaire, *Ann. Soc. Ent. Fr.* 4^e sér. tome vi. p. 44. Head projecting, slightly hollowed in front; antennary auricles very prominent; lab. palpi with last joint nearly triangular; max. palpi long, last joint very obliquely truncate; epistoma separated by a strong curved furrow; eyes small, somewhat reniform; antennæ, joint 1 thick, short, 3 about as long as 1 and 2 together, last joints diminishing in length; prosternum broad, arched in front; mesosternum broad, triangular, oblique; metasternal point truncate; tibial spurs very small; tarsi very villous beneath; claws simple. Type *Eutrapeta suturalis* (Lucas).

Polytropus, g. n., Kirsch, *Berl. ent. Zeits.* 1866, p. 201. Allied to *Lana*;

prothorax globular; antennæ only twice as long as head, joint 2 subglobose, 3 longer, nearly cylindric, 4 and 5 nearly globose, 6-11 transverse, last largest. Sp. *P. lenoides*, sp. n., Kirsch, *l. c.* p. 202, from Bogotâ.

Arcothymus, g. n., Pascoe, Journ. of Ent. ii. p. 476. Allied to *Adelium*; clypeus rounded in front; labium emarginate at apex; joint 3 of antennæ as long as the rest; epipleuræ narrow; basal joint of posterior tarsi longer than the rest taken together. Sp. *A. canosus*, sp. n., Pasc. *l. c.* p. 476, Australia.

Mimopeus, g. n., Pascoe, *l. c.* p. 477. Allied to *Misolampus*; clypeus indistinct, emarginate in front; eyes transverse; prothorax transverse, narrowed in front, bisinuate at base, strongly emarginate in front; scutellum transversely triangular; tibiæ spurred; posterior tarsi elongated; prosternum produced; mesosternum short, triangular. Sp. *M. amaroides*, sp. n., Pasc. *l. c.* p. 477, Australia.

Gnesis, g. n., Pascoe, *l. c.* p. 477. Allied to *Pseudhelops*; inner lobe of maxillæ hooked; labrum emarginate; anterior femora unidentate beneath; tibiæ curved, briefly spurred; last joint of tarsi nearly equal to the rest; prosternum produced, received in a notch of the mesosternum; metasternum short. Sp. *G. helopioides*, sp. n., Pasc. *l. c.* p. 478, Mantchuria.

Atryphodes (= *Thoracophorus*, Hope nec Motsch.). Pascoe describes *A. macleayi*, *l. c.* p. 478, and *A. egerius*, *ibid.* pl. 19. fig. 4, New South Wales?; *A. errans* and *A. aratus*, *l. c.* p. 479, Queensland.

Otrintus, g. n., Pascoe, *l. c.* p. 483. Allied to *Adelium*; prothorax sinuate at base; elytra convex, narrow; epipleuræ vertical; anterior tibiæ curved; mesosternum elevated, with a Δ -shaped cavity for the prosternal process. Type *Prosodes? behrii* (Germ.).

Cripiera, g. n., Pascoe, *l. c.* p. 483. Allied to *Adelium*; elytra closely applied to the prothorax; epipleuræ narrow, distant from the shoulders. Type *Adelium deplanatum* (Boisd.).

Phloneis, g. n., Pascoe, *l. c.* p. 483. Allied to *Adelium*; apical joints of antennæ, except the last, transverse; elytra closely applied to prothorax; joints 1-4 of anterior and intermediate tarsi widened, transversely triangular. Type *Adelium harpaloides* (White).

Seirotiana, g. n., Pascoe, *l. c.* p. 483. Allied to *Adelium*; elytra closely applied to prothorax; joint 3 of antennæ shorter than the two following. Type *Adelium catenulatum* (Boisd.).

Cymbeba, g. n., Pascoe, *l. c.* p. 483. Allied to *Adelium*; form navicular, depressed; prothorax transverse, broadly sinuate in front, notched in the middle at base; prosternum produced, received in a cavity of the mesosternum; metasternum short, interfemoral process rounded. Sp. *C. dissimilis*, sp. n., Pasc. *l. c.* p. 484, pl. 19. fig. 8, Australia.

Helops. Leconte (New Col. N. Amer. i.) describes the following new species of this genus:—*H. impolitus*, p. 132, and *H. discretus*, p. 134, Texas; *H. undulatus*, p. 132, Middle and Southern States; *H. punctipennis*, p. 133, *H. rugicollis*, *ibid.*, and *H. tumescens*, p. 134, California; *H. sulcipennis*, p. 133, Georgia.

Adelium. Of this genus Pascoe (*l. c.*) describes *A. augurale*, p. 480, and *A. striatum*, p. 481, Queensland; *A. succisum*, p. 480, *A. obesum*, p. 481, and *A. congestum*, p. 482, Victoria; *A. vicarium*, p. 480, Western Australia; *A. auratum*, p. 481, North Australia; and *A. lutum*, p. 482, Australia.

Megacanthides.

Alymon, g. n., Pascoe, Journ. of Ent. ii. p. 484. Allied to *Oplocheirus*; clypeus indistinct; eyes not approximate; inner lobe of maxillæ unarmed; last joint of labial palpi cylindrical; joint 3 of antennæ longer than following ones, 7-11 thicker; elytra arched; metasternum concave. Sp. *A. prolatus*, sp. n., Pasc. l. c. p. 484, Natal.

Amarygmides.

Dietytus, g. n., Pascoe, Journ. of Ent. ii. p. 486. Allied to *Amarygmus*; clypeus truncated; inner lobe of maxillæ unarmed; labial palpi approximated at base; antennæ rather long, thickened towards apex, joint 3 elongate, last joint ovate, obliquely truncate; tibiæ slightly curved, spurred; prosternum produced, received in a cavity of the mesosternum. Sp. *D. confusus*, Pasc. l. c. p. 486, Java

Amarygmus nigratarsis, convexus, and tarsalis, spp. nn., Pascoe, l. c. p. 485, Queensland.

Strongyliides.

Sinopium, g. n., Pascoe, Journ. of Ent. ii. p. 487. Allied to *Strongylium*; eyes smaller; antennæ rather short, last 4 joints transverse; tarsi dilated, except last two joints, joint 1 scarcely longer than 2, last joint as long as the rest taken together. Type *Strongylium variabile* (Walk.).

Cholipus, g. n. (Dej.), Pascoe, l. c. p. 471. Head exserted; clypeus distinct; labrum transverse; mandibles entire; maxillary palpi securiform; joint 3 of antennæ longer than 1, 6-10 transverse and compressed; prosternum declivous, without a mucro. Sp. *C. brevicornis* (Dej.), Pasc. l. c. p. 472, Java; *C. punctipennis*, sp. n., Pasc. ibid., Queensland.

Spheniscus 4-plagiatus, sp. n., Kirsch, Berl. ent. Zeits. 1866, p. 202, and *S. thomsoni*, Kirsch, l. c. p. 203, from Bogotá.

Spheniscus cyaneus, sp. n., Pascoe, l. c. p. 486, Amazons.

Pacilesthus testaceus, sp. n., Kirsch, l. c. p. 204, from Bogotá.

CISTELIDÆ.

FAIRMAIRE (Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 48-55) describes the North-African species of *Gastrhema* (Duval) and *Helohaurus* (Muls.). Some of the species are new.

Cistela erythroa (Kirby) is probably an *Androchirus*. Leconte, List. Col. N. Am. p. 64, note.

Apellatus. Pascoe remarks (Journ. of Ent. ii. p. 491) that his genus *Apellatus* = *Euomma* (Boh.), but the latter name was previously employed. Boheman's *E. lateralis* will retain its specific name; Pascoe's *A. lateralis* must be called *A. amœnus*.

New genera and species:—

Chromomœa, g. n., Pascoe, l. c. p. 490. Allied to *Æthyssiæ* (Pasc.) = *Atractus* (MacL.); head somewhat produced; joint 1 of antennæ slender, 3 elongate; tibiæ strongly calcarate; anterior and intermediate tarsi slightly dilated, last joint longer than two preceding, posterior slender, last joint elongate; interfemoral process narrowly triangular. Sp. *C. picta*, sp. n., Pasc. l. c. p. 491, Queensland.

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Othelecta, g. n., Pascoe, *l. c.* p. 488. Allied to *Cylindrothorus*; pronotum distinct from parapleuræ; penultimate joint of tarsi produced, but not lamellar. Sp. *O. torrida*, sp. n., Pasc. *l. c.* p. 488, pl. 19. fig. 5, N°Gami.

Metistete, g. n., Pascoe, *l. c.* p. 489. Allied to *Tanychilus*; head short in front; last joint of maxillary palpi broadly triangular. Type *Tanychilus gibbicollis* (Newm.). *T. cistcloides* (Newm.) is probably a second species.

Homotrysis, g. n., Pascoe, *l. c.* p. 489. Allied to *Allecula*; joint 3 of antennæ twice as long as 1; eyes narrow, transverse; tarsi stout, joint 1 of anterior obconic, 2 and 3 not longer, transverse. Sp. *Allecula tristis* (Germ.); *H. microderes*, sp. n., Pasc. *l. c.* p. 489, Victoria.

Hybrenia, g. n., Pascoe, *l. c.* p. 489. Allied to preceding, but eyes large, approximate, and prothorax closely applied to base of elytra. Sp. *H. insularis* and *H. vittata*, sp. n., Pasc. *l. c.* p. 490, North Australia.

Isomera (sic) *acuminata*, Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 46, from Tangier.

Hymenalia crassicollis, Fairmaire, *l. c.* p. 47, from Tangier.

Gastrhæma hæmorrhoidale (sic), Fairmaire, *l. c.* p. 50, from Algeria.

Heliotaurus plenifrons, Fairmaire, *l. c.* p. 51, *H. longipilus* and *scabriusculus*, Fairm. *l. c.* p. 54, from Algeria.

Lobopoda anthracina, Kirsch, Berl. ent. Zeit. 1856, p. 206, and *L. cærulescens*, Kirsch, *l. c.* p. 207, from Bogotá.

Hymenorus communis, Leconte, New Col. N. Amer. i. p. 135, Middle and Southern States; *H. humeralis*, Lec. *ibid.*, Kentucky; *H. confertus*, Lec. *l. c.* p. 136, California; *H. densus*, Lec. *l. c.* p. 138, Florida; *H. punctatissimus*, Lec. *ibid.*, Arizona.

Mycetochares haldemani, Leconte, *l. c.* p. 140, Middle and Southern States; *M. foveata*, Lec. *ibid.*, Western States; *M. tenuis*, Lec. *ibid.*, Michigan.

Cteniopus murrayi, Leconte, *l. c.* p. 141, Florida?

MONOMMIDÆ.

Hyporhagus opaculus, Leconte, New Col. N. Amer. i. p. 142, California.

PYTHIDÆ.

On the characters of *Pytho depressus*, see L. von Heyden, Stett. ent. Zeit. 1866, p. 256.

CROTCH (Entomologist, iii. pp. 174-175) remarks on the following species of this family:—*Orchesia fasciata* (Payk.), *Carida flexuosa* (Payk.), and *Lissodema heyana* (Curt.).

Conopalpus brevicollis (Kraatz) and *Salpingus æratus* (Muls.) are recorded as British species by Crotch (Cat. Brit. Col.). See Rye, Ent. Ann. 1867, pp. 82 and 84.

Lissodema ærata (Muls.) is also recorded as British by R. Hislop, Ent. M. Mag. iii. p. 141.

Pytho strictus, sp. n., Leconte, New Col. N. Amer. i. p. 168, Canada.

Salpingus ceylonicus, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 399, Ceylon.—*Salpingus tibialis*, sp. n., Leconte, *l. c.* p. 168, Kansas.

Rhinosisimus nitens, sp. n., Leconte, *l. c.* p. 168, Maine and Canada.

MELANDRYIDÆ.

MULSANT and REY (Col. de France, Colligères, &c.) separate

the *Salpingides* and *Agnathides* from the *Melandryidæ* to form a tribe which they denominate *Simplicitarses* (see table p. 357, under *Pedilidæ*). They divide this tribe into the above-mentioned two groups, but only describe the latter, with its sole genus *Agnathus* and the species *A. decoratus* (Germar), *l. c.* p. 181, with its larva and pupa, pp. 184–187. This species in all its stages is also figured with details.

LECONTE (New Col. N. Amer. i. pp. 146–147) gives the following table of the classification of his tribe *Melandryini* :—

- I. Anterior coxæ with a distinct exterior fissure.
 - A. Anterior coxæ separated by prosternum. Groups.
 - 1. Joint 3 of antennæ longer than 4 1. *Penthes*.
 - 2. Joint 3 of antennæ equal to 4. 2. *Synchroæ*.
 - B. Anterior coxæ contiguous.
 - 1. Frontal suture distinct; trochantin visible 3. *Melandryæ*.
 - 2. Frontal suture and trochantin not visible. 4. *Serropalpi*.
- II. Anterior coxæ without exterior fissure; trochantin not visible.
 - A. Anterior coxæ contiguous 5. *Dircææ*.
 - B. Anterior coxæ separated by prosternum 6. *Orchesiæ*.

Of these groups, 1 and 2 contain only the single genera *Penthes* and *Synchroa* (Newm.); the third includes *Nothus* (Oliv.), *Phryganophlus* (Sahlb.), *Emmesa* (Newm.), *Melandrya* (Fab.), and *Prothalpia* (Lec.); of the others Leconte gives the following table :—

Group 4. SERROPALPI.

- I. Middle coxæ contiguous *Xylita* (Payk.).
- II. Middle coxæ separated by mesosternum.
 - A. Joint 4 of max. palpi wider than 2 and 3.
 - 1. Pubescence prostrate.
 - * Antennæ thick, outer joints transverse; last joint of max. palpi securiform *Carebara* (Lec.).
 - † Antennæ slender; last joint of max. palpi long, cultriform.
 - Spilotus* (Lec.).
 - 2. Pubescence erect; antennæ slender; last joint of max. palpi securiform. *Zilora* (Muls.).
 - B. Max. palpi serrate, joints 2 and 3 as wide as 4.
 - 1. Joint 3 of hind tarsi shorter than 2, emarginate; last joint of max. palpi long, cultriform.
 - * Thorax elongate, lateral margin effaced in front, obsolete behind.
 - Hypulus* (Payk.).
 - † Thorax quadrate, lateral margin distinct behind, effaced in front.
 - Marolia* (Muls.).
 - 2. Joints 2 and 3 of hind tarsi equal, not emarginate; max. palpi serriform, last joint elongate, securiform. *Serropalpus* (Hell.).
 - C. Max. palpi not serrate, joints 2 and 4 equal in width, 4 elongate.
 - Enchodes*, g. n.

Group 5. DIRCÆÆ.

- I. Max. palpi with last joint cultriform; terminal spurs of tarsi moderate.
 - Dircæa* (Fab.).

II. Max. palpi with last joint securiform.

A. Spurs of middle tibiæ very unequal *Anisoxya* (Muls.).B. Spurs of middle tibiæ small; joint 2 of antennæ shorter than 3; anterior tarsi not dilated *Symphora*, g. n.

Group 6. ORCHESLÆ.

I. Spurs of hind tibiæ small; hind coxa not oblique. *Eustrophus* (Lat.).II. Spurs of hind tibiæ moderate; hind coxæ oblique *Hallomenus* (Panz.).

III. Spurs of hind tibiæ large, inner one very long, serrate.

A. Joint 2 of antennæ moderate *Orchesia* (Lat.).B. Joint 2 of antennæ thick; ant. strongly clavate *Microscapha*, g. n.

L. von Heyden (Stett. ent. Zeit. 1866, pp. 255-256) discusses the characters of *Dircea lævigata* (Hellw.) and *parreysii* (Dej.), and indicates the distinctive characters of *Phlæotrya vaudoneri* (Muls.) and *rufipes* (Gyll.).

Enchodes, g. n., Leconte, *l. c.* p. 148. See table, p. 355. Sp. *Dircea sericea* (Hald.).

Symphora, g. n., Leconte, *l. c.* p. 150. See table, above. Sp. *Seraptia flavicollis* and *rugosa* (Hald.).

Microscapha, g. n., Leconte, *l. c.* p. 152. See table, above. Sp. *M. clavicornis*, sp. n., Lec. *l. c.* p. 153, Georgia and Illinois.

Tetratoma truncorum, sp. n., Leconte, *l. c.* p. 145, United States and Canada.

Nothus varians, sp. n., Leconte, *l. c.* p. 145, New York, Illinois, Missouri.

Prothalia undata, sp. n., Leconte, *l. c.* p. 145, Louisiana.

Carebara longula, sp. n., Leconte, *l. c.* p. 148, Middle States.

Zilora hispida, sp. n., Leconte, *l. c.* p. 148, New Hampshire.

Dircea concolor, sp. n., Leconte, *l. c.* p. 149, Pennsylvania.

Anisoxya glaucula, sp. n., Leconte, *l. c.* p. 150, Pennsylvania.

Hallomenus punctulatus, sp. n., Leconte, *l. c.* p. 152, Canada; *H. debilis*, Lec. *ibid.*, Illinois.

Eustrophus confinis, sp. n., Leconte, *l. c.* p. 152, Canada and Western States.

LAGRIIDÆ.

Colparthrum, g. n., Kirsch, Berl. ent. Zeits. 1866, p. 204. Allied to *Statira*; mandibles tridentate at apex; last joint of max. palpi securiform, of labials deeply emarginate; anterior tibiæ spurred. Sp. *C. gerstæckeri*, sp. n., Kirsch, *l. c.* p. 205, from Bogotá.

Ictistygna, g. n., Pascoe, Journ. of Ent. ii. p. 491. Allied to *Diacalla* (Pasc.); head subquadrate, neck narrowed; labium rounded, pedunculate, membranaceous; last joint of labial palpi triangular, of maxillary securiform; outer lobe of maxillæ minute, triangular. Sp. *I. vetula* and *I. adusta*, sp. n., Pasc. *l. c.* p. 492, New South Wales. Pascoe considers that this genus and *Diacalla* form a peculiar subfamily of *Lagriidæ*.

Statira submitida, sp. n., Leconte, New Col. N. Amer. i. p. 141, California.

Statira mäklini, sp. n., Kirsch, *l. c.* p. 205, from Bogotá.

Statira (sic) *ceylonica*, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 398, Ceylon.

PEDILIDÆ.

The French species of this family are included by MULSANT & REY in their tribe of *Colligères*, together with the *Anthicide*.

(Col. de France, Colligères). They give the following table of the tribes into which they divide the group of Heteromera, excl. Melasomata (*l. c.* p. 19) :—

- I. Base of prothorax as wide as the elytra.
 - A. Head immersed in the prothorax, narrow; maxillary palpi generally long *Barbipalpes*.
 - B. Head not immersed, applied to the prothorax, without a neck, vertical or inclined..... *Longipèdes*.
- II. Base of prothorax generally sensibly narrower than the shoulders, or head rostrated.
 - A. Head applied to prothorax, or separated from it by a neck.
 - 1. Head vertical or inclined; antennæ not pectinated or serrated.
 - * Claws simple *Colligères*.
 - † Claws divided *Vésicants*.
 - 2. Head not much deflexed; antennæ pectinated or strongly serrated; elytra wide *Latipennes*.
 - B. Head immersed in prothorax.
 - 1. Prothorax sensibly narrower than the elytra.
 - * Elytra widest behind; prothorax nearly cylindrical. *Cylindricolles*.
 - † Elytra widest about the middle; prothorax usually narrower at its base.
 - a. Antennæ slender, filiform; penultimate joint of tarsi sublobate..... *Angusticolles*.
 - b. Antennæ stout, or enlarged towards apex; penultimate joint of tarsi entire *Simplicitarses*.
 - 2. Prothorax as wide as elytra; head rostrated *Rostrifères*.

The *Colligères* are divided by the authors into the groups *Xylophilides* and *Anthicides*, intermediate between which are the *Pédilides* (*l. c.* p. 46). The true *Xylophilides* are represented in France only by the genus *Xylophilus*, divided by the authors (*l. c.* p. 22) into 4 subgenera :—*Olotelus* (*pruinosis*, Kies., *neglectus*, Du Val, and two new species); *Anidorus* (*nigrinus*, Germ., *sanguinolentus*, Kies., and *ruficollis*, Rossi); *Eugenes*, Westw. (*pygmæus*, De G., and *femicus*, Mann.); and *Xylophilus*=*Aderus*, Westw. (*populneus*, Panz.). Between the second and third of these subgenera Mulsant & Rey place *Phytobænus* (Sahlb.) including only *P. amabilis* (Sahlb.).

Of the *Pédilides*, Mulsant & Rey briefly characterize the genera *Pedilus* (Fisch.) and *Steropes* (Stev.), referring to the former *P. fuscus* (Fisch.) and *rufipes* and *rubricollis* (Motsch.), to the latter *S. caspius* (Stev.).

Mulsant & Rey figure :—*Xylophilus pygmæus* ♂ ♀, *l. c.* pl. 1. figs. 1, 2; ♂ ♀ antennæ and elytra of *X. nigrinus*, figs. 3–6; base of ♂ antenna of *X. sanguinolentus*, fig. 7; and the antenna of *X. populneus*, fig. 8.

Xylophilus neglectus (Du Val) is recorded as British by Crotch (Cat. Brit. Col.). See Rye, Ent. Ann. 1867, p. 84.

Leconte (New Col. N. Amer. i. p. 144) proposes the division of the genus *Scraptia* (Lat.) into three, as follows :—

- I. Last joint of max. palpi triangular.
 - A. Penultimate joint of all tarsi lobed..... *Scraptia*.
 - B. Penult. joint of hind tarsi not lobed..... *Allopora* (Lec.).
- II. Last joint of max. palpi elongate, cultriform *Canifa* (Lec.).

The first genus includes *Orchesia sericea* (Mels.), the second *S. lutea* (Hald.), and the third *S. americana* and *pusilla* (Hald.) and *S. pallipes* (Mels.).

Xylophilus punctiger, sp. n., Mulsant & Rey, Col. de France, Colligères, p. 23, Marseilles; *X. flaveolus*, Muls. & Rey, l. c. p. 26, Lyons.

Bactrocera concolor, sp. n., Leconte, l. c. p. 143, California:

Corphyra canaliculata, sp. n., Leconte, l. c. p. 143, Ohio.

ANTHICIDÆ.

MULSANT & REY have treated of the French species of this family, which they refer, with the *Pedilidæ*, to their tribe *Colligères* (Col. de France, Collig.) (see p. 356). They divide the family into 2 groups (families), the *Notoxiens* and the *Anthiciens*, and the former into the 2 genera *Notoxus* and *Mecynotarsus*. Of the former, 4 species are described; of the latter, only 1. The *Anthiciens* include the genera *Tomoderus*, *Formicomus*, *Leptaleus*, *Anthicus*, and *Ochthenomus* (tabulated l. c. p. 65). Of the genus *Anthicus* 34 species are numbered as French, and these are arranged under 7 divisions (tabulated at p. 77), some of which are again divided into groups. No new species of this family are described.

Mulsant & Rey figure *Notoxus monoceros* l. c. pl. 1. fig. 9, with details, figs. 10-12; details of *Mecynotarsus rhinoceros*, figs. 13, 14; *Tomoderus compressicollis*, with its antenna, l. c. pl. 2. figs. 1, 2; *Formicomus pedestris*, fig. 3; *Leptaleus rodriguii*, fig. 4; *Anthicus tristis*, fig. 5; prothorax of *A. bimaculatus*, *antherinus*, *sellatus*, and *plumbeus*, figs. 6-9; and the head and prothorax of *Ochthenomus punctatus*, figs. 10, 11.

Anthicus strictus (Erichs.) and 2 new species found in ants' nests at Freemantle (Western Australia). Pascoe, Proc. Ent. Soc. 1866, p. xvi.

Anthicus quisquilius (Thoms.) is recorded as British by Crotch (Cat. Brit. Col.). See Rye, Ent. Ann. 1867, p. 53.

Anthicus salinus, Crotch. Indicated as new by Crotch, Cat. Brit. Col. See Rye, Ent. Ann. 1867, p. 53.

Mecynotarsus albellus, sp. n., Pascoe, Proc. Ent. Soc. 1866, p. xvi, from Western Australia.

PYROCHROIDÆ.

Pyrochroa rufula, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 173, Japan.

Eupleurida costata, sp. n., Leconte, New Col. N. Amer. i. p. 142, North Carolina and Pennsylvania.

MORDELLIDÆ.

Anaspis. Crotch publishes (Entomologist, iii. pp. 31-34) some observations on the British species of this genus, of which he recognizes 8, namely:—*A. frontalis* (Linn.), *pulicaria* (Costa) = *forcipata* (Muls.), *rufilabris* (Gyll.), *ruficollis* (Fab.), *fasciata* (Forst.) = *geoffroyi* (Müll.), *thoracica* (Linn.), *subtestacea* (Steph.), and *melanopa* (Forst.) = *maculata* (Forst.). These species are briefly characterized.

Anaspis rufilabris (Gyll.) and *A. monilicornis* (Muls.) are introduced into

the British list by Crotch (Cat. Brit. Col.). See Rye, Ent. Ann. 1867, pp. 82-83.

Anaspis nigripes, sp. n., Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 384, Reynosa.

Mordella aculeata (Linn.) is a genuine British species, and *Mordellistena inæqualis* (Muls.) = *parvula* (Gyll.). Crotch, Entomologist, iii. p. 175.

Mordella humulata, sp. n., Helmuth, Proc. Acad. Nat. Sci. Phil. 1865, p. 96, Illinois.

Mordellistena intermixta, *auricoma*, and *nigerrima*, sp. n., Helmuth, l. c. p. 96, Illinois.

Mordellistena bella, sp. n., Kirsch, Berl. ent. Zeits. 1866, p. 207, from Bogotá.

RHIPIPHORIDÆ.

Myodites. Leconte (Proc. Acad. Nat. Sci. Phil. 1865, pp. 96-98) characterizes the 6 species of this genus known to him as inhabitants of the United States. The previously described species are *M. scaber* (Lec.), *M. fasciatus* (Say), and *M. stylopides* (Newm.); the other 3 are new. A seventh North American species is *M. americanus* (Guér.), with which Leconte is unacquainted.

Myodites semiflavus, sp. n., Leconte, l. c. p. 97, Maryland; *M. luteipennis*, Leconte, ibid., New York; *M. walshii*, Leconte, ibid., Illinois.

Macrosiagon flavipennis, sp. n., Leconte, New Col. N. Amer. i. p. 153, New York and Missouri; *M. abdominalis*, Lec. l. c. p. 154, note, Middle States; and *M. marginalis*, Lec. ibid., Philadelphia.

Rhipiphorus linearis, sp. n., Leconte, l. c. p. 154, Kentucky.

STYLOPIDÆ.

LECONTE remarks upon an objection raised by Gerstäcker to the arrangement of the *Stylopidæ* under the order Coleoptera, in which the latter author inquires what characters has a Strepsipteron in common with a beetle? Leconte replies:—1. Hypermetamorphosis of the larva (*Meloidæ*); 2. Parasitism (*Rhipidius*); 3. Retention of the pupa within the skin of the larva (*Lampyridæ*, tribe *Lycini*); 4. Unfitness of anterior wings for flight; 5. Large development of metathoracic segment.

*Tricena**, g. n., Menge, Schr. nat. Ges. in Danz. neue Folge i. p. 2. Allied to *Stylops*; antennæ 7-jointed, joints 3 and 4 produced within, forming a sort of 3-toothed comb with the last three joints; tarsi 5-jointed, with two claws. Sp. *T. tertiaria*, sp. n., Menge, l. c. p. 3, figs. 1-5, in Amber.

MELOIDÆ.

REICHE (Ann. Soc. Ent. Fr. 4^e sér. v. pp. 628-642) publishes a classification of the species of *Mylabris* (Fab., Lac.) in his collection (75 in number) founded solely on the structure of the antennæ. He divides them into 2 genera—*Coryna* (Billb.) = *Hydulus* (Lat.) with 9-jointed antennæ; and *Mylabris* pr. with those organs 11-jointed.

FAIRMAIRE (Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 55-56) redescribes

* Name previously employed.

Ctenas sericeus (Oliv.), and describes *Cantharis rubriventris* and *janthina* (Fairm.) and *C. viridissima* (Luc.) as species of *Lydus*.

Mylabris setigera (Waltl) is probably described from rubbed specimens of *M. 14-punctata* (Pall.). Kraatz, Berl. ent. Zeits. 1866, p. 301.

Zonitis mutica. Giraud gives a curious account of the oeconomy of this species, which lives parasitically in the nests of *Osmia tridentata*. Ann. Soc. Ent. Fr. 4^e sér. vi. pp. 494-496.

New species :—

Meloe montanus, Leconte, New Col. N. Amer. i. p. 155, Oregon and Montana; *M. tinctus* and *M. carbonaceus*, Lec. ibid., Nebraska.

Coryna (Billb.). Reiche describes the following new species of this genus:—*C. lata*, l. c. p. 628, Egypt; *C. confluens* (Klug, MS.), l. c. p. 629, Roumelia; *C. ornata*, l. c. p. 630, and *C. peyronis*, ibid., Syria.

Mylabris. Of this genus Reiche describes the following new species:—*M. trizonata*, l. c. p. 631, *M. jugatoria*, l. c. p. 633, *M. apicipennis*, l. c. p. 635, *M. niligena*, l. c. p. 638, and *M. fulgurita*, l. c. p. 640, from Egypt; *M. corynoides*, l. c. p. 631, and *M. ustulata*, l. c. p. 633, Algeria; *M. schah*, l. c. p. 632, Persia; *M. damascena*, l. c. p. 634, and *M. delarouzei*, l. c. p. 639, Syria; *M. schreibersii* (Dej.), l. c. p. 636 (= *terminata*, Chevr.), Sicily.

Tetraonyx decoratus, Kirsch, Berl. ent. Zeits. 1866, p. 208, from Bogotá.

Macrobasis virgulata, Leconte, l. c. p. 156, California.

Epicauta (= *Lytta*, Fairm.). Of this genus, Leconte (l. c.) describes the following new species:—*E. pedalis*, p. 157, California; *E. pardalis*, ibid., New Mexico and Arizona; *E. sericans*, p. 158, Kansas, New Mexico, and Texas; *E. pruinosa*, ibid., Colorado Territory; *E. callosa*, ibid., Texas and Nebraska.

Epicauta reichenbachii, Kirsch, l. c. p. 208, from Bogotá.

Pyrotu terminata, Leconte, l. c. p. 159, Kansas; *P. postica*, Lec. l. c. p. 160, Texas and New Mexico; *P. cimbalis*, Lec. ibid., Virginia.

Pomphopcea unguicularis, Leconte, l. c. p. 160, Illinois; *P. texana*, Lec. l. c. p. 161, Texas.

Lytta puberula, Leconte, l. c. p. 162, Arizona; *L. viridana*, Lec. ibid., Rocky Mountains.

CEDEMERIDÆ.

Rhopalobrachium (Bohem.). Philippi (Stett. ent. Zeit. 1866, pp. 111-113) describes in detail the structural characters of *R. clavipes* (Boh.), placed by Boheman among the CEdemerides, and the apparent relationship of which to *Trachelostenus* was indicated by Lacordaire. In the structure of the sternum and of the legs the genus approaches *Trachelostenus*; but the tarsi are all pentamerous and the structure of the mouth is quite different. Philippi leaves the position of the genus quite uncertain. *R. clavipes* is figured with details, taf. ii. fig. 5-5 h; and the buccal organs of *Trachelostenus inaequalis* (Sol.) are represented for comparison, figs. 5 i-5 k.

Fairmaire's genus *Ananca* is identical with Pascoe's *Sessinia*. See Pascoe, Journ. of Ent. ii. p. 488.

Ischnomera unicolor (Mels.) = *Asclera cærulea*; and *CEdemera vestita* (Say) is probably a *Stereopalpus*. Leconte, List Col. N. Am. p. 70, note.

CEdemera nobilis (Scop.) is identical with and prior to *C. cærulea* (Linn.). Crotch, Entomologist, iii. p. 175.

Anoncodes ruficollis (Fab.). On the metamorphosis of this species, see F. Löw, Verh. zool.-bot. Ges. in Wien, xvi. p. 955.

New genera and species :—

Diplectrus, g. n., Kirsch, Berl. ent. Zeits. 1866, p. 210. Allied to *Xanthochroa*; tibiæ bicalcarate; antennæ remote from the eyes. Sp. *D. ferrugineus*, sp. n., Kirsch, l. c. p. 210, from Bogotá.

Hyphasclera, g. n., Kirsch, l. c. p. 210. Allied to *Asclera*; head more produced, eyes more coarsely granulated; last joint of maxillary palpi securiform, of labials cylindrical, truncate. Sp. *H. schistacea*, sp. n., Kirsch, l. c. p. 211, *H. marginata* and *H. flavicollis*, sp. n., Kirsch, l. c. p. 212, from Bogotá.

Edemera lucidicollis, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 174, Japan.

Oncomera vitticollis, Motschulsky, l. c. p. 174, Japan.

Calopus aspersus, Leconte, New Col. N. Amer. p. 163, Texas and California.

Microtomus sericans, Leconte, l. c. p. 163, Eastern States.

Xanthochroa trinotata, Leconte, l. c. p. 164, Louisiana.

Xanthochroa bogotensis, Kirsch, l. c. p. 209, from Bogotá.

Anoncodes flaviceps, Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 57, from Algeria (P).

Chitona metallescens, Fairmaire, l. c. p. 57, from Tangier.

Oxaxis granulata, Leconte, l. c. p. 166, and *O. fuliginosa*, Lec. ibid., California.

Probosca pleuralis, Leconte, l. c. p. 166, Florida; *P. lucana*, Lec. l. c. p. 167, California.

Lacconotus punctatus, Leconte, l. c. p. 167, Pennsylvania.

Asclera cinerivipennis, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 173, Japan.

CURCULIONIDÆ.

LACORDAIRE (Genera des Coléoptères, tome vii.) has completed his classification of the present family. In the previous volume (published in 1863) he indicated his proposed division of the *Curculionidæ* into 2 "legions:"—the *Adélognathes*, having the maxillæ covered by the mentum, except sometimes at their base, and the submentum destitute of a peduncle, or only with traces of one; and the *Phanérogathes* (vi. p. 286), in which the mentum leaves the maxillæ entirely exposed, and the submentum has a more or less prominent peduncle. The latter group includes 2 "cohorts," namely:—the *Symérides*, with the anterior coxæ contiguous or very slightly separated, and the prosternum not canaliculate between them; and the *Apostasimérides*, with these coxæ more or less separated, rarely contiguous, and the prosternum often canaliculate. The exceptions to the group-characters among the *Apostasimérides* occur in the following genera, as stated by Lacordaire:—*Gymnetron*, *Ectatorhinus*, *Acentrus*, *Ithyporus*, *Conotrachelus*, *Phacecorynes*, *Sphenophorus*, *Xerodesmus*, *Oxyrhynchus*, *Orthognathus*, *Sipalus*, and *Mesocor-*

dylus; but in several cases the approximation of the coxæ is presented only by a portion of the species.

The *Apostasimérides* alone are treated by Lacordaire in his seventh volume; they are divided into tribes as follows:—

PHALANGE I. (p. 3).

Antennal club articulated; joint 3 of tarsi bilobate.

SECTION A. Mesothoracic epimera not ascendant (p. 4).

Tribes:—*Gymnétrides* (p. 6), *Déréloomides* (p. 9), *Lémosaccides* (p. 12), *Alecidides* (p. 14), *Haplonycides* (p. 16), *Eudérides* (p. 18), *Nerthopides* (p. 19) with 3 groups, *Camarotides* (p. 25), *Ménemachides* (p. 27) with 2 groups, *Cholides* (p. 32), *Cryptorhynchides* (p. 48) with 4 groups and subdivided, *Zygopides* (p. 142) with 8 groups, *Tachygonides* (p. 167), *Ramphides* (p. 170), *Isorhynchides* (p. 172) with 2 groups, *Trypétides* (p. 177), *Antliarhinides* (p. 180), *Utomascides* (p. 184), *Epipédides* (p. 186), and *Pyropides* (p. 187).

SECTION B. Mesothoracic epimera ascendant (p. 189).

Tribes:—*Ptérocólides* (p. 190), *Ceuthorhynchides* (p. 191) with 3 groups, *Péridinétides* (p. 209), *Pantotélides* (p. 212), and *Baridiides* (p. 214) with 2 subtribes (*Baridiides vrais* and *Madarides*, p. 248) including 11 groups.

PHALANGE II. (p. 261).

Antennal club compact; joint 3 of tarsi almost always entire.

Tribes:—*Campyloscélides* (p. 264), *Calandrides* (p. 267) with 6 groups, *Strombosécérides* (p. 306), *Oxyrhynchides* (p. 308), *Sipalides* (p. 310) with 3 groups, and *Cossonides* (p. 319) with 4 groups.

G. R. CROUCH (Entomologist, iii. pp. 63–65) remarks upon the concluding portion of Lacordaire's genera of Rhynchophora, with especial reference to the changes in the nomenclature and classification of British genera.

Crotch (Entomologist, iii. pp. 133–136) remarks on the synonymy &c. of numerous species of this family, with reference to his new catalogue of British Coleoptera. The species referred to are:—*Baris abrotani* (Germ.), *Ceuthorhynchus versicolor* (Bris.), *C. pallipes* var. *contractus*?, *C. suturellus* (Schönh.), *Acalus miscellus* (Schönh.) = var. *turbatus* (Boh.), *Cionus hortulanus* (Marsh.), distinct; *Tychius*, various species; *Acalyptus rufipennis* (Schönh.), *Magdalinus barbicornis* (Latr.), *Rhynchites uncinatus* (Thoms.); *Bagous*, various species; *Procas steveni* (Schönh.), *Larinus ebeneus* (Marsh.) = *carlinæ* (Oliv.), *Hypera elongata* (Payk.), *H. julini* (Sahlb.), *H. trilineatus* (Marsh.), *Otiorrhynchus fuscipes* (Oliv.), *Sitones longicollis* (Schönh.), *Strophosomus melanogrammus* (Forst.) = *coryli* (Walt.), and *Barynotus schönherri* (Zett.).

FAIRMAIRE (Ann. Soc. Ent. Fr. 4^e sér. tome vi.) describes the following known North African species:—*Sciaphilus giganteus* (Fairm.), p. 58; *Tanymericus submaculatus* (Chevr.), probably = *siculus* (Tourn.); and *T. brevis* (Chevr.), p. 61. He also describes the species of *Holcorhinus* (pp. 62–65), and treats *H. metallescens* (Luc.) as a distinct form. *Procas rugicollis* (Perris) probably = *P. lethierryi* (Chevr.), p. 61.

FRAUENFELD (Verh. zool.-bot. Ges. in Wien, xvi. pp. 967–971) gives details as to the life-history of *Gymnetron noctis* (Herbst), *G. netus* (Germ.), *Braclhypertus gravidus* (Ill.), *Baridius punctatus* (Schönh.), *B. abrotani* (Germ.), *Ceuthorhynchus cynoglossi* (Mill. MS.), and *C. lycopi* (Chevr.).

Brachyderides.

Sitones cinnamomeus (All.) occurs near Geneva under stones surrounded by snow. See Gautier des Cottes, Rev. et Mag. de Zool. 1866, p. 179.

Sitones longicollis (Schönh.), *S. lineellus* (Gyll.), and *Barynotus schönherri* (Zett.) are recorded as British by Crotch (Cat. Brit. Col.). See Rye, Ent. Ann. 1867, pp. 85 & 86.

Sitones cinerascens (Schönh.) is recorded as a British species by Sharp, Ent. M. Mag. iii. p. 164.

Sitones ononidis, Sharp. A new species indicated by Sharp. See Rye, Ent. Ann. 1867, p. 54.

New species:—

Cneorrhinus cuprescens, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 178, and *C. angusticollis*, Motsch. l. c. p. 179, Japan.

Cneorrhinus graellsii, Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 387, and *C. baubnyi*, Bris. l. c. p. 389, Escorial and Madrid.

Brachyderes alboguttatus, Chevrolat, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 321, Escorial.

Sitones allardi, Chevrolat, l. c. p. 322, Spain.

Metalmites punctulatus, Brisout, l. c. p. 392, La Granja and Reynosa.

Polydrosus senex, Chevrolat, Rev. et Mag. de Zool. 1866, p. 24, Aranjuez.

Eustolus aceris, Chevrolat, l. c. p. 24, Escorial.

Thylacites corsicus, Perris, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 188, from Corsica; *T. argenteus*, Perris, l. c. p. 190, from Spain.

Thylacites heliophilus, Chevrolat, l. c. p. 24 (= *T. atratus*, Dej.), Spain; *Thylacetes tonsus*, Chevrolat, l. c. p. 103, Escorial.

Tanymeceus metallinus, Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 60, from Tangier; *T. nubeculosus*, Fairm. ibid., from Biskra.

Scaphilus alternans, Fairmaire, l. c. p. 58, and *S. fasciolatus*, Fairm. l. c. p. 59, from Tangier.

Dermatodes interstitialis, Motschulsky, l. c. p. 179, and *D. carinulatus*, Motsch. ibid., Japan.

Otiiorhynchides.

Otiiorhynchus. Stierlin publishes (Berl. ent. Zeits. 1866, pp. 129-135) a supplement to his revision of the European *Otiiorhynchi*, including descriptions of several new species and of new varieties of *O. alpicola*, *mæstus*, and *navaricus*.

Otiiorhynchus. Rye (Ent. M. Mag. ii. pp. 181-182) refers to *O. fuscipes*, *O. ambiguus*, and some other species, and indicates their distinctive characters. The true *O. fuscipes* (Oliv.) does not seem to occur in British collections, where it is represented by *O. tenebricosus*. *O. ambiguus* (Steph.) is very nearly allied to *O. rugifrons* (Gyll.), if distinct. *O. fuscipes* is further discussed by Smith & Rye (l. c. pp. 232-234).

Gautier des Cottes maintains, in opposition to Aubé (see 'Record' 1864, p. 407), that his *Omiias raymondi*, *trichopterus*, and *marqueti* are distinct from each other and from *O. concinnus*. Bull. Soc. Ent. Fr. 1865, p. lx.

Phyllobius scutellaris (Redt.). Kiesenwetter (Berl. ent. Zeits. 1866, pp. 287-288) discusses the variations of this species as observed in individuals from different localities. He regards *P. alpinus* (Stierl.) and *P. xanthocnemus* (Kies.) as varieties of it.

New genera and species :—

Otiorynchus. Stierlin describes the following new European species (Berl. ent. Zeits. 1866):—*O. lombardus*, p. 129, from Lombardy; *O. subcostatus* (= *septentrionis*, var. β), p. 129, from the Engadine; *O. küenburgi*, p. 130, from Siebenbürgen; *O. teretirostris*, p. 131, from the Alpes Maritimes; *O. bonvouloiri*, p. 132, from the French Alps; *O. javeti*, p. 133, from Mont Feu; and *O. piochardi*, p. 134, from the French Alps.

Otiorynchus dubitabilis, Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 266, and *O. armicus*, Fairm. l. c. p. 267, from Asia Minor.

Otiorynchus montanus, Chevrolat, Rev. et Mag. de Zool. 1866, p. 25, and *O. sylvestris*, Chev. l. c. p. 26, Reynosa; *O. lethierryi*, Chev. l. c. p. 104, Escorial.—*Otiorynchus reynosæ*, Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 410, Reynosa.

Schaumiis, g. n., Brisout, l. c. p. 411. Allied to *Otiorynchus*; antennæ with the funiculus 8-jointed. Sp. *S. vulléfroyi*, sp. n., Brisout, l. c. p. 412, from Spain.

Holcorhinus cyrtus and *H. costulatus*, Fairmaire, l. c. p. 64, from Algeria.

Peritelus breviostris, Brisout, l. c. p. 407, Spain.—*Peritelus sulcirostris*, Chevrolat, l. c. p. 104, Escorial.—*Peritelus imbricatus*, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 430, Ceylon.

Omius lepidotus, Perris, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 190, from Bone.

Ptochus obscuripes, Motschulsky, l. c. p. 180, Japan.

Trachyphlæus (sic) *socius*, Chevrolat, Rev. et Mag. de Zool. 1866, p. 26, Escorial.

Lacordairius, g. n., Brisout, l. c. p. 413. Allied to *Trachyphlæus*; eyes very small, rounded, not very convex; funiculus of 5 joints. Sp. *L. seidlitzii*, sp. n., Bris. l. c. p. 413, Escorial.

Cathormiocerus lapidicola, Chevrolat, Ann. Soc. Ent. Fr. 4^e ser. vi. p. 322, Valladolid.

Phyllobius squamosus, Brisout, l. c. p. 409, Madrid.—*Phyllobius tuberculifer*, Chevrolat, Rev. et Mag. de Zool. 1866, p. 27, Escorial.—*Phyllobius* (sic) *canديدatus*, Perris, Ann. Soc. Ent. Fr. 4^e sér. v. p. 509, Spain.—*Phyllobius prolongatus*, Motschulsky, l. c. p. 180, Japan.

Myllocerus hispanus, Chevrolat, l. c. p. 105, Cordova.

Brachycerides.

Brachycerus peninsularis, sp. n., Chevrolat, Rev. et Mag. de Zool. 1866, p. 105, Escorial and Portugal.

Rhytirhinides.

Rhytirhinus caudatus, sp. n., Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 394, *R. escorialensis*, Bris. l. c. p. 396, Escorial; *R. interruptus*, Bris. l. c. p. 397, *R. bonvouloirii*, Bris. l. c. p. 400, La Granja and Escorial; and *R. variabilis*, Bris. l. c. p. 398, Aranjuez and Escorial.

Molytides.

Plinthus illigeri (Germ.) and *P. findelii* (Schönh.) = *megerlei* (Panz.); and *P. schalleri* (Germ.) = *porculus* (Fab.). Kraatz, Berl. ent. Zeits. 1866, p. 301.

Liosomus reynosa, sp. n., Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 393, Reynosa.

Plinthus perezii, sp. n., Brisout, *l. c.* p. 408, Reynosa.

Anchonus suturalis, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 434, Ceylon.

Tanyrhynchides.

Myorhinus subvittatus, sp. n., Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 267, from Asia Minor.

Scythropides.

Scytropus (sic) *glabratus*, sp. n., Chevrolat, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 322, Spain; *S. argenteolus*, Chevr. *l. c.* p. 323, note, Vernet; *S. cedri*, Chevr. *l. c.* p. 324, note, Bidah.

Hyperides.

Hypera julini (Sahlb.) and *H. elongatus* (Payk.) are recorded as British by Crotch (Cat. Brit. Col.). See Rye, Ent. Ann. 1867, pp. 86-87.

Hypera rogenhoferi, sp. n., Ferrari, Verh. zool.-bot. Ges. in Wien, xvi. p. 369, Lower Austria.

Phytonomus ochraceus, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 430, Ceylon.

Comiatus latus, sp. n., Miller, Verh. zool.-bot. Ges. in Wien, xvi. p. 819, Corfu.

Cleonides.

Cleonus piochardi, sp. n., Brisout, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 390, Escorial; *C. marmottani*, Bris. *l. c.* p. 391, Aranjuez.—*Cleonus lejeunii*, sp. n., Fairmaire, *ibid.* p. 65, Algeria.

Larinus planus (Fab.). F. Löw has bred this species from the flowers of *Cirsium palustre*. Verh. zool.-bot. Ges. in Wien, xvi. p. 955.

Larinus crinitus (Schönh.). The occurrence of this species in the Banat is recorded by Scriba, Berl. ent. Zeits. 1866, p. 291.

Larinus albocinctus, sp. n., Chevrolat, Rev. et Mag. de Zool. 1866, p. 106, Valladolid.—*Larinus escorialensis*, sp. n., Brisout, *l. c.* p. 401, and *L. lethierryi*, Bris. *l. c.* p. 402, Escorial.

Lixus bicolor. The larva of this species is described and its habits indicated by Goureaux. Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 173. Laboulbène also notices the larva of this species. Bull. Soc. Ent. Fr. 1865, p. lviii.

Lixus puncticollis, sp. n., Brisout, *l. c.* p. 403, Escorial and Madrid; *L. brevipes*, Bris. *l. c.* p. 404, Escorial; *L. lateralis*, Bris. *l. c.* 406, Aranjuez.

Lixus hypocrita, sp. n., Chevrolat, *l. c.* p. 27, Aranjuez; *L. castellumus*, Chevr. *l. c.* p. 28, Valladolid; *L. cretaceus*, Chevr. *ibid.*, Valladolid.

Hylobiüdes.

Heilipus orientalis, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 180, Japan.

Erirhinides.

Bagous. H. Brisout de Barneville (*l. c.* p. 624) publishes the following notes on the synonymy of species of this genus:—*B. incertus* (Gyll.)=*encaustus* (Boh.), as also *B. argillaceus* (Gyll.); *B. mundanus* and *claudicans*

(Boh.)=*frit* (Boh.); *B. validitarsus* (Boh.)=*lutosus* (Gyll.); and *B. tibialis* (Boh.)=*Hydronomus alismatis* (Marsh.).

Anoplus roboris (Suff.) and *Bayous subcarinatus* (Gyll.) are recorded as British by Crotch (Cat. Brit. Col.). See Rye, Ent. Ann. 1867, pp. 89-90.

Dorytomus bivittatus, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 432, Ceylon.

Phyllotrox. Schaufuss describes the following new species of this genus from New Granada (Rev. et Mag. de Zool. 1866):—*P. variabilis*, l. c. p. 412; *P. posticus*, *rugirostris*, and *subopacus*, l. c. p. 413.

Belides.

C. A. DOHRN publishes a note on *Homalocerus nigripennis* (Schönh.), describing a specimen differing in its proportions from Boheman's description. Stett. ent. Zeit. 1866, pp. 356-357.

Apionides.

Apion. Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvi. pp. 961-967) remarks upon the species of this genus of which the transformations have been described by previous authors, and describes the habits and metamorphoses of the following species:—*A. radiolus* (Marsh.), *meliloti* (Kirby), *seniculus* (Kirby), *virens* (Herbst), *elongatum* (Germ.), *vernale* (Fab.), *penetrans* (Germ.), *simum* (Germ.), *fagi* (Linn.), *ononidis* (Gyll.), and *assimile* (Kirby).

Apion. Aubé (Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 165-168) publishes remarks on the habits of the following species of this genus:—*A. candidum* (Wenck.) and *oculare* (Gyll.), *A. wenckeri* (Bris.), *rugicolle* (Germ.), *rufescens* (Gyll.), *kraatzii* (Wenck.), *difforme* (Ahr.), *sulcifrons* (Herbst), *cencomicans* (Wenck.), *capiononti* (Wenck.), *aciculare* (Germ.), *sedii* (Germ.), *semicyaneum* (Muls.), *vernale* (Fab.), *brevirostre* (Herbst), *simum* (Germ.), and *caulei* (Wenck.). His statements relate to the plants on which these species are found. Goureau also notices the habits of the larvæ of *A. vernale*, *caulei*, and *simum* (l. c. pp. 172 & 173).

Apion steveni (Gyll.) is distinct from *flavofemoratum* (Herbst), with which it is united by Wencker. Kraatz, Berl. ent. Zeits. 1866, p. 303.

Apion difformis. H. Moncreaff mentions taking a pair of this species in copulation at Southsea, and states that the ♂ only has the bifid tooth on the epigastrium, and that the ♀ is much smaller than the ♂. Entomologist, iii. p. 43.

Apion ononidis (Gyll.). On the synonymy of this species see Sharp & Rye, Ent. M. Mag. ii. p. 205 & 230-232; also Rye, Ent. Ann. 1867, p. 118.

Apion putonii, sp. n., Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 386, Escorial.

Apion separandum, sp. n., Aubé, l. c. p. 163, from Béziers.

Attelabides.

Attelabus foveicollis (Jekel) is probably a variety of *A. variolosus* (Oliv.), according to Jekel. Ann. Soc. Ent. Fr. 4^e sér. tome v. p. 536, note.

Rhynchites uncinatus (Thoms.) is recorded as British by Crotch (Cat. Brit. Col.). See Rye, Ent. Ann. 1867, p. 84.

Anthonomides.

Orchestes. Rye publishes (Ent. M. Mag. ii. pp. 224-227) a tabular abstract of Brisout de Barneville's Monograph of *Orchestes* (see 'Record,' 1865, pp. 395 and 487), with remarks upon some of the reputed British species,

namely :—*O. rufus* (Oliv.), *ferrugineus* (Marsh.), *semirufus* (Gyll.), *pubescens* (Stev.), *populi* (Fab.), and *decoratus* (Germ.). See also a note on *O. rufus* by Rye, *l. c.* p. 259.

Magdalinus barbicornis (Latr.) is recorded as British by Crotch (Cat. Brit. Col.). See Rye, Ent. Ann. 1867, p. 88.

New species :—

Balaninus lugubris, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 430, *B. tessellatus*, *lineolatus*, and *rufimanus*, Motsch. *l. c.* p. 431, Ceylon.

Motschulsky also describes *B. X-album*, *l. c.* p. 432, India; *B. basithorax*, *ibid.*, Java; *B. bifasciatus*, *ibid.*, Burmah; and *B. bicruciatu*s, *ibid.*, North Australia.

Anthonomus aceris, Chevrolat, Rev. et Mag. de Zool. 1866, p. 29, Escorial.

Acalyptus sabulicolor, Motschulsky, *l. c.* p. 433, Ceylon.

Orchestes meridianus, Motschulsky, *l. c.* p. 432, *O. flavidus*, Motsch. *l. c.* p. 433, and *O. P rufipes*, Motsch. *ibid.*, Ceylon.

Orchestes quinque maculatus, Chevrolat, L'Abeille, p. lxxvi, France.

Orchestes quedenfeldii, sp. n., Gerhardt, Jahresber. schles. Gesellsch. für vaterl. Cultur, 1866, p. 132. Oval, black, shining, with erect hairs; scape and first four joints of the 6-jointed funiculus dark reddish brown; legs pitchy black; rostrum with a fine median furrow; posterior femora dilated in the middle, with a series of fine teeth from that point to the apex; anterior and intermediate femora with a small tooth. 1-1½ lin. Silesia.

Tychiides.

Lignyodes rudesquamosus (Fairm.). Scriba (Berl. ent. Zeits. 1866, p. 291) indicates some variations in this species, and points out the near resemblance between it and *L. suturatus* (Fairm.).

Lignyodes muerlei, sp. n., Ferrari, Verh. zool.-bot. Ges. in Wien, xvi. p. 368, Hainburg.

Tychius polylineatus (Germ.) is recorded as British by Crotch (Cat. Brit. Col.). See Rye, Ent. Ann. 1867, p. 88.

Tychius bivittatus, sp. n., Perris, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 191, from Corsica.—*Tychius suavis*, sp. n., Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 414, Aranjuez; *T. acuminirostris*, Bris. *l. c.* p. 415, Madrid.—*Tychius genistacola*, sp. n., Chevrolat, Rev. et Mag. de Zool. 1866, p. 29, Escorial.

Micotrogus suturatus, sp. n., Perris, *l. c.* p. 192, from Corsica.

Sibynes formosus, sp. n., Aubé, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 163, France.

Cionides.

Nanophyes aureolus (Perr.)=*transversus* (Aubé), according to Perris, Ann. Soc. Ent. Fr. 4^e sér. v. p. 512.

Cionus hortulanus (Marsh.) is restored to specific rank by Crotch (Cat. Brit. Col.). See Rye, Ent. Ann. 1867, p. 92.

Cionus fraximi (De G.). The habits of this species, the larva of which is injurious to the olive in the neighbourhood of Nice, are noticed by Peragallo. Bull. Soc. Ent. Fr. 1866, pp. xlv-xlvii.

New species :—

Nanophyes trimaculatus and *quadrivittatus*, Motschulsky, Bull. Soc. Nat.

Mosc. xxxix. l. p. 443, *N. subfasciatus*, *rufipes*, and *niger*, Motsch. l. c. p. 444, and *N. pallescens*, Motsch. l. c. p. 445, Ceylon.

Motschulsky also indicates:—*N. ochreatus*, l. c. p. 443, from Tenasserim; and *N. nigripennis*, *jota*, *latus*, and *plumbeus*, l. c. p. 444, from Continental India.

Amorphoidea testacea and *A. rufotestacea*, Motschulsky, l. c. p. 493, Ceylon.

Gymnetrides.

Gymnetron. H. Brisout de Barneville (Ann. Soc. Ent. Fr. 4^e sér. v. pp. 620–624) publishes some notes on this genus, containing supplementary remarks and corrections to his monograph of the European species. At p. 622 he makes some corrections in the characters of his first and second groups, and notes that in the third the claws are simple—a character which, added to the others peculiar to this group, leads him to think that it may be reestablished as a genus (*Cleopus*, Suff. = *Miarus*, Steph.). He also gives a corrected table of the first subdivision of his group 11, and of the characters of *G. longirostris* (Gyll.) and *scutellaris* (Bris.), l. c. p. 623. The following synonymic corrections are indicated:—*G. concinnus* (Gyll.) = *beccabungæ* (Linn.); *G. perparvulus* (Boh.) = *melanarius* (Germ.); *G. plagiatus* (Gyll.) = var. *asellus* (Grav.); *G. plagiellus* (Gyll.) = *teter* (Fab.); *G. trigonalis* (Gyll.) = *teter* (Fab.); *G. distinctus* (Schaum) is specifically distinct from *G. scutellaris* (Bris.). The paper also includes notes on the food-plants, localities, and characters of several other species.

Gymnaetron (sic) *pallidimanus*, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. l. p. 445, Ceylon.

Cryptorhynchides.

Acalles. According to H. Brisout de Barneville (Ann. Soc. Ent. Fr. 4^e sér. v. pp. 624–625), *A. dromedarius* (Boh.) = *fasciculatus* (Boh.), *A. quercus* (Boh.) = *camelus* (Fab.), *A. barbarus* (Luc.) = *teter* (Boh.), and *A. querihaci* (Bris.) is a distinct species.

Camptorhinus statua. Berce notices an individual of this species only one-fourth the ordinary size. Bull. Soc. Ent. Fr. 1865, p. lvii.

New genera :—

Ectatorhinus, g. n., Lacordaire, l. c. p. 53. Allied to *Mecocorymus*; rostrum three-fourths of length of body, slender, arched, quadrangular to the origin of the scrobes, then depressed; scrobes commencing about the basal third; scape of antennæ reaching eyes, joint 2 of funiculus the longest; anterior coxæ contiguous. Sp. *E. wallacei*, sp. n., Lac. l. c. p. 54, Sarawak.

Empleurus, g. n., Lacordaire, l. c. p. 74 (= *Strongylopterus* p., Schönh.). Allied to *Psepholax*; antennal club oval; prothorax with a trace of ocular lobes, slightly bisinuate at base; elytra trisinuate at base; femora unarmed, tibiae arcuate; intercoxal process narrow, elongate. Type *S. dentipes* (Schönh.).

Hemideres, g. n., Lacordaire, l. c. p. 135. Allied to *Anomocerus*; scutellum distinct; prothorax square at base, suddenly narrowed in front. Type *Anom. lucasi* (Montr.).

Mecistostylus, g. n. (Jek.), Lacordaire, l. c. p. 136. Allied to preceding; prothorax elongate, conical; scape of antennæ nearly straight, gradually clavate, slightly passing eyes. Sp. *M. douei*, sp. n. (Jekel, MS.), Lac. l. c. p. 137, from New Zealand.

Mecomastyx, g. n., Lacordaire, *l. c.* p. 137. Allied to preceding; prothorax very long, conical, with large, angular ocular lobes; scape of antennæ at least as long as body, somewhat flexuous at base, then straight and scarcely clavate. Sp. *Anom. montravelii* (Montr.).

New species :—

Conotrachelus? *pistrinarius*, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1, p. 436, Ceylon.

Acalles sierræ, H. Brisout de Barneville, *l. c.* p. 625, Spain,

Acalles histrix (sic), Motschulsky, *l. c.* p. 436, Ceylon.

Tylodes semicolles, Motschulsky, *l. c.* p. 436, Ceylon.

Cryptorhynchus fascicularis, Motschulsky, *l. c.* p. 435, Ceylon.

Zygopides.

Hemigaster, g. n., Lacordaire, *l. c.* p. 154. Allied to *Timorus*; segment 1 of abdomen horizontal, remainder vertical; body very thick, cubical behind; rostrum slender, slightly dilated and keeled above at base, scrobes commencing near base. Sp. *H. cubicus*, sp. n., Lac. *l. c.* p. 155, Brazil.

Macrobamon, g. n., Lacordaire, *l. c.* p. 158. Allied to *Mecopus*; segments 2-4 of abdomen with posterior margin rectilinear. Sp. *M. periergus*, sp. n., Lac. *l. c.* p. 158, Ceylon.

Copturus trimaculatus, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1, p. 438, Ceylon.

Isorhynchides.

Lobotrachelus. Motschulsky (*l. c.* p. 438) says that all the species described by him (Et. Ent. 1848, p. 73) under the generic name of *Celosternus* belong to this genus, of which he describes the following new Cingalese species :—*L. olivaceus*, *bifasciatus*, *cinerascens*, and *fulvus*, *l. c.* p. 439; and *L. cruciatus*, *obliquevittatus*, *piccofasciatus*, and *setigerus*, *l. c.* p. 440.

Elattocerus bifasciatus, Motschulsky, *l. c.* p. 436, *E. affinis* and *similis*, Motsch. *l. c.* p. 437, and *E. angustatus*, Motsch. *l. c.* p. 438, Ceylon. Motschulsky also indicates from continental India :—*E. obliquefasciatus*, *nebulosus*, and *tessellatus*, *l. c.* p. 437, and *E. albopictus*, *l. c.* p. 438.

Ceuthorhynchides.

Ceuthorhynchus. The habits of the larvæ of *C. glaucus* and *C. quadridens* are indicated by Goureau, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 171.

Cæliodes didymus. The habits of the larva are indicated by Goureau, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 172.

Ceuthorhynchus suturellus (Gyll.). W. Tylden records the occurrence in Britain of a species identified with this, but differing from Gyllenhal's description in certain points indicated by him. Ent. M. Mag. ii. pp. 256-257. Rye also doubts the correctness of the determination (*l. c.* pp. 257-258).

Ceuthorhynchus suturalis (Fab.) is also recorded as British by Power (Entomologist, iii. p. 80).

Pachyrhinus. Power (Entomologist, iii. p. 80) records the capture of a species of this genus new to Britain, which proves to be the true *P. 4-nodosus* (Gyll.), whilst the species previously recorded under that name is *P. denticollis* (Gyll.).

New species:—

Ceuthorhynchus nebulosomaculatus, *C. latrunculatus*, and *C. debilis*, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 442, Ceylon.

Ceuthorhynchus ichierryi, Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 416, La Granja; *C. nebulosus*, Bris. l. c. p. 417, Madrid and Escorial.

Ceuthorhynchus cynoglossi (Mill. MS.), Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvi. p. 970.

Mecystoderes grisescens, *umbrinus*, and *stramineus*, Motschulsky, l. c. p. 441, Ceylon; *M. semialbidus*, Motsch. l. c. p. 442, India. Motschulsky's species of *Caeliosomus* described in Etudes Ent. 1858, p. 70, belong to this genus.

Lytodactylus testaceus, Motschulsky, l. c. p. 434, Ceylon.

Amalus alpinus, Hampe, Berl. ent. Zeits. 1866, p. 375, Alps.

Baridiides.

Baridius. Lereboullet (Mém. Soc. Sci. Nat. Strasb. vi.) describes the metamorphoses and mode of life of 2 species of this genus, *B. picinus* (Germ.) and *B. chloris* (Germ.), both destructive of brassicaceous plants in the neighbourhood of Strasbourg. He figures the larva and pupa of the former species with details on the plate accompanying his paper (figs. 1-8); fig. 9 represents a section of the stem of a Colza plant hollowed out by the larva, and fig. 10 a nest formed by the larva attached to a root-fibre: the beetles are also figured—*B. chloris*, fig. 11, and *B. picinus*, fig. 12. Two parasites, one Dipterous (*Lauxania*) and one Hymenopterous (*Bracon*), are also figured (figs. 13-15 and 16-20). In the introductory portion of his paper the author gives a summary of previous researches.

Taschenberg notices the occurrence of a Curculionide larva, probably that of *Baridius chloris*, together with the larva of *Psylliodes chrysocephala*, in rape-plants early in May. Zeitschrift für die ges. Naturw. xxiii. Corr.-Bl. p. 422.

Baris chlorizans. Some details on the habits of the larva are given by Goureau, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 172.

New genera:—

Eucalus, g. n., Lacordaire, l. c. p. 229. Allied to *Phacelobarus*; elytra scarcely wider than prothorax; rostrum a little longer than prothorax; scape suddenly clavate, not quite attaining eyes, joint 1 of funiculus larger and longer than the rest. Sp. *Oncorhinus fasciolatus* (Blanch.).

Lispodemus, g. n., Lacordaire, l. c. p. 244. Allied to *Madopterus*; antennæ long and slender, scape not nearly reaching eyes, joint 1 of funiculus very large. Sp. *L. femoralis*, sp. n., Lac. l. c. p. 244, Brazil.

Lichnus, g. n., Lacordaire, l. c. p. 245. Allied to *Madopterus*; rostrum gibbous at base; antennæ slender, scape very thin, suddenly clavate; legs short and robust. Sp. *L. erythroderus*, sp. n., Lac. l. c. p. 246, note, Brazil.

Elasmorhinus, g. n., Lacordaire, l. c. p. 249. Allied to *Lyterius*; rostrum three-fourths as long as body, depressed, very slender; scrobes inferior, occupying only the thickened basal portion. Sp. *E. longirostris*, sp. n., Lac. l. c. p. 250, note, Surinam.

Microstrates, g. n., Lacordaire, l. c. p. 252 = *Torneutes* (Schönh.); the latter name previously employed in Longicornia.

Pseudocolus, g. n., Lacordaire, *l. c.* p. 253. Allied to *Lyterius*; rostrum bent, compressed, scrobes commencing near its apex, confluent beneath towards the base. Sp. *P. decipiens*, sp. n., Lac. *l. c.* p. 254, note, New Guinea.

Conoproctus, g. n., Lacordaire, *l. c.* p. 255. Allied to *Madarus*; antennæ terminal, very long and slender; pygidium prominent, forming an acute cone. Sp. *C. quadriplagiatus*, sp. n., Lac. *l. c.* p. 256, note, Cayenne.

Barymerus, g. n., Lacordaire, *l. c.* p. 259=*Physomerus* (Schönh.); the latter name already employed in Rhynchota.

Physoproctus, g. n., Lacordaire, *l. c.* p. 260. Allied to preceding; pygidium and propygidium exposed; antennæ subanterior, scape clavate, not quite reaching eyes; scutellum triangular. Sp. *P. dohrnii*, sp. n., Lac. p. 261, note, Brazil.

New species :—

Baridius septemguttatus, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 434, and *B. interruptofasciatus*, Motsch. *l. c.* p. 435, Ceylon. Motschulsky also indicates:—*B. quadricollis*, *l. c.* p. 434, and *B. novemmaculatus*, *l. c.* p. 435, from Java; and *B. ochraceo-maculatus*, *alboscitellatus*, *subsignatus*, and *lineatofasciatus*, *l. c.* p. 435, from Continental India.

Baridius sulcicollis, Chevrolat, Rev. et Mag. de Zool. 1866, p. 106, Valladolid.

Baridius crassirostris, *brevirostris*, and *sexcarinatus*, Schaufuss, Rev. et Mag. de Zool. 1866, p. 414, from New Granada.

Centrinus. Of this genus Schaufuss describes the following 13 new species. From New Granada:—*C. radiatus*, *l. c.* p. 415; *C. submetallicus*, *plieicollis*, and *jekelii*, p. 416; *C. semicostatus*, *politus*, and *semiflavus*, p. 417; *C. dolus* and *hematopus*, p. 418; *C. montanus* and *jugularis*, p. 419. From Venezuela:—*C. bramanii*, p. 415, and *C. planirostris*, p. 419.

Calandrides.

Otidognathus, g. n., Lacordaire, *l. c.* p. 273=*Litorhynchus* (Schönh.); the latter name previously employed by Macquart for a genus of Diptera.

Aphiocephalus, g. n., Lacordaire, *l. c.* p. 277=*Conocephalus* (Schönh.); the latter name previously employed by Thunberg and Zenker.

Oxyppygus, g. n., Lacordaire, *l. c.* p. 281=*Megaproctus* (Schönh.); name previously employed by Chevrolat for a genus of Longicorns.

Heterotoxus, g. n., Lacordaire, *l. c.* p. 283. Allied to *Crepidotus*; intermediate abdominal segments widened and oblique on each side; pygidium declivous; epipleura much dilated at base. Sp. *H. gratus*, sp. n., Lac. *l. c.* p. 284, note, Java.

Abacobius, g. n., Lacordaire, *l. c.* p. 285. Allied to *Crepidotus*; scutellum large, triangular, elongate, acute. Sp. *A. jekelii*, sp. n., Lac. *l. c.* p. 286, note, Caffraria.

Barystethus, g. n., Lacordaire, *l. c.* p. 287. Allied to *Sphenophorus*; scutellum concealed by the median lobe of the pronotum. Sp. *Calandra melanosoma* (Boisd.).

Cyrtorhinus, g. n., Lacordaire, *l. c.* p. 292. Allied to *Cereidoceerus*; club of antennæ scarcely transverse, its spongy portion retracted; rostrum convex, somewhat gibbous at base. Sp. *C. baridioides*, sp. n., Lac. *l. c.* p. 293, note, Caffraria.

Melchus, g. n., Lacordaire, *l. c.* p. 300. Allied to *Belopæus*; scutellum small, rounded; rostrum equally thickened at base in both sexes. Sp. *M. leprosus*, sp. n., Lac. *l. c.* p. 301, note, Venezuela; and *M. umbratilis*, sp. n., Lac. *ibid.*, Cayenne.

Litosomus, g. n., Lacordaire, *l. c.* p. 305 (= *Myorhinus*, Chev. MS.). Allied to *Toxorhinus*; rostrum nearly horizontal, slender, very slightly arched; antennæ very long and slender, scape suddenly thickened at apex, funiculus with nodose joints. Sp. *L. grillarius*, sp. n., Lac. *l. c.* p. 305, note, Columbia.

Xerodermus, g. n., Lacordaire, *l. c.* p. 307. Allied to *Stromboscerus*; rostrum robust; eyes small, transverse, lateral. Sp. *X. porcellus*, sp. n., Lac. *l. c.* p. 308, note, Ceylon.

Mesocordylus, g. n., Lacordaire, *l. c.* p. 314 = *Sipalus* p. (Schönh.). Club of antennæ squarely truncate at apex; prothorax never cylindrical; suture between segments 1 & 2 of abdomen straight. Sp. The American *Sipali* of Schönherr (10 sp. *striatus*, *memnonius*, &c.); *S. luteosignatus* (Blanch.); *S. immundus* and *scutellaris* (Erichs.).

Cossonides.

Cossonus ferrugineus. Larvæ, pupæ, and perfect insects of this species were found in a wooden water-pipe, which had been buried for 9 years to a depth of 9 ells. The pupæ and beetles were on the outside of the pipe; the latter had their eyes perfectly developed. The larva is described by Kirsch, Berl. ent. Zeits. 1866, pp. 282-283.

Dryophthorus? setulosus, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 446, Ceylon.

Cotaster apioniformis, sp. n., Motschulsky, *l. c.* p. 445, Ceylon.

Mesites suturalis, sp. n., Motschulsky, *l. c.* p. 445, and *M. subcritatus*, Motsch. *l. c.* p. 446, Ceylon.

Rhyncholus ater, sp. n., Motschulsky, *l. c.* p. 446, and *R. taciturnus*, Motsch. *ibid.*, Ceylon.

ANTHRIBIDÆ.

LACORDAIRE (Genera des Coléoptères, tome vii. pp. 476-596) treats of this family, which he classifies as follows:—

Legion I. ANTHRIBIDES PLEUROCÈRES.

Antennæ inserted on the sides of the rostrum.

Tribe 1. *Tropidérides*. Anterior keel of prothorax antebasal.

I. Rostrum narrower at base than head, dilated at apex, or as wide as the head and cylindrical.

A. Rostrum thick, generally emarginate at apex, and with the scrobes terminal.

* Eyes oval, or rounded.

1. Scrobes of variable form, never rounded.

a. Body very elongate 1. *Phloxotragides*.

b. Body oblong, or oblong-oval.

a. Joint 1 of antennæ equal to or longer than 2.

2. *Mécocérides*.

β. Joint 1 of antennæ shorter than 2. 3. *Tophocérides*.

2. Scrobes distinctly rounded or oval. 4. *Discoténides*.

- † Eyes oblong-oval, longitudinal.
 - 1. Scrobes foveiform 5. *Isehnocérides*.
 - 2. Scrobes sulciform 6. *Sintorides*.
- B. Rostrum depressed, flat above, rarely sinuate at apex; scrobes scarcely ever terminal.
 - * Eyes very large 7. *Acorynides*.
 - † Eyes of normal size, lateral 8. *Phlæophilides*.
- II. Rostrum as large at base as head, very rarely dilated at apex.
 - A. Scrobes foveiform.
 - * Rostrum not thick; scrobes generally covered by its lateral margins.
 - 1. Eyes entire.
 - a. Head and rostrum normal 9. *Tropidérides vrais*.
 - b. Head and rostrum forming a vertical triangle.
 - 10. *Zygnodides*.
 - 2. Eyes emarginate.
 - a. Scrobes large, basal 11. *Proscoporhinides*.
 - b. Scrobes large, median 12. *Corrheécérides*.
 - † Rostrum thick, very short; scrobes exposed.
 - 1. Antennæ very long and slender; club indistinct.
 - a. Eyes entire.
 - a. Scrobes superior 13. *Apolectides*.
 - β. Scrobes lateral 14. *Decatophanides*.
 - b. Eyes emarginate 15. *Xénocérides*.
 - 2. Antennæ robust; club distinct 16. *Xylínadides*.
 - B. Scrobes sulciform 17. *Ecclónérides*.
- Tribe 2. *Basitropides*. Anterior keel of prothorax basal.
 - I. Rostrum parallel.
 - A. Body elongate, cylindrical.
 - * Scrobes sulciform, concealed 18. *Basitropides vrais*.
 - † Scrobes foveiform, exposed 19. *Eugonides*.
 - B. Body oblong, or oval; scrobes foveiform 20. *Anthribides vrais*.
 - II. Rostrum very short, cut obliquely on each side; scrobes sulciform.
 - 21. *Brachytarsides*.

Legion II. ANTHRIBIDES ANOCÈRES.

- Antennæ inserted on the upper surface of the rostrum or on the forehead.
- Tribe 1. *Aræocérides*. Antennæ on the rostrum.
 - I. Prothoracic keel basal or subbasal 22. *Aræocérides vrais*.
 - II. Prothoracic keel antebasal 23. *Notioxénides*.
 - Tribe 2. *Xenorehestides*. Antennæ on the forehead.

These groups include the following, besides the typical genera, and the new genera, which will be cited below:—

 - 1. *Phlæopemon*, *Ptychoderes* (Schönh.), *Tribotropis* (Jek.), and *Cerambyrhynchus* (Montr.); 2. *Eugigas* (Thoms.); 4. *Acanthopygus* (Montr.) and (P) *Bythoprotus* (Pasc.); 5. *Ancylotropis* (Jek.) and *Genethila* (Pasc.); 7. *Litocerus* (Schönh.), *Cedus* (Pasc.), and (P) *Mecotarsus* (Schönh.); 8. *Eczesaris*, *Ethneca*, *Plintheria*, *Phæocrotus* (Pasc.), *Stenocerus*, *Gymnognathus*, *Analotes* (Schönh.), and (P) *Systellorhynchus* (Blanch.), *Esocus* and *Myeteis* (Pasc.), and *Tetragonopterus* (Perroud); 9. *Systaltocerus* (Imh.), *Platyrhinus* (Clairv.) *Enebreutes* (Schönh.), *Nessiaria*, *Apatenia*, *Hypyseus*, *Hucus* (Pasc.), *Lago-*

pezus (Schönh.), and *Camptotropis* (Jek.); 10. *Exechesops* (Schönh.); 11. (?) *Anthrībisonus* (Perroud); 12. *Habrissus* and *Phaulimia* (Pasc.), *Phænithon* (Schönh.), *Ormiscus* (Wat.), and (?) *Camaroderes* (Jek.) and *Nerthomma* (Pasc.); 13. (?) *Anocerastes* (Imh.); 14. *Deuterocrates* (Imh.); 17. *Chiron-tonon* (Imh.), *Eucorynus* (Schönh.), and *Dendrotrogus* (Jek.); 19. *Polyco-rymus* (Schönh.), *Aneurhinus* (Thoms.), and *Ozotomerus* (Perroud); 20. *Phlæo-bius*, *Cratoparis*, *Piezocorymus*, and *Blaberus* (Schönh.), *Penestica*, *Picenia*, *Protædus*, *Dæothena*, and *Exillis* (Pasc.), *Trigonorhinus* (Woll.), and (?) *Parablops* (Schönh.), *Dinema* (Fairm.), and *Rhinobrachys* (Fairm.); 22. *Caranistes* (Schönh.), *Aræocorymus* (Jek.), *Misthosima*, *Dynsos* (Pasc.), and *Choragus* (Kirby).²

Enciodes, g. n., Pascoe, Journ. of Ent. ii. p. 492. Allied to *Exillis*; head broader below; joint 2 of antennæ elongate, club of 2 joints, short; prothoracic keel scarcely continued to the sides; joint 1 of tarsi not longer than 2 & 3 together. Sp. *E. suturalis*, sp. n., Pasc. l. c. p. 493, South Australia.

Mecotropis, g. n., Lacordaire, l. c. p. 495. Allied to *Eugigas*; rostrum strongly emarginate at apex, with a narrow groove above; joint 2 of antennæ much shorter than 1. Sp. *M. bipunctatus*, sp. n., Lac. l. c. p. 496, note, Ceylon.

Physopterus, g. n., Lacordaire, l. c. p. 498. Allied to *Mecocerus*; elytra dilated and gibbous behind. Sp. *M. gibbosus*. (Guér.)

Dinocentrus, g. n., Lacordaire, l. c. p. 506. Allied to *Ischnocerus*; last abdominal segment transversely quadrate; rostrum twice as long as head, finely tricarinate above; scrobes oblong, arcuate. Sp. *Stenocerus tuberculosus*, *signatipes* (Blanch.), and *S. posticalis* and *lineola* (Phil.).

Xylopcæmon, g. n., Lacordaire, l. c. p. 507. Allied to *Ischnocerus*; prothoracic keel nearly basal; body subcylindrical. Sp. *X. lateralis*, sp. n., Lac. l. c. p. 508, note, Moluccas.

Idiopus, g. n., Lacordaire, l. c. p. 511. Allied to *Sintor*; legs robust, tibiae compressed, densely fringed; body broad, quadrate-oval. Sp. *I. striga*, sp. n., Lac. l. c. p. 512, note, Celebes.

Diastotropis, g. n., Lacordaire, l. c. p. 520. Allied to *Phlæophilus* (Schönh.); rostrum much depressed, not furrowed in front of the eyes; antennal club of 3 joints; prothoracic keel far from the base, rounded at its extremities. Sp. *D. tigrinus* and *D. irroratus*, sp. n., Lac. l. c. p. 520, note, Madagascar.

Phlæops, g. n., Lacordaire, l. c. p. 533. Allied to *Platyrhinus*; rostrum tricarinate above; eyes large, without a distinct orbit. Sp. *Stenocerus platypennis* (Montr.).

Strabascopus, g. n., Lacordaire, l. c. p. 533. Allied to *Platyrhinus*; prothorax not angular at the sides, more or less convex; rostrum less continuous with the forehead; eyes very large, oblong-oval, with a short orbit. Sp. *S. riehlü*, sp. n., Lac. l. c. p. 534, note, Ceylon; *S. sanguinipes*, Lac. ibid., Assam; *S. orbitalis*, Lac. ibid., Mexico. Also *Platyrhinus spiculosus* and *aculeatus* (Schönh.), and *Macrocephalus tuberculatus* (Oliv.).

Dasycoorymus, g. n., Lacordaire, l. c. p. 560. Allied to *Xylinades*; antennal club of 5 joints, long and very wide. Sp. *D. riehlü*, sp. n., Lac. l. c. p. 561, note, Timor.

Gynandrocerus, g. n., Lacordaire, l. c. p. 567. Allied to *Basitropis*; antennæ with joints 3-4 longer than the following ones, club 5-jointed (♂)

or 4-jointed (♀). Sp. *G. antennalis*, sp. n., Lac. l. c. p. 568, note, West Africa.

Toxonotus, g. n., Lacordaire, l. c. p. 575. Allied to *Anthribus* (type *A. albivus*); antennæ much longer than body, joint 2 longer than 1; eyes large, reniform, strongly granulated. Sp. *Anthribus fascicularis* (Schönh.).

BRUCHIDÆ.

LACORDAIRE (Genera des Coléoptères, tome vii. pp. 597–607) divides the *Bruchidæ* into the two tribes *Urodontides*, with an antennal club of 3 joints, and *Bruchides vrais*, with the antennæ subperfoliate, dentate, or pectinate. The former includes only the genus *Urodon* (Schönh.); the latter the 2 genera *Spermophagus* and *Bruchus*. *Aglycyderes* (Westw.) is placed provisionally with the *Bruchides*.

Bruchus marginellus. The metamorphoses of this species are described by Goureau; it feeds in the seed-vessels of *Astragalus glycyphyllos*. Goureau also notices its parasites, and indicates some other insects found upon the same plant, especially one living in galls upon the branches, which he conjectures may be either an *Apion* or a *Cynips*. Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 170–171. See also Bull. 1865, p. lviii.

Sericorhynchus rotundatus, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 405, Ceylon.

Bruchus trifasciatus, sp. n., Motschulsky, l. c. p. 405, Ceylon.

Bruchus uniformis, sp. n., Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 385, Spain and France.

Spermophagus niger, sp. n., Motschulsky, l. c. p. 405, Ceylon.

Urodon maculatus, sp. n., Motschulsky, l. c. p. 400, *U. tantillus*, Motsch. ibid., and *U. nigripes*, Motsch. ibid., Ceylon.

BRENTHIDÆ.

LACORDAIRE (Genera des Coléoptères, tome vii. pp. 399–475) treats of this family, which he divides into the two tribes:—

Brenthides vrais, with the antennæ of 11 joints and of ordinary form, and

Ulocérides, with the antennæ usually of 9 joints (11-jointed in the new genus *Pholidochlamys*), deformed.

The former of these tribes is subdivided by Lacordaire into 12 groups, characterized as follows:—

I. Prothorax much compressed in front and often excavated for the reception of the anterior legs.

A. Antennæ short, robust, in part moniliform. *Taphrodérides*.

B. Antennæ long, slender, with subcylindrical joints. *Ischnomérides*.

II. Prothorax not compressed in front.

A. Antennæ moderate, often stout, and terminated by a club.

1. Prothorax ovate or conical, convex, and usually without a furrow above.

* Head transverse, or a little longer than broad.

- a. Mandibles short; antennæ usually clavate ... *Trachéizides*.
 b. Mandibles prominent; antennæ without a club. *Arrhénodides*.
 † Head very long, cylindrical *Eutrachéidides*.
 2. Prothorax depressed and canaliculate above.
 * Rostrum elongate-conical at base, continuous with head.
 Brenthides vrais.
 † Rostrum cylindrical or quadrangular at base.
 a. Head short, truncate at base *Céocephalides*.
 b. Head more or less elongate, constricted, and not truncate at base.
 Némocéphalides.
 B. Antennæ long, slender, filiform, or setaceous.
 1. Antennæ median or submedian.
 * Eyes very large, occupying most of the head .. *Héphéboécrides*.
 † Eyes of normal size *Bélophérides*.
 2. Antennæ placed far forward.
 * Tarsi robust, joint 1 scarcely so long as 2 & 3 together.
 Bélorhynchides.
 † Tarsi slender, joint 1 longer than 2 & 3 *Ithysténides*.

Besides the typical genera the first of these groups includes *Calodromus* (Guér.), *Zemioses* (Pasc.), *Cyphagogus* (Parry), and ? *Aprostoma* (Guér.); the third, *Cerobates* (Schönh.), *Molispia* (Pasc.), *Cordius*, *Amorphocephalus*, *Sym-morphocerus* (Schönh.), and ? *Diastrophus* (Perroud); the fourth, *Orychodes* (Pasc.); the sixth, *Clæoderes* and *Cephalobarus* (Schönh.); the seventh, *Rhyticephalus*, *IIormocerus* (Schönh.), *Uropterus* (Lat.), *Phucicerus* (Schönh.), and *Tennolaimus* (Chevr.); the tenth, *Ectocenus* (Pasc.) and *Raphirhynchus* (Schönh.); and the twelfth, *Teramocerus* (Schönh.), *Ozodecerus* (Chevr.) and *Prodictus* and *Durus* (Pasc.). The other groups contain only the typical genus, with or without new genera; most of those above referred to include new genera, which will be cited hereafter.

Sebasius, g. n., Lacordaire, *l. c.* p. 409. Allied to *Zemioses*; rostrum very short; antennæ inserted on its upper surface in large irregular scrobes. Sp. *S. deyrollei*, sp. n., Lac. *l. c.* p. 409, note, Madagascar.

Zemioses cancellatus, sp. n., Lacordaire, *l. c.* p. 409, note, origin uncertain.

Anisognathus, g. n., Lacordaire, *l. c.* p. 411. Allied to *Taphroderes*; head much elongated, cylindrical; mandibles (♂) lamelliform, compressed, irregular, the left much larger than the right. Sp. *Taphr. distortus* (Westw.).

Ionthocerus, g. n., Lacordaire, *l. c.* p. 415. Allied to *Hephebocerus*; anterior tibiæ very strongly dentate. Sp. *I. crematus*, sp. n., Lac. *l. c.* p. 416, note, Ceylon.

Stereodermus, g. n., Lacordaire, *l. c.* p. 419. Allied to *Cerobates*; antennæ with a distinct 3-articulate club; eyes strongly granulated; first two segments of abdomen broadly excavated. Sp. *Cerobates pygmaeus* (Schönh.).

Prophthalmus, g. n., Lacordaire, *l. c.* p. 427. Allied to *Arrhenodes*; head elongated, very large, cylindrical; eyes small, rounded, prominent, distant from base of head. Sp. *P. potens*, sp. n., Lac. *l. c.* p. 428, Assam.

Baryrhynchus, g. n., Lacordaire, *l. c.* p. 428. Allied to *Arrhenodes*; head transverse, subcylindrical; femora compressed and lamelliform at base. Sp. *Arrh. latirostris*, *dehiscens*, *miles*, *truncatus* (Schönh.).

Eupsalis, g. n., Lacordaire, *l. c.* p. 430. Allied to *Arrhenodes*; head not widened behind, with its posterior angles indistinct; surface very brilliant.

Sp. *Brenthus maxillosus* (Oliv.); *Arrh. vulsellatus* (Schönh.) and *anthracinus* (Klug).

Esienorhinus, g. n., Lacordaire, *l. c.* p. 431. Allied to *Arrhenodes*; rostrum elongate, dilated only at extremity; head elongated, eyes distant from its base. Sp. *Arrh. forficatus*, *designatus*, *monilifer*, *forcipitigerus*, and *faldermanni* (Schönh.). Perhaps also *A. viphias* (Westw.).

Pterygostomus, g. n., Lacordaire, *l. c.* p. 448. Allied to *Hormocerus*; rostrum robust, strongly dilated at the end, with two vertical processes at the sides of the mouth; joint 1 of antennæ as long as 2-4 together, club 3-jointed, perfoliate. Sp. *Ceocephalus opacus* (Chevr.).

Rhinopteryx, g. n., Lacordaire, *l. c.* p. 449. Allied to *Hormocerus*; rostrum robust, dilated between the antennæ and the apex. Sp. *Ceoc. foveipennis* (J. Thoms.).

Nothogaster, g. n., Lacordaire, *l. c.* p. 450. Allied to preceding; abdominal segments nearly equal in length, separated by well-marked rectilinear sutures; elytra not denticulate at base; femora dentate. Sp. *N. paradoxus*, sp. n., Lac. *l. c.* p. 450, note, Madagascar?

Gynandrorhynchus, g. n., Lacordaire, *l. c.* p. 450. Allied to *Ceocephalus*; scape of antennæ very long, reaching the eyes; rostrum filiform in front. Sp. *G. bocandei*, sp. n., Lac. *l. c.* p. 451, note, Guinea.

Piazocnemis, g. n., Lacordaire, *l. c.* p. 453 = *Centrophorus* p. (Chevr.). Rostrum long, thinner anteriorly, slightly but distinctly dilated at the end; femora strongly compressed and lamelliform at the base, dentate beneath. (Madagascar.) Sp. *Brenthus striatulus* (Oliv.) = *C. compressipes* (Chevr.); *B. picicornis*, *atratus*, *nigritus* (Klug), *encaustus* (Schönh.). *P. dives*, sp. n., Lac. *l. c.* p. 454, note, Madagascar.

Storcosomus, g. n., Lacordaire, *l. c.* p. 454. Allied to preceding; head more elongate, more strongly truncate behind; elytra shortly appendiculate at apex; femora pedunculate, slender, unarmed. Sp. *Brenthus decollatus* (Chevr.) and *Ceoc. rissii* (Imh.).

Schizotrachelus, g. n., Lacordaire, *l. c.* p. 454. Allied to *Ceocephalus*; funiculus with its basal joints transverse or moniliform; elytra only slightly, if at all, appendiculate at apex; femora unarmed; tibiæ compressed. Sp. *S. brevicaulatus*, sp. n., Lac. *l. c.* p. 455, note, Java; *S. madens*, Lac. *ibid.*, Malacca; *S. consobrinus* (Dej.), Lac. *l. c.* p. 456, note, Java; *S. cameratus*, Lac. *ibid.*, Malacca; *S. dichrous*, Lac. *ibid.*, Moreton Bay.

Eubactrus, g. n., Lacordaire, *l. c.* p. 456. Allied to preceding, but basal joints of funiculus obconic. Sp. *E. semiceneus*, sp. n., Lac. *l. c.* p. 457, note, Fiji Islands; *E. tripartitus*, Lac. *ibid.*, Gilolo.

Zetophlæus, g. n., Lacordaire, *l. c.* p. 460. Allied to *Nemocephalus*; elytra very flat, regularly punctate-striate, not canaliculate near the suture, appendiculate at apex. Sp. *Brenthus pugionatus* (Chevr.) and *B. guttifer* (Schönh.).

Amerismus, g. n., Lacordaire, *l. c.* p. 461. Allied to preceding; elytra subcylindrical, appendiculated at apex, canaliculated along the suture; head obconical, scarcely constricted at base. Sp. *Ozodecerus* ? *cavicaudatus* (Chevr.).

Acratus, g. n., Lacordaire, *l. c.* p. 463. Allied to *Nemocephalus*; antennæ longer, more or less setaceous; tarsi longer, joint 1 as long as 2 and 3 united; segments 1 and 2 of abdomen neither canaliculated nor excavated. Sp.

Brenthus suturalis (Fab.); *Teramocerus acutipennis*, *lævigatus*, *badius*, *lævis*, *tarsatus*, *plumirostris*, *interruptelineatus*, and *subfasciatus* (Schönh.).

Bulbogaster, g. n., Lacordaire, *l. c.* p. 467. Allied to *Ithystenus*; prothorax with no furrow above; elytra and abdomen strongly constricted in the middle; posterior femora not reaching extremity of second abdominal segment; joint 3 of tarsi very small, entire. Sp. *B. ctenostomoides*, sp. n., Lac. *l. c.* p. 467, note, Fiji Islands.

Lasiorrhynchus, g. n., Lacordaire, *l. c.* p. 469. Allied to *Prodecor*; elytra regularly punctate-striate, not canaliculate along the suture; head scarcely constricted at base, almost destitute of neck. Sp. *Brenthus barbicornis* (Fab.) ♂, *B. assimilis* (Fab.) ♀.

Heteroplites, g. n., Lacordaire, *l. c.* p. 471. Allied to *Diurus*; funiculus with joint 2 equal to 3; prothorax depressed and canaliculate above. Sp. *Teram. erythroderes* (Schönh.).

Pholidochlamys, g. n., Lacordaire, *l. c.* p. 473. Allied to *Ulocerus*; antennæ of 11 joints. Sp. *P. madagascariensis*, sp. n., Lac. *l. c.* p. 474, note, Madagascar.

SCOLYTIDÆ.

LACORDAIRE (Genera des Coléoptères, tome vii. pp. 349–398) characterizes this family, which he divides into the following two tribes:—

1. *Scolytides vrais*. Tarsi with joint 1 shorter than 2–4 together; and

2. *Platypides*. Tarsi with joint 1 as long as 2–4 together.

The genera adopted in the first of these tribes are nearly identical with those proposed by Eichhoff (see 'Record,' 1864, p. 413), of course with the addition of the exotic forms; but Lacordaire divides the tribe into the following six groups:—

I. Abdomen of normal form.

A. Head not globular, visible from above.

1. Eyes finely granulated.

* Pronotum confounded with the sides of the prothorax.

Hylesinides.

† Pronotum distinct *Camptocérides*.

2. Eyes coarsely granulated.

* Pronotum distinct *Eutomides*.

† Pronotum confounded with the sides of the prothorax.

Phlæcotrupides.

B. Head globular, usually visible from above *Tomicides*.

II. Abdomen turned up from the second segment *Scolytides vrais*.

In the treatment of the *Platypides*, Lacordaire follows Chapuis (see 'Record,' 1865, pp. 489–490).

Eichhoff (Berl. ent. Zeits. 1866, pp. 275–278) remarks upon several species of this family. He discusses the distinctive characters of *Hylesinus juniperi* (Doebn.) and *H. thuja* (Perr.), and indicates that these species and *H. aubei* (Perr.) belong to *Dendroctonus*. *Cryphalus asperatus* (Gyll.) and *abietis* (Ratz.) are said to be probably identical. Of *Bostrichus villosus* (Fab.) the author has reared several broods, but never obtained a male individual. The structure of the mouth of *Bostrichus dactyliperda* (Fab.) resembles that oc-

curing in *Xyleborus dispar*, near which this beetle may be placed; the characters of the ♂ are indicated by Eichhoff. *Bostrichus delphinii* (Rosenh.) belongs to *Thamnurgus* (Eichh.).

Xyleborus alni (Muls. & Rey). Perris (Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 195-196) indicates the characters of this species, united by Schaum and De Marseul with *Bostrichus saxeseni* (Ratz.), but which is more nearly allied to *B. monographus* (Fab.).—*Bostrichus alni* (Georg) described in the same year as Mulsant's species, belongs to *Dryocetes*.

Crotch (Entomologist, iii. p. 133) remarks on the synonymy of some species of this family.

Xyloterus quercus (Eichh.) and *Tomicus quadridens* (Hart.) are recorded as British by Sharp; also *T. lichtensteinii* (Ratz.) by Crotch. See Rye, Ent. Ann. 1867, p. 93.

Hylurgus pilosus (Ratz.). On the characters of British examples of this species, see Rye, Ent. M. Mag. ii. p. 258.

Cryphalus asperatus (Gyll.). E. Heeger (Sitzungsber. Wien. Akad. liii. Abth. i. pp. 533-537) describes the natural history and metamorphoses of this species, = ? *granulatus* (Ratz.). He also illustrates the details of structure of the perfect beetle on the first of his four plates, and the characters of the larva and pupa, the burrows of the former, and the wing of the beetle on the second.

Polygraphus pubescens. Heeger also (*l. c.* pp. 538-542, pl. 3, 4) describes the natural history and metamorphoses of this species.

New genera:—

Eutomus (Dej. Cat.), Lacordaire, *l. c.* p. 369. Forming the group *Eutomides*; head visible from above, with a very short muzzle; funiculus 3-jointed, club 7-jointed, pectinate; eyes strongly granulated; pronotum separated from the sides of the prothorax by ridges. Sp. *E. micrographus* (Dej. Cat.), Lac. *l. c.* p. 370, note, Columbia.

Olonthogaster, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 401. Allied to *Dendroctonus* and *Hylesinus*; head small; prothorax subconical, narrowed in front; elytra rounded behind, striated by large impressed points; funiculus of 5 joints, club elongated, elliptical, depressed, uniarticulate, forming half the length of the antennæ. Sp. *O. nitidicollis*, sp. n., Motsch. *l. c.* p. 401, and *O. nudifrons*, Motsch. *l. c.* p. 402, Ceylon.

Monarthrum, Kirsch, Berl. ent. Zeits. 1866, p. 213. Allied to *Aphanarthrum*; first three joints of tarsi equal, simple; antennæ with the funiculus uniarticulate, club ringed. Sp. *M. chapuisi*, sp. n., Kirsch, *l. c.* p. 213, from Bogotá.

New species:—

Hylesinus sericeus, Motschulsky, *l. c.* p. 402, Ceylon.

Iphiotribus (sic) *subquadratus*, Motschulsky, *l. c.* p. 402, Ceylon.

Phleotribus (sic) *schönbachii*, Kirsch, Berl. ent. Zeits. 1866, p. 214, from Bogotá.

Hypoborus cinereotestaceus, Motschulsky, *l. c.* p. 403, Ceylon; (and *H. nebulosus*, and *dorsalis*, Motsch. *ibid.*, from Continental India, merely indicated).

Anodius distinctus, Motschulsky, *l. c.* p. 403, Ceylon.

Phleotrogus (sic) *crassiusculus*, Motschulsky, *l. c.* p. 403, Ceylon.

Techa velutina, Motschulsky, *l. c.* p. 404, *T. minuta*, Motsch. *ibid.*, and *T. angustata*, Motsch. *ibid.*, Ceylon.

Xyletinus pumilus, Motschulsky, *l. c.* p. 404, Ceylon.

Xyleborus angustatus, Eichhoff, Berl. ent. Zeits. 1866, p. 278, from Volhynia.

Dryocates capronatus, Perris, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 193, from the south of France; *D. leprieurii*, Perris, *l. c.* p. 194, from Bone.

LONGICORNIA.

PASCOE, in his catalogue of the Longicorns of Penang (Proc. Zool. Soc. 1866, pp. 222-267 and 504-536), enumerates 186 species of these Beetles, 98 of which, or rather more than half, are described as new. The collection made by Mr. Lamb, upon which this paper is founded, included 26 more species, probably new; but these Pascoe has left undescribed for the present, as some of them are very obscure forms, and others in bad condition. The species here indicated are referred to 110 genera, of which 29 are described as new; and of the 26 undetermined forms, 19 are said to be types of new genera. In his remarks on the geographical relations of the Insects referred to, Pascoe says that 2 genera are European, with species extending to North China (*Mesosa* and *Ægosoma*); 6 belong to North China and North India (*Praonetha*, *Olenecamptus*, *Astathes*, *Philus*, *Dere*, and *Pyrestes*), the first also Australian; 4 are African (*Coptops*, *Cerosterna*, *Glenea*, and *Megopis*); 2 are common to Africa and Australia (*Xystrocera* and *Sybra*); and 1 (*Atimura*) is confined to the Australian and Malayan regions. Of 72 exclusively Malayan genera, 8 (*Ostedes*, *Eoporis*, *Anancylus*, *Cacia*, *Clyzomedus*, *Serixia*, *Xyaste*, and *Merionæda*) occur in New Guinea. Of 154 genera of Australian Longicorns, 124 are peculiar. Pascoe maintains the distinctness, as regards the distribution of the Coleoptera, of the Australian and Malayan regions, the latter having its centre in Borneo, its south-eastern limit in New Guinea, and its northern boundaries in the Philippines, the south of China, and Burmah. The last two areas, with India, are regarded by the author as transition provinces from Malayan to European types.

ROJAS publishes (Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 236-248) a catalogue of the Longicorns of the province of Caraccas, with indications of the habits of the species, and of the precise localities in which they are found, the latter rendered more valuable by a supplementary statement of the elevations and mean temperatures of the different places. The species of some of the genera are not determined; but their probable number is stated, and the approximate total number of Longicorn Beetles inhabiting Caraccas is stated at 110-120, two-thirds of which live in the colder regions.

Several known species are figured by Pascoe (Journ. Linn. Soc. ix. pls. 3 & 4)

as examples of his new genera; also *Zygoecera pentheoides* (Pasc.), l. c. pl. 3. fig. 5.

Lamiides.

PASCOE has continued his descriptions of the Malayan Longicorns (Ent. Trans. 3rd ser. vol. iv. pp. 225-336). His work now extends to the *Saperdinæ*, his eighteenth subfamily of *Lamiidæ*.

The following known species and genera are characterized in this part, besides those referred to as types of new genera:—(DORCADIONINÆ) *Trachystola granulosa* (Pasc.), p. 226: (HYPSELOMINÆ) *Stegenus* (*Achtophora*, Newm.) *daetylon* (Pasc.), p. 229; *Monohammus* (*Peribasis*, Th.) *asperus* (Pasc.), p. 230; *Triammatus saundersii* (Chevr.), p. 232; *T. chevrolati* and *tristis* (Pasc.), p. 233; *Otarionomus* = *Hotarionomus* (Thoms.), p. 234; *Monohammus* (*Otarionomus*) *blattoides* (Pasc.), p. 235, pl. 11. fig. 4; *Cercopsius* (*Etymestia*, g. n.) *helena* (White), p. 237; *Cercopsius exoletus* (Pasc.), p. 238; *C. senotatus* (Thoms.), p. 239; *C. marmoratus* (Pasc.) = ? *C. mysticus* (Thoms.), p. 240; *C. (Othelais, g. n.) histrio* (Pasc.), p. 241, pl. 12. fig. 3; *Agnia fasejata* (Pasc.), p. 247, pl. 11. fig. 1; *A. eximia* (Pasc.), p. 248; *Pharsalia* (Thoms.), p. 248; *Monohammus* (Combe, Th.) *briamus* (White) = *C. fulgurata* (Thoms.), p. 252; *Meton granulicollis* (Pasc.), p. 254; *Zygoecera* (Nieppe, Th.) *compleca* (Pasc.), p. 256: (LAMIINÆ) *Batoeera* (Lap.), p. 261, with the following known species:—*Lamia* 8-*maculata* (Fab.) = *B. sarawakensis* (Thoms.), p. 262; *B. celebiana* (Thoms.), *ibid.*; *B. thomsonii* (Javet), p. 263; *B. victoriana* (Thoms.), *ibid.*; *B. rosenbergii* (Kaup), p. 265; *B. gerstaeckerii* (Thoms.), p. 266; *B. wallacci* (Thoms.), p. 267; *B. læna* (Thoms.), p. 269; *Lamia hercules* (Boisd.); and *B. leonina* (Thoms.) = ? *B. whitei* (Kaup), p. 271; *Apriona cinerea* (Chevr.) = ? *Batoeera* (*Apriona*) *flavescens* (Kaup), p. 272; *Sarothroera lowii* (White), p. 273; *Nemophas batoeerooides* (Thoms.), p. 274; *Monohammus* (*Nemophas*) *grayii* (Pasc.), p. 274, pl. 13. fig. 1; *Pelargoderus vitatus* (Serv.), p. 277; *Rhamses* (*Pelargod.*) *arouensis* (Thoms.), *ibid.*, and *R. ceramensis* (Thoms.), p. 279; *Monohammus* (*Pelargod.*) *hector* (Pasc.), p. 278; *Lamia* (*Pelarg.*) *bipunctata* (Schönh.), *ibid.*; *Monohammus* (*Pelarg.*) *aleanor* (Newm.), *ibid.*; *Paragnoma acuminipennis* (Blanch.), p. 280; *Cerambyx* (*Protenuemus*, Th.) *seabrosus* (Oliv.), p. 281; *Lamia* (*Epicedia*, Th.) *eareelii* (Guér.) = *Leprodera pleuricosta* (Thoms.), p. 284; *Leprodera fimbriata* (Chev.), p. 286; *L. plagiata* (Thoms.), p. 287; *Cerambyx* (*Himantoeera*, Th.) *plumosa* (Oliv.), p. 288; *Monoehamus* (*Anhammus*, Th.) *dalenii* (Guér.), p. 290; *Dihammus* (Thoms.), p. 290, with the species *Monoehamus longicornis* and *rarus* (Thoms.), p. 291; *Monoehamus* (Serv.), with the species *Lamia fistulator* (Germ.), p. 293, and *M. musivus* (Pasc.), p. 294; *Lamia* (*Epepeotes*, Pasc.) *lusea* (Fab.), p. 301; *Monohammus* (*Epep.*) *plorator* (Newm.), p. 302; *Gnoma*? (*Psectroceera*, Pasc.) *plumosa* (Westw.), p. 311; *Gnoma* (Fab.), p. 312, with the following species—*Cerambyx giraffa* (Schreib.) = *longicollis* (Oliv.), p. 312, *G. agroides* (Thoms.), *ibid.*, *G. alboSELLATA* (Blanch.), p. 313, and *G. ctenostomoides* (Thoms.), *ibid.*; *Meeotagus* (Pasc.), p. 315; *Saperda* (*Olenecamptus*, Chev.) *biloba* (Fab.) = *Olen. serratus* (Chev.) = *Anthades indianus* (Thoms.), p. 316; *Olenecamptus optatus* (Pasc.), p. 317; *Cylindrepomus nigrofasciatus* (Blanch.), p. 318; *C. grammicus* (Pasc.), p. 319, pl. 14. fig. 5; *C. peregrinus* (Pasc.), *ibid.*; *C. lætus* (Pasc.), *ibid.*; *C. comis*,

(Pasc.), p. 320; *Saperda* (*Gerania*, Serv.) *boscii* (Fab.), p. 321, pl. 14. fig. 7. (HIPPOPSINÆ) *Tetraglenes* (Newm.), p. 325; *Pothyne* (Thoms.), p. 326. (SAPERDINÆ) (*vide infra*) *Entelopes glauca* (Guér.), *wallacei* (Pasc.), and *ioptera* (Pasc.), p. 334; *Serixia modesta* (Pasc.) and *S. apicalis* (Pasc.), p. 336.

Pascoe (*l. c.* pp. 257–258) abandons his subfamilies *Mono-chaminæ* and *Gnominaæ*, and combines them with the *Lamiinaæ*, remarking that the characters of these insects are so graduated that they must form either one or a multiplicity of groups. He indicates as the headquarters of the group thus constituted the Malayan Islands; and its members are almost confined to those islands and the Indian and African regions. Wallace's collections contained 110 species.

Pascoe (*l. c.* pp. 321–322) remarks on the characters of his subfamily *Onocephalinaæ*, the members of which are, according to him, confined to South America and Malasia. Wallace's collections contained only a single species. Pascoe thinks that *Epaphra* (Newm.) belongs to this group.

Pascoe (*l. c.* pp. 327–328) also discusses the characters and relationships of the *Saperdinaæ*, which, as limited by him, are very nearly identical with the *Saperdita veræ* of Thomson; he adds *Serixia*, placed by Thomson among the *Amphionychinaæ*. The separation of the *Agapanthiinaæ* is regarded as doubtful by Pascoe.

PASCOE (Proc. Zool. Soc. 1866, *l. c.*) also remarks upon the following known genera and species of this subfamily:—*Elara*, *Camptocnema*, and *Ochutes* (Thoms.), which he considers insufficiently discriminated; *Daxata* (Pasc.), characters; *Corethrophora* (Blanch.) = *Cacia* (Newm.); *Samia* (Pasc.), name preoccupied in Lepidoptera, changed to *Saimia*; *Golsinda corallina* (Thoms.), variation; *Praonetha obducta* and *illicita* (Pasc.); *Xylorhiza venosa* (Lap.), habits; *Combe fulgurata* (Thoms.) = *Monohammus briamus* (White); *Monohammus aspersus* (Pasc.) = *Peribasis*; *Stegenus* (Pasc.) = *Achthophora* (Newm.); *Trachystola* (Pasc.), position; *Lamia germari* (Hope) = *Apriona*; *Epicedia* (Thoms.); *Lamia fistulator* (Germ.) = *Monochamus*; *Imantocera* (Thoms.), species; *Nyctimene* (Thoms.), position; *Tetraglenes* (Newm.), *Eucomatocera*, *Euthuorus*, *Spalacopsis*, *Dorcasta*, and *Aprosopus*, characters; *Cerambyx splendidus* (Fab.) = *Astathes*; *Glenea* (Newm.), species; *Isosceles* (Newm.) = *Oberea* (Muls.).

The following known genera and species of this group are characterized or discussed by BATES (Ann. & Mag. Nat. Hist. 3rd ser. vol. xvii.):—*Caecostolu* (Dej., Fairm.), p. 31; *C. (Pachypeza) simplex* (Pasc.), *ibid.*; *Dorcasta oryx* (Pasc.), p. 35; *Megacera* (Serv.), p. 36; *Hippopsis* (Serv.), p. 38; *Exocentrus* (Muls.), p. 191; *Omosarotes singularis* (Pasc.), p. 194; *Scopadus ciliatus* (Pasc.), p. 195; *Esmia* (Pasc.), *ibid.*; *E. turbata* (Pasc.), p. 196; *Tapeina dispar* (Serv.) and *T. erectifrons* (Thoms.), p. 196; *Composoma* (Serv.), p. 197; *C. mnaszehii* (Thoms.) and *C. (Ærenea) terrena* (Pasc.), *ibid.*; *Tes-sarephora arachnoïdes* (Thoms.), p. 198; *Ærenea* (Thoms.), *ibid.*, and *Æ. cognata* (Pasc.), p. 199; *Desmiphora* (Serv.), p. 199; *D. (Lamia) fasciculata* (Oliv.), *D. cirrosa* (Erich.), p. 200, and *D. elegantula* (White), p. 201; *Esthlo-gena* (Thoms.), p. 289; *Estola* (Fairm.), p. 291; *Agemopsis* (Thoms.), p. 295;

Eumathes (Pasc.), p. 296; *Hastatis* (Buq.), p. 299; *Callia* (Serv.), and *C. chrysolina* (Pasc.), p. 300; *Phæa* (Newm.) = *Lamprocleptes* (Thoms.), p. 367; *Lycidola* (Thoms.), p. 368; *Spathoptera* (Serv.), *ibid.*; *Hemilophus* (Serv.), p. 370; *Amphionycha* (Dej., Thoms.), p. 425; *A. diana* (Thoms.), p. 426; *A. cephalotes* (Pasc.), p. 428; *A. (Phæbe) concinna* (White) and *A. (Saperda) bicornis* (Oliv.), p. 429; *Amillarus* (Thoms.), p. 432. *Eutrypanus colobothoides* (White) belongs to *Sporetus* (Bates), *l. c.* p. 435.

Anæsthetis lepida (Germ.) is indicated by Pascoe as the type of a new genus, which he neither names nor characterizes (*Journ. Linn. Soc.* ix. p. 118).

Saperda umbellatarum (Waltl) is a *Phytæcia* and = *P. rufipes* (Oliv.); and *P. vestita* (Küst.) = *Mallosia duponcheli* (Brullé). *Kraatz, Berl. ent. Zeits.* 1866, p. 301.

Pogonocherus multipunctatus (Georg) = *P. scutellaris* (Muls.), according to *Kraatz, Berl. ent. Zeits.* 1866, p. 418.

Saperda pupillata. The history of the larva of this species is indicated by *Goureau (Ann. Soc. Ent. Fr. 4^e sér. tom. vi. p. 174)*. It lives in the branches of the common Honeysuckle (*Lonicera caprifolium*).

Dorcadion suturatium (Ferrari) probably = *D. nitidum* (Motsch.), according to *Ferrari, Verh. zool.-bot. Ges. in Wien, xvi. p. 372*.

New genera :—

Pascoe's subfamily *Hypselominæ* includes 37 (or 38) Malasian species belonging to 19 (or 20) genera, of which he gives the following table (*Ent. Trans.* 3rd ser. iii. p. 228):—

Prothorax unarmed.

Mesosternum elevated.

Joint 3 of ant. bulbous at apex. 1. *Iphiothe*, g. n.

Joint 3 of ant. simple.

Elytra lobed at shoulders 2. *Achthophora* (Newm.).

Elytra not lobed 3. *Agnia* (Newm.).

Mesosternum declivous. 4. *Euthyastus*, g. n.

Prothorax toothed or spined at the sides.

Scape rounded and entire at apex.

Eyes coarsely granulated 5. *Psaumis*, g. n.

Eyes finely granulated.

Head quadrate anteriorly.

Prothoracic spine directed backwards 6. *Othelais*, g. n.

Prothoracic spine short, straight 7. *Otroea*, g. n.

Head transverse anteriorly 8. *Nicippe* (Thoms.).

Scape cicatricose at apex.

Antennal tubercles produced internally or cornuted.

Antennæ setaceous in both sexes 9. *Pharsalia* (Thoms.).

Antennæ more or less nodose 10. *Triammatus* (Chev.).

Antennal tubercles not cornuted.

Elytra produced at shoulders.

Femora thickened in middle 11. *Peribasis* (Thoms.).

Femora narrow, or nearly linear 12. *Otarionomus* (Thoms.).

Elytra not produced at shoulders.

Prothoracic spine more or less basal.

Joint 3 longer than scape.

- Prothoracic spine nearly obsolete 13. *Xoes*, g. n.
 Prothoracic spine strongly developed. 14. *Cercopsius* (Pasc.).
 Joint 3 shorter than scape 15. *Diallus*, g. n.
 Prothoracic spine more or less median.
 Mesosternum produced.
 Eyes coarsely granulated 16. *Amesisa*, g. n.
 Eyes finely granulated.
 Scape as long as 3rd joint 17. *Etymestia*, g. n.
 Scape much shorter than 3rd joint.
 18. *Combe* (Thoms.).
 Mesosternum declivous 19. *Meton* (Pasc.).

A twentieth Malasian genus referred with some doubt to this group is

Lalida, g. n., Pascoe, *l. c.* p. 257. Antennæ very long, linear, scape cylindrical, cicatricose, nearly 3 times as long as joint 3, last 2 joints shortest; prothorax subcylindric, with a small tooth on each side; prosternum unarmed; mesosternum elevated, slightly produced in front. Sp. *L. antennata*, sp. n. Pasc. *l. c.* p. 257, pl. 15. fig. 1, from Singapore.

The *Lamiinae* of Pascoe include 110 Malasian species in the collections found by Wallace; they are divided by him into 28 genera, of which 8 are new, namely:—

Megacriodes, g. n., Pascoe, *l. c.* pp. 259 and 271. Allied to *Batocera*; antennæ unarmed; elytra narrowed behind, not spinose at the shoulders. Sp. *M. saundersii*, sp. n., Pasc. *l. c.* p. 272, pl. 12. fig. 1 from Sumatra.

Orsidis, g. n., Pascoe, *l. c.* pp. 259 and 307. Allied to *Monochamus*; scape without a cicatrix; prothorax subcylindrical, strongly spinose. Known sp. *Monochamus sobrius* and *proletarius* (Pasc.); new sp. *O. oppositus*, Pasc. *l. c.* p. 307, pl. 14. fig. 4, from Sarawak; *O. hepaticus*, Pasc. *l. c.* p. 308, from Batehian; *O. dispar* Pasc. *ibid.*, from Sarawak; *O. cariosus*, Pasc. *l. c.* p. 309, from Singapore and Sarawak; and *O. incomptus*, Pasc. *ibid.*, from Makian.

Nephelotus, g. n., Pascoe, *l. c.* pp. 259 and 306. Allied to *Monochamus*; prothorax with a minute tooth on each side; lower lobe of eye vertical. Sp. *N. licheneus*, sp. n., Pasc. *l. c.* p. 307, pl. 14. fig. 1, from Sarawak.

Trysimia, g. n., Pascoe, *l. c.* pp. 259 and 305. Allied to *Monochamus*; face subquadrate; prothorax with a small tubercle on each side; lower lobe of eye rounded. Sp. *T. geminata*, sp. n., Pasc. *l. c.* p. 305, pl. 14. fig. 2, from Bouru, Ceram, and Amboina; *T. rugicollis*, Pasc. *l. c.* p. 306, from Macassar.

Periaptodes, g. n., Pascoe, *l. c.* pp. 260 and 282. Allied to *Protelmemus*; elytra subdepressed, not flattened, with the sides rounded and unarmed, except at apex. Sp. *P. lictor*, sp. n., Pasc. *l. c.* p. 283, pl. 14. fig. 3, and *P. testator*, Pasc. *ibid.*, from Dorey; *P. luctator*, Pasc. *l. c.* p. 284, from Ceram.

Psaromaia, g. n., Pascoe, *l. c.* pp. 260 and 289. Antennæ short, thick, scape cicatricose, joint 3 longest; lower lobe of eye large, rounded; prothorax transverse, strongly spined; prosternum simple; mesosternum elevated, toothed in front. Sp. *P. tigrina*, sp. n., Pasc. *l. c.* p. 289, pl. 13. fig. 3, from Java.

Diocares, g. n., Pascoe, *l. c.* pp. 260 and 303. Allied to *Monochamus*; antennal tubercles strong, remote; eyes large, lower lobe rounded; mesosternum toothed. Type *Cerambyx fimbriatus* (Oliv.) = *L. lineator* (Fab.)

= *M.?* *rhobator* (Newm.). New sp. *D. lugubris*, Pasc. *l. c.* p. 304, and *D. imphuviatus*, Pasc. *l. c.* p. 305, from Toudano.

Blephephæus, g. n., Pascoe, *l. c.* pp. 260 and 293. Allied to *Monochamus*; mesosternum elevated, toothed at apex; anterior tibiæ straight; last joint of tarsi short. Type *Monochammus succinator* (Chev.).

Of his group *Onocephalinæ*, Pascoe records one Malasian species, forming the type of a new genus:—

Phelipara, g. n., Pascoe, *l. c.* p. 322. Allied to *Pachypezza*; antenniferous tubercles strong, contiguous, nearly erect; antennæ fimbriate, scape elongate, cylindrical; elytra sinuate at apex, dentate at outer angle; last joints of tarsi very long; anterior coxæ globose. Sp. *P. marmorata*, sp. n., Pasc. *l. c.* p. 322, from Sarawak.

Of the *Hippopsinæ*, Pascoe describes 5 Malasian species belonging to 3 genera, namely *Pothyne* (Thoms.), *Tetraglenes* (Newm.), and

Apophrena, g. n., Pascoe, *l. c.* pp. 323 and 324. Allied to *Hippopsis*; antenniferous tubercles apical, contiguous, erect; eyes not close to base of antennæ. Sp. *A. filifera*, sp. n., Pasc. *l. c.* p. 324, pl. 15. fig. 7, from Sarawak; *A. tenella*, Pasc. *ibid.*, from Aru; and *A. montana*, Pasc. *l. c.* p. 325, from Java.

Of the Malasian genera of his group *Saperdinæ*, Pascoe gives the following table (*l. c.* p. 329). Four out of the eight are new:—

Intermediate tibiæ emarginate.

Antennal tubers projecting, approximate. 1. *Zotale*, g. n.

Antennal tubers very short, distant.

Legs very short 2. *Nyctimene* (Thoms.).

Legs moderately long.

Scape subcylindrical 3. *Orcesis*, g. n.

Scape claviform 4. *Amymoma*, g. n.

Intermediate tibiæ entire.

Antennæ shorter than body 5. *Entelopes* (Thoms.).

Antennæ longer than body.

Eyes divided 6. *Bacchisa*, g. n.

Eyes not divided.

Joint 3 of antennæ slender 7. *Serixia* (Pasc.).

Joint 3 nearly as thick as scape. 8. *Xyaste* (Pasc.).

Neissa, g. n., Pascoe, Journ. Linn. Soc. ix. p. 82. Allied to *Pentacosmia* and *Illæna*; joint 3 of antennæ not longer than scape, equal to 4; prothorax quadrate, abruptly spinose on each side; elytra crested at base. Sp. *N. inconspicua*, Pasc. *l. c.* p. 82, pl. 3. fig. 6, and *N. nigrina*, Pasc. *ibid.*, from South Australia.

Bucynthia, g. n., Pascoe, *l. c.* p. 83. Allied to *Mesosa*; antennæ slender, joint 3 much longer than scape; prothorax transverse, minutely dentate on the sides; elytra ovate; prosternum simple; mesosternum elevated, subdentate in front. Type *Zygocera spilopectera* (Pasc.).

Ilathliodes, g. n., Pascoe, *l. c.* p. 88 (= *Ilathlia*, Dej.). Allied to *Myccerinus*; prosternum simple, not produced in front. Known sp. *Myccerinus* 1866. [VOL. III.] 2 c

grammicus, *aridus*, *uniformis* (Pasc.); *Hathlia murina* (Pasc.); *H. quadrilineata*, *lacteola*, *melanocephala*, and *lineella* (Hope). N, sp. *H. moratus*, Pasc. l. c. p. 89, pl. 3. fig. 7, from (North ?) Australia.

Lychrosis, g. n., Pascoe, l. c. p. 89. Allied to preceding; prothorax rounded at the sides, contracted at base; elytra convex; anterior coxæ large. Sp. *Mycerinus luctuosus* (Pasc.).

Essisus, g. n., Pascoe, l. c. p. 90 (*Hippopsina*). Antennæ fimbriate, joints 3 and 4 equal, longer than scape, remainder much shorter; prothorax cylindrical, not wider than head; elytra rather short, rounded at apex; legs very short; pro- and mesosterna simple. Sp. *E. dispar*, Pasc. l. c. p. 91, pl. 3, fig. 4, from Queensland.

Marmylaris, g. n., Pascoe, l. c. p. 88, note. Allied to *Mycerinus*; head large; antennæ long, joints 3 and 4 nearly equal; prothorax not broader than head, cylindrical. Type *Hathlia buckleyi* (Pasc.).

Meges, g. n., Pascoe, Ent. Trans. 3rd ser. iii. p. 272, note. Allied to *Apriona*; scape strongly cicatricose; eyes moderate; lower lobe narrow; last tarsal joint short. Type *Monohammus gravidus* (Pasc.).

Cydros, g. n., Pascoe, Ent. Trans. 3rd ser. v. p. 285. Allied to *Eudesmus*; prothorax cylindrical, unarmed; elytra with callosities at the base, abruptly declivous behind. Sp. *C. leucurus*, sp. n., Pasc. l. c. p. 285, pl. 20. fig. 5, from Santa Marta.

Stygnesis, g. n., Pascoe, Ent. Trans. 3rd ser. v. p. 286. Allied to *Agenopsis* (Thoms.); cylindrical; mesosternum simple; legs short, anterior femora thickened, anterior coxæ subconic, posterior legs placed far back. Sp. *S. punctiger*, sp. n., Pasc. l. c. p. 286, from Santa Marta.

Zeale, g. n., Pascoe, Ent. Trans. 3rd ser. v. p. 287. Allied to *Phytocia*; antennæ distant, fimbriate, scape cylindrical, third joint longest; prothorax cylindrical, slightly constricted at base; femora somewhat thickened; tarsi equal; claws bifid; pro- and mesosterna simple. Sp. *Z. scalaris*, sp. n., Pascoe, l. c. p. 287, pl. 20. fig. 1, from Santa Marta.

Cuphisia, g. n., Pascoe, Proc. Zool. Soc. 1866, p. 229. Allied to *Egesina*; head large; eyes small, deeply emarginate; antennæ slender, setose, scape thin, cylindrical, shorter than joint 3; prothorax transverse, sides unarmed. Sp. *C. callosa*, sp. n., Pascoe, l. c. p. 230, pl. 26. fig. 1, Penang.

Irais, g. n., Pascoe, l. c. p. 239. Allied to *Cenodocus*; head in front subtransverse, with a median line reaching the mouth; antennæ very short, joints 3 and 4 subequal, fringed below; elytra widened behind, convex in the middle. Sp. *I. episomoides*, sp. n., Pasc. l. c. p. 239, pl. 26. fig. 10, Penang.

Cyrdium, g. n., Pascoe, l. c. p. 239. Allied to *Synelasma*; head subtransverse, forehead sulcate; antennæ short, robust, scape obconic; prothorax wider than head, toothed anteriorly; elytra elongate, cylindrical. Sp. *C. cribratum*, sp. n., Pasc. l. c. p. 240, pl. 26. fig. 5, Penang.

Thylactus, g. n., Pascoe, l. c. p. 242. Allied to *Xylorhiza*; prothorax strongly toothed on each side; scape obconic; palpi short, nearly naked. Sp. *T. angularis*, sp. n., Pasc. l. c. p. 242, pl. 27. fig. 6, Penang.

Obages, g. n., Pascoe, l. c. p. 243. Allied to *Microtragus*; maxillary palpi elongate, last joint dilated and truncated; prothorax unarmed, ovate, closely applied to elytra; penultimate joint of tarsi dilated. Sp. *O. palparis*, sp. n., Pasc. l. c. p. 243, pl. 26. fig. 11, Penang.

Cycos, g. n., Pascoe, *l. c.* p. 244. Allied to *Pharsalia* and *Triammatus*; antennæ (♂) very long, scape cylindrical, suddenly constricted at base; mesosternum dentate; legs elongated, especially the anterior (♂). Sp. *Monochamus subgemmatus* (J. Thoms.).

Omocyrius, g. n., Pascoe, *l. c.* p. 245. Allied to *Triammatus*; head exerted, gradually widened beneath the eyes; antennæ with joints 4 and 5 thickened; shoulders produced; anterior legs (♂) very long. Sp. *O. fulvisparsus*, sp. n., Pasc. *l. c.* p. 246, pl. 27. fig. 3, Penang.

Thestus, g. n., Pascoe, *l. c.* p. 247. Allied to *Sarothrodera*; prothorax nearly unarmed; mesosternum produced; head transverse, not dilated below eyes; antennary tubercles robust, approximate. Sp. *T. oncideroides*, sp. n., Pasc. *l. c.* p. 248, pl. 27, fig. 7, Penang.

Metopides, g. n., Pascoe, *l. c.* p. 248. Allied to *Imalmus* and *Hagesata*; head very broad in front; antennæ distant, not fringed, scape subcylindrical, cicatricose; prothorax armed; mesosternum toothed. Sp. *M. occipitalis*, sp. n., Pasc. *l. c.* p. 249, pl. 27. fig. 5, Penang.

Epepeotes, g. n., Pascoe, *l. c.* p. 249. Allied to *Monochamus*; antennæ slender, joint 3 twice or thrice as long as scape; anterior legs long, tibiæ curved; mesosternum elevated, produced. Sp. *Lamia lusca* (Fab.).

Blepephæus, g. n., Pascoe, *l. c.* p. 249. Allied to *Monochamus*; antennæ subincrassate, joint 3 scarcely longer than 1, last 2 joints nearly equal; propectus short, mesosternum elevated, toothed; anterior legs not elongated. Sp. *Monohammus succinator* (Chev.).

Mecotagus, g. n., Pascoe, *l. c.* p. 252. Allied to *Gnoma*; prothorax subcylindrical, narrow in front; femora linear; joint 1 of tarsi equal to 2 and 3 together. Sp. *Cerambyx tigrinus* (Oliv.), and *Pelargoderus guerini* (White). *M. pacilus*, sp. n., Pasc. Ent. Trans. 3rd ser. iii. p. 315, Java.

Xyaste, g. n., Pascoe, *l. c.* p. 257. Allied to *Serixia*; joint 3 of antennæ thickened, usually hirsute; anterior tarsi dilated, joints 1-3 equal. Sp. *Iole nigripes* (Pasc.), pl. 27. fig. 2.

Tanylecta, g. n., Pascoe, *l. c.* p. 263. Allied to *Glenea*; antennæ approximate; legs slender, femora linear, intermediate tibiæ emarginate, claws simple. Sp. *T. lambii*, sp. n., Pasc. *l. c.* p. 263, pl. 28. fig. 9, Penang.

Zosne, g. n., Pascoe, *l. c.* p. 263. Allied to preceding; antennæ distant, last 6 joints abbreviated; intermediate tibiæ entire, claws obtusely dentate at base. Sp. *Z. cincticornis*, sp. n., Pasc. *l. c.* p. 264, pl. 28. fig. 11, Penang.

Nedytisis, g. n., Pascoe, *l. c.* p. 266. Allied to *Phytocia*?; elytra not deflexed at the sides; prothorax wider than head, constricted and sulcate before and behind; posterior femora elongate; anterior coxæ contiguous. Sp. *N. obvioides*, sp. n., Pasc. *l. c.* p. 267, pl. 28. fig. 1, Penang.

Anastetha, g. n., Pascoe, Proc. Ent. Soc. 1866, p. xxviii. Allied to *Spintheria*; antennæ setaceous, longer than body; prothorax broad and bisinuate at base, scutellar lobe produced; scutellum elongate, narrow; post. femora not thickened; mesosternum forming an acute spine in front. Sp. *A. rari-pila*, sp. n., Pasc. *l. c.* p. xxviii, from Queensland.

Amphiencæia, g. n., Bates, Ann. & Mag. N. II. 3rd ser. xvii. p. 32. Allied to *Dorcasta*; linear; head very short, vertically; eyes encircling base of antennæ, upper reniform lobe wide; antennary tubercles short, oblique, unarmed; prothorax cylindrical, unarmed. Sp. *A. lineata*, sp. n., Bates, *l. c.* p. 33, from Ega;

A. pusilla, Bates, *ibid.*, from Santarem; *A. lyctoides*, Bates, *ibid.*, note, from Rio Janeiro.

Aletretia, g. n., Bates, *l. c.* p. 34. Allied to preceding; elongate-elliptical; thorax cylindrical, with very small lateral tubercles; eyes not prominent, nearly contiguous above. Sp. *A. inscripta*, sp. n., Bates, *l. c.* p. 34, from the Amazons.

Blabicentrus, g. n., Bates, *l. c.* p. 192. Allied to *Exocentrus*; thorax unarmed, but tumid at the sides; basal joint of antennæ narrowed towards base; eyes nearly approximate on the vertex. Sp. *B. hirsutulus*, sp. n., Bates, *l. c.* p. 192, from the Tapajos; *B. angustatus*, sp. n., Bates, *l. c.* p. 193, from Santarem.

Eriopsilus, g. n., Bates, *l. c.* p. 193. Allied to *Exocentrus*; prothorax subquadrate, with a short conical tubercle on each side; eyes small, distant; basal joint of antennæ short and thick, narrowed at base; body elongate, clothed with long woolly hairs. Sp. *E. nigrinus*, sp. n., Bates, *l. c.* p. 193, from S. Paulo.

Prynmosis, g. n., Bates, *l. c.* p. 288. Allied to *Pogonocherus*; elongate, flat above; head small, prolonged below eyes, contracted behind; antennæ filiform, long, with fine, stiff hairs, longest beneath, basal joint long, 3rd longer than 4th; prothorax with a stout acute spine on each side; elytra spined at shoulders and outer apical angles; mesosternum narrowed and elevated behind; anterior acetabula widely angular externally. Sp. *P. bicuspis*, sp. n., Bates, *l. c.* p. 288, from Santarem and Ega.

Epectasis, g. n., Bates, *l. c.* p. 294. Allied to *Estola*; elongated and cylindrical; antennæ filiform; as long as body, hairy above and beneath, joint 3 shorter than 4; prothorax long, cylindrical, lateral tubercles obsolete. Sp. *E. attenuata*, sp. n., Bates, *l. c.* p. 294, from Ega.

Chalcolyme, g. n., Bates, *l. c.* p. 297. Allied to *Gryllica* (Thoms.), but prothorax acutely spined; antennal joints simple. Sp. *Onocephala* (?) *metallica* (Pasc.).

Eumimesis, g. n., Bates, *l. c.* p. 298. Allied to preceding; eyes large, but distant on the vertex; antennæ short, basal joint subquadrate, compressed, joint 2 dilated, 3 curved and dilated at apex, 4 with a short foliaceous expansion above. Sp. *E. heilipoides*, sp. n., Bates, *l. c.* p. 298, from S. Paulo.

Pretilia, g. n., Bates, *l. c.* p. 302. Allied to *Callia*, but prothorax unarmed at the sides. Sp. *P. telephoroides*, sp. n., Bates, *l. c.* p. 302, from Pará &c.

Tyrintia, g. n., Bates, *l. c.* p. 371. Allied to *Hemilophus*; lateral keel of elytra wanting. Sp. *T. capillata*, sp. n., Bates, *l. c.* p. 371, from S. Paulo; *T. scissifrons*, sp. n., Bates, *l. c.* p. 372, from the Tapajos and Ega.

Isomerida, g. n., Bates, *l. c.* p. 372. Allied to *Hemilophus*; antennal joints regularly decreasing in length from joint 3, all uniformly fringed beneath, not longer than body. Sp. *Hemilophus albicollis* (Lap.); *I. ruficornis*, sp. n., Bates, *l. c.* p. 373, from Fonte Boa.

Erana, g. n., Bates, *l. c.* p. 431. Allied to *Phytocia*; cylindrical; eyes with upper and lower lobes connected; antennæ filiform, setose, fringed beneath, joint 3 much longer than 4; prothorax short, cylindrical; claws bifid. Sp. *Saperda triangularis* (Germ.); *S. leta* (Newm.); *E. cincticornis*, sp. n., Bates, *l. c.* p. 431, from Ega and S. Paulo.

Paraglenea, g. n., Bates, Proc. Zool. Soc. 1866, p. 352. Allied to *Glenea*; elytra rounded and simple at apex. Type *Glenea fortunei* (White). *P. winhoei*, sp. n., Bates, *l. c.* p. 352, fig. 3, Formosa.

New species :—

Ærenea albilarvata, Bates, Ann. & Mag. N. II. 3rd ser. xvii. p. 198, from the Tapajos.

Ethomerus verrucosus, Pascoe, Ent. Trans. 3rd. ser. v. p. 281, from Santa Marta; *Æ. cretatus*, Pasc. l. c. p. 281, note, and *Æ. analis*, Pasc. ibid., origin not stated (South America).

Agapanthia zavadskyi, Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 275, from Asia Minor.

Agelasta lambii, Pascoe, Proc. Zool. Soc. 1866, p. 235, pl. 26. fig. 7, *A. balleata*, Pasc. l. c. p. 236, pl. 26. fig. 9, and *A. substrigosa*, Pasc. l. c. p. 236, pl. 26. fig. 8, from Penang.

Agemopsis pygæa, Bates, l. c. p. 295, *A. sordida*, Bates, ibid., and *A. cylindrica*, Bates, l. c. p. 296, from Santarem. *A. pygæa* also from Rio Janeiro.

Aleidion privatum, Pascoe, Ent. Trans. 3rd ser. v. p. 283, from Santa Marta.

Alphus asellus, Pascoe, l. c. p. 282, from Santa Marta.

Amesisa (g. n.) *consularis*, Pascoe, Ent. Trans. 3rd ser. iii. p. 236, pl. 11. fig. 2, from Singapore.

Amillarvus mutabilis, Bates, l. c. p. 432, from Santarem.

Amphionycha. Bates (l. c.) describes the following new species of this genus:—*A. seminigra*, p. 426, from S. Paulo; *A. nigripennis*, ibid., *A. sapphira*, p. 428, *A. megacephala*, ibid., *A. testacea*, p. 430, and *A. roseicollis*, ibid., from Ega; *A. miniacea*, p. 427, from Obydos; *A. megalopoides*, ibid., from Santarem; and *A. capito*, p. 429, note, from Panama.

Anymona (g. n., see p. 385) *pulchella*, Pascoe, l. c. p. 332, pl. 15. fig. 3, from Sarawak.

Athemistus armitagei, Pascoe, Journ. Linn. Soc. ix. p. 87, and *A. funereus*, Pasc. ibid., from Sydney.

Atossa atomaria, Pascoe, Proc. Zool. Soc. 1866, p. 254, pl. 26. fig. 6, Penang.

Batoœra. Pascoe (Ent. Trans. 3rd. ser. iii.) describes the following new Malayan species:—*B. metalleseens*, p. 264, from Macassar; *B. pulverosa*, ibid., from Timor; *B. orpheus* (= ? *B. œneo-nigra*, Thoms.), p. 265, from Morty, Batchian, and Ternate; *B. oreus*, p. 266, from Ceram; *B. ammon*, p. 267, from Amboyna; *B. meleager*, p. 268, from Bouru; *B. cinnamomea*, p. 269, from Sula; and *B. attila*, p. 270, from Sumatra and Java.

Bybe, g. n. (see 'Record,' 1865, p. 498). Sp. *B. parmenoides*, Pascoe, l. c. p. 225, pl. 10. fig. 7, from Sarawak.

Cucia melanopsis, Pascoe, Proc. Zool. Soc. 1866, p. 232, pl. 26. fig. 4, *C. pistora*, Pasc. l. c. p. 232, *C. herbacea*, Pasc. l. c. p. 233, pl. 26. fig. 3, and *C. obsessa*, Pasc. l. c. p. 233, from Penang.

Cæostola flexicornis, Bates, l. c., from Santarem.

Callia. Bates (l. c.) describes the following new species of this genus:—*C. fulvoœincta*, p. 300, from Santarem; *C. eriocerina*, p. 300, and *C. lycoides*, p. 301, from S. Paulo; *C. halticoides* and *C. cleroides*, p. 301, from Ega; *C. lampyroïdes*, p. 302, note, from Rio Janeiro.

Carterica optata, Pascoe, Ent. Trans. 3rd ser. v. p. 284, from Santa Marta.

Cenodocus granulatus, Pascoe, Proc. Zool. Soc. 1866, p. 233, pl. 26. fig. 12, Penang.

Cereopsius. The following new Malasian species of this genus are de-

scribed by Pascoe (Ent. Trans. 3rd ser. iii.) :—*C. luctuosus*, p. 238, from Ceram and Goram ; *C. tricinctus*, p. 239, from Batchian ; and *C. privatus*, p. 240, from Malacca.

Clyzomedus annularis, Pascoe, Proc. Zool. Soc. 1866, p. 234, Penang.

Colobotheca distincta, Pascoe, Ent. Trans. 3rd ser. v. p. 284, from Santa Marta, Guatemala, and Costa Rica.

Conizonia allardi, Fairmaire, Ann. Soc. Ent. Fr. 4e sér. tome vi. p. 68, from Algeria.

Daxata ustulata, Pascoe, Proc. Zool. Soc. 1866, p. 230, pl. 27. fig. 4, Penang.

Desmiphora senicula, Bates, l. c. p. 200, from the Tapajos ; *D. multiseriata*, Bates, l. c. p. 201, from Obydos ; *D. ornata*, Bates, l. c. p. 201, note, and *D. venosa*, Bates, l. c. p. 202, note, from Rio Janeiro.

Diallus (g. n.) *lachrymosus*, Pascoe, Ent. Trans. 3rd ser. iii. p. 242, pl. 12. fig. 5, from Tondano. *D. lugens*, Pasc. l. c. p. 243, from Ceram ; *D. sub-tinctus*, Pasc. ibid., from Mysol.

Dorcadion. L. Fairmaire describes the following new species of this genus from Asia Minor (Ann. Soc. Ent. Fr. 4e sér. tome vi.) :—*D. nogelli*, p. 270 ; *D. weyersii*, p. 271 ; *D. cincellum*, p. 272 ; *D. semilineatum*, p. 273 ; *D. confluens*, p. 274 ; and *D. boszdaghense*, p. 275.

Dorcadion escorialense, Chevrolat, Rev. et Mag. de Zool. 1866, p. 107, Escorial.—*Dorcadion reynosa*, Brisout, Ann. Soc. Ent. Fr. 4e sér. vi. p. 418, and *D. mulsanti*, Bris. l. c. p. 420, Reynosa.

Dorcasta lignea, Bates, l. c. p. 35, *D. occulta* and *D. caenosa*, Bates, l. c. p. 36, from Santarem.

Ectinogramma collare, Pascoe, Proc. Zool. Soc. 1866, p. 266, pl. 28. fig. 10, Penang.

Entelopes similis, Pascoe, l. c. p. 255, Penang.—*Entelopes amcena*, Pascoe, Ent. Trans. 3rd ser. iii. p. 335, pl. 15. fig. 8, from Sarawak.

Epepeotes fumosus, Pascoe, l. c. p. 301, from Flores ; *E. vestigiialis*, Pasc. ibid., from Sarawak ; *E. diversus*, Pasc. l. c. p. 302, from Key Island ; *E. meridicanus*, Pasc. ibid., from Java, Sumatra, Sarawak, &c.

Esthlogena. Bates describes the following new species of this genus :—*E. pulverea*, l. c. p. 289, *E. sulcata* and *E. linearis*, p. 290, from Santarem ; *E. nuernata*, p. 289, from Ega ; *E. obtusa* and *E. proluxa*, p. 291, note, from Rio Janeiro.

Estola. The following new species are described by Bates :—*E. basinotata*, l. c. p. 291, *E. lineolata*, p. 292, from the Tapajos ; *E. variegata*, p. 292, from Ega ; *E. porcula*, p. 293, from Santarem ; *E. truncatella*, *E. acricula*, and *E. varicornis* (Dej.), p. 293, note, from Rio Janeiro.

Eumathes amazonicus, Bates, l. c. p. 297, from Ega.

Euthyastus (g. n., see p. 383) *binotatus*, Pascoe, l. c. p. 253, pl. 11. fig. 5, from Sarawak and Malacca.

Exocentrus striatus, Bates, l. c. p. 191, and *E. nitidulus*, Bates, ibid., from Santarem.

Glenea. Of this genus, Pascoe (Proc. Zool. Soc. 1866) describes the following new species from Penang :—*G. porphyrio*, l. c. p. 259, pl. 28. fig. 5 ; *G. neanthes*, p. 259, pl. 28. fig. 4 ; *G. jubæa*, p. 260 ; *G. cumila*, ibid. ; *G. alysson*, p. 261, pl. 28. fig. 8 ; *G. ame*, p. 261, pl. 28. fig. 2 ; *G. manto*, p. 262, pl. 28. fig. 7 ; and *G. anthyllis*, p. 262, pl. 28. fig. 6.

Gnoma propinqua, Pascoe, Ent. Trans. 3rd ser. iii. p. 313, from Makian ;

G. longitarsis, Pasc. l. c. p. 314, from Singapore and Sarawak; *G. puberea*, Pasc. l. c. p. 314, from Macassar; *G. dispersa*, Pasc. Proc. Zool. Soc. 1866, p. 252, and Ent. Trans. l. c. p. 314, from Singapore, Macassar, Batchian, and Java.

Hastatis galericoides, Bates, l. c. p. 299, from Santarem.

Ilebecis sparsa, Pascoe, Journ. Linn. Soc. ix. p. 81, from Western Australia (= *Ilebecerus sparsus*, Reiche, MS.).

Hemilophus? *murinus*, Pascoe, Ent. Trans. 3rd ser. v. p. 288, from Santa Marta.

Hemilophus fasciatus, Bates, l. c. p. 370, from Ega.

Hippopsis. The following five new Amazonian species are described by Bates (l. c.):—*H. truncatella*, p. 39, from Pará; *H. griseola* and *H. clavigera*, p. 40, from Santarem; *H. prona*, p. 41, from S. Paulo; and *H. fractilinea*, ibid., from Ega.

Iphiothe (g. n., see p. 383) *cripsioides*, Pascoe, Ent. Trans. 3rd ser. iii. p. 255, from Sarawak.

Isomerida amicta, Pascoe, Ent. Trans. 3rd ser. v. p. 287, pl. 20. fig. 2, from Santa Marta.

Leprodera equestris, Pascoe, Ent. Trans. 3rd ser. iii. p. 285, pl. 14. fig. 6, = ? *L. elongata* (Thoms.), from Penang and Sarawak; *L. verrucosa*, Pasc. l. c. p. 286, and *L. epicedioides*, Pasc. l. c. p. 287, from Sarawak.

Lepturges figuratus, Pascoe, Ent. Trans. 3rd ser. v. p. 283, from Santa Marta.

Lepturges ovalis, Bates, l. c. p. 433, from Santarem; and *L. scutellatus*, Bates, l. c. p. 434, from S. Paulo.

Lycidola simulatrix, Bates, l. c. p. 368, from Ega and the Tapajos.

Macrocephalus marmoratus, Motschulsky, Bul. Soc. Nat. Mosc. xxxix. 1. p. 399, Ceylon.

Megacera praelata, Bates, l. c. p. 37, and *M. apicalis*, Bates, ibid., from Ega; *M. rigidula*, Bates, l. c. p. 38, from Santarem.

Megopsis procerca, Pascoe, Proc. Zool. Soc. 1866, p. 536, Penang.

Mesosa allapsa, Pascoe, Proc. Zool. Soc. 1866, p. 231, Penang.

Microtragus sticticus, Pascoe, Journ. Linn. Soc. ix. p. 86, pl. 3. fig. 9, from Australia.

Monochamus. The following new Malasian species are described by Pascoe (Ent. Trans. 3rd ser. iii.):—*M. defector*, p. 293, *M. tarsalis*, p. 294, from Singapore; *M. productus*, p. 294, from Bouru; *M. variolaris*, p. 295, from Dorey and Mysol; *M. litigiosus*, ibid., from Aru; *M. feralis*, p. 296, from Flores; *M. tincturatus*, ibid., from Waigiou; *M. convexus*, p. 297, from Kaioa; *M. viator*, ibid., from Matabello; *M. magneticus*, p. 296, from Ceram and Aru; *M. captiosus*, p. 298, from Dorey, Menado, and Kaioa; *M. anxius*, p. 298, from Batchian &c.; *M. argutus* (= ? *L. fasciata*, Montr.), p. 299, from Ternate, Aru, and Bouru; *M. solutus*, ibid., from Makian and Batchian; and *M. uræus*, p. 300, from Mysol and Sula.—*Monochamus musivus*, Pascoe, Proc. Zool. Soc. 1866, p. 251, Penang.

Nemophas incensus, Pascoe, l. c. p. 275, pl. 13. fig. 5, from Morty; *N. leuciscus*, Pasc. ibid., pl. 13. fig. 4, from Batchian; and *N. lethalis*, Pasc. l. c. p. 276, pl. 13. fig. 2, from Morty.

Nyctimene vittata, Pascoe, l. c. p. 330, from Singapore; *N. subsericea*, Pasc. l. c. p. 331, from Menado.

Oberca curialis, Pascoe, Proc. Zool. Soc. 1866, p. 264, *O. clara*, Pasc. l. e. p. 265, and *O. tenuata*, Pasc. ibid., Malasia.

Olenecamptus optatus, Pascoe, l. e. p. 253, and *O. quietus*, Pasc. l. e. p. 254, Penang.—*Olenecamptus strigosus*, Pascoe, Ent. Trans. 3rd ser. iii. p. 317, from Aru and Amboyna.

Orcesis (g. n., see p. 385) *phauloides*, Pascoe, l. e. p. 332, pl. 15. fig. 2, from Batchian.

Oreodera (*Anoreina*) *biamulata*, Bates, l. e. p. 433, from S. Paulo.

Othelais (g. n., see p. 383) *virescens*, Pascoe, l. e. p. 241, Saylee and Dorey.

Otroca (g. n., see p. 383) *semiflava*, Pascoe, l. e. p. 244, pl. 12. fig. 2, from Batchian; *O. eimerascens*, Pasc. ibid., from Amboyna; *O. tessellata*, Pasc. l. e. p. 245, from Ceram.

Palinna mouhotii, Pascoe, Proc. Zool. Soc. 1866, p. 237, Penang.

Pelargoderus meleagris, Pascoe, Ent. Trans. 3rd ser. iii. p. 279, from Tondano.

Phæa crocata, Pascoe, Ent. Trans. 3rd ser. v. p. 288, pl. 20. fig. 3, and *P. astathcoides*, Pasc. l. e. p. 289, from Santa Marta.—*Phæa coccinea*, Bates, l. e. p. 367, from Santarem.

Pharsalia. Pascoe (Ent. Trans. 3rd ser. iii.) describes six new Malasian species:—*P. lentiginosa*, l. e. p. 249, from Banda; *P. eincticornis*, ibid., from Malacca; *P. duplicata*, p. 250, from Singapore; *P. supposita*, p. 250, and *P. saperdoides*, p. 251, from Sarawak; and *P. vinosa*, p. 251, from Sarawak and Singapore.

Pogonocherus granulatus, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 174, Japan.

Pothyne capito, Pascoe, l. e. p. 327, from Dorey, Ternate, and Ceram.

Praonetha pleuricausta, Pascoe, Journ. Linn. Soc. ix. p. 89, North Australia.—*Praonetha consularis*, Pascoe, Proc. Zool. Soc. 1866, p. 240, and *P. villosa*, Pasc. l. e. p. 241, Penang.—*Praonetha binodosa*, Bates, P. Z. S. 1866, p. 350, and *P. kaleca*, Bates, l. e. p. 351, Formosa.

Protennemus lima, Pascoe, Ent. Trans. 3rd ser. iii. p. 282, from Goram; *P. pristis*, Pasc. ibid., from Aru.

Psaumis (g. n., see p. 383) *turbidus*, Pascoe, l. e. p. 246, pl. 11. fig. 6, from Sarawak.

Rhytiphora odewahlui, Pascoe, Journ. Linn. Soc. ix. p. 86, from South Australia; *R. semivestita*, Pasc. ibid., from Western Australia.

Ropiea formosana, Bates, P. Z. S. 1866, p. 351, Formosa.

Saimia bituberosa, Pascoe, Proc. Zool. Soc. 1866, p. 235, Penang.

Serixia varians, Pascoe, l. e. p. 256, *S. basalis*, Pasc. ibid., and *S. prasinata*, Pasc. l. e. p. 257, pl. 27. fig. 1, Penang.

Sodus ursulus, Pascoe, l. e. p. 237, pl. 26. fig. 2, Penang.

Spathoptera capillacea and *S. mimica*, Bates, Ann. & Mag. N. H. 3rd ser. xvii. p. 369, from Ega.

Sporetus decipiens, Bates, l. e. p. 434, from Pará.

Steirastoma lyeon, Pascoe, Ent. Trans. 3rd ser. v. p. 279, and *S. stellio* (Dej.), Pascoe, l. e. p. 280, from Santa Marta.

Sybra pumetatostrigata, Bates, P. Z. S. 1866, p. 351, and *S. baculina*, Bates, l. e. p. 352, Formosa.—*Sybra centurio*, Pascoe, Journ. Linn. Soc. ix. p. 90, from New South Wales.

Symphyletes. The following new Australian species are described by Pascoe (Journ. Linn. Soc. ix.):—*S. devotus*, p. 83, *S. duboulayi*, ibid., *S. subminiatus*, p. 84, *S. iliacus*, ibid., and *S. simius*, p. 85, from Western Australia; and *S. bathurstii*, p. 85, from South Australia.

Tetraglenes fusiformis, Pascoe, Ent. Trans. 3rd ser. iii. p. 326, from Sarawak.

Xoes (g. n., see p. 384) *egeria*, Pascoe, l. c. p. 246, pl. 11. fig. 3, Sarawak.

Zotale (g. n., see p. 385) *unicolor*, Pascoe, l. c. p. 330, pl. 15. fig. 5, Sumatra.

Lepturides.

Leptura bisignata (Ménétr.) probably = *L. jägeri* (Hummel), the latter being a black variety. *L. rufipennis* (Muls.) = *L. erythroptera* (Hagenb.), and *L. bisignata* (Brullé) = *L. ustulata* (Fisch.), var. Kraatz, Berl. ent. Zeits. 1866, pp. 300–301.

Fairmaire (Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 69) indicates the characters of *Vesperus flavicollis* (Muls.), which he says = *V. mauritanicus* (Dej.). He also describes *Leptura approximans* (Rosenh.), from Tangier (l. c. p. 70).

Asilaris, g. n., Pascoe, Proc. Zool. Soc. 1866, p. 505. Allied to *Ocalemia*; last joint of maxillary palpi elongate-ovate; joints 5–11 of antennæ dilated on the inside; femora thickened in the middle. Sp. *A. zonatus*, sp. n., Pasc. l. c. p. 505, pl. 41. fig. 1, Penang.

Ephies, g. n., Pascoe, l. c. p. 506. Allied to *Euryptera*; antennæ short, dilated, rather remote; eyes nearly entire. Sp. *E. cruentus*, sp. n., Pasc. l. c. p. 506, pl. 41. fig. 9, Penang.

New species :—

Cortodera discolor, Fairmaire, l. c. p. 277, from Asia Minor.

Leptura nigropicta, Fairmaire, l. c. p. 278, from Asia Minor.

Agapete vestita, Pascoe, Journ. Linn. Soc. ix. p. 91, from South Australia.

Earinis kruesleræ, Pascoe, l. c. p. 91, from South Australia.

Aposites pubicollis, Pascoe, l. c. p. 92, pl. 3. fig. 8, from Western Australia.

Uracanthus simulans, Pascoe, l. c. p. 92, from South Australia; and *U. miniatus*, Pascoe, l. c. p. 93, from Western Australia.

Omophana tenuata, Pascoe, l. c. p. 93, from Australia.

Cepholynna capreola, Pascoe, Proc. Zool. Soc. 1866, p. 504, pl. 42. fig. 1, Penang.

Philus rufescens, Pascoe, l. c. p. 506, Penang.

Philus pallescens, Bates, Proc. Zool. Soc. 1866, p. 350, Formosa.

Euryptera ruficollis, Pascoe, Ent. Trans. 3rd ser. v. p. 289, and *E. ? lyciformis*, Pasc. ibid., from Santa Marta.

Vesperus conicicollis, Fairmaire, l. c. p. 69, from Morocco.

Cerambycides.

Sphaerion and *Mallogera*. Pascoe (Ann. & Mag. N. II, 3rd ser. xviii. pp. 477–478) discusses the species ordinarily referred to these genera, and separates several new genera from *Sphaerion* (vide infra). *Nephalius* (Newm.) is regarded by him as deserving separation from *Sphaerion*, being restricted to those species in which the elytra are not at all, or but slightly, deflected at

the sides. The species of this genus would then be *N. cassus*, *serius*, and *excutus* (Newm.). *N. amictus* (Newm.) is unknown to Pascoe; and *N. blandus* (Newm.) is a *Sphæron*. Pascoe gives a list of the species which he refers to *Sphæron* as restricted by him, and characterized as follows (*l. c.* p. 478):—antennæ elongate (♀ equal to body), joints 3-6 or 7 spinose; prothorax subdepressed; posterior tibiæ subcompressed, spurred. Pascoe states that *Appula* (Thoms.), including *Mallocera lateralis* and *undulans* (White) = *Stizocera* (Serv.).—*M. eburioides* (White) is better placed in the vicinity of *Eburia*; and *M. obliqua* (Dej.) forms the genus *Eurysthea* (Thoms.).

Clytus. Kraatz remarks that *C. trifasciatus* (Fab.) does not occur in Hungary, where it is represented by a nearly allied species. *C. ægyptiacus* (Lap.), for which Laporte gives Hungary as a habitat, is said to be a variety of *C. trifasciatus*. Kraatz seems to imply that the Hungarian species is *C. ægyptiacus*; it is also found in the Greek archipelago. *C. bruckii* (Kraatz) = *C. caucasicus* (Motsch.). Berl. ent. Zeits. 1866, p. 300.

Kraatz maintains (Berl. ent. Zeits. 1866, p. 370) that the genera *Brachypteroma* (Heyd.) and *Dolocerus* (Muls.) are identical, and that the species *B. ottomanum* (Heyd.) = *D. reichei* (Muls.) and *Molorchus nulsanti* (Stierl.). The eyes are not sensibly emarginate.

Pascoe remarks (Ent. Trans. 3rd ser. v. pp. 290-291) on the distinctive characters of the genera *Charis*, *Odontocera*, and *Acyphoderes*.

On the relationships of the genus *Apilocera* (Chevr.) see Pascoe, Ent. Trans. 3rd ser. v. p. 295.

Pascoe (Proc. Zool. Soc. 1866, *l. c.*) remarks upon the following species and genera of this group:—*Deuteronma testaceum* (Pasc.); *Pseudoleptura* (Thoms.) = *Erythrus* (White); *Niræus* (Newm.) = *Pachyteria* (Serv.); *Calidium annulare* (Fab.) = *Clytanthus*; *Clytus australis* (Cast. & Gory) = *Xylotrichus*; *Acrocyrta* (Pasc.) and *Demonax* (Thoms.); *Blemmya* (Pasc.) = *Euryarthrum* (Blanch.); *Cyclodera* (White) = ? *Purpuricenus* (Serv.); *Cer. maxillosus* and *nigripes* (Oliv.) = *Euryphagus*; *Eurycephalus cardinalis* (Thoms.) = *Euryclea*; *Cer. globosa* (Oliv.) = *Xystrocera*.

New genera :—

(*Phoracantha*.) Pascoe remarks (Journ. Linn. Soc. ix. p. 98) that the genus *Phoracantha* (Newm.) now includes a heterogeneous assemblage of species, which he proposes to divide into the following genera :—

Phoracantha (Newm.). Head not elongated behind eyes, forehead short, broad at apex; antennæ with subterete joints, 3-6 spinose at apex; prothorax spinose at the sides; anterior tibiæ straight. Sp. *Stenochorus semipunctatus* (Fab.) &c.

Epithora, g. n., Pascoe, *l. c.* Head elongated behind eyes, forehead short, narrowed at apex; antennæ with cylindrical joints, 3-7 with a strong spine at apex; prothorax with the sides uneven; femora thickened in the middle; anterior tibiæ curved. Type *Stenochorus dorsalis* (MacLeay).

Callirhoë (Newm.). Forehead rather short, narrowed at apex; antennæ with joints 3-6 or 7 spinose; femora elongate, strongly clavate; prothorax tuberculate. Sp. *Stenochorus biguttatus* (Don.) &c.

Alcsta, g. n., Pascoe, *l. c.* p. 99. Allied to preceding; antennæ with joint 3 strongly, and 4 obsoletely spinose, remainder unarmed; femora thickened in the middle; elytra rounded at apex. Sp. *Phoracantha balteata* (Pasc.), *P. bifasciata* (Pasc.), pl. 4. fig. 5, and *P. angasii* (Pasc.).

Allotisis, g. n., Pascoe, *ibid.* Forehead short, broad at apex; antennæ with joints 3 & 4 subspinose; prothorax elongate, tuberculate; elytra truncate at apex; femora elongate, clavate. Sp. *Phoracantha scitula* (Pasc.), *A. discreta* (Pasc.), pl. 3. fig. 1, and *Coptocercus unifasciatus* (Hope).

Diospides, g. n., Pascoe, *ibid.* Forehead somewhat short and narrowed at apex; antennæ with joints 3-8 strongly spinose; prothorax spinose; elytra bispinose at apex; legs slender. Type *Stenochorus obscurus* (Don.).

Tryphocharia, g. n., Pascoe, *ibid.* Forehead somewhat produced, narrowed at apex; joints 3-8 of antennæ bispinose; prothorax small, spinose; femora linear. Sp. *Phoracantha hamata* (Newm.), *P. superans* (Pasc.), *P. odewahnii* (Pasc.), pl. 4. fig. 7, and *Stenochorus mitchellii* (Hope).

Xypeta g. n., Pascoe, *l. c.* p. 100. Forehead very short, dilated at apex; antennæ with joints 3-6 bispinose, last joint incised, representing a twelfth joint; posterior legs very long. Type *Phoracantha grillaria* (Pasc.), figured, pl. 4. fig. 2.

Diosyris, g. n., Pascoe, Proc. Zool. Soc. 1866, p. 508. Allied to *Mythodes*; head transverse in front, produced between the antennæ, elongated behind the eyes; antennæ approximate at base; eyes rounded; prothorax nearly oblong, equal in width before and behind; femora abruptly clavate; tarsi rather short. Sp. *D. miranda*, sp. n., Pasc. *l. c.* p. 508, pl. 41. fig. 7, Penang.

Clopera, g. n., Pascoe, *l. c.* p. 510. Allied to *Deuteromma*; eyes nearly entire; antennæ setaceous, scape cicatricose; prothorax elongate. Sp. *C. decolorata*, sp. n., Pasc. *l. c.* p. 511, pl. 41. fig. 10, Penang.

Epianthe, g. n., Pascoe, *l. c.* p. 511. Allied to *Rhinotragus*; antennæ thickened towards apex; scape obconic; elytra entire, parallel; posterior tarsi elongate. Sp. *E. viridis*, sp. n., Pasc. *l. c.* p. 511, pl. 41. fig. 5, Penang.

Mydasta, g. n., Pascoe, *l. c.* p. 512. Allied to *Acyphoderes*; head very little produced in front; antennæ as in preceding; elytra entire, narrowed behind, sides not declivous; tibiæ stout, tarsi nearly equal. Sp. *M. discoidea*, sp. n., Pasc. *l. c.* p. 512, pl. 41. fig. 4, Penang.

Sesthya, g. n., Pascoe, *l. c.* p. 513. Allied to preceding genera; antennæ linear, scape pyriform; head with a constricted neck, wider than prothorax; tarsi nearly equal. Sp. *S. cephalotes*, sp. n., Pasc. *l. c.* p. 513, pl. 41. fig. 3, Penang.

Mimistena, g. n., Pascoe, *l. c.* p. 513. Allied to *Cosmisona*; antennæ setaceous, scape pyriform; head with a neck, narrower than prothorax; posterior and intermediate tarsi elongate; elytra entire. Sp. *M. femorata*, sp. n., Pascoe *l. c.* p. 514, pl. 41. fig. 6, Penang.

Bicon, g. n., Pascoe, *l. c.* p. 522. Allied to *Epipedocera*; antennæ short, joints 5-11 dilated; prothorax ovate; tarsi short, equal. Sp. *B. sanguineus*, Pasc. *l. c.* p. 522, pl. 41. fig. 8, Penang.

Sigeum, g. n., Pascoe, *l. c.* p. 523. Allied to *Euryarthrum*; head flattened between the eyes, subdilated; antennæ serrated towards apex, joint 3 longer than 1; hind legs elongate, slender. Sp. *Blemmya humeralis* (Pasc.), *l. c.* pl. 41. fig. 2.

Asmedia, g. n., Pascoe, *l. c.* p. 525. Allied to *Euryarthrum*; antennæ

thickened towards apex, not flattened; prothorax angulated at the sides; prosternum not produced. Sp. *A. minctes*, sp. n., Pasc. l. c. p. 526, pl. 41. fig. 11, Penang.

Imbrius, g. n., Pascoe, l. c. p. 528. Allied to *Cerambyx*; antennæ more or less serrated, scape entire at apex; eyes coarsely granulated, approximated to the mouth; prothorax oblong, unarmed; legs equal, femora thickened in the middle. Sp. *I. lineatus*, sp. n., Pasc. l. c. p. 529, pl. 41. fig. 12; *I. ephcbus*, and *I. strigosus*, Pasc. ibid., from Penang.

Cyriopalus, g. n., Pascoe, l. c. p. 530. Allied to *Cerambyx*; antennæ 12-jointed, pectinate; prothorax unarmed; legs rather short, femora not thickened. Sp. *C. wallacei*, sp. n., Pasc. l. c. p. 530, pl. 42. fig. 3, Penang.

Sidis, g. n., Pascoe, Journ. Linn. Soc. ix. p. 93. Allied to *Obrium*; antennæ short, basal joint longest; prothorax elongate, nodoso-rotundate at the sides; legs short, femora thickened; body setose. Sp. *S. opiloides*, Pasc. l. c. p. 94, pl. 4. fig. 3, from South Australia.

Acyrusa, g. n., Pascoe, l. c. p. 94. Allied to *Obrium*; joint 1 of antennæ short, curved, and attenuate at base; joint 3 longer, spinose at apex; prothorax elongate, nodose at the sides; femora elongato-clavate. Sp. *Obrium ciliatum* (Pasc.).

Igenia, g. n., Pascoe, l. c. p. 95. Allied to *Obrium*, but with the anterior coxæ globose, not reduced. Known sp. *Obrium ibidionoides* and *dorsale* (Pasc.); n. sp. *Igenia stigmosa*, Pasc. l. c. p. 95, pl. 3. fig. 3, from South Australia.

Sisyrium, g. n., Pascoe, l. c. p. 95. Allied to preceding genus; 3rd joint of antennæ longer than scape, unarmed; last joints scarcely compressed; prothorax oblong, broader than head, irregular at the sides; anterior acetabula cicatricose, scarcely angulate. Type *Obrium tripartitum* (Pasc.), figured on pl. 4. fig. 4.

Xystena, g. n., Pascoe, l. c. p. 96. Allied to *Phalota*; head elongated and constricted behind the eyes; antennæ remote, linear; palpi rather elongate, last joint obconic; prothorax constricted before and behind, nodose at the sides; legs short; basal joint of tarsi elongate; anterior acetabula widely angular. Sp. *X. vittata*, Pasc. l. c. p. 97, pl. 4. fig. 8, from Queensland.

Bethelium, g. n., Pascoe, Journ. Linn. Soc. ix. p. 97. Allied to *Callidium*; head very short, antenniferous tubercles obsolete; antennæ distant at base, scape obconical, equal to joint 3, joint 4 short, remainder longer; prothorax oblong, narrowed at base, rounded at sides, disk even; anterior coxæ globose, acetabula slightly angulated; pro- and mesosterna elevated. Sp. — *signiferum* (Newm.) and *Callidium inscriptum* (Pasc.).

Oxymagis, g. n., Pascoe, l. c. p. 101. Allied to *Strongylurus* (Hope); palpi short, terminal joint triangular; prosternum broad, elevated, transversely dilated behind; mesosternum elevated, anteriorly dilated and perpendicular. Sp. *O. grayii*, Pasc. l. c. p. 101, pl. 3. fig. 2, from Australia.

Paphora, g. n., Pascoe, l. c. p. 102. Allied to *Bebius* (Pasc.); stouter; legs longer; head ovate, with no muzzle. Type *Ceresium? modestum* (Pasc.), figured on pl. 4. fig. 6.

Poritheca, g. n., Pascoe, l. c. p. 102. Allied to *Ceresium*; prothorax constricted at base; femora stout, clavate; face short, transverse. Type *Callidium intortum* (Newm.).

Ectosticta, g. n., Pascoe, l. c. p. 104. Allied to *Homœnota*; antennæ

shorter than body, scape and joint 3 nearly equal, remainder shorter and subequal; prothorax rounded, not attenuated at base; anterior acetabula not angulated. Type *Callidium cleroides* (White). *E. ruida*, sp. n., Pasc. l. c. p. 104, from Western Australia.

Ipomorja, g. n., Pascoe, l. c. p. 104. Allied to *Homœnota* and *Monoplia* (Newm.); scape longer than joint 3 of antennæ, the latter unarmed; prothorax attenuated at base; anterior acetabula narrowly angulated. Sp. *I. tillides*, sp. n., Pasc. l. c. p. 105, pl. 4. fig. 1, from South Australia.

Adrium, g. n., Pascoe, l. c. p. 105. Allied to preceding; eyes coarsely granulated; joint 3 of antennæ shorter than scape, equal to 4; prothorax constricted behind, disk impressed; anterior acetabula nearly entire. Type *Callidium catoxanthum* (White).

Æbaria, Pascoe, l. c. p. 105*. Allied to *Phacodes*; palpi elongate, with a broadly triangular terminal joint; tarsi nearly linear. Sp. *Æ. tristis*, sp. n., Pasc. l. c. p. 105, and *Æ. ceresioides*, sp. n., Pasc. l. c. p. 106, from South Australia.

Mephritis, g. n., Pascoe, Ann. & Mag. N. H. 3rd ser. xviii. p. 479. Allied to *Sphæron*; head projecting between the antennæ; prothorax subdepressed; tibiæ compressed, posterior not spinose at apex. Sp. *M. cinerascens*, sp. n. (Dej.), Pasc. l. c. p. 480, from Rio Janeiro.

Castiale, g. n., Pascoe, l. c. p. 480. Allied to *Sphæron*; antennæ elongate, joints 3-6 spinose at apex; antenniferous tubercles horizontal; prothorax shortly ovate, subdepressed; femora slender-fusiform, posterior four bispinose at apex. *C. viridipennis*, sp. n., Pasc. l. c. p. 480, from Columbia.

Gorybia, g. n., Pascoe, l. c. p. 481. Allied to *Sphæron*; head inserted nearly to eyes; antennæ scarcely longer than body, unarmed; prothorax subdepressed; posterior tarsi short. Sp. *G. martes*, sp. n., Pasc. l. c. p. 481, from Espiritu Santo.

Psyrassa, g. n., Pascoe, l. c. p. 481. Allied to *Sphæron*, habit of *Ibidion*; antennæ rather short, joints 3-6 spinose at apex; prothorax oblong, subcylindrical, not tuberculate, narrower at base; elytra narrow, elongate, bispinose at apex; femora not clavate. Sp. *Stenocorus unicolor* (Randal). *P. basicornis*, sp. n. (Pilate), Pasc. l. c. p. 482, from Yucatan.

Limozota, g. n., Pascoe, l. c. p. 482. Allied to *Mallocera*; antennæ unarmed; antenniferous tubercles approximate; prothorax cylindrical, elongate, unarmed at the sides; elytra parallel, emarginate but not spinose at apex. Sp. *L. virgata*, sp. n. (Chev. MS.), Pasc. l. c. p. 482, from Columbia.

Rhysium, g. n., Pascoe, l. c. p. 483. Allied to *Sphæron*; antennæ unarmed; prothorax oblong, subdepressed; elytra narrow, rounded at apex; mesosternum declivous. Sp. *R. bimaculatum*, sp. n. (Deyr.), Pasc. l. c. p. 483, from Bolivia.

Alyopsis, g. n., Pascoe, l. c. p. 484. Lepturiform; head much exerted, with a constricted neck; antennæ unarmed; antenniferous tubercles strong, produced within, contiguous at base; prothorax elongate-cylindrical, irregular; mesosternum produced in front; femora clavate. Sp. *A. cyanoptera*, sp. n., Pasc. l. c. p. 484, from Brazil.

Phacidius, g. n., Pascoe, Ent. Trans. 3rd ser. v. p. 293. Allied to *Lissonotus* and *Charinotes*; antennæ long, serrate, 11-jointed; prothorax smooth,

* Previously indicated by Pascoe, see 'Record,' 1864, p. 441.

with a lateral tooth; mesosternum declivous, dentate in the middle. Sp. *P. lissonotoïdes*, sp. n., *Pasc. l. c.* p. 293, pl. 20. fig. 6, from Santa Marta.

New species :—

Callidium albofasciatum, Motschulsky, Bull. Soc. Nat. Mosc, xxxix. 1. p. 174, Japan.

Clytus insignitus, Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 269, from Asia Minor.

Rhopalopus ledereri, Fairmaire, *l. c.* p. 269, from Asia Minor.

Rhamnusium juglandis, Fairmaire, *l. c.* p. 276, from Asia Minor.

Pœcilium alni, Chevrolat, Rev. et Mag. de Zool. 1866, p. 107, Escorial.

Sphæron suturale (Dej.), Pascoe, Ann. & Mag. N. II. 3rd ser. xviii. p. 479, and *S. geniculatum*, *Pasc. ibid.*, from Brazil.

Dejanira biapiculata, Pascoe, Proc. Zool. Soc. 1866, p. 507, Penang.

Noëmia chalybeata, Pascoe, *l. c.* p. 509, Penang.

Merionæda acuta, Pascoe, *l. c.* p. 509, Penang.

Phutonesthes crocata, Pascoe, *l. c.* p. 514, pl. 42. fig. 2, Penang.

Erythrus ignitus, Pascoe, *l. c.* p. 514, *E. lacertosus*, *apiculatus*, and *atricollis*, *Pasc. l. c.* p. 515, Penang.

Erythrus formosanus, Bates, P. Z. S. 1866, p. 350, Formosa.

Pyrestes politus, Pascoe, *l. c.* p. 516, pl. 42. fig. 6, *P. scapularis*, *Pasc. l. c.* p. 516, pl. 42. fig. 5, *P. virgatus*, *Pasc. l. c.* p. 517, pl. 42. fig. 4, and *P. nigricollis*, *Pasc. l. c.* p. 517, Penang.

Chloridolum cinmyris, Pascoe, *l. c.* p. 518, Penang.

Pachyteria. The following six new species of this genus from Penang are described by Pascoe:—*P. speciosa*, *l. c.* p. 519, pl. 43. fig. 5; *P. lambii*, *ibid.*, pl. 43. fig. 6; *P. virescens*, *ibid.*, pl. 43. fig. 2; *P. spinicollis*, *ibid.*, pl. 43. fig. 4; *P. insignita*, *l. c.* p. 520; and *P. strumosa*, *ibid.*, pl. 43. fig. 3.

Dere marginata, Pascoe, *l. c.* p. 522, Penang.

Euryarthrum (Blanch.) = *Blenmya* (Pasc.). The following 6 new species from Penang are described by Pascoe:—*E. nudicollis*, *l. c.* p. 524, pl. 42. fig. 7; *E. lambii*, *carinatum*, and *interruptum*, *l. c.* p. 524; and *E. egenum* and *atripenne*, *l. c.* p. 525.

Cerambyx pruinusosus, Pascoe, *l. c.* p. 526, Penang.

Neocerambyx lambii, and *N. ? intricatus*, Pascoe, *l. c.* p. 527, Penang.

Hoplocerambyx relictus, Pascoe, *l. c.* p. 528, Penang.

Rhytidodera cristata, Pascoe, *l. c.* p. 531, pl. 43. fig. 1, Penang.

Ceresium vestigiule, Pascoe, *l. c.* p. 532, and *C. ? versutum*, *Pasc. ibid.*, Penang.

Xystrocera alcyonea, Pascoe, *l. c.* p. 534, Penang.

Phalota collaris, Pascoe, Journ. Linn. Soc. ix. p. 96, from South Australia.

Didymocantha brevicollis, Pascoe, *l. c.* p. 100, from Western Australia.

Strongylurus orbatus, Pascoe, *l. c.* p. 100, from Queensland.

Opsidota albipilosa, Pascoe, *l. c.* p. 101, from South Australia.

Arilæus heros, Pascoe, *l. c.* p. 103, from North Australia.

Homæmota duboulayi, Pascoe, *l. c.* p. 103, from Western Australia.

Charis corima, Pascoe, Ent. Trans. 3rd ser. v. p. 290, from Santa Marta.

Rhopalophora intincta, Pascoe, *l. c.* p. 291, and *R. mastula*, *Pasc. l. c.* p. 292, from Santa Marta.

- Callichroma scitulum* (Dej.), Pascoe, *l. c.* p. 292, from Santa Marta.
Chrysoprasis bouchardi, Pascoe, *l. c.* p. 292, from Santa Marta.
Neoclytus scenicus, Pascoe, *l. c.* p. 294, pl. 20. fig. 7, from Santa Marta.
Apilocoera postica, Pascoe, *l. c.* p. 295, pl. 20. fig. 4, from Santa Marta.

Prionides :—

Fairmaire [Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 66] describes *Prionus forficatus* (Fab.) as a species of *Opisognathus*. It lives in the stem of *Chamæropis humilis*. Fairmaire also describes *Polyarthron barbarum* (Luc.), *l. c.* p. 67.

Lucas notices the distribution of *Prionobius scutellaris*, and mentions its occurrence in Egypt. Bull. Soc. Ent. Fr. 1866, p. xlv.

Lucas (Rev. et Mag. de Zool. 1866, pp. 441-445) discusses the synonymy of the species of Mulsant's genus *Prionobius*, and especially the characters of *P. scutellaris* (Germ.), which he regards as a very variable species, and as probably including *P. gaubili* (Chevr.), *lethifer* (Fairm.), *germari* (Muls.), *atropos* (Chevr.), *goudotii* (Chevr.), and *cedri* (Mars.).

PHYTOPHAGA.

Suffrian has abstracted Waterhouse's revision of the Linnean and Banksian *Phytophaga*, and discussed some of his results (Stett. ent. Zeit. 1866, pp. 158-165). Suffrian maintains that *C. hæmorrhoidalis* = *C. ænea* (Suffr.); *C. armoræie* is not = *C. betulæ*; *C. chrysocephala* probably = *Haltica chrysocephala*, the collection being in error; *C. nitens* probably includes both *Cryptocephalus nitens* and *C. nitidulus*; *C. barbaræ* = *Cryptocephalus decempunctatus*, var., as indicated by Thunberg, the specimen in the collection not agreeing with description; *C. sericea* = *C. sericea* (Suffr.), and not *hypochæridis*.

Criocerides.

Suffrian (Arch. f. Naturg. 1866) remarks upon the characters, and especially the variations of the following known species of this group :—*Lema cæruleipennis*, *perizonata*, *placida*, *punctato-fasciata*, and *pocyi* (Lac.), *confusa* (Chevr.), *postica* (Guér.), and *dorsalis* (Oliv.).

Lema lunigera, sp. n., Suffrian, *l. c.* p. 284, and *L. intermedia*, sp. n., Suffr. *l. c.* p. 287, Cuba.

Lema postrema, sp. n., Bates, Proc. Zool. Soc. 1866, p. 353, Formosa.

Donacia brevicornis (Schneid., nec Ahr.), from Finmark = *D. comari* (Suffr.). L. von Heyden, Stett. ent. Zeit. 1866, p. 257.

Donacia antillarum, sp. n., Suffrian, Arch. f. Naturg. 1866, p. 282, Cuba.

Crotch (Entomologist, iii. p. 136) remarks that *Zeugophora turneri* (Power) = var. *scutellaris* (Suffr.).

Zeugophora apicalis, sp. n., Motschulsky, *l. c.* p. 406, Ceylon.

Crioceris. On the stridulation of species of this genus, see F. Löw, Verh. zool.-bot. Ges. in Wien, xvi. p. 955.

Orsodaena indica, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 406, Ceylon.

Pæcilomorpha nigrocyanea, sp. n., Motschulsky, *l. c.* p. 406, Ceylon.

Chrysomelides.

Monachus. Suffrian (Linn. Ent. xvi.) refers to variations of the following previously known species of this genus:—*M. gemellus* (Suffr.), p. 7; *consimilis* (Dej.), p. 8; and *pygidialis* (Suffr.), p. 9. *Clythra bipustulata* (Fab.) is also referred to this genus by Suffrian (*l. c.* p. 481), as also *Cryptocephalus juvenecus* (Oliv.).

Cryptocephalus. Suffrian (Linn. Ent. xvi. p. 18) cancels the second "Rotte" of this genus, as established by him (*op. cit.* xv. p. 184), the species described as belonging to it (*C. præustus*, Suffr.) being a native of Madagascar. He proposes here a new second group, including a new species (*C. abhorrens*). Suffrian also notices the ♂ of *C. bis-septemguttatus* (Suffr.), *l. c.* p. 26; states that his *C. flagitosus* is identical with *C. nigroplagiatus* (Guér.) from Tahiti, p. 31; indicates a variety of *C. viridiæneus* (Boh.), p. 53; gives a diagnosis of *C. pusio* (Suffr.), from Venezuela, Cuba, and Porto Rico, p. 54; notices a large ♀ of *C. ænescens* (Suffr.), p. 55; and indicates the characters of the ♀ of *C. siccus* (Suffr.), p. 63.

The following recorded species are mentioned by Suffrian (*l. c.* pp. 479–483) as unknown to him:—*Cryptocephalus lineatus*, *modestus*, *impressus*, *obliquus*, *cinctus*, *limbatus*, and *glabratus* (Fab.), *longimanus* and *juvenecus* (Oliv.). *C. longimanus* is probably a *Scolochrus*, and *juvenecus* a *Monachus*. *C. dubius*, *saliens*, and *saltator* (Fab.) probably belong to the *Halticides* (p. 483).

Scolochrus (Suffr.). Suffrian, in his monograph of the South American *Cryptocephalides* (Linn. Ent. xvi. pp. 69–247), describes 94 species of this genus from various parts of that continent. The previously known species are only 6 in number, namely *Pachybrachys hyacinthinus* (Erichs.), *argentatus* (Erichs.), *Cryptocephalus perlatus* (Oliv.), *triguttatus* (Fab.), *Sc. cazicus* (Suffr.), and *Pach. pallidilabris* (Stål). The remainder are described as new, but it will be unnecessary to cite them all here. A new species from Mexico, *S. indigestus*, is also described, *l. c.* p. 79. *Cr. longimanus* (Oliv.) also probably belongs to this genus (*l. c.* p. 482).

SUFFRIAN (Arch. f. Naturg. 1866) remarks upon the characters and variations of the following known species of this group occurring in Cuba:—*CHILAMYX conifera* and *flavicollis* (Lac.), *CRYPTOCEPHALUS crenulatus*, *grosulus*, *curtus*, *rusticus*, *bicinctus*, *hypocrita*, *tibiellus*, *pictus*, *pusio*, *dives*, *saucius*, *ephippium*, *vinulus*, *rubetra*, *tortuosus*, *ensorius*, *5-punctatus*, *complanatus*, and *cylindricus* (Suffr.), *chloroticus* (Oliv.), *margincollis* (Latr.), *rubrofasciatus* (Chevr.), *ruftarsis* (Klug), *viridipennis* (Dej.), and *azureipennis* (Chevr.), *MASTACANTHUS insularis* (Suffr.), *PACHYBRACHYS tostus*, *conglomeratus*, and *punicatus* (Suffr.), *COLASPIS smaragdula* (Oliv.), and *MYOCHROUS dubius* (Ram. de la Sagra).

Suffrian publishes a note in correction of an error in his memoir on the *Chrysomelæ* of the *Oreina* group (Stett. ent. Zeit. 1866, pp. 97–99). His

C. nigriceps is not Fairmaire's species, but identical with *C. peirolerii* (Bassi); and *C. nigriceps* (Fairm.), as indicated by types communicated by Fairmaire himself, = *C. ludovicæ* (Muls.), which is here described (p. 98) by Suffrian.

SUFFRIAN (Stett. ent. Zeit. 1866, pp. 205-207) remarks on the following species of *Chrysomelides*:—*Pachybrachys mærens* (Stål), described as a Brazilian species = *luridus* (Fab.) from North America; *Cryptocephalus mucoræus* (Lec.) = *basalis* (Sturm); *C. inexpectatus* (Fairm.) = *marginellus* (Oliv.), var.; *C. abietinus* (Gaut.) = *carinthiacus* (Suffr.); *C. perrieri* (Fairm.) = *albolineatus* (Suffr.); and *C. rhæticus* (Stierl.) = *4-pustulatus* (Gyll.), var. Suffrian notices the statement of Gautier des Cottés, that *C. cyanipes* (Dej., Suffr.) is the ♀ of *C. lobatus* (Fab.), and observes that Gautier has probably mistaken the ♂ of *C. cyanipes* for *C. lobatus*.

The characters of *Lina collaris* (Linn.) and *alpina* (Zett.), regarded by him as belonging to one species, are discussed by L. von Heyden (Stett. ent. Zeit. 1866, p. 257). He also indicates the peculiarities of examples of *L. lapponica* (Linn.) from Finmark (*l. c. p. 258*).

Cryptocephalus flavoguttatus (Oliv.). Variations indicated by Scriba, Berl. ent. Zeits. 1866, p. 291.

Fairmaire (Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 71-72) describes *Gymnandrophthalma rufimana* (Lac.) and *gratiosa* (Luc.) and *Melitonoma sobrina* (Lac.). The latter, a Senegal species, extends northward to Tunis.

Crotch (Entomologist, iii. pp. 137 & 173) remarks on the following species of this group:—*Cryptocephalus violaceus* (Linn.); *C. fulcratus* (Germ.) = *flavilabris* of British authors; *C. vittatus* (Fab.); *C. querceti* (Suff.); *Chrysomela sanguinolenta* (Linn.), its varieties; *C. hyperici* (Forst.) = *fucata* (Fab.); *Lina longicollis* (Suff.) = *tremulæ* of British authors; and *Phædon armoraciæ* (Linn.).

Cryptocephalus violaceus (Linn.), *C. vittatus* (Fab.), and *C. querceti* (Suff.) are recorded as British by Crotch. See Rye, Ent. Ann. 1867, p. 94.

On *Cryptocephalus 10-punctatus* in Staffordshire, see Garneys, Ent. M. Mag. iii. p. 67.

F. Löw records the occurrence of *Prasocuris phellandrii* (Linn.) in the stems of *Cicuta virosa*. Verh. zool.-bot. Ges. in Wien, xvi. p. 966.

New genera:—

Heptarthrius, g. n., Suffrian, Linn. Ent. xvi. p. 2. Allied to *Monachus*; eyes emarginate; prosternum channelled longitudinally, longer than broad, posteriorly broadly triangularly emarginate, anteriorly with a distinct gorget; antennæ with a 7-jointed, lax club; scutellum present. Sp. *H. longimanus*, sp. n. (Moritz, MS.), Suff. *l. c. p. 4*, from Venezuela.

Ambrotodes, g. n., Suffrian, *l. c. p. 469*. Allied to *Pachybrachys*; prosternum without a collar, longer than broad, swelled longitudinally in the middle and distinctly furrowed on each side, terminating behind in an obtusely triangular mamilla. Known sp. *Crypt. chilensis* (Blanch.), ♀ = *C. elegans* (Blanch.) and *Pach. signatipennis* (Blanch.). *A. ignobilis*, sp. n., Suffrian, *l. c. p. 474*, from Chili.

Metallactus, g. n., Suffrian, *l. c. p. 248*. Between *Scolochrus* and *Pachybrachys*; eyes emarginate; prosternum longer than broad, flat anteriorly, slightly channelled behind, terminated by a round mamilla, without a collar; scutellum present. Known species: *Cryptocephalus guttula* (Fab.), *C. 15-guttatus* (Fab.); *Pachybrachys flavopustulatus* (Stål), *P. limbiventris* 1866. [VOL. III.] 2 D

(Stål), *P. nigro-ornatus* (Stål), and *Cr. kollari* (Perty). The remainder (57 species) are described as new.

Sternoglossus, g. n., Suffrian, *l. c.* p. 378. Allied to *Scolochrus*; prosternum without a collar, longer than broad, tubercular before the middle, tubercle produced into a much compressed keel, passing to the narrow mesosternum. Sp. *S. cruciger*, sp. n., Suff. *l. c.* p. 379, from Brazil; *S. scalaris*, sp. n., Suff. *l. c.* p. 381, from Cayenne.

Bathseba, g. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 412. Allied to *Colaspis*; antennæ slender, more than half as long as body; eyes approaching on the forehead; thorax transverse, rounded in front, slightly bisinuate at base, posterior angles square; scutellum triangular; elytra scarcely wider than thorax, oval, somewhat obliquely punctate-striate. Sp. *B. ferruginosa*, sp. n., Motsch. *l. c.* p. 413, Ceylon.

Odontionota, g. n., Motschulsky, *l. c.* p. 408. Allied to *Eumolpus*; prothorax granulose, or transversely strigulose; elytra with prominent shoulders, deeply striated; anterior legs a little longer than intermediate; antennæ slender, often more than half as long as body. Sp. *O. viridula* (Murr.), Old Calabar; *O. ænea*, sp. n., Motsch. *l. c.* p. 408, Ceylon; *O. cupripes*, Motsch. *l. c.* p. 409, Ceylon; *O. stigmaticollis* (sic), Motsch. *ibid.*, Continental India.

New species:—

Lamprosoma auricolle, Suffrian, Arch. f. Naturg. 1866, p. 288, Cuba.

Lamprosoma alienum, Bates, Proc. Zool. Soc. 1866, p. 353, Formosa.

Chlamys formosana, Bates, *l. c.* p. 353, Formosa.

Chlamys melanospila, Suffrian, *l. c.* p. 290, *C. nigritella*, Suffr. *l. c.* p. 292, and *C. straminea*, Suffr. *l. c.* p. 293, Cuba.

Labidostomis lejeunii, Fairmaire, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 70, from Oran.

Languria unicolor, Motschulsky, *l. c.* p. 176, Japan.

Gynandrophthalma nigrocyanea, Motschulsky, *l. c.* p. 177, Japan.

Cheilotoma geniculata, Motschulsky, *l. c.* p. 177, Japan.

Cheilotoma reyi, Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 422, Spain.

Eumolpus setulosus, Motschulsky, *l. c.* p. 406, *E. picipes*, Motsch. *l. c.* p. 407, and *E. albostrigatus*, Motsch. *ibid.*, Ceylon. Also *E. rugicollis* and *fascicularis*, Motsch. *l. c.* p. 407, and *E. incanus*, *rufulus*, and *fuscus*, Motsch. *l. c.* p. 408, from Continental India.

Colaspis alcyonea (Mus. B.), Suffrian, *l. c.* p. 326, Cuba.

Colaspidea ovulum, Fairmaire, *l. c.* p. 72, from Algeria; *C. grossa*, Fairm. *l. c.* p. 73, from Tangier.

Pachnephorus hispidulus, Fairmaire, *l. c.* p. 72, from Oran.

Chalcophana. Six new Cuban species of this genus are described by Suffrian (*l. c.*):—*C. elongata*, p. 327; *C. abdominalis*, p. 328; *C. fervida* (Mus. B.), p. 330; *C. viridula*, p. 331; *C. varicornis*, p. 334; and *C. striata*, p. 336.

Heteraspis nana, Suffrian, *l. c.* p. 337, Cuba.

Metachroma. Of this genus Suffrian (*l. c.*) describes the following new species from Cuba:—*M. adusta* (Gundl.), p. 339; *M. puncticollis*, p. 341; *M. suturalis*, p. 342; *M. liturata*, p. 343; *M. læviuscula*, p. 345; *M. sordida*, *ibid.*

Monachus. Of this genus Motschulsky describes the following 6 new Cingalese species:—*M. luridus*, *flaveolus*, *basalis*, and *suturalis*, *l. c.* p. 411; *M. nigrolimbatus* and *acutangulus*, *l. c.* p. 412.

Monachus. The following new species of this genus are described by Suf-

frian (Linn. Ent. xvi.):—*M. flavicaudis*, p. 5, *M. curtulus*, p. 9, *M. pusillimus*, p. 11, *M. microscopicus*, *ibid.*, *M. splendidulus*, p. 12, from Venezuela (the last also from Brazil); *M. globator*, p. 7, from Columbia; *M. oblongulus*, p. 13, *M. convexicollis*, p. 14, from Brazil.

Cryptocephalus. Of this genus the following new species are described by Suffrian (Linn. Ent. xvi.):—*C. pectinicornis*, p. 16, from Chili; *C. abhorrens*, p. 18, from Cayenne; *C. compressicollis*, p. 20, *C. simplicipennis*, p. 29, *C. pauxillus*, p. 54, *C. humilis*, p. 55, *C. rufocinctus*, p. 58, *C. sphacelatus*, p. 60, *C. ochrosomus*, p. 62, and *C. strangulatus*, p. 65, from Brazil; *C. limitatus*, p. 22, *C. cachecta*, p. 24, *C. uniformis*, p. 37, *C. piccolus*, p. 38, *C. liquidus*, p. 39, *C. obfuscatus*, p. 41, *C. hematopterus*, p. 49, *C. virgineus*, p. 67, from Venezuela; *C. bambalio*, p. 26, *C. bigatus*, p. 32, *C. circumfusus*, p. 33, *C. urbanus*, p. 44, *C. lætifuscus*, p. 45, *C. lividipennis*, p. 47, *C. decorus*, p. 52, *C. bicostatus*, p. 63, from Columbia; *C. bullatus*, p. 28, *C. parvicollis*, p. 50, from New Granada; *C. patulus*, p. 35, from Caraccas and Cayenne; *C. melano-gastrius*, p. 42, from Bogotá; and *C. paleaceus*, p. 57, of unknown origin (South America). Suffrian (Arch. f. Naturg. 1866) also describes the following new species from Cuba:—*C. commutatus*, p. 297; *C. elatus*, p. 298; *C. vinctus*, p. 300; *C. pocyi*, p. 302; *C. pavidus*, p. 305; and *C. signatellus*, p. 307.

Cryptocephalus floribundus, Suffrian, Stett. ent. Zeit. 1866, p. 207, from the Pyrenees.

Cryptocephalus obliquostratus, Motschulsky, l. c. p. 176, Japan.

Cryptocephalus carneobfasciatus, Motschulsky, l. c. p. 411, Ceylon.

Cryptocephalus swinhoei, Bates, l. c. p. 354, Formosa.

Cryptocephalus tibialis, Brisout, l. c. p. 421, Spain.

Pachybrachys ano-guttatus, Suffrian, l. c. p. 208, from Mallorca.—*Pachybrachys testaceus*, Perris, Ann. Soc. Ent. Fr. 4^e sér. v. p. 510, Corsica.

Pachybrachys. Suffrian (Linn. Ent. xvi.) describes 24 new South American species:—*P. spurcans*, p. 388, Chile; *P. adpersus*, p. 390, Brazil and Cayenne; *P. syrtes*, p. 396, Bolivia; *P. idiota*, p. 398, Brazil; *P. ægrotans*, p. 400, Columbia; *P. fetidus*, p. 404, Brazil; *P. ferrugatus*, p. 406, Chile; *P. callifer*, p. 408, Columbia; *P. anxius*, p. 412, *P. lavandus*, p. 416, *P. phthisiacus*, p. 419, *P. strictus*, p. 420, and *P. sordidulus*, p. 423, from Brazil; *P. dissolutus*, p. 425, Columbia; *P. xanthogrammus*, p. 433, Buenos Ayres; *P. stomachosus*, p. 435, *P. fervidus*, p. 439, *P. curvatus*, p. 441, *P. guttipennis*, p. 443, *P. nigricollis*, p. 445, *P. annexus*, p. 448, *P. tenebrosus*, p. 451, *P. clathratus*, p. 456, all from Brazil; *P. quadricollis*, p. 466, Cayenne.

Pachybrachys. The following new species from Cuba are described by Suffrian (Arch. f. Naturg. 1866):—*P. decipiens*, p. 317; *P. parallelepipedus*, p. 318; *P. militans*, p. 320; *P. devotus*, p. 321; *P. brunneolus*, p. 322; *P. flavocallens*, *ibid.*

Aoria quinque maculata, Bates, l. c. p. 354, Formosa.

Lina formosana, Bates, l. c. p. 354, Formosa.

Cyrtonus gibbicollis, Fairmaire, l. c. p. 73, from Tangier.

Phratora fairmairei, Brisout, l. c. p. 423, Reynosa.

Gallerucides.

LECONTE (Proc. Acad. Nat. Sci. Phil. 1865, pp. 204–222) gives an analysis of the species of true *Gallerucides* (excl. *Halticides*) inhabiting North America. He refers the species to 12 genera, which are tabulated as follows. (p. 205):—

I. Claws with a broad basal dilatation.

A. Antennæ with joint 1 very long, 3 longer than 4.

CEROTOMA (Chevr.).

B. Antennæ with joint 1 moderate.

1. Front coxæ separated MALACOSOMA (Rosenh.).

2. Front coxæ contiguous.

a. Elytra not margined at sides PHYLLOBROTICA (Redt.).

. Elytra distinctly margined.

* Epipleuræ not extending to apex.

a. Last joint of max. palpi small subulate.

PHYLLECHTHRUS (Dej.).

Last joint of max. palpi conical acute.

LUPERUS (Geoff.).

Epipleuræ extending to apex.

a. Upper margin of epipleuræ thick obtuse.

AGELASTICA (Redt.).

β. Upper margin of epipleuræ very sharp, prominent.

GASTROGYNA, g. n.

II. Claws cleft or acutely toothed.

A. Tibiæ deeply grooved externally CÆLOMERA (Chevr.).

B. Tibiæ not sulcate externally.

1. Forehead carinated between antennæ. DIABROTICA (Chevr.).

2. Forehead flat, with an impressed line.

a. Epipleuræ extending to apex GALERUCA (Geoff.).

b. Epipleuræ not reaching apex TRIRHABDA, g. n.

III. Claws acute, usually entire MONOXIA, g. n.

The species of these genera are briefly characterized, and in the case of the larger genera, such as *Luperus*, *Diabrotica*, and *Galeruca*, and in the new genera *Trirhabda* and *Monoxia* they are also tabulated. The last-named genus presents an exception to the general characters of the group in having the claws usually simple.

JOANNIS has completed his monograph of the European *Gallerucides* (L'Abeille, iii. pp. 145-148) by giving descriptions of the remaining species of *Luperus* and of those of *Monolepta*, and the characters of his new genus *Marseulia*. *Monolepta* includes 3 species, 1 of which is new. In conclusion (*l. c.* p. 162), the author discusses the question of the distinctness of *Luperus sulphuripes* (Graells) and *foveolatus* (Rosenh.), which he had united in the first portion of his memoir. Perez-Arcas has indicated the differences between the two species, showing that *sulphuripes* is a true *Luperus*, whilst *foveolatus* belongs to the section *Culomicrus*. Joannis also quotes Kiesenwotter's character of his *Luperus nigripes* (*l. c.* p. 164). Plate ii., intended to accompany this memoir, contains the following figures:—Heads of *Luperus* and *Galleruca*, figs. 1 and 1 bis; eggs of *Galleruca*, fig. 2; larvæ of *Agelastica halensis* and *Galleruca eratægi*, figs. 3, 4; *Adimonia orientalis*, fig. 5; pronota of *Adimonia lobata*, *bonvouloirii*, *grelleri*, *javeti*, *haagi*, *declivis*, *luctuosa*, *erratica*, *obscura*, *brevis* (Joannis), *circumdada* (Duft.), *tanaceti* (Linn.), *littoralis* (Fab.), *rustica* (Schal.), *corsica*, *abbreviata*, *goudoti*, *macchoi*, and *reichei* (Joan.), figs. 6-24; *Galleruca nymphææ* (Linn.), fig. 25; *Rhaphidopalpa foveicollis* (Luc.), fig. 26 and (♂ abd.) fig. 27; *Malacosoma lusitanica* (Linn.), fig. 28 and (extremity of ♂ abd.) fig. 29; *Agelastica albi* (Linn.), fig. 30 and

(extr. ♂ abd.) fig. 31; *Phyllobrotica 4-maculata* (Linn.), fig. 32 and (♂ abd.) fig. 33 bis; *Phyll. sibirica* (Joan.), ♂ abd., fig. 33; *Luperus flavipes* (Linn.), fig. 34 and (extr. ♂ abd.) fig. 35; *Monolepta erythrocephala* (Ol.), fig. 36 and (claws) fig. 37; *Marseulia (Agelastica) dilativentris* (Reiche), fig. 39; claws of *Gallerucides*, fig. 40.

ALLARD has published (L'Abeille, iii. pp. 169-320) the greater portion of a monograph of the European *Halticidae*. Following Illiger, he divides the group into the following 8 sections:—*Physapodes* (genus *Lithonoma*, with 3 species), *Cæsa* (genera *Crepidodera*, Chev., 33 species, 1 new, and *Orestia*, Germ., 6 species), *Sulcicolles* (genera *Hermæophaga*, Foudr., 3 species, and *Graptodera*, Chev., 12 species), *Saltatrices* (genera *Aphthona*, Chev., 38 species, 5 new; *Argopus*, Fisch., 4 species; *Sphæroderma*, Steph., 4 species; and *Phyllotreta*, Foudr., 25 species, 1 new), *Striatæ* (genera *Podagrica*, Chev., 8 species; *Batophila*, Foudr., 3 species, 1 new; *Plectroscelis*, Latr., 23 species; *Balanomorpha*, Chev., 6 species; *Apteropeda*, Redt., 4 species; *Hyperophila*, Foudr., 2 sp.; and *Mniophila*, Steph., 1 sp.), *Longitarsi* (genus *Thyamis*, Steph., 109 sp., 16 new), *Cryptocephali* (genus *Dibolia*, Chev.), and *Altitarsi* (genus *Psyllodes*, Latr.). The portion published in 1866 includes the first few species of *Thyamis*; and descriptions of the remainder appeared in January and March of the present year*. *Crepidodera marginicollis* (Küst.) probably = var. *ferruginea* (Scop.), p. 186.

Phyllobrotica adusta. Kraatz indicates some omissions in the description of the abdomen of the ♂ of this species in the description given by Joannis. Berl. ent. Zeits. 1866, p. 286.

Puton regards *Calomicrus foveolatus* (Rosenh.) and *Luperus sulphuripes* (Graells) as distinct. They had been united by Joannis. Bull. Soc. Ent. Fr. 1865, p. lxxvii.—Perez Arcas also remarks on the differences between these species. Bull. Soc. Ent. Fr. 1866, p. xxxiv.

Crotch (Entomologist, iii. pp. 173-174) remarks on the following species of this group:—*Luperus betulinus* (Fouc.) = *rufipes* of British authors; *Aphthona cærulea* (Payk.) = *pseudacori* (Marsh.); *Plectroscelis subcærulea* (Kutsch.) = *sahlbergii* of British authors; *Thyamis castanea* (Foudr.) and *brunnea* (Dufts.); and *T. patruelis* (All.).

The following species of this group are recorded as British by Crotch (Cat. Brit. Col.):—*Haltica (Gropodera) ericeti* (All.), *H. (G.) longicollis* (All.), *H. (G.) helianthemii* (All.), *Phyllotreta flexuosa* (Ent. Hefte), *Aphthona atratula* (All.), *Plectroscelis sahlbergii* (Gyll.), *Thyamis absinthii* (Kutsch.), *T. castanea* (Foudr.), *T. patruelis* (All.), *T. atriceps* (Kutsch.), and *T. medicaginis* (All.). See also Rye, Ent. Ann. 1867, pp. 95-97.

The larva of *Psyllodes dulcamaræ* (Hoffm.) is described by Goureau. It lives as a miner in the leaves of *Solanum dulcamara*. Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 169.

Plectroscelis scheffleri (Kutsch.) occurs near Csanád in the Banat, according to Scriba, Berl. ent. Zeits. 1866, pp. 291-292.

New genera :—

Trichoerastes, g. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 413.

* The whole of the new species of *Thyamis* are cited hereafter, as the tabular synopsis in which they are first characterized appeared in 1866.

Allied to *Luperus*; eyes large; thorax not wider than head, with a median transverse impression; elytra wider than thorax, elongate, parallel, ruguloso-punctate; antennæ (♂) longer than body, with long, straight, scattered hairs. Sp. *Luperus pilicornis* (Motsch.); *T. flavofemoratus*, sp. n., Motsch. l. c. p. 414, *T. P. sericeus*, Motsch. ibid., *T. P. viridimarginellus*, Motsch. ibid., and *T. P. cinctulus*, Motsch. l. c. p. 415, Ceylon.

Parlina, g. n., Motschulsky, l. c. p. 420. Allied to *Crepidodera*; elytra nearly smooth, without punctate striæ. Sp. *P. truncata*, sp. n., Motsch. l. c. p. 420, Ceylon.

Elytropachys, g. n., Motschulsky, l. c. p. 419. Allied to *Aphthona*; thorax very wide; elytra nearly square, smooth, transversely impressed near the base. Sp. *Aphthona latissima* and *dimidiata* (Motsch.); *E. viridescens*, *E. obscurata*, and *E. dorsalis*, sp. n. Motsch. l. c. p. 419, Ceylon.

Marseulia, g. n., Joannis, l. c. p. 160 (see 'Record,' 1865, p. 520). Sp. *Agelastica dilativentris* (Reiche).

Phyllechthrus (Dej.), Leconte, Proc. Acad. Nat. Sci. Phil. 1865, p. 207. (See table p. 404.) Sp. *G. atriventris* (Say); *G. dorsalis* (Oliv.); *P. gentilis*, sp. n., Leconte, l. c. p. 208, Georgia.

Gastrogyna, g. n., Leconte, l. c. p. 210. (See table p. 404.) Sp. *Diabrotica P. insolita* (Lec.).

Trirhabda, g. n., Leconte, l. c. p. 219. (See table p. 404.) Known species: *Gal. canadensis* (Kirby), *G. luteocincta* (Lec.), *G. flavolimbata* (Mann.), *G. attenuata* (Say), *Chrys. tomentosa* (Linn.). New sp. *T. nitidicollis*, Leconte, l. c. p. 219, New Mexico; *T. convergens*, Leconte, l. c. p. 220, Kansas and Nova Scotia; *T. virgata*, Leconte, ibid., Middle and Southern States; and *T. brevicollis*, Leconte, l. c. p. 221, Southern States.

Monoxia, g. n., Leconte, l. c. p. 221. (See table p. 404.) Known sp.: *Gal. angularis*, *guttulata*, *conspua*, and *sordida* (Lec.); *M. obtusa*, sp. n., Leconte, l. c. p. 222, Massachusetts; and *M. debilis*, sp. n., Leconte, ibid., New Mexico. (*G. puncticollis*, Say, is probably allied to the last named species.)

New species:—

Galleruca. Leconte describes the following new North American species of this genus:—*G. cribrata*, l. c. p. 215, Pennsylvania, Georgia, &c.; *G. conferta*, ibid., Canada and Illinois; *G. sexvittata*, ibid., Pennsylvania; *G. cavi-collis*, l. c. p. 216, North Carolina; *G. hamatica*, ibid., Quebec; *G. integra*, l. c. p. 218, Pennsylvania; and *G. maritima*, ibid., western coast of United States.

Malacosoma fuscata, Leconte, l. c. p. 206, Pennsylvania, Illinois, and Kansas; *M. tineta*, Leconte, ibid., Illinois.

Colonicrus lividus, Motschulsky, l. c. p. 415, Ceylon.

Diabrotica albescens, Motschulsky, l. c. p. 415, Ceylon.

Diabrotica rufotestacea, Motschulsky, l. c. p. 175, Japan.

Diabrotica connexa, Leconte, l. c. p. 212, Texas; *D. soror*, Leconte, ibid. = *D. 12-punctata*, var. (Mann.), California, Oregon, and Arizona; *D. bal-teata*, Leconte, l. c. p. 213, Texas.

Adorium chrysomeloides, Bates, Proc. Zool. Soc. 1866, p. 355, Formosa.

Dicherosis punctipennis, Motschulsky, l. c. p. 176, Japan.

Luperodes dorsalis, Motschulsky, l. c. p. 415, and *L. scriptus*, Motsch. l. c. p. 416, Ceylon.

Luperus cyanellus, Leconte, *l. c.* p. 209, Michigan, Illinois; *L. morulus*, Leconte, *l. c.* p. 210, Texas.

Luperus cœruleipennis, Motschulsky, *l. c.* p. 413, Ceylon.

Luperus kiesewetteri, Joannis, *l. c.* p. 146, Sarepta; *L. megalophthalmus*, Joan. *l. c.* p. 147, South of France; *L. geniculatus*, Joan. *l. c.* p. 151, Alps.

Monolepta heydeni, Joannis, *l. c.* p. 156, pl. 2. fig. 38, Egypt.

Rhaphidopalpa signata, Kirsch, Berl. ent. Zeits. 1866, p. 284, from Sicily.

Phyllobrotica elegans, Kraatz, Berl. ent. Zeits. 1866, p. 285, from Constantinople.

Phyllobrotica sibirica, Joannis, *l. c.* p. 113, pl. 2. fig. 3, Siberia.

Phyllobrotica hyperina, Leconte, *l. c.* p. 207, California.

Crepidodera corsica (Perris, MS.), Allard, L'Abeille, iii. p. 184, Corsica.

Tenodactyla (sic). Motschulsky describes the following Cingalese species of this genus:—*T. suturanigra* and *T. suturella*, *l. c.* p. 416; *T. atripes*, *T. simplex*, and *T. undulatovitata*, *l. c.* p. 417; *T. morio*, *l. c.* p. 418. He also indicates from Continental India *T. albescens* and *T. parva*, *l. c.* p. 417, and *T. nigripennis*, *l. c.* p. 418; and from Java, *T. polita* *l. c.* p. 417.

Ochrosis nigripennis, Motschulsky, *l. c.* p. 418, Ceylon.

Aphthona nigrita, Motschulsky, *l. c.* p. 418, Ceylon; *A. cyanipennis*, Motsch. *l. c.* p. 419, India.

Aphthona allardi, Brisout, Ann. Soc. Ent. Fr. 4^e sér. vi. p. 424, Reynosa.

Aphthona. Allard describes the following 5 new species:—*A. albertina*, *l. c.* p. 230, Spain; *A. hispana*, *l. c.* p. 232, Spain; *A. cœnea*, *l. c.* p. 233, Landes; *A. janthina* (= *A. nigella*, All. olim), *l. c.* p. 237, Algeria; *A. puncticollis*, *l. c.* p. 240, Italy.

Phyllotreta crassicornis, Allard, *l. c.* p. 255, South of France.

Batophila pyrenœa, Allard, *l. c.* p. 271, Pyrenees.

Thyamis. Of this genus Allard characterizes the following new species:—*T. anacardia*, *l. c.* p. 324, Algiers; *T. dimidiata* (Desbr. MS.), p. 320, South of France; *T. multipunctata*, p. 331, Algiers; *T. mediterranea*, p. 332, South of France; *T. viduala*, p. 340, France; *T. bonnairei*, p. 344, Corsica; *T. liliputana*, p. 348, France; *T. rudipennis*, p. 358, Corsica; *T. georgiana*, p. 362, Georgia; *T. syriaca*, p. 379, Syria; *T. papaveris*, p. 394, France; *T. patruelis*, p. 398 (= *lateralis*, All.), Paris; *T. alba*, p. 405, Algeria; *T. poveri*, p. 408, England; *T. subquadrata*, p. 414, France; and *T. moscovita*, p. 415, Moscow.

Nodostoma. Motschulsky describes the following Cingalese species of this genus:—*N. picturata*, *triangularis*, and *fulva*, *l. c.* p. 409; *N. suturalis*, *uniformis*, and *oblonga*, *l. c.* p. 410. He also indicates *N. lateralis*, *l. c.* p. 410, from Continental India; and *N. concolor* and *flavescens*, *ibid.*, from Java.

Podagrica tropica, Motschulsky, *l. c.* p. 420, Ceylon.

Sphæroderma viridipennis, Motschulsky, *l. c.* p. 420, *S. gracilentia*, Motsch. *l. c.* p. 421, and *S. rufopicta*, Motsch. *l. c.* p. 422, Ceylon. Motschulsky also indicates the characters of *S. javana*, *brunnea*, and *fusca*, from Java, and *S. orbiculata* and *fulva*, from Continental India, *l. c.* p. 421.

Psylliodes pallescens, Motschulsky, *l. c.* p. 418, Ceylon.

Psyllodes halmoenensis, Becker, Bull. Soc. Nat. Mosc. xxxvii. 1. p. 485; *P. glycyrrhiza*, Beck, *l. c.* p. 486; and *P. artemisiae*, Beck. *l. c.* p. 488, from Sarepta.

Sebathe balyi, Bates, *l. c.* p. 355, Formosa.

Hypnophila flavipennis, Motschulsky, *l. c.* p. 422, Ceylon.

Mniophila ruficollis (sic), Motschulsky, *l. c.* p. 422, Ceylon.

Anisodera nigricauda, Motschulsky, *l. c.* p. 422, Ceylon.

Hispidæ.

Hispa callicantha, sp. n., Bates, Proc. Zool. Soc. 1866, p. 354, Formosa.

Cassididæ.

Cassida rotundicollis (Bris.) = var. *filaginis* (Perr.), according to Perris, Ann. Soc. Ent. Fr. 4^e sér. v. p. 512.

Cassida desertorum (Gehl.). C. A. Dohrn discusses the characters of this species. Stett. ent. Zeit. 1866, pp. 166-167.

Cassida rugoso-punctata, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 177, and *C. rufo-fusca*, Motsch. *l. c.* p. 178, Japan.

Cassida koechlini, sp. n., Marseul, L'Abeille, lxxviii, Algeria.

EROTYLIDÆ.

Triplax lacordairii is the name proposed by Crotch for a British species identified with *T. ruficollis* (Lac.). Entomologist, iii. p. 174.

Cladoxena, g. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 428. Allied to *Cladophila*; thorax convex in front, narrowed behind, posterior angles square; elytra elongate, punctate striate; scutellum quadrangular, acuminate behind; antennæ longer than head and thorax, club 3-jointed; last joint of palpi acuminate; tarsi tetramerous, broad, third joint bilobate. Sp. *C. rufipes*, *C. picipes*, and *C. maculata*, spp. nn., Motsch. *l. c.* p. 429, Ceylon.

Languria porrecta, sp. n., Kirsch, Berl. ent. Zeits. 1866, p. 214, and *L. undigrada*, Kirsch, *l. c.* p. 215, from Bogotá.

Languria unicolor, sp. n., Motschulsky, *l. c.* p. 176, Japan.

COCCINELLIDÆ.

MULSANT has commenced a monograph of the insects of this family by the publication of a first part, embracing the *Coccinelliens* of his system (Monographie des Coccinellides, 1^{re} partie). In the general introduction he divides the *Coccinellides* into the 2 groups *Gymnosomides* and *Trichosomides*, and the former into the families *Coccinelliens*, *Chilocoriens*, and *Hypéraspiens*. The first of these families includes 9 "branches" placed under 2 divisions,—the first of which includes the *Hippodamiaires*, *Coccinellaires*, *Halyziaires*, *Micraspiaires*, and *Discotomaires* (and all the European species of the "family"), the second the *Cariaires*, *Alésiaires*, *Cælophoraires*, and *Cydoniaires*. The number of genera adopted is very considerable, but no new ones are proposed; the new species, of which a good many are described, are cited below.

Coccinella. Kraatz (Berl. ent. Zeits. 1866, pp. 302-303) remarks upon several Spanish species of this genus. *Mysia vogelii* and *mulsantii* (Schauf.) are said to be varieties of *C. oblongoguttata*; *C. inconstans* and *clathrata* (Schauf.) = *C. variabilis* (Ill.) vars. without keel; *C. lutea* (Schauf.), if allied to *C. pallida* (Muls.), must be a *Bulea*, or it may be a var. of *C. variabilis*. Kraatz also indicates the characters of *C. (Harmonia) 12-pustulata*, var. *lyncea*.

Coccinella 12-guttata (Poda) is distinct from *C. 16-guttata*, according to Crotch, *Entomologist*, iii. p. 174.

Coccinella trifasciata (Schneid. ncc Linn.) from Finmark = *undecimpunctata* (Linn.), var. L. von Heyden, *Stett. ent. Zeit.* 1866, p. 288.

Lithophilus cordatus (Rosenh.) is described from Oran and Tangier by Fairmaire, *Ann. Soc. Ent. Fr.* 4^e sér. tome vi. p. 74.

MacLachlan has observed the larvæ of *Coccinella bipunctata* sucking the juices of the pupæ of the same species. *Ent. M. Mag.* iii. p. 95.

New species :—

Hyperaspis bellieri, Chevrolat, *Rev. et Mag. de Zool.* 1866, p. 325, Escorial.

Hyperaspis scæguttata, Brisout, *Ann. Soc. Ent. Fr.* 4^e sér. vi. p. 425, Aranjuez.

Novius limbatus, Motschulsky, *Bull. Soc. Nat. Mosc.* xxxix. 1. p. 178, Japan.

Chilocorus sanguinolentus, Motschulsky, *l. c.* p. 422, and *C. rufoplagiatus*, Motsch. *l. c.* p. 423, Ceylon; *C. sanguinosus*, Motsch. *ibid.*, India.

Æneis flavescens, Motschulsky, *l. c.* p. 423, *Æ. nigrifulva*, Motsch. *ibid.*, and *Æ. lateralis*, Motsch. *l. c.* p. 424, Ceylon.

Pentilia? *tesciventris*, Motschulsky, *l. c.* p. 424, India.

Yauravia albidula, Motschulsky, *l. c.* p. 424, and *Y. limbata*, Motsch. *ibid.*, Ceylon.

Aspidimerus nigrovittatus, Motschulsky, *l. c.* p. 424, Ceylon.

Scymnus corporosus, *brunnescens*, *uniformis*, *nitidulus*, and *stabilis*, Motschulsky, *l. c.* p. 425, and *S. gracilis*, Motsch. *l. c.* p. 426, Ceylon.

? *Pullus rotundulus*, Motschulsky, *l. c.* p. 426, Ceylon.

MULSANT (Mon. Coccin. i.) describes the following new species of this family :—

Hippodamia ripicola, p. 13, East Indies.

Megilla conteminata, p. 17, Brazil; *M. variolosa*, p. 19, South America.

Næmia fuscilabris, p. 22, New Orleans.

Adonia bifurcata, p. 28, Abyssinia; *A. krieckbaumii*, p. 30, Abyssinia.

Ailalia M-fuscum, p. 35, Ceylon; *A. ludovicæ*, p. 36, North America; *A. revelieri*, p. 40, Corsica; *A. luteo-picta*, p. 45, North India; *A. gemmingeri*, p. 48, origin unknown; *A. gratiosa*, p. 50, Caraccas.

Harmonia julia, p. 56, East Indies; *H. felicia*, p. 57, East Indies; *H. signatella*, p. 58, North India; *H. crocea*, p. 58, Manilla; *H. viridipennis*, p. 60, Mexico; *H. soularyi*, p. 63, Playa Vicente; *H. V-nigrum*, p. 64, Mexico; *H. luteipennis*, p. 67, Mexico; *H. ambitiosa*, p. 72, China; *H. nigri-labris* (Deyr.), p. 73, Manilla.

Coccinella boliviana, p. 75, Bolivia; *C. biscutellata*, p. 76, Brazil; *C. multiplicata*, p. 78, Canton; *C. bacchata*, p. 83, Jamaica; *C. ægyptiaca* (Reiche), p. 86, Syria, Egypt, Sumatra; *C. brucki*, p. 90, Japan; *C. eugenii*, p. 95, California.

Mysia lignicolor, p. 109, Brazil.

Sospita flavo-lineata, p. 113, Australia.

Calvia septenaria, p. 116, East Indies.

Psyllobora simplex, p. 128, Sumatra; *P. configurans*, p. 129, Bolivia; *P. perfida*, p. 130, New Granada; *P. octodecimsignata*, p. 130, South Africa;

P. bakewelli, p. 132, Amazons; *P. consita*, *ibid.*, Amazons; *P. subsimilis*, (Deyr.), *ibid.*, Brazil; *P. conglutinans*, p. 134, origin not stated; *P. tardigrada*, p. 135, Columbia; *P. meticulosa*, p. 135, Brazil; *P. feralis*, p. 138, Chili; *P. liliputiana*, p. 139, Columbia; *P. kirschi*, p. 140, Bogotá; *P. picturata*, p. 141, Brazil; *P. foliacea*, p. 144, Brazil.

Propylea conglobata, p. 131, China; *P. obverse-punctata*, *ibid.*, North India.

Seladia augustiniiana, p. 155, Mexico; *S. fastuosa*, p. 157, *S. erato*, p. 158, and *S. eugeniae*, *ibid.*, Brazil.

Micaria la saussayeii, p. 162, Brazil; *M. biguttulata*, p. 163, Cayenne; *M. künckeli*, *ibid.*, Cayenne.

Caria superba, p. 167, East Indies; *C. infirmata*, *ibid.*, Java; *C. miranda*, p. 168, Java; *C. manillana*, p. 170, Philippine Islands; *C. distaura*, p. 173, Celebes; *C. faivrii*, *ibid.*, Celebes.

Leis rougeti, p. 175, East Indies; *L. atrocincta*, *ibid.*, Manilla; *L. gibbipennis*, p. 176, Madagascar.

Pelina mayeti, p. 189, North India; *P. zephirinae*, p. 190, North India; *P. gerstaeckeri*, p. 192, Brazil?

Neda auriculata, p. 195, East Indies; *N. bayaderæ*, p. 200, East Indies; *N. paulinae*, p. 203, Manilla; *N. sicheli*, p. 204, Venezuela; *N. hopfferi*, *ibid.*, Cape of Good Hope; *N. emiliae*, p. 205, Bolivia.

Daulis minki, p. 211, Ceylon; *D. sinopæ*, p. 213, Celebes; *D. gilardini*, p. 214, Columbia; *D. henoni*, p. 220, origin unknown; *D. girini*, p. 221, Japan; *D. ebenina*, p. 222, Peru; *D. steini*, *ibid.*, Coquimbo; *D. proserpinae*, p. 223, Brazil; *D. darestei*, p. 228, Brazil; *D. carolinae*, p. 229, East Indies.

Alesia gabilloti, p. 233, Caffraria; *A. guerini*, *ibid.*, origin unknown; *A. inconsiderata*, p. 238, Nepaul; *A. circumflua*, *ibid.*, Senegal.

Verania gauthardi, p. 241, Central Africa.

Lemnia allardi, p. 249, North India; *L. henriceæ*, p. 253, China.

Celophora desjardini, p. 258, Senegal; *C. dumortieri*, p. 260, India; *C. dupasquieri*, p. 261, origin unknown; *C. ochracea*, p. 262, New Holland; *C. victoriae*, p. 269, North India; *C. mendica*, p. 270, New Holland; *C. romani*, p. 273, North India; *C. fluchati*, p. 274, origin unknown; *C. petriquini*, p. 276, North India.

Ænopia sauzeti, p. 281, East Indies.

HYMENOPTERA.

A. *Separate Works.*

TASCHENBERG, E. L. Die Hymenopteren Deutschlands nach ihren Gattungen und theilweise nach ihren Arten als Wegweiser für angehende Hymenopterologen und gleichzeitig als Verzeichniss der Halle'schen Hymenopterenfauna analytisch zusammengestellt. Leipzig, 1866. 8vo, pp. vi & 277, with 21 woodcuts. (Published October 1865.)

The general nature of this work is sufficiently indicated by its title; it is an introductory treatise on the German Hymenoptera, containing analytical tables of the family-groups and genera belonging to that order, with remarks upon many of the latter, and lists, in some cases accompanied by descriptions, of the species. The whole work appears to have been

prepared with the greatest care, and will prove indispensable to the student of European Hymenoptera. It is, however, somewhat unequal in its execution; certain groups (and these are among the best known, such as the Tenthredinidæ, Fossorial Hymenoptera, and Anthophila) are treated in great detail, even the German species being described, whilst the generic analysis of the Proctotrupidæ is altogether omitted. The species referred to are more particularly those found in the vicinity of Halle. The principal works relating to each family are particularly referred to. In the introduction to each family the special terminology employed in characterizing the genera and species belonging to it is explained and illustrated by woodcut outlines of the wings and other parts.

SHUCKARD, W. E. *British Bees: an introduction to the study of the Natural History and economy of the Bees indigenous to the British Islands.* 12mo. 1866. London, Reeve. pp. 371, 16 plates.

This little volume, which belongs to the same series as the works on British Spiders and British Beetles already noticed, is intended as a popular guide to the knowledge of the British Bees. It contains a general account of the natural history of the insects of the family Anthophila, a description of the structure and development of these insects, a sketch of the geographical distribution of the British and of some of the more striking foreign genera, an account of the parasites of Bees, and a classification of the genera of the family, with descriptions of the natural history of their members, and lists of the British species. Throughout the work the author's leading rule appears to have been to take as little notice as possible of the writings of Frederick Smith: the existence of this distinguished Hymenopterologist is just noticed in the chapter on "the scientific cultivation of British Bees;" but in other places, as in the account of the geographical distribution of the family, although there is sufficient evidence that Smith's works have been laid under contribution by the author, we find him studiously kept out of sight. In the lists of species there is scarcely an alteration in nomenclature from that adopted in Smith's catalogue, and even the synonymy might all be derived from that source; but 33 species described in it by Smith are suppressed bodily, with no indication of their being referred to other species as synonyms, and it is remarkable that 27 of these species are to be quoted as of Smith. The introductory chapters are a good deal spun out, and contain some singular geological and anthropological statements. The account of the Strepsiptera also contains the following curious remark:—"Their natural history is but imperfectly known, and I believe the males have not yet been discovered." Shuckard proposes a new arrangement of the genera of British Bees, which will be

noticed hereafter; this and his descriptions of the characters of the genera, which are in considerable detail, constitute the best parts of his book. The accounts of the habits of the species are disfigured in many places by evidences of the spirit indicated above, which one regrets to see in a book bearing the name of Shuckard on its titlepage.

B. *Papers published in Journals.*

- BRISCHKE, C. G. A., and ZADDACH, GUSTAV. Beobachtungen über die Arten der Blatt- und Holzwespen. Dritte Abhandlung. Schr. der phys.-ökon. Gesellsch. zu Königsberg, Jahrg. vi. pp. 104-202, Tafel iv. : 1865.
- DAMIANITSCH, R. Hymenopterologische Beiträge. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvi. pp. 993-996, Taf. 21.
- FOX, S. BEVAN. The Honey Bee. Rep. & Trans. Devonshire Assoc. part 3, 1864, pp. 98-110.
- FRAUENFELD, G. VON. Weitere Mittheilung über die Rapswespe. Verhandl. zool.-bot. Gesellsch. Wien, xvi. pp. 839-844.
- GIRAUD, J. Communication sur diverses Galles du Chêne et sur les Insectes qui les forment. Annales Soc. Ent. France, 4^e série, tome vi. pp. 197-200.
- . Sur les Insectes qui habitent les tiges sèches de la Ronce. See INSECTA.
- IMHOFF, L. Die schweizerischen Arten der Gattung *Andrena*, F. (partim), Latr. (maxima parte), Leach. Mittheil. schweiz. entom. Gesellsch. Band ii. pp. 33-74.
- KAWALL, J. H. Die den genuinen Ichneumoniden verwandten Tribus in Russland, vorzugsweise in Kurland. Bull. Soc. Nat. de Moscou, tome xxxviii. pt. 2. pp. 331-380: 1865.
- The author of this paper remarks upon the very limited information published upon the parasitic Hymenoptera of Russia, and especially upon the *Ichneumones adsciti* and the allied families *Chalcididae*, *Proctotrupidae*, and *Cynipidae*. Of the species belonging to these groups, found principally in Courland, he gives a list, with short Latin characters of many of the species and varieties noticed, and with remarks on the synonymy of others.
- LINCECUM, GIDEON. On the Agricultural Ant of Texas (*Myrmica molefaciens*). Proc. Acad. Nat. Sci. Philad. 1866, pp. 323-331.
- MAYR, GUSTAV L. Myrmecologische Beiträge. Sitzungsberichte der Akad. der Wiss. in Wien, Band liii. Abth. i. pp. 484-517, with a plate: May 1866.

Includes descriptions of new species, and remarks upon several known ones, belonging to the family *Formicidæ*.

MAYR, GUSTAV L. Diagnosen neuer und wenig gekannter Formiciden. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvi. pp. 885-908, Tafel 20 (read October 3, 1866).

MORAWITZ, AUGUST. Einige Bemerkungen über die Crabroartigen Hymenopteren. Bull. Acad. Sci. de St. Pétersb. tome ix. pp. 243-273 : January 20, 1866.

Contains a discussion of the generic or subgeneric groups to be admitted among the true *Crabrones*, with descriptions of 10 new species, nearly all Russian or Siberian.

NEWMAN, EDWARD. A Chapter on Galls. Entomologist, vol. iii. pp. 169-173.

PACKARD, A. S. Observations on the Development and Position of the Hymenoptera, with Notes on the Morphology of Insects. Proc. Bost. Soc. Nat. Hist. vol. x. pp. 279-296 *cum figg.* Reprinted in Annals & Mag. Nat. Hist. 3rd ser. vol. xviii. pp. 82-99.

In this valuable paper the author describes the later portion of the development of *Bombus fervidus*, and discusses the consequences of his observations upon our conceptions of the structure of the Hymenoptera, and of their relations to other orders of insects. It appears from his investigation that at least three changes of form, accompanied by sheddings of the skin, take place between the adult larval condition and the perfect state in this insect. Two of these Packard regards as stages of the "semipupa," which is formed within the skin of the larva, and on its emergence presents a considerable change in the nature of the cephalic and thoracic segments, with rudiments of the appendages of those segments; whilst the abdomen retains nearly its larval form, except that the stigma of the fifth (or first abdominal) segment has become linear and closely approximated to the posterior margin of the third thoracic segment. In the second stage of the semipupa the head and thorax approach more nearly to their form in the pupa, and exhibit a certain increase in size and a somewhat greater perfection in the development of their appendages; but the most remarkable change consists in the transfer of the first abdominal segment, marked by its linear stigma, to the back of the thoracic region. At the same time the three terminal rings of the abdomen have become absorbed and partially enclosed within the cavity of the abdomen, but the abdominal stigmata are still exposed. The third form is the well-known pupa. In some specimens presenting a general resemblance to the pupa, but having the integuments chitinized, the wings as large as in the perfect Bee, the joints of the legs spiny, and the ovipositor entirely withdrawn within the abdomen,

Packard detected the remains of a thin pellicle upon the extremities, from which he regards these individuals as representing a subimago state analogous to that of the *Ephemeridæ*; and hence he considers that, including the emergence from the egg, the *Bombi* "may be considered to undergo a series of at least ten moultings of the skin." The evidence of a subimago state appears, however, to be very imperfect.

The author next enters upon a consideration of the number of arthromeres composing the head in insects. The pleural region is the limb-bearing region of the body; and the development of the three regions of the arthromere (*tergite*, *sternite*, and *pleurites*) will depend upon the development of the appendages. Thus in the abdomen the tergites and sternites are most developed, in the thorax the pleurites come into prominence, and in the head the larger portion is pleural, and "the tergal and especially the sternal parts are either very slightly developed or wholly obsolescent." The consideration of the number of pairs of appendages attached to the head leads the author to regard that part as theoretically composed of seven arthromeres. The body of an insect thus consists of 20 segments, of which 7 belong to the head, 3 to the thorax, and 10 to the abdomen. The Myriapods, according to Packard, form an order of the class Insecta. The author refers to his proposed classification of insects in two series,—one commencing with the *Neuroptera*, and passing through the *Orthoptera* and *Hemiptera*, to culminate in the *Coleoptera*; the other, which ranks higher as a whole, commences with the *Diptera* and terminates with the *Hymenoptera*, which thus occupy the highest place in the class of insects. Packard refers to various structural indications of this superiority in the *Hymenoptera*, of which he regards as the most striking single character the transfer of the first abdominal segment forward to the thoracic region. The study of "degradational" and wingless forms in the various orders of insects leads the author to the same conclusion, as does also the consideration of the geological range in time of the known forms of this class.

PACKARD, A. S. Revision of the Fossorial Hymenoptera of North America. I. *Crabronidæ* and *Nyssonidæ*. Proc. Ent. Soc. Philad. vol. vi. pp. 39-115: June 1866.

In this paper Packard commences an elaborate revision of the North-American Fossorial Hymenoptera, in which the whole of the species are tabulated, but, as a general rule, only the new ones characterized at greater length. In his opening remarks the author has some judicious observations on the modern system of excessive subdivision, especially on the practice of giving family or tribal names to "minor collections of genera connected by characters of very slight importance," and on the inconvenience of burdening the nomenclature of science with an immense

number of generic and subgeneric names. Packard also has some valuable remarks on the relative value of the characters derived from different organs and parts of the body in the Hymenoptera, and indicates the general principles of classification followed by him, which are in accordance with the law of cephalization laid down by Dana, of which the author is a warm supporter.

PHILIPPI, R. A. See INSECTA.

POEY, FELIPE. Destruccion de las Bibijaguas. Repertorio Fisico-Natural de la isla de Cuba, tomo i. pp. 365-368. (*Atta cephalotes*.)

RADOSKOVSKY, O. Supplément aux descriptions des Mutilles Russes. Bull. Soc. Nat. de Moscou, tome xxxix. part 1. pp. 299-303, pl. 9 : 1866.

— Description d'un nouveau genre de Cynips. Ibid. pp. 304-306, pl. 9 : 1866.

RONDANI, CAMILLO. Note Entomologica. Sugl' Imenotteri parassiti della *Cecidomyia frumentaria*. See INSECTA.

SCHENCK, —. Verzeichniss der nassauischen Hymenoptera aculeata, mit Hinzufügung der übrigen deutschen Arten. Berliner entom. Zeitschrift, 1866, pp. 317-369.

SICHEL, J. Etudes Hyménoptérologiques. Premier fascicule. Annales Soc. Entom. de France, 4^e série, tome v. pp. 331-492 : Dec. 13, 1865, and May 26, 1866.

The appearance of the earlier pages of this paper was noticed in the 'Record' for 1865, p. 533 ; the later portion, published in May 1866, contains the conclusion of the memoir on *Phasganophora* and *Conura*, and monographic revisions of the genera *Sphecodes*, *Stephanus*, and *Megischus*.

SMITH, FREDERICK. Notes on some Hymenopterous Insects collected by Mr. Peckolt at Catagallo, South Brazil. Trans. Ent. Soc. London, 3rd ser. vol. v. pp. 323-327.

WYMAN, JEFFRIES. Notes on the cells of the Bee. Proc. Amer. Acad. of Arts and Sci. vol. vii. pp. 68-83.

ZADDACH, G. See BRISCHKE.

TASCHENBERG (Hymen. Deutschl.) adopts the following general classification of the Hymenoptera :—

A. HYM. DITROCHA : Two joints between the coxa and femur.

I. Abdomen not narrowed anteriorly, and completely united to the posterior part of the thorax, which is not narrowed ; fore wings with a lanceolate cell ; hind wings with 3 basal cells ; antennæ straight ; ovipositor saw-like.

1. *Tenthredinidæ*.

II. Abdomen not completely united, sessile, adherent, or pedunculated in

various degrees; fore wings with no lanceolate cell; hind wings with fewer than 3 basal cells; ovipositor spiniform.

a. Anterior wings with a stigma and much ramified venation, or without a stigma and with 1-3 or no veins; wings sometimes deficient, when the body is naked and the antennæ are not geniculate.

1. Fore wings with 2 recurrent veins, and therefore 2 discoidal cells (sometimes wanting) 2. *Ichnumonidae*.
2. Recurrent vein 1 or 0.

* Abdomen attached to the upper part or middle of the metanotum 4. *Evanidae*.

† Abdomen attached to the lower part of the metanotum.

a. Fore wings with 1 recurrent vein .. 3. *Braconidae*.

β. Fore wings without a recurrent vein.

a. Antennæ in ♂ geniculate, with 1 or more annular joints between the scape and the flagellum; ovipositor originating before the apex of the abdomen .. 5. *Chalcididae*.

b. Antennæ in male not geniculate, or without annular joints; ovipositor issuing from apex of abdomen.

6. *Proctotrupidae*.

b. Anterior wings without a stigma, with only 6-8 cells; antennæ straight, with not more than 16 joints; abdomen more or less compressed 7. *Cynipidae*.

B. HYM. MONOTROCHA: One joint between the coxa and femur.

I. Joint 1 of posterior tarsi more or less cylindrical, never much widened or densely hairy. (RAPIENTIA).

a. Fore wings flat, not folded.

1. First abdominal segment with an erect scale, or with 2 knots. 14. *Formicariæ*.

2. First abdominal segment normal.

* Abdomen adherent, of equal breadth 8. *Chrysididae*.

† Abdomen adherent or pedunculate, oval, or if broadest in front gradually tapering to a point behind.

a. Posterior margin of pronotum not reaching base of wings.

9. *Sphingidae*.

β. Posterior margin of pronotum reaching base of wings.

a. Segment 1 not separated from 2.

** Legs long, especially the hinder ones, which are spinose or denticulated. 10. *Pompilidae*.

†† Legs short, hinder ones without spines or teeth.

11. *Sapygidae*.

b. Segment 1 separated from 2, as indicated by a deep ventral furrow.

** Both sexes winged; middle coxæ distant; first tarsal joint as long as the tibiæ 12. *Scoliidae*.

†† ♀ wingless; ♂ with 2-4 cubital cells; tongue not elongated 13. *Mutillidae*.

b. Fore wings folded lengthwise 15. *Vespidæ*.

II. Joint 1 of posterior tarsi more or less compressed, hairy, at least on the inside 16. *Anthophila*.

SCHENCK has published (Berl. ent. Zeits. 1866, pp. 317–369) a catalogue of the Aculeate Hymenoptera (including *Chrysididæ*) of Nassau, with indications of the species inhabiting other parts of Germany. The total number of species observed in Nassau is 549: namely, *Apiaria* 269, *Vesparia* 36, *Formicaria* 42, *Fossoria* 167, and *Chrysididæ* 35. In the classification of the *Apiaria* Schenck adopts the unusual plan of separating the parasitic Bees from the rest, forming of them 3 subfamilies—*Psithyridæ*, *Melectidæ*, and *Stelidæ*. Notes on synonymy, variation, &c. are appended to many of the species; and the memoir is concluded by a bibliographical notice of the literature of the Aculeate Hymenoptera.

GIRAUD publishes (Ann. Soc. Ent. Fr. 4^e sér. vi. pp. 443–500) an admirable memoir on the insects inhabiting bramble-stems and their parasites, an amplification of the paper on nearly the same subject produced in 1860 by Léon Dufour and Perris, with several rectifications of nomenclature. Nearly all the insects referred to belong to the present order. The authors just mentioned had obtained in all 27 species of Hymenoptera from the bramble; and of these 12 formed their nests in it, whilst the remainder were parasitic upon them. Giraud has increased the number of nidificating species to 25, and the parasites observed by him are 20 in number. The nidificating species are:—

ANTHOPHILA (11) 1. *Osmia leucomelana* (Kirby) = *parvula* (Duf. & Perr.); 2. *O. atricornis* (Duf. & Perr.); 3. *O. tridentata* (Duf. & Perr.); 4. *O. ruborum* (Duf. & Perr.); 5. *O. cyanea* (Fab.); 6. *O. cærulescens* (Kirby); 7. *Ceratina albitabris* (Fab.); 8. *C. cærulea* (Vill.); 9. *C. callosa* (Fab.) = *cærulea* (Duf. & Perr.); 10. *Prosopis confusa* (Schenck); 11. *P. brevicornis* (Schenck): VESPIDÆ (3) 12. *Odynerus vivipes* (Shuck.) = *rubicola* (Duf. & Perr.); 13. *O. timidus* (Sauss.); 14. *O. delphinalis* (sp. n.): FOSSORÆ (8) 15. *Pogonius hircanus* (Fab.); 16. *Psen concolor* (Dahlb.); 17. *Cemonus unicolor* (Panz.); 18. *Passalæcus gracilis* (Curt.); 19. *Stigmus pendulus* (Panz.) = *ater* (Duf. & Perr.); 20. *Trypoxylon figulus* (Linn.); 21. *Nitela spinolæ* (Latr.); 22. *Crabro rubicola* (Duf. & Perr.): FORMICIDÆ (3) 23. *Formica truncata* (Spin.); 24. *F. marginata* (Lat.); 25. *Leptothorax nylanderii* (Först.). The Hymenopterous parasites observed are the following, the numbers in brackets indicating the species on which they prey:—ICHNEUMONIDÆ (11) 26. *Fœnus affectator* (Fab.) [20]; 27. *Cryptus confector* (Grav.) [3]; 28. *C. gyrator* (Duf. & Perr.) [20]; 29. *C. odoriferator* (Duf. & Perr.) [20]; 30. *C. bimaculatus* (Grav.) = *Ichn. odynericidus* (Duf. & Perr.) [1, 12]; 31. *C. signatorius* (Fab.) [3]; 32. *C. quadriguttatus* (Grav.) [22]; 33. *Hemiteles mandibulator* (Duf. & Perr.) [22, 12]; 34. *Campoplex lugens* (Grav.); 35. *Ephialtes divinator* (Rossi) = *Pimpla ephippiatoria* (Duf. & Perr.) [17, 20]; 36. *E. mediator* (Grav.) [17, 20]: CHALCIDIDÆ (4) 37. *Perilampus levifrons* (Dalm.); 38. *Diomorus kollari* (Först.) [22]; 39. *D. calcaratus* (Nees) [19]; 40. *Eurytoma rubicola* (sp. n.) [1, 10, 17, 20, 22, 30]: CHRYSIDIDÆ (4) 41. *Omalus auratus* (Dahlb.) = *Hedychrum minimum* (Duf. & Perr.) [17]; 42. *Chrysis cyanea* (Fab.) [20, 21]; 43. *C. splendidula* (Rossi) [12]; 44. *C. indigotea* (Duf. & Perr.): ANTHOPHILA (1) 45. *Stelis minuta* (Lep.) [1].

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Zonitis mutica (Fab.) is parasitic in the cells of *Osmia leucomelana*. Cocoons of *Hemerobius* are frequently found sheltered in the tubes formed by the hollowed bramble-stems; and from these Giraud has bred *Hemiteles æstivalis* (Grav.) = *Microgaster perlæ* (Donmerc) and *Pteromalus boucheanus* (Ratz.). (See also Bull. Soc. Ent. Fr. 1866, p. xxxvi.)

MARSHALL (Ent. M. Mag. iii. p. 92) notices some of the rarer species of Hymenoptera taken by him at Freshwater Bay, Pembrokeshire.

ANTHOPHILA.

The analytical table of the genera of German Bees given by TASCHEBERG (Hym. Deutschl.) includes 30 genera. No division into subfamilies is recognized by him. The species are described.

SHUCKARD (British Bees) proposes the following arrangement of the genera of this family, for which he proposes the wholly unnecessary new name, *Mellicolligeræ* :—

Subfamily 1. ANDRENIDÆ (Subnormal Bees).

Section 1. With lacerate paraglossæ.

a. With emarginate tongues. 1. *Colletes*. 2. *Prosopis*.

b. With lanceolate tongues. 3. *Sphecodes*. 4. *Andrena*. 5. *Cilissa*.

Section 2. With entire paraglossæ.

c. With acute tongues. 6. *Habictus*. 7. *Macropis*. 8. *Dasypoda*.

Subfamily 2. APIDÆ (Normal Bees).

Section 1. Solitary.

Subsection 1. *Scopulipedes*.

a. *Femoriferæ* (collectors on the entire leg).

† With 2 submarginal cells. 9. *Panurgus*.

b. *Cruriferæ* (collectors on the shank only).

† With 2 submarginal cells. 10. *Eucera*.

†† With 3 submarginal cells. 11. *Anthophora*. 12. *Saropoda*.

13. *Ceratina*.

Subsection 2. *Nudipedes*.

a. With 3 submarginal cells. 14. *Nomada*. 15. *Melecta*. 16. *Epeolus*.

b. With 2 submarginal cells. 17. *Stelis*. 18. *Cælixys*.

Subsection 3. *Dasygasters* (all with 2 submarginal cells). 19. *Megachile*. 20. *Anthidium*. 21. *Chelostoma*. 22. *Heriades*. 23. *Anthocopa*. 24. *Osmia*.

Section 2. *Cenobites*.

Subsection 1. Spurred.

† Parasitical. 25. *Apathus*.

†† Collectors. (Temporarily social.) 26. *Bombus*.

Subsection 2. Unspurred. (Permanently social.) 27. *Apis*.

Anthocopa papaveris is introduced on the authority of Leach's specimens.

Sphecodes. Sichel has published (Ann. Soc. Ent. Fr. 4° sér. v. pp. 396–466 and 491) a "Révision monographique, critique et synonymique du genre mellifère *Sphecodes*, Latreille," in the earlier portion of which he maintains from his own observations,

in support of the assertion of Smith, that the insects of this genus are not parasites, but that they make and store their own nests. He believes that they convey pollen to their burrows by means of the hairs on the head, the clypeus, and the mandibles. With regard to the species of this genus, Sichel is inclined, after the examination of about 3200 specimens, to adopt the opinion of Wesmael, that most of the described European and Algerian species are to be regarded as varieties of *S. gibbus*, and thinks that the whole number may be reduced to at the utmost 3. In the detailed description of these species and their numerous varieties and subvarieties (*l. c.* pp. 412-446), it is rather difficult to understand what value the author puts upon the various forms described under distinct names. The 3 admitted species seem to be *S. gibbus* (Linn.), *S. scabricollis* (Wesm.), and *S. fuscipennis* (Germ.); but we find many other forms described as species, and even as new species (*vide infra*), although we are afterwards told that they are merely varieties or subvarieties, not only of the 3 admitted species, but even of *S. hispanicus* (Wesm.), which itself is said to be a subvariety of *S. gibbus*! Such a treatment of a difficult subject can only render the confusion worse than it was before. It is hard to see why the term "species" should be employed at all in the designation of what are confessedly mere subordinate varieties. The total number of forms, numbered as species, belonging to Europe and the Mediterranean region, is 10; that of the exotic "species" is 19.

Sphæcodes. Sichel describes the following forms of this genus, and gives them new specific names:—*S. ruficornis*, *l. c.* p. 440, Algeria; *S. punctulatus*, *l. c.* p. 443, Algeria; *S. scariosus*, *l. c.* p. 444 (subvar. *gibbus*), Morocco; *S. subpunctulatus*, *l. c.* p. 445, Morocco; *S. abyssinicus*, *l. c.* p. 447 (subvar. *hispanicus*); *S. senegalensis*, *l. c.* p. 448 (subvar. *ruficornis*?) ; *S. punctatus*, *l. c.* p. 449, Cape of Good Hope; *S. subconfertus*, *l. c.* p. 455, *S. metathoracicus*, *l. c.* p. 456, *S. aspericollis*, *l. c.* p. 457, *S. puncticollis*, *l. c.* p. 459, *S. metanoticæus*, *l. c.* p. 460, and *S. basalis*, *ibid.*, Mexico; *S. rugulosus*, *l. c.* p. 463, and *S. granulatus*, *l. c.* p. 464, Chili.

Andrena. Imhoff has published (*Mitth. schw. ent. Ges.* ii. pp. 33-74) descriptions of the Swiss species of this genus. He enumerates 37 species, and remarks upon the general characters presented by them (*l. c.* pp. 33-35). An analytical table is given (pp. 71-74). The following synonymic indications occur:—*Melitta smithella* (Kirby)=*præcox* (Scop.); *A. varians* (Rossi) includes as vars. *A. mixta* (Schenck) and *helvola* and *angulosa* (K.); *M. albicans* (K.)=*A. hæmorrhœa* (Fab.); *A. cognata* and *griseola* (Sch.)=*dorsata* (K.); *A. elongata* (Imhoff)=*hatterfiana* (Fab.).

Andrena nycthemera, sp. n., Imhoff, *l. c.* p. 45 (♂ perhaps=*M. subdentata*, K.), *A. sericata*, sp. n., Imh. *l. c.* p. 63, and *A. lucens*, sp. n., Imh. *l. c.* p. 67, Switzerland.

Andrena angustipes, sp. n., Schenck, *Berl ent. Zeits.* 1866, p. 326, Nassau.

S. BRVAN FOX has communicated to the Devonshire Association a paper on the Natural History of the Honey-Bee. Report and Trans. part iii. (1864) pp. 98-110.

JEFFRIES WYMAN (Proc. Amer. Acad. vii. pp. 68-83) discusses the question of the irregularities in the structure of the comb of the Hive-Bee, and especially in the different diameters of the cells. The author comes to the conclusion that the irregularities are irregularities of construction. His paper is illustrated with figures of portions of comb and tables of cell-measurements.

Some remarks on the swarming of Bees by LAYARD and TEGETMEIER. Proc. Ent. Soc. 1866, pp. xii-xiii.

GIRARD notices the supposed evidence of Insect rationality furnished by the *Bombi* cutting through the corollas of tubular flowers to get at their nectaries, but considers it to be invalidated by the fact that the solitary *Xylocopa* adopt the same course. Bull. Soc. Ent. Fr. 1865, p. lxvi.

H. WEIJENBERGH records the occurrence of two species of *Psithyrus* (*P. barbutellus*, Kirby, and *P. nemorum*, Fab.) in a separate nest containing nearly empty cells of two sizes. The nest was at a distance of four metres from one of *Bombus hypnorum*, and was in communication with it underground. Tijdschr. voor Ent. 1866, pp. 95-96.

Trigona mosquito. Smith (Ent. Trans. 3rd ser. v. pp. 324-326) describes the female and worker of this species from specimens sent from Brazil by Peckolt. The gravid female has the abdomen enormously dilated; and hence Smith concludes that a single queen may supply the necessary eggs even for the largest communities of this species. Smith also remarks upon the occurrence of individuals of *T. rufiterus* of all shades of colour, and describes the ♂ of *T. basalis* (l. c. p. 326).

GIRAUD (Ann. Soc. Ent. Fr. 4^e sér. vi. pp. 447-462 and 494) describes the economy of various species of this family inhabiting the stems of the bramble (see p. 417).

Ædiscelis, g. n., Philippi, Stett. ent. Zeit. 1866, p. 109. Rather elongate; antennæ long, filiform; mandibles bidentate; tongue elongate, bipartite at apex; radial cell slightly constricted, 2 cubital cells, recurrent vein 1 joining the vein between the two cells, 2 terminating within the outer angle of the second; abdomen with the sutures constricted; hind femora very thick, hind tibiæ triangular. Sp. *Æ. vernalis*, sp. n., Phil. l. c. p. 110, taf. 2. fig. 3, and *Æ. minor*, Phil. ibid., Chili (probably parasitic).

Nomioides, g. n., Schenck, Berl. ent. Zeits. 1866, p. 333. Allied to *Nomia*, but differing in the wing-scales, in the hind legs of the ♂, and in habit. Sp. *Andrena pulchella* (Jur.).

Halictus unicolor, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 183, Japan.

VESPIDÆ.

Of this family TASCHEBERG (Hym. Deutschl.) tabulates 7 genera as occurring in Germany. The species are very imperfectly indicated.

The economy of 3 species of *Odynerus* inhabiting dry bramble-twigs is described by GIRAUD (Ann. Soc. Ent. Fr. 4^e sér. vi. pp. 463-466). See p. 417.

The habits of *Polybia pygmaea* (Sauss.) are noticed by SMITH, Ent. Trans. 3rd ser. v. p. 324.

SMITH notices the characters of wasps'-nests produced by workers alone. Proc. Ent. Soc. 1866, p. vi.

POMPILIDÆ.

Of this family TASCHENBERG (Hym. Deutschl.) tabulates and describes all the German genera and species. The number of genera admitted is 7.

Pogonius hircanus (Fab.). The œconomy of this species as nidificating in bramble-stems is described by Giraud (Ann. Soc. Ent. Fr. 4^e sér. vi. pp. 467-469).

Pompilus nanus, Schenck, Berl. ent. Zeits. 1866, p. 358, Danzig.

Salix taniatus (Ziegl. MS.), Taschenberg, Hym. Deutschl. p. 211, Germany.

CRABRONIDÆ.

Of this family TASCHENBERG (Hym. Deutschl.) tabulates and describes all the German genera and species, the former numbering 37.

GIRAUD (Ann. Soc. Ent. Fr. 4^e sér. vi. pp. 470-476) describes the œconomy of various species of this family, which nidificate in bramble-stems (see p. 417).

Crossocerus niger (St. Farg.) makes its nests in the burrows of *Saperda pupillata* in branches of Honeysuckle, and provisions them with flies of the genera *Sargus* and *Chrysomyia*, according to Goureau. Ann. Soc. Ent. 4^e sér. tome vi. p. 174.

Bembex olivacea exhibited by Smith and said to have been captured in Britain. Proc. Ent. Soc. 1866, p. viii.

PACKARD (Proc. Ent. Soc. Phil. vi. p. 48 *et seq.*) indicates his views on the general classification &c. of the *Crabronidæ* sensu stricto. He follows Dahlbom in dividing the group into 3 subfamilies (*Philanthinæ*, *Crabroninæ*, and *Pemphredoninæ*), which he regards as subparallel groups, although the last-mentioned one occupies the lowest position. *Psen* and *Stigmus* are regarded by him as degraded forms related to *Cerceris* and *Crabro* respectively, but at the same time as showing a plain relationship to the *Larridæ* and *Sphegidæ*, thus in their affinities passing over the *Nyssonidæ*, which in general stand in the closest relationship to the *Crabronidæ*. Referring to the variety of generic forms compared with the small number of the species of *Pemphredoninæ*, the author considers that in some cases they may be regarded as mimetic forms in the sense attached to the term by Wallace, but that such groups must be looked upon as isolated forms, "the connecting links of which have perished in mesozoic times," and also as "comprehensive types" out of which higher genera are elaborated. These 3 subfamilies are characterized at great length by the author, the character of the *Philanthinæ* including a discussion of the peculiarities presented by the genera belonging to the other two groups:—

The *Philanthinæ* (p. 49) include the genera:—*Philanthus*, with 15 species (tabulated on pp. 54-55), *P. solivagus* (Say) ♀ described p. 57; *Eucerceris* (Cress.), with 6 species (tab. p. 58); and *Cerceris*, with 24 species, 1 new (tab. pp. 59-60). Of the *Crabroninæ* (p. 64) only 2 genera are here de-

scribed, namely:—a new genus, *Anacrabro*, with 1 new species; and the genus *Crabro*, divided into 9 groups (distinguished by letters A–I), and including 40 species, 20 described as new (all tabulated pp. 71–74), and the following known species described in detail:—*C. interruptus* ♂ ♀ (St. Farg.), p. 74; *C. 10-maculatus* ♀ (Say), p. 79; *C. chrysarginus* ♂ ♀ (St. Farg.), p. 82; *C. singularis* ♂ ♀ (Sm.), p. 86; *C. sex-maculatus* ♂ ♀ (Say), p. 91; *C. trifasciatus* ♂ ♀ (Say), p. 93; *C. obscurus* ♀ (Sm.), p. 99; and *C. scaber* ♀ (Sm.), p. 113.

MORAWITZ (Bull. Acad. St. Pétersb. ix. pp. 243–255) discusses the value of the groups into which the species of the great genus *Crabro* have been divided, two of which (*Lindenius* and *Crabro*) he admitted to generic rank in his paper on the *Crabronidæ* of the environs of St. Petersburg. He now argues that the characters upon which the supposed genera of *Crabrones* have been founded are evanescent, and that, although we may select a certain number which, when placed side by side, appear to be abundantly distinct, the examination of a larger number shows transitions from one form to the other, which materially diminish the value of those characters by which the separation of the groups seemed to be justified. Accordingly he proposes to leave all the *Crabrones* in one great genus, which he divides into 2 primary and 17 secondary groups, as shown in the following abridgment of his tabular synopsis:—

- I. LINDENIUS (St. Farg.). Mandibles simple at apex.
 - A. Mandibles with the apex gradually diminished, rounded.
 1. Antennary pits further from each other than from the hairy eyes.
 1. *Entomognathus* (Dahlb.).
 2. Antennary pits not further from each other than from the eyes.
 2. *Chalcolamprus* (Wesm.);
 3. *Lindenius* (Wesm.).
 - B. Mandibles cut off obliquely at the apex within.
 4. *Trachelosimus* (Mor.).
- II. CRABRO (Fab.). Mandibles truncated at apex, and divided into 2 approximated teeth.
 - A. Eyes scarcely convergent towards vertex; labial and maxillary palpi differing by 3 joints 5. *Trachelodes* (Mor.).
 - B. Eyes strongly convergent towards vertex; labial and maxillary palpi differing by 2 joints (= *Crabro*, Lat.).
 1. Maxillary palpi 5-jointed, labial 3-jointed.
 6. *Physoscelis* (St. Farg.);
 7. *Corynopus* (St. Farg.).
 2. Maxillary palpi 6-jointed, labial 4-jointed.
 - a. Thorax shining, metanotum faintly sculptured, cordiform area generally distinct.
 - α. First abdominal segment with a median triangular impression at base (= *Crossocerus*, Wesm.) . . 8. *Blepharipus* (St. Farg.);
 9. *Crossocerus* (St. Farg.).
 - β. First abdominal segment elongated, with a sharp longitudinal keel on each side towards the base 10. *Cuphopterus* (Mor.) = *Blepharipus* (Wesm.).

- b. Metanotum roughly sculptured, dull; cordiform area indistinct.
 a. Abdomen elongate; first segment with 2 distinct, parallel keels.

* Sculpture of metanotum partially obliterated at the sides.

11. *Anothyreus* (Dahlb.);

12. *Thyreopus* (St. Farg.).

† Metanotum obliquely (schräg) striated at the sides (*Ceratocolus lewi*, Dahlb.).

β. Abdomen short; first segment with 2 obtuse keels convergent behind 13. *Ceratocolus* (St. Farg.);

14. *Thyreus* (St. Farg.); 15. *Crabro* (Dahlb.); 16. *Solenius*

(St. Farg.)=*Ectemnius* (Dahlb.); 17. *Clytochrysus* (Mor.)

=*Crabro* (St. Farg.) and *Solenius* (Dahlb., Wesm.).

In conclusion, the author states that these groups will probably be reduced to 9, namely, Nos. 1, 3+2, 4, 5, 7+6, 9+8, 10, 12+11, and 15=13-17.

MORAWITZ also remarks upon the following species of the genus *Crabro* (l. c. pp. 266-272):—*Rhopalum nigrinum* (Kiesenw.) is an intermediate form between *Physoscelis* and *Corynopis*, and its ♀ is probably described by Wesmael as *Rhopalum gracile*. Both names are previously employed in *Crabro*; and Morawitz proposes to name the species *C. kiesenwetteri* (l. c. p. 267). The species of the *Blepharipus* group seem to vary much as regards the sculpture of the metanotum; *C. congener* (Dahlb.) is a variety of *C. podagricus* (Vanderl.). The mesopleural denticle is variable in species of *Crossocerus*; *C. ovalis* (St. Farg.), *ambiguus* (Dahlb.), and *nigrita* are particularly mentioned by Morawitz. Morawitz also gives a table of the species cited by Eversmann in his 'Fauna Volgo-Uralensis,' with their localities, and remarks on their synonymy (l. c. pp. 269-272).

Crabro guttatus (Vanderl.). The cocoon of this species is described by F. Löw, Verh. zool.-bot. Ges. in Wien, xvi. p. 951.

Crabro. Of this genus, as defined by him (see p. 422), Morawitz describes the following new species:—*C. (Entomognathus) sahlerbergi*, l. c. p. 257, Ochotsk; *C. (Chalcolamprus) luteiventris*, ibid., of unknown origin; *C. (Blepharipus) hirtipes*, l. c. p. 258, Spask; *C. (Crossocerus) pullulus*, l. c. p. 259, Ochotsk; *C. (Cross.) distinguendus*, l. c. p. 260, Creuznach; *C. (Anothyreus) mülkini*, l. c. p. 261, Ochotsk; *C. (Thyreopus) sibiricus*, ibid., Kiachta; *C. (Ceratocolus) ochoticus*, l. c. p. 262, Ochotsk; *C. (Solenius) intermedius*, l. c. p. 264, Spask; and *C. (Sol.) spinipes*, l. c. p. 265, Spask and Kasan.

Crabro. Packard describes the following new North American species of this genus (Proc. Ent. Soc. Phil. vi.):—*C. producticollis*, p. 76, New Jersey; *C. gracilissimus* (!), p. 78, Colorado Territory; *C. ruffemur*, p. 81, Illinois; *C. villosifrons*, p. 84, New Jersey, Pennsylvania; *C. quadrangularis*, p. 85, Pennsylvania; *C. 14-maculatus*, p. 87, Illinois; *C. oblongus*, p. 88, Connecticut; *C. trapezoideus*, p. 89, Illinois; *C. paucimaculatus*, p. 90, Illinois; *C. pauper*, p. 95, Maine, Virginia; *C. denticulatus*, p. 97, Virginia, New York; *C. tenuiglossa*, p. 98, Illinois; *C. cristatus*, p. 101, Colorado Territory, Illinois; *C. brunneipes*, p. 102, Pennsylvania, Maine; *C. effossus*, p. 104, New York; *C. cubiceps*, p. 105, Illinois; *C. corrugatus*, p. 107, Virginia; *C. parvulus*, p. 108, Colorado Territory; *C. septentrionalis*, p. 110, Hudson Bay Territory, Maine, &c.; *C. stirpicola*, p. 111, New York, New Jersey, Illinois.

Cerceris occipito-maculata, sp. n., Packard, l. c. p. 62, Kansas.

SAPYRIDÆ.

TASCHENBERG (Hym. Deutschl.) describes four German species of this family belonging to the genera *Sapyga* and *Plochrum* of Latreille.

SCOLIIDÆ.

TASCHENBERG (Hym. Deutschl. p. 225) tabulates the genera belonging to this family found in Germany: namely, *Tiphia* (Fab.), *Scolia* (Fab.), and *Meria* (Lat.). Under the latter he includes *Bethylus* and *Elis* as subgenera. Its German representative is *M. tripunctata*, Latr.

GIRAUD stated that *Bethylus depressus* (Fab.) and *Methoca domestica* (Lat.) were ♂ and ♀ of one species, to which he gave the name of *Pristocera depressa*. F. LÖW confirms this statement, and says that he has found the two forms in copulâ. Verh. zool.-bot. Ges. in Wien, xvi. p. 953.

MUTILLIDÆ.

Under this family TASCHENBERG (Hym. Deutschl. p. 228) tabulates the three genera *Mutilla*, *Myrmosa*, and *Methoca*. Of the first he describes only three species, regarding the synonymy and probably the stability of the other described forms as rather doubtful.

RADOCHKOFFSKY (Bull. Soc. Nat. Mosc. xxxix. pt. 1) adds *Mutilla quinque-punctata* (Oliv.) to the list of Russian *Mutillæ*, and gives a description of it (l. c. p. 299). He also describes and figures red varieties of *M. coronata* and *M. hungarica* (Fab.), l. c. p. 301, pl. 9. figs. 2 & 3; and remarks that his species *M. taurica* and *discoidalis* will probably have to be united with *M. torosa* (Costa). A long list of errata in his former paper (see 'Record,' 1865, pp. 545 & 546), chiefly relating to references to figures, also includes a notice that the name of his new species, "*petiolaris*," is to be changed to "*unipetiolearis*" (l. c. p. 303). A new species described will be cited below.

F. LÖW has taken *Methoca domestica* ♀ in copulation with *Bethylus depressus* ♂ (see above).

Mutilla ballioni, sp. n., Radochkoffsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 300, pl. 9. fig. 1, Crimea.

FORMICIDÆ.

Under this family TASCHENBERG (Hym. Deutschl.) admits the three subfamilies *Formicidæ*, *Poneridæ*, and *Myrmicidæ*, which he tabulates (p. 232). He also gives tables of the genera belonging to each of these groups in accordance with the characters presented by the different sexes. The total number of genera characterized is 16. The species are for the most part very briefly characterized; but the author has extracted a synonymic list of the European Ants from Roger's Catalogue of the Formicidæ, published in the Berl. ent. Zeitschrift, Band vii.

MAYR (Verh. zool.-bot. Ges. in Wien, xvi. pp. 885-908, taf. 20) gives de-

scriptions of, or notes upon, the following known species of this family:—*CAMPONOTUS niveosetosus* ♀ (Mayr), p. 885, *auricomus* (Rog.) and *sericeus* ♀ (Fab.), p. 886; *POLYRHACHIS militaris* (Fab.) ♂, p. 886; *LASIUS latipes* (Walsh) ♀, p. 889, taf. 20. fig. 4; *FORMICA pallide-fulva* (Lat.) ♀, p. 889; *ECTATOMMA metallicum* (Smith) ♂, p. 891; *GNAMPTOGENYS* (Rog.) characterized, and sp. *Ectat. concinna* (Smith) ♀, p. 892, taf. 20. fig. 5; *PALTOHYREUS* (Mayr) characterized, p. 893, and *P. tarsatus* (Fab.) ♂, p. 894, tab. 20. fig. 6; *APHLÆNOGASTER capensis* (Mayr) ♂ ♀, p. 896, taf. 20. fig. 9; *PHEIDOLOGETON hostilis* (Smith) ♀, p. 899; *CREMASTOGASTER arborea* (Smith) ♀ ♂, p. 900, taf. 20. fig. 10, *cicatriculosa* (Rog.) ♀, p. 901, and *lineolata* (Say) ♂, *ibid.*, taf. 20. fig. 11; *CAREBARA vidua* (Smith) ♂ ♀, p. 904; *MYRMICARIA eumenoides* (Gerst.) = *Physatta natalensis* (Smith) ♀, p. 905; *SIMA* (= *Pseudomyrma*) *capensis* (Smith) ♂, p. 906, taf. 20. fig. 14; and *CA-TAULACUS striatus* (Smith) ♀, p. 908.

MAYR (Sitzungsber. Wien. Akad. liii. Abth. 1) refers to the following known species of *Formicidæ*:—*Camponotus clarus* (Mayr) = *Formica mellea* (Say), p. 485; *C. pellitus* (Mayr), description of a var. (♂) and of the ♀, p. 486; *Polyrhachis philippinensis* (Sm.) ♂ noticed, p. 491; *Tapinoma boreale* (Rog.), characters of ♀, p. 497; *Liometopum xanthochroum* (Rog.) ♂ described with doubt as *Iridomyrmex xanthochrous*, p. 497; *Ponera crocea* (Rog.) ♀ probably belongs to *Sysphingta* (Rog.), p. 501; *Macromischa* (Rog.), absence of spurs on intermediate and posterior legs indicated as a generic character, p. 507; *Monomorium minutum* (Mayr) ♀, p. 509; *Cryptocercus angustus* (Mayr) ♂ described, p. 515; *Cephaloxys capitata* (Sm.) said to belong to *Strumigenys* (Sm.), p. 517.

LINCECUM (Proc. Acad. Nat. Sci. Phil. 1866, pp. 101–106) describes the habits of the “small, black, erratic Ant” of Texas. The same author (*l. c.* pp. 4–6) describes a battle between two communities of the large Black Tree-Ants of the same country

Myrmica molefaciens. Under this name Lincecum describes a species of Ant inhabiting Texas, which he also denominates the “Agricultural Ant” (Proc. Acad. Nat. Sci. Phil. 1866, pp. 323–331). The author describes the habits of this species in great detail; it lives in the ground in large communities, forming extensive paved ways, and cultivating a particular species of grain-bearing grass (*Aristida stricta*).

Atta cephalotes. Poey indicates (Repert. Cuba, i. pp. 365–368) the general natural history of this species in Cuba (where it is known under the name of *Bibijagua* or *Vivijagua*) and the damage done by it to agriculture by the destruction of cultivated plants. He describes a method of destroying the insects by the fumigation of their nests.

Myrmica lobicornis (Nyl.) occurs as a littoral species in small communities under stones in sandbanks in Durham and Northumberland (T. J. Bold, Ent. M. Mag. ii. p. 234).

Cryptocercus elongatus is said by Peckolt to be destructive to nests of *Trigona mosquito*. Smith, Ent. Trans. 3rd ser. v. p. 327.

GIRAUD (Ann. Soc. Ent. Fr. 4^e sér. vi. pp. 476–477) notices 3 species of this family as inhabiting the dry stems of the Bramble (see p. 417).

New genera and species:—

(*Formicidæ*.)

Dorymyrmex, g. n., Mayr, Sitzungsber. Wien. Akad. liii. Abth. 1. p. 494.

Allied to *Hypoclinea* and *Liometopum*; fore wings with two cubital cells; spurs aciculiform. Sp. *Formica flavescens* (Fab.).

Linepithema, g. n., Mayr, l. c. p. 496. Allied to preceding; spurs briefly pectinated; clypeus triangular, posteriorly with a very distinct curved impression; intermediate and inner genital valves (in ♂) elongated. Sp. *L. fuscum*, sp. n., Mayr, l. c. p. 497, fig. 7, Lima.

Camponotus. Of this genus Mayr describes the following new species:—*C. pullatus*, Sitzungsber. Wien. Akad. liii. Abth. 1. p. 484, Mexico; *C. clypeatus*, l. c. p. 487, Lagoa Santa; *C. depressus*, ibid. fig. 1, Brazil; *C. sicheli*, l. c. p. 488, fig. 2, Algeria; *C. cristatus*, l. c. p. 489, fig. 3, *C. laminatus*, ibid., fig. 4 (thorax), and *C. schmelzi*, l. c. p. 490, Fiji Islands.—*Camponotus japonicus*, Mayr, Verh. zool.-bot. Ges. in Wien, xvi. p. 885, Japan.

Polyrhachis sidnica, Mayr, l. c. p. 886, taf. 20. fig. 1, Sidney.

Colobopsis paradoxa, Mayr, l. c. p. 887, taf. 20. fig. 2, Brazil.

Colobopsis dentata, Mayr, Sitzungsber. Wien. Akad. liii. Abth. 1. p. 492, fig. 5, Fiji Islands.

Prenolepis braueri, Mayr, in Brauer, Reise der Novara, Neur. p. 49, note, Sydney, with *Eutermes fumigatus* (Br.).

Plagiolepis mediterranea, Mayr, Sitzungsber. Wien. Akad. liii. Abth. 1. p. 493, Egypt.

Lasius (Acanthomyops) interjectus, Mayr, Verh. zool.-bot. Ges. in Wien, xvi. p. 888, taf. 20. fig. 3, New Jersey.

Formica japonica, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 183, Japan.

Formica schaufussi, Mayr, Sitzungsber. Wien. Akad. liii. Abth. 1. p. 493, fig. 6 (thorax), North America.

Iridomyrmex sericeus, Mayr, l. c. p. 498, fig. 8 (thorax), Mexico.

Hypoclinea taschenbergi, Mayr, l. c. p. 498, North America; *H. ursus*, Mayr, l. c. p. 499, fig. 9 (hind leg), Quito.

(*Ponerides*.)

Prionopella, g. n., Mayr, Sitzungsber. Wien. Akad. liii. Abth. 1. p. 503. Allied to *Stigmatomma*; antennæ (♀) 11-jointed, clavate, last joint very large; mandibles with masticating surface oblique, tridentate. Sp. *P. punctulata*, sp. n., Mayr, l. c. p. 505, fig. 11 (antenna), Parana.

Centromyrmex, g. n., Mayr, Verh. zool.-bot. Ges. in Wien, xvi. p. 894. Allied to *Typhlomyrmex*; clypeus long and pointed; intermediate tibiae and tarsi and posterior tarsi with numerous short spines, anterior and posterior tibiae with broad, pectinated spurs. Sp. *C. bohemanni*, sp. n., Mayr, l. c. p. 895, taf. 20. fig. 7 (♂), Rio de Janeiro.

Odontomachus angulatus, Mayr, Sitzungsber. Wien. Akad. liii. Abth. 1. p. 500, fig. 10 (peduncle), Fiji Islands.

Pachycondyla atrovirens, Mayr, Verh. zool.-bot. Ges. in Wien, xvi. p. 890, New Granada.—*Pachycondyla lineaticeps*, Mayr, Sitzungsber. Wien. Akad. liii. Abth. 1. p. 502, Mexico.

Leptogenys ingens, Mayr, l. c. p. 503, Columbia.

Ectatomma rostratum, Mayr, Verh. zool.-bot. Ges. in Wien, xvi. p. 890, Brazil.

(*Dorylides*.)

Sphinctomyrmex, g. n., Mayr, Verh. zool.-bot. Ges. in Wien, xvi. p. 895.

Allied to *Typhlopone*; abdomen distinctly constricted at all the junctions of the segments. Sp. *S. stali*, sp. n., Mayr, *l. c.* p. 895, taf. 20. fig. 8 (♀), Brazil.

(*Myrmicidæ*.)

Tranopelta, g. n., Mayr, Sitzungs. Wien. Akad. liii. Abth. 1. p. 512. Allied to *Aphenogaster*; anterior wings with one cubital cell; antennæ 11-jointed, clavate, joints 8-11 gradually increasing in size. Sp. *T. gilva*, sp. n., Mayr, *l. c.* p. 514, fig. 14 (antenna), Venezuela.

Typhlatta ceylonica, Mayr, *l. c.* p. 505, Ceylon.

Myrmecia pumilio, Mayr, Verh. zool.-bot. Ges. in Wien, xvi. p. 896, Sidney.

Ischnomyrmex exasperatus, Mayr, Sitzungs. Wien. Akad. liii. Abth. 1. p. 506, fig. 12 (antenna), origin unknown.

Macromischa aculeata, Mayr, *l. c.* p. 507, and *M. africana*, Mayr, *ibid.*, Gold Coast.

Leptothorax nudus, Mayr, *l. c.* p. 508, Fiji Islands; *L. curvispinosus*, Mayr, *ibid.* fig. 13 (thorax), North America.

Monomorium specularis, Mayr, *l. c.* p. 509, Upolu (Navigator's Islands).

Phaidole oceanica, Mayr, *l. c.* p. 510, Fiji Islands; *P. tasmaniensis*, Mayr, *l. c.* p. 511, Van Diemen's Land.

Phaidole sculpturata, Mayr, Verh. zool.-bot. Ges. in Wien, xvi. p. 897, Caffraria; *P. innotata*, Mayr, *l. c.* p. 898, of unknown origin; and *P. punctulata*, Mayr, *l. c.* p. 899, Caffraria.

Cremastogaster erecta, Mayr, *l. c.* p. 902, taf. 20. fig. 12, Island of St. Joseph.

Solenopsis capensis, Mayr, *l. c.* p. 905, Cape of Good Hope.

Cryptocerus patellaris, Mayr, *l. c.* p. 907, taf. 20. fig. 15, Brazil; *C. notatus*, Mayr, *ibid.* taf. 20. fig. 16, Brazil.—*Cryptocerus crenaticeps*, Mayr, Sitzungs. Wien. Akad. liii. Abth. 1. p. 515, fig. 15, Columbia.

Strumigenys godeffroyi, Mayr, *l. c.* p. 516, Upolu.

CHRYSIDIDÆ.

Of this family TASCHENBERG (Hym. Deutschl. p. 148) tabulates nine genera, but remarks of two of them (*Elampus*, Spin., and *Notozus*, Först.) that they are separated upon very slight characters, and, indeed, pass one into the other. The characters of many of the German species are given.

The economy of the species of this family which live as parasites in bramble-stems is noticed by GIRAUD (Ann. Soc. Ent. Fr. 4^e sér. vi. pp. 492-493). See p. 417.

ICHNEUMONIDÆ.

The insects of this group are divided by TASCHENBERG into three families, *Ichneumonidæ*, *Braconidæ*, and *Evanidæ* (see p. 416). Of the first he recognizes 131 genera in Germany, of the second 89, and of the last 3.

Stephanus and *Megischus*. Sichel (Ann. Soc. Ent. Fr. 4^e sér. v.) publishes a revision of these genera, with the latter of which his genus *Bothriocerus* is identical. He treats the genus *Stephanus* as including two subgenera, characterized as follows (*l. c.* p. 471):—

Stephanus (Jur.) s. str. Posterior femora with 3 teeth beneath; posterior tarsi 5-jointed in ♂ ♀.

Megischus (Brullé). Posterior femora with 2 teeth beneath; posterior tarsi 3-jointed in ♀, 5-jointed in ♂. The characters of these genera are illustrated on pl. 10. Of the former Sichel describes only the Swiss *Stephanus serrator* (Fab.), *l. c.* p. 472; of the latter he describes 8 species, of which 2 are new. The known species are:—*Pimpla coronator* (Fab.), p. 477; *Bothriocerus americanus* (Sich.), p. 480; *Megischus annulator* (Brullé), p. 482, pl. 10. fig. 6 (details); *M. brasiliensis* (Westw.), p. 483; *Bothriocerus europæus* (Sich.), p. 484; and *Stephanus anomalipes* (Först.), p. 485. The last two are probably identical.

A catalogue of species of *Braconides* and *Evanides* found in Russia, and especially in Courland, is given by KAWALL, Bull. Soc. Nat. Mosc. xxxviii. pt. 2. pp. 340–367.

GIRAUD (Ann. Soc. Ent. Fr. 4 sér. vi. pp. 477–487) notices various species of this family as parasitic upon other Hymenoptera, which make their nests in the stems of the Bramble (see p. 417). Several of the species (27–34) are characterized.

MARSHALL records the occurrence of *Pachylomma buccata* (Bréb.) in the run of *Etobia nigripes* (Steph.) in Pembrokeshire. Ent. M. Mag. iii. p. 92.

Pimpla oculatoria bred from the egg-bag of a spider by W. Rogers, Proc. Ent. Soc. 1866, p. vii.

F. LÖW notices the insects from which he has bred species of *Bracon*, *Chelonus*, *Microgaster*, *Polemon*, *Campoplex*, *Cryptus*, *Exochus*, *Hemiteles*, *Mesostenus*, *Pimpla*, and *Trogus*. Verh. zool.-bot. Ges. in Wien, xvi. pp. 951–953.

Catadelphus, g. n., Taschenberg, Hymen. Deutschl. pp. 36 & 51. Allied to *Trogus*; scutellum moderately convex; wings blue-black, with a yellow stigma. Type *T. arrogator* (Grav.).

Automalus, g. n., Taschenberg, *l. c.* pp. 36 & 52. Allied to *Trogus*; clypeus with the anterior margin straight; forehead convex; keel occupying only the second ventral segment. Type *T. alboguttatus* (Grav.).

Cryptopimpla, g. n., Taschenberg, Hym. Deutschl. pp. 40 & 66. Allied to *Phytodietus*; claws not pectinated; areolet triangular. Sp. *Phytodietus microtamius*, *errabundus*, *blandus*, and *calceolatus* (Grav.).

Megischus tarsatus, sp. n., Sichel, *l. c.* p. 475, pl. 10. figs. 4, 5, and *M. nigricauda*, Sichel, *l. c.* p. 479, Manilla.

Iphiaulax pictus, sp. n., Kawall, Bull. Soc. Nat. Mosc. xxxviii. pt. 2. p. 340, Russia (Kameniec-Podolsk).

CHALCIDIDÆ.

The German genera of this family are tabulated by TASCHENBERG (Hymen. Deutschlands). He follows Förster throughout, and admits 170 genera.

A catalogue of species of this family occurring in Russia, chiefly in Courland, is published by KAWALL, Bull. Soc. Nat. Mosc. xxxviii. pt. 2. pp. 367–372.

GIRAUD (Ann. Soc. Ent. Fr. 4^e sér. vi. pp. 488–492) describes and notices the habits of 4 species of this family parasitic upon insects nidificating in bramble-stems (see p. 417).

F. Löw records the insects from which he has bred species of *Chalcis*, *Encyrtus*, *Eurytoma*, *Siphonura*, and *Tetrastichus*. Verh. zool.-bot. Ges. in Wien, xvi. pp. 952-953.

GILAUD records the occurrence of more than 50 specimens of a Chalcidite, named by Sichel *Phasganophora*, or *Conura bauhinia*, sp. n., in a cocoon of *Attacus bauhinia* (Guér.). Ann. Soc. Ent. Fr. 4^e sér. vi. p. 427.

Phasganophora. Sichel, in his memoir on *Phasganophora* and *Conura* (Ann. Soc. Ent. Fr. 4^e sér. v. pp. 345-396), after the table of genera of the *Chalcidoidea* given in the Record for 1865 (pp. 559, 560), discusses the relationships of those genera, of the former of which he mentions that he has detected in collections and in the writings of entomologists no fewer than 13 species from all parts of the world except Australia. The described species of *Phasganophora* are:—*Chalcis conigastra* (Perty), Brazil; *P. condalus* (Walk.), Brazil; *P. sulcata* (Westw.), North America?; *Chalcis rubens* (Klug), Dongola; *C. decorata* (Klug), Arabia; *C. pyramidea* (Fab.), Cayenne; *C. caudatus* (Guér.), Brazil; and *C. conica* (Fab.)*, Pyrenees. The rest are described by Sichel as new. Sichel gives a detailed description of the characters of the genus, and a tabular synopsis of the species, which he arranges in the subgenera *Phasganophora*, *Trigonura*, and *Allocera*, the characters of which are indicated in his generic table (Record, 1865, l. c.) but somewhat modified in the table of subgenera and species (pp. 357-360), as shown below:—

- I. Tail elongate, composed of the hypopygium and terebra; epipygium short; metathorax bituberculate on each side.
 - A. Abdomen subsessile, petiole short or nearly wanting (*Phasganophora chalcidiformes*).
 - a. Antennæ inserted on the forehead, short; scape nearly half length of head. Genus PHASGANOPHORA.
 - 1. Tail compressed, ensiform. Subg. *Phasganophora*.
 - 2. Tail depressed, subtriangular Subg. *Trigonura*.
 - b. Antennæ inserted near mouth, at least as long as head and thorax; scape nearly as long as head (*Phasganophora halticellaformis*).
 - 1. Anterior surface of head subquadrate; segment 1 of abdomen much longer than the rest Subg. *Allocera*.
 - B. Abdomen petiolated. (*Phasgan. smicriformes*).
- II. Tail elongate, composed of the epipygium, hypopygium, and terebra; metathorax unarmed Genus CONURA.
 - A. Abdomen subsessile (*Conura chalcidiformes*).
CONURA s. str.
 - B. Abdomen petiolate (*Conura smicriformes*).

Phasganophora. Sichel describes the following new species of this genus:—*P. rufiventris*, l. c. p. 360, pl. 9. fig. 4, *P. thoracica*, l. c. p. 361, pl. 9. fig. 5,

* If the insect here described prove distinct from *Chalcis conica* (Fab.), the author proposes for it the name of *Phasganophora gallica*.

Mexico: (TRIGONURA) *P. crassicauda*, l. c. p. 377, pl. 10. fig. 1, Mexico: (ALLOCIERA) *A. bicolor*, l. c. p. 379, Algeria: (PHASG. SMICRIF.) *P. variegata*, l. c. p. 381, Brazil.

Conura. The amended characters of this genus given by Sichel (l. c. p. 386) are indicated in the above table; his former error arose from his not perceiving the separation between the first and second segments of the abdomen, and thus supposing that the fifth segment formed part of the caudal prolongation of the abdomen. The known species referred to this genus by Sichel are *Conura flavicans* (Spin.), *C. bicolor* (Brullé), *Chalcis punctata* (Fab.), and *Smicra annulipes* (Spin.).

Conura scutellaris, sp. n., Sichel, l. c. p. 388, and *C. dimidiata*, sp. n., Sichel, l. c. p. 390, Mexico.

Laesthia litigiosa, sp. n., Rondani, Arch. Canestr. iv. p. 101, pl. 7. figs. 7, 8, parasitic in *Cecidomyia frumentaria* in Italy.

PROCTOTRUPIDÆ.

A list of species of this family found in Russia, principally in Courland, is furnished by KAWALL, Bull. Soc. Nat. Mosc. xxxviii. pt. 2. pp. 372-377.

Isostasius punctiger (Först.) is described and figured by B. Wagner (Stett. ent. Zeit. 1866, p. 178, taf. 3. figs. 23-25), as also *Leptacis tipulæ* (Kirby) (l. c. p. 180, taf. 3. figs. 26, 27), as parasites upon the Wheat-midges (*Diplosis tritici*, Kirby, and *D. aurantiaca*, B. Wagn.).

F. Löw notices the parasitism of *Diapria picipes* (Grav.) upon a species of *Stratiomys*. Verh. zool.-bot. Ges. in Wien, xvi. p. 952.

Epimeces canestrinii, sp. n., Rondani, Arch. Canestr. iv. p. 191, pl. 7. figs. 1-3, parasitic on *Cecid. frumentaria*, in Italy.

Platygaster generalii, sp. n., Rondani, l. c. p. 191, pl. 7. figs. 4-6, parasitic on *Cecid. frumentaria*, in Italy.

CYNIPIDÆ.

The German genera and species of this family are analyzed at considerable length by TASCHEBERG (Hym. Deutschl. pp. 121-144):—

The author admits 24 genera, of which he gives the synonymy, namely:—

1. *Ibalia*; 2. *Sarothrus* (Hart.) = *Amphithecetes* (Hart.) = *Melanips*, pars (Giraud); 3. *Amblynotus* (Hart.); 4. *Ægilips* (Hal.) = *Xyalaspis* (Hart.); 5. *Anacharis* (Dalm.) = *Megapelmus* (Hart.); 6. *Figites* (Lat.) = *Psilogaster* (Hart.); 7. *Onychia* (Hal.) = *Callaspidia* (Hart.) and *Xyalaspis*, pars. (Hart.); 8. *Omalaspis* (Gir.); 9. *Aspicera* (Dahlb.) = *Onychia* (Dahlb., Gir.); 10. *Euscoila* (Westw.) = *Cothonaspis* (Hart.); 11. *Allotria* (Westw.) = *Xystus* (Hart.); 12. *Synergus* (Hart.); 13. *Aulax* (Hart.); 14. *Ceroptres* (Hart.); 15. *Diastrophus* (Hart.); 16. *Synophrus* (Hart.); 17. *Rhodites* (Hart.); 18. *Trigonaspis* (Hart.); 19. *Spathegaster* (Hart.); 20. *Biorhiza* (Westw.); 21. *Teras* (Hart.); 22. *Neuroterus* (Hart.); 23. *Andricus* (Hart.); and 24. *Cynips* (Linn.).

A list of Russian species of this family is given by KAWALL, Bull. Soc. Nat. Mosc. xxxviii. pt. 2. pp. 377-380.

NEWMAN publishes (Entomologist, iii. pp. 169-173) a semipopular essay on galls, recommending the study of these excrescences, and of the insects which produce them. He seems to imply that he was the first discoverer of

the agamic reproduction of certain *Cynipidæ*, and, ignoring the important papers of Walsh and Reinhard, says that he has not "the slightest evidence" that his statement on the subject "has ever elicited even the most cursory investigation." The latter observation, however, may be literally correct.

GOUREAU indicates the occurrence of galls upon the prostrate branches of *Astragalus glycyphyllos*, containing larvæ which may be those either of a *Cynips* or an *Apion*. Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 171.

GIRAUD (Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 197-200) publishes some remarks on the natural history of the *Cynipidæ* of the oak. He describes the characters of the galls produced by *Cynips corticalis* (Hart.), *corticis* (Linn.), and *rhizomæ* (Hart.), indicates that galls may be classified in accordance with the season at which their growth takes place, states that the *Cynipidæ* hatched from galls in his breeding-cages would not deposit their eggs in fresh branches of the trees on which they are parasitic, although, in accordance with his observation that oviposition takes place very soon after exclusion, they discharged their eggs in small masses, and remarks upon the causes of the formation of galls and distribution of the same excrescences upon different species of trees. See also remarks by Laboulbène and Giraud, l. c. Bull. 1866, p. xxxvi.

Manderstjernia, g. n., Radochkoffsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 304. Allied to *Cynips*; antennæ (♀) 14-jointed; abdomen large, much compressed, segment 1 larger than 2-4, 5 as large as 1, semicircular, bearing two upright rods above at its junction with the other segments [? the sheaths of the ovipositor, which is very long and passes quite round the periphery of the semicircular plate formed by the 5th segment]. Sp. *M. paradoxa*, sp. n., Radochk. l. c. p. 305, pl. 9. fig. 4 (with details), on the trunk of an old oak near St. Petersburg.

URO CERIDÆ.

TASCHENBERG (Hymen. Deutschl.) admits four genera of this family, which he unites with the Tenthredinidæ; the genera are *Cephus*, *Oryssus*, *Xiphydria*, and *Sirex*, the latter including *Xyloterus* (Hart.).

Cephus compressus. On the habits of this species, see F. Löw, Verh. zool.-bot. Ges. in Wien. xvi. p. 953.—It is figured by Damianitsch, Verh. zool.-bot. Ges. in Wien, xiv. pl. 21. fig. 3.

Cephus brachypterus, sp. n., Damianitsch, Verh. zool.-bot. Ges. in Wien, xvi. p. 993, pl. 21. figs. 1 & 6, Corfu; and *C. erberi*, sp. n., Dam. l. c. p. 994, pl. 21. fig. 2, Syra.

TENTHREDINIDÆ.

The classification of this family adopted by TASCHENBERG (Hym. Deutschl.) is manifestly founded upon that of Hartig, and includes most of the subgenera of the latter raised to generic rank. Exclusive of the *Uroceridæ*, which are placed in this family by Taschenberg, the number of genera admitted is 20, namely:—

1. *Cimbex* (subg. *Cimbex* and *Abia*);
2. *Blasticotoma*;
3. *Hylotoma*;
4. *Schizocera*;
5. *Athalia*;
6. *Allantus*;
7. *Macrophya* (subg. *Macrophya*,

and *Pachyprotasis*, Hart.); 8. *Tenthredo* (subg. *Tenthredo*, *Strongylogaster*, *Pæcilotoma*, *Taxonus*, *Perineura*, and *Synairema*); 9. *Selandria* (subg. *Blenocampa*, *Monophadnus*, *Hoplocampa*, and *Selandria*); 10. *Dineura*; 11. *Phyllotoma*; 12. *Emphytus*; 13. *Dolerus*; 14. *Nematus*; 15. *Cryptocampus*; 16. *Cladius*; 17. *Lophyrus*; 18. *Tarpa*; 19. *Lyda*; 20. *Xyela*.

BRISCHKE and ZADDACH have continued the publication of their researches upon the insects of this family, with the species of the group including *Lyda* and *Tarpa* (Schr. phys.-ökon. Ges. zu Königsb. vi. pp. 104-202). They remark upon the characters distinguishing this group from the rest of the *Tenthredinide*, and characterize the following species, noticing the natural history of many of them:—

Lyda stellata (Chr.), *laricis* (Gir.), *circumcincta* (Klug), *tessellata* (Klug), *populi* (Linn.), taf. 4. figs. 1, 2, *erythrocephala* (Linn.), *flaviceps* (Retz.), *pumilionis* (Gir.), *campestris* (Linn.), *arvensis* (Panz.), taf. 4. figs. 4 & 6, *hypotrophica* (Hart.), taf. 4. figs. 5 & 7, *erythrogaster* (Hart.), taf. 4. fig. 8, *reticulata* (Linn.), taf. 4. fig. 3, *pyri* (Schr.), *nemorialis* (Linn.), *marginata* (St. Farg.), taf. 4. fig. 11, *depressa* (Schr.), taf. 4. fig. 9, *latifrons* (Fall.), taf. 4. fig. 13, *stramineipes* (Hart.), *balteata* (Fall.), taf. 4. fig. 10, *histrion* (Latr.), taf. 4. figs. 14 & 15, *gyllenhali* (Dahlb.), taf. 4. figs. 19 & 20, *hortorum* (Klug), *aurantiaca* (Gir.), *arborum* (Fab.), *inanita* (Vill.), *hilaris* (Eversm.), *betule* (Linn.), *amplecta* (Fab.), *sylvatica* (Linn.), taf. 4. fig. 21, *ocreata* (Say), *flagellicornis* (Smith), *alternans* (Costa); as doubtful species of *Lyda*, *Tenthredo salticum* (Linn.) and *Psen minutus* (Schr.); *Tarpa cephalotes* (Fab.), *flavicornis* (Klug), *spissicornis* (Klug), taf. 4. fig. 22, *plagiocephala* (Fab.), *fabricii* (Leach), *spirææ* (Pall.), *bucephala* (Klug), *phænicia* (St. Farg.), *quinquecincta* (Pall.), *olivieri* (Brullé), *scripta* (Say), *cæsariensis* (St. Farg.), and *judæica* (St. Farg.). *Tenthredo cynosbati* (Linn.) = *Lyda cynosbati* and *geoffroyi* (St. Farg.) is a species of *Cephus*, to which genus also probably belong Geoffroy's species 37 and 38, of the latter of which Latreille has made his *Lyda longicornis*. *Lyda hæmorrhoidalis* (Fab.) = *Astatus analis* (Klug). *Lyda flava* and *signata* (Fab.) are not true *Lydæ* (l. c. pp. 184-185).

DAMIANITSCH (Verh. zool.-bot. Ges. in Wien, xvi. pp. 994 & 995, pl. 21. figs. 4 & 5) describes and figures specimens of *Tenthredo ambigua* (Klug) and *T. scalaris* (Klug) with abnormal antennæ. In the former the right antenna is divided into 2 jointed branches from the fourth joint; in the latter a straight, 2-jointed branch springs from the apex of the basal joint.

Abia aurulenta (Sichel). Sichel gives a detailed description and figures of this South European species, Ann. Soc. Ent. Fr. 4^e sér. v. p. 488, pl. 10. figs. 2, 3.

Lyda inanita (Vill.). On the leaf-rolling habits of the larva of this species, see F. Löw, Verh. zool.-bot. Ges. in Wien, xvi. p. 954.

Lyda. The following new species are described by Brischke and Zaddach:—*L. poppigii*, l. c. p. 123, North America; *L. mandibularis* (Taschb. MS.), l. c. p. 147, Halle; *L. fulvipennis*, l. c. p. 155, taf. 4. figs. 12 & 13, Pomerania; *L. nigricornis* (Voll. MS.), l. c. p. 156; Holland; *L. variegata*, l. c. p. 161, Prussia; *L. infida*, l. c. p. 162, Kamtschatka and Ural; *L. maculosa*, l. c. p. 166, taf. 4. figs. 16 & 17, Prussia; *L. arbuti* (And. MS.), l. c. p. 170, origin unknown; *L. jucunda*, l. c. p. 171, Russia and Germany; *L. semicincta*, ibid., Europe; *L. neglecta*, l. c. p. 174, Vienna; *L. insignis*, l. c. p. 179, North America.

Tarpa coronata, sp. n., Brischke and Zaddach, *l. c.* p. 198, Europe; *T. exornata*, sp. n., Br. & Zadd. *l. c.* p. 199, Europe; and *T. leucosticta*, sp. n., Br. & Zadd. *l. c.* p. 200, Syria.

SMITH (Ent. Trans. 3rd ser. v. pp. 323-324), on the authority of Mr. Peckolt of Catagallo, confirms the account given by Curtis of the social habits of *Dielocerus ellisii*.

Dolerus coxalis, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 182, Japan.

Tenthredo picta and *T. adusta*, spp. nn., Motschulsky, *l. c.* p. 182, Japan.

Tenthredo adumbrata (Klug). Boisduval notices the injury done to fruit-trees by the larva of this species. Bull. Soc. Ent. Fr. 1866, pp. xlvii-xlviii.

Phyllotoma melanopyga (Klug). The larva mines the leaves of *Abnus glutinosa*. Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvi. p. 556.

Athalia spinarum. On the occurrence of this species in Austria, and especially on its attacking and destroying a troublesome weed, *Erysimum cheiranthoides*, see Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvi. pp. 642-643. The same author has a longer notice on this insect, *l. c.* pp. 839-844.

F. Löw describes some galls on *Salix myrsinites*, supposed to be caused by *Nematus vallisneri* (Hart.). Verh. zool.-bot. Ges. in Wien, xvi. p. 953.

LEPIDOPTERA.

A. Works in progress.

FELDER, C. & R. Reise der österreichischen Fregatte Novara um die Erde, &c. Zoologischer Theil, zweiter Band, zweite Abtheilung, Lepidoptera. Heft II. Vienna, 1865: 4to, pp. 137-152, with 26 plates.

The second part of M.M. Felder's 'Lepidoptera of the Voyage of the Novara' includes descriptions of the species of *Pierides*, *Lycenides*, *Erycinides*, *Libytheides* and *Danaides*, many of them previously indicated by diagnoses published in 'Wiener entom. Monatschrift.' Many new species and some new generic forms are also described, and the illustrations, as in the former part, are very good. Although this part bears the date of 1865, it was not procurable in 1866; and the Recorder has been informed that an application in February of the present year was unsuccessful. The date is of importance with regard to the question of priority between this work and some of Mr. Butler's papers.

HEWITSON, W. C. Exotic Butterflies, being illustrations of new species. 4to. London: Van Voorst. Parts 57-60 (January to October 1866).

These parts complete the third volume of the work, and contain the titlepage, index, &c.

MORRIS, F. O. A Natural History of British Moths. Parts 38-47. 8vo. London, 1864-1866.

In this work the author gives figures, generally pretty recognizable, of each species of British Moths; but the letterpress is of a very bald description, consisting only of notices of the 1866. [VOL. III.]

localities and times of appearance of the insects, the food-plant of the larva, and sometimes a general description of the appearance of the latter. The work at present extends as far as the Tortricidæ. With the later numbers are issued half sheets of a general 'Catalogue of British Insects.'

VOLLENHOVEN, S. C. SNELLEN VAN. Essai d'une Faune Entomologique de l'Archipel Indo-Neerlandais. Seconde Monographie: Famille des Piérides. La Haye, 1865, pp. 70, with 7 plates.

This second part of Vollenhoven's 'Entomological Fauna of the Indian Archipelago' is devoted to the group of the *Pierides*; its contents will be indicated under that head.

B. *Separate Works.*

CONSTANT, A. Catalogue des Lépidoptères du Département de Saône-et-Loire. Autun, 1866, pp. 368. Publication de la Société Eduenne.

In this excellent Catalogue of the Lepidoptera of the department of the Saône-et-Loire the author enumerates no fewer than 1418 species inhabiting that district, and to a great many of these he appends notes relating to their habits and the localities in which they are to be met with. M. Constant has followed the classification, and in most cases the nomenclature, adopted by Staudinger and Wocke in their catalogue of European Lepidoptera.

KOCH, GABRIEL. Die Indo-Australische Lepidopteren-Fauna in ihrem Zusammenhang mit der Europæischen, nebst den drei Hauptfaunen der Erde. 8vo. pp. xii & 119, with 1 plate. Leipzig, Denicke, 1865.

In this important work Koch treats of the geographical distribution of the Lepidoptera in general, with especial reference to the faunas of the East Indies and Australia. His results will be indicated further on. A few new species are described.

TRIMEN, ROLAND. Rhopalocera Africæ australis; a Catalogue of South African Butterflies: comprising descriptions of all the known species, with notices of their larvæ, pupæ, localities, habits, seasons of appearance, and geographical distribution. 8vo. London and Cape Town, 1862-1866, pp. 353 and 7 plates.

Of this valuable work, the general scope of which is sufficiently indicated by its title as given above, the second part appeared in 1866, and thus comes into the present 'Record.' The first portion, published in 1862, included descriptions of the South African Butterflies belonging to the groups *Papilionides*, *Pierides*, *Danaides*, *Acræides*, and *Nymphalides*, and occupied pp. 1-183; the second and concluding part contains

the *Satyrines*, *Eurytelides*, *Lycanides* and *Hesperides*. An appendix contains additional species of Butterflies, belonging to the earlier groups, and ascertained to be inhabitants of Southern Africa since the publication of the first part, and numerous additions and corrections, especially relating to the geographical distribution of the species.

C. *Papers published in Journals.*

a. *Descriptive &c.*

BATES, H. W. On the Blue-belted *Epicalia* of the forests of the Amazons. Ent. Monthly Mag. vol. ii. pp. 174-177.

——. New species of Butterflies from Guatemala and Panama. Ent. Monthly Mag. vol. iii. pp. 49-52, 85-88, 133-136, and 152-157.

These papers contain descriptions of species supplementary to his former communications in vols. i. & ii. of the same journal.

BEHR, H. Verzeichniss der Rhopaloceren Californiens. Stett. entom. Zeitung, 1866, pp. 213-216.

BIRCHALL, EDWIN. The Lepidoptera of Ireland. Ent. Monthly Mag. vol. iii. pp. 2-6, 31-37, 57-61, 73-76, 105-109, 128-131, 145-148, and 169-173, plate 1.

This paper contains a list of the species of Lepidoptera known to inhabit Ireland. It is regarded by its author as very incomplete, a great portion of the country having been as yet very imperfectly explored entomologically. The total number of species recorded is only 961; but 7 of these are unknown in Great Britain. The arrangement followed is that of Doubleday's list; the references to many of the species are accompanied by remarks on their distribution &c.

BUTLER, A. G. Description of some new species of Butterflies belonging to the genus *Athyma* in the collection of the British Museum. Ann. & Mag. Nat. Hist. 3rd ser. vol. xvii. pp. 98-100.

——. Descriptions of some new species of Diurnal Lepidoptera in the collection of the British Museum. Ibid. pp. 285-287.

——. Note on the Identity of certain species of Diurnal Lepidoptera. Ibid. pp. 435-436.

——. A List of the Diurnal Lepidoptera recently collected by Mr. Whitely in Hakodadi (North Japan). Proc. Linn. Soc. vol. ix. pp. 50-59: October 11, 1866.

This paper contains a synonymic list of 31 species of Butterflies, the greater part of them identical with European forms. Several new species are described.

——. Descriptions of some new Exotic Butterflies in the

National Collection. Proc. Zool. Soc. 1866, pp. 39-42, pl. 3.

- BUTLER, A. G. A Monograph of the Diurnal Lepidoptera belonging to the genus *Danais*, being a Revision of the species of the genus, with Descriptions of New Species in the National Collection. Ibid. pp. 43-59, pl. 4. Supplement to a Monograph of the genus *Danais*, founded on specimens in the collection of Mr. Osbert Salvin. Ibid. pp. 171-175.
- . Note on the genus *Brahmæa* of Walker. Ibid. pp. 118-121.
- . A Revision of the genus *Hypna*, with descriptions of the new species. Ibid. pp. 206-210, pl. 23.
- . A Monograph of the Diurnal Lepidoptera belonging to the genus *Euplaea*, with descriptions of many new species; founded principally on the specimens in the collection of the British Museum. Ibid. pp. 268-302, pls. 29 & 30.
- . A Monograph of the genus *Euptychia*, a numerous race of Butterflies belonging to the family *Satyridae*; with descriptions of sixty species new to science, and Notes on their affinities &c. Ibid. pp. 458-503, pls. 39 & 40.
- . Note on some species of Butterflies belonging to the genus *Catagramma*. Ibid. pp. 578-580.
- . Monograph of the species of *Charaxes*, a genus of Diurnal Lepidoptera. Proc. Zool. Soc. 1865, pp. 622-639, pls. 36-37.
- . Descriptions of six Butterflies new to science, belonging to the genera *Heterochroa* and *Romaleosoma*. Ibid. pp. 667-673 *cum figg.*
- . Corrections and Addenda to certain papers on Lepidoptera published during the years 1865-66; with additional notes on some of the species described. Proc. Zool. Soc. 1866, pp. 451-458.
- . Description of a new species of Butterfly belonging to the family *Lycanidæ*. Ent. Monthly Mag. vol. ii. pp. 169-170: January 1866.
- . Descriptions of some curious variations in the genus *Morpho*. Ibid. pp. 202-204: February 1866.
- . Description of a new species of *Junonia* in the National Collection. Ibid. pp. 227-228: March 1866.
- . Descriptions of some new species of Diurnal Lepidoptera in the collection of the British Museum. Ent. Monthly Mag. vol. iii. pp. 76-78: September 1866.
- . Remarks on the distinctiveness of certain species of *Erycina*. Ibid. pp. 53-54.

- CLAUS, —. Ueber das bisher unbekannte Männchen von *Psyche helix*. Sitzungsber. der Gesellseh. z. Beförd. der Naturw. : Stettiner entom. Zeitung, 1866, pp. 358–360.
- COQUEREL, CHARLES. Des différentes espèces de *Bombyx* qui donnent de la soie à Madagascar. Annales Soc. Ent. de France, 4^e sér. tome vi. pp. 341–344, pls. 5 & 6.
- FALLOU, J. Note sur un nouveau cas d'hermaphroditisme chez un Lépidoptère Rhopalocère du genre *Argynnis*, *A. paphia*. Annales Soc. Ent. de France, 4^e sér. tome v. pp. 496–498.
- FREY, H. Die schweizerischen Microlepidopteren. Zweite Abtheilung. Mittheil. schweiz. ent. Gesellseh. Band ii. pp. 136–146.
- A list of the *Elachistides* of Switzerland, with remarks on the habits of the larvæ, and descriptions of 2 new species.
- GIRARD, MAURICE. Notes diverses sur la sérieiculture. Ann. Soc. Ent. de France, 4^e sér. tome vi. pp. 427–434.
- GOOSSENS, T. Notice sur la préparation des Chenilles. Ann. Soc. Ent. de France, 4^e sér. tome v. pp. 493–495.
- GREENE, J. A few Remarks on Mr. Birchall's List of Irish Lepidoptera. Entomologist, vol. iii. pp. 155–158.
- This paper contains two or three additions to the list, and remarks upon other species.
- GROTE, A. R. Remarks on the Sphingidæ of Cuba, and Description of a New Species of *Ambulyx* from Brazil. Annals Lyc. Nat. Hist. of New York, pp. 195–207 : November 1865.
- This paper contains some observations on the synonymy of the Cuban Sphingidæ enumerated by Grote in his paper read before the Entomological Society of Philadelphia in 1865 (see 'Record,' 1865, p. 571), and descriptions of some species since received by him.
- . Notes on the Bombycidæ of Cuba. Proc. Ent. Soc. Phil. v. pp. 227–255, pl. 4.
- GROTE, A. R., and ROBINSON, C. T. A Synonymical Catalogue of North American Sphingidæ, with notes and descriptions. Proc. Ent. Soc. Philad. vol. v. pp. 149–193, pl. 3.
- and ———. Lepidopterological Notes and Descriptions. No. 2. Ibid. iv. pp. 1–30, pls. 1–4 : June 1866.
- GUÉRIN-MÉNEVILLE, —. Indications des principales localités où commence à se développer la culture de l'Ailanthé. Comptes Rendus, lxiii. pp. 500–501.
- GUNDLACH, J. Descripción de una nueva Especie de Mariposa Diurna Cubana, del género *Papilio*. Repertorio Fis.-Nat. de la Isla de Cuba, tomo i. pp. 279–280 : January 1866.

- HEALY, CHARLES. Observations on the economy, moulting, and pupation of a larva of *Nepticula aurella*, together with some remarks respecting the habits of the parasite of that species. Ent. Monthly Mag. vol. iii. pp. 7-8, 27-29, and 61-63.
- HELLINS, JOHN. Notes on the British Species of *Ennomos*. Ent. Monthly Mag. vol. iii. pp. 159-162.
- HOPFFER, —. Neue Arten der Gattung Papilio im Berliner Museum. Stettiner entom. Zeitung, 1866, pp. 22-32.
- JOURDHEUIL, —. Note sur une aberration de la *Chelonia quenselii*. Annales Soc. Ent. France, 4^e série, tome vi. pp. 127-128, pl. 2. fig. 14.
- KNAGGS, H. G. Notes on Collecting, Management, &c. (Lepidoptera). Ent. Monthly Mag. vol. ii. pp. 277-278, and vol. iii. pp. 37-41.
- . Notes on new and rare British Lepidoptera (excepting Tineina) in 1866. Entom. Annual, 1867, pp. 127-162.
- This paper contains notices of the various new British species recorded during last year, and also a table of the occurrence of the rarer species.
- KÜNCKEL, J. Note sur les ravages causés par le Ver gris (*Agrotis segetum*) dans les plantations de Betteraves du Nord de la France. Ann. Soc. Ent. France, 4^e sér. vi. pp. 129-131.
- LEDERER, JULIUS. Excursion Lépidoptérologique en Anatolie. Annales Soc. Ent. de Belgique, tome ix. pp. 49-80, pl. 3.
- In this paper Lederer gives a general account of his collecting in Anatolia, chiefly about Kisilgye-Aolé and on the Bosz-Dagh and neighbouring mountains. He gives a list of the species obtained by him, with notes on the habits of some of them. The Rhopalocera are most richly represented. Several new species are described in an appendix.
- LINGENTHAL, E. ZACHARIÆ VON. Verordnung Justinian's über den Seidenhandel, aus den Jahren 540-547. Mém. Acad. Sci. de St. Pétersb. série 7, tome ix. pp. 19: 1865.
- A curious contribution to the history of the silk-trade.
- LUCAS, H. Note sur un Fourreau appartenant à un Lépidoptère de la Tribu des Psychides? rencontré dans le sud des Possessions Françaises du nord de l'Afrique. Annales Soc. Ent. Fr. 4^e série, tome vi. pp. 223-224, pl. 3. fig. 4.
- . Quelques remarques sur les Lépidoptères du genre *Argynnis* qui habitent les environs de Pékin, et description d'une espèce nouvelle appartenant à cette groupe générale. Ibid. pp. 219-222, pl. 3. fig. 3: October 24, 1866.
- MANN, JOSEF. Aufzählung der im Jahre 1865 in der Dobrudscha gesammelten Schmetterlinge. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvi. pp. 321-360, Tafel i. b.

Contains a list of Lepidoptera observed by the author in the course of a three-months' stay at Tultscha in the Dobrudscha, with descriptions of some new species (chiefly *Tortricidæ* and *Tineidæ*), and a general account of the district, which may prove useful to future travellers.

MILLIÈRE, P. Iconographie et Description de Chenilles et Lépidoptères inédits. Livraisons xiv. & xv. Ann. Soc. Linn. Lyon, xiii. pp. 1-86, pls. 63-70: June 30, 1866.

Also published separately under the above title.

MÖSCHLER, H. B. Aufzählung der in Andalusien 1865 von Herrn Graf von Hoffmannsegg gesammelten Schmetterlinge. Berliner entom. Zeitschrift, 1866, pp. 136-146.

This paper contains a list of the species of Lepidoptera captured by Count Hoffmannsegg in Andalusia during the Spanish excursion of 1865, with notes on the variations of some of them and descriptions of several new species.

——. Neue Microlepidopteren von Sarepta. Ibid. pp. 147-150.

MOORE, FREDERIC. On the Lepidopterous Insects of Bengal. Proc. Zool. Soc. 1865, pp. 755-823, pls. 41-43.

In this paper Moore gives a complete list of the species contained in three large collections of Lepidoptera made by Indian officers in Bengal, with observations on the characters &c. of some of the known species, and descriptions of a considerable number of new ones. Many species characterized in Moore's Catalogue of the Lepidoptera in the East-India Company's Museum are also described. The present paper extends as far as the Arctiidæ.

——. See WALLACE, A. R.

POEY, FELIPE. Revista de *Notes on the Sphingidæ of Cuba by Augustus Radcliffe Grote*. Repertorio Físico-Natural de la isla de Cuba, tomo i. pp. 243-263: December 1865.

A notice of Grote's paper on the Cuban Sphingidæ (see 'Record,' 1865, pp. 571 & 600), with additional notes on synonymy &c. and some additional species.

PRITZWITZ, — VON. Literarisches. Stettiner entom. Zeitung, 1866, pp. 259-275.

This paper contains a notice of Koch's 'Indo-Australische Lepidopteren-Fauna,' and Vollenhoven's 'Piérides de l'Archipel Indo-Neerlandaise.'

REAKIRT, TRYON. Descriptions of some new species of *Danainæ*. Proc. Ent. Soc. Philad. vol. v. pp. 217-223.

——. Descriptions of some new species of *Eresia*. Ibid. pp. 224-227.

——. Descriptions of some new species of Diurnal Lepidoptera. Proc. Acad. Nat. Sci. Phil. 1866, pp. 238-249, 331-342.

REAKIRT, TRYON. Coloradian Butterflies. Proc. Ent. Soc. Philad. vol. vi. pp. 122-151.

Contains a list of the species of Diurnal Lepidoptera ascertained to exist in the Colorado Territory, with remarks upon the variations presented by specimens of known, and descriptions of new species.

ROBINSON, C. T. See GROTE, A. R.

ROGENHOFER, ALOIS. Zur Lepidopteren-Fauna Oesterreichs. Verhandl. zool.-bot. Ges. in Wien, Band xvi. pp. 999-1000.

RONDANI, CAMILLO. Note Entomologiche. Specie Italiane del genere *Triphæna*, Ochs. See INSECTA.

SNELLEN, P. C. T. Entomologische Aanteekeningen. Tijdschrift voor Entom. 1866, pp. 61-66, pl. 2.

STAINTON, H. T. Description of a new species of the family *Galleridae*. Ent. Monthly Mag. vol. ii. pp. 172-173.

———. A few words about *Gelechia triannulella*. Ent. Monthly Mag. vol. iii. pp. 97-101: October 1866.

———. Observations on Tineina. Entom. Annual, 1867, pp. 17-30.

———. In Memoriam. Carl von Heyden. Ibid. pp. 31-42.

In this paper Stainton gives an analysis of all the published works of Carl von Heyden, including his descriptions of new species.

———. New British Tineina. Ibid. pp. 163-164.

STAUDINGER, O. Bemerkungen über Arten der Gattung *Colias*. Stettiner entom. Zeitung, 1866, pp. 44-50.

———. Drei neue Sesien und Berichtigung über einige ältere Arten. Ibid. pp. 50-55.

———. Zur Gattung *Heliodes*. Ibid. pp. 56-57.

TEICH, C. A. Lepidopterologische Mittheilungen. Stettiner entom. Zeitung, 1866, pp. 132-134.

Contains notes on the occurrence of various species of Lepidoptera, chiefly Rhopalocera, in the vicinity of Riga.

TRIMEN, ROLAND. Notes on the Butterflies of Mauritius. Trans. Ent. Soc. London, 3rd series, vol. v. 1866, pp. 329-344.

VOLLENHOVEN, S. C. SNELLEN VAN. Description de deux nouvelles espèces de *Pierides* et de la femelle de *P. polisma*. Tijdschrift voor Entom. 1866, pp. 57-60, pls. 1 & 2.

WALLACE, ALEXANDER. Ailanthiculture; or the prospect of a new English Industry. Trans. Ent. Soc. London, 3rd series, vol. v. pp. 185-245, pls. 15 & 16: April 1866.

This is a prize essay on the culture of *Bombyx cynthia* in England.

WALLACE, A. R., and MOORE, F. List of Lepidopterous Insects collected at Takow, Formosa, by Mr. Robert Swinhoe. Proc. Zool. Soc. 1866, pp. 355-365.

Contains a list of species with descriptions of a few new species of *Rhopalocera* and *Sphingidæ*.

WALLENGREN, H. D. J. Heterocer-Fjärilar, samlade i Kafferlandet af J. A. Wahlberg. [Heterocerous Lepidoptera collected in Kaffirland by J. A. Wahlberg.] Kongliga Svenska Vetensk.-Akad. Handlingar; Ny Följd, Bd. v. No. 4, pp. 83: 1865 (read February 2, 1864).

In this paper Wallengren describes the Caffrarian species belonging to the groups *Sphingina*, *Bombycina*, and *Noctuina*, and in the introductory portion of the memoir compares the Lepidopterous fauna of that region with those of other countries. Caffraria has 27 species of Lepidoptera in common with Europe, 41 in common with the continent of Asia, 9 with the islands of the Eastern Archipelago, 5 with Australia and Polynesia, and 9 with America. The islands of the Indian Ocean possess 49 species in common with Caffraria, the Cape Colony 67 species, and Central Africa 104. The new genera and the whole of the species are characterized with more or less detail in Latin. The number of the former seems to be excessive, and the characters on which they are founded, derived chiefly from the venation of the wings, are generally very slight.

ZELLER, P. C. Einige Worte über das Seppsche Werk nebst Proben aus der Fortsetzung desselben. Stettiner entom. Zeitung, 1866, pp. 4-21.

This paper consists of a discussion of the general qualities of Sepp's work on Dutch Lepidoptera, and of its continuation by Snellen van Vollenhoven, which is spoken of in terms of high praise. As specimens of the supplementary portion, the histories of three species, *Hesperia sylvanus*, *Grapholitha nebritana*, and *Coleophora caspitiella* are given.

— . Beschreibung einiger amerikanischen Wickler und Crambiden. Ibid. pp. 137-157, Tafel i.

— . Ueber *Senta maritima*, Tauscher (*ulvæ*, Hüb.). Ibid. pp. 353-356.

A translation of Snellen's paper on the habits of the larva, from Tijdschr. voor Entom. 1861.

b. *Physiological and Anatomical.*

ACHARD, F. Note sur les maladies des vers à soie. Comptes Rendus, lxxiii. pp. 528-529: September 1866.

BALBIANI, — . Recherches sur les corpuscules de la pébrine et sur leur mode de propagation. Comptes Rendus, lxxiii. pp. 388-391: August 1866.

BÉCHAMP, A. Recherches sur la nature de la maladie actuelle des vers à soie. Comptes Rendus, tome lxiii. pp. 311-313 : August 1866.

On the disease of silkworms known as *pébrine*, which the author regards as parasitic.

———. Recherchès sur la nature de la maladie actuelle des vers à soie et plus spécialement sur celle du corpuscule vibrant. Ibid. pp. 391-394 : August 1866.

———. Réponse aux observations faites par M. Pasteur au sujet d'un Note relative à la nature de la maladie actuelle des vers à soie. Ibid. pp. 425-427 : September 1866.

———. Sur le siège du parasite dans la maladie du ver à soie appelée *pébrine*, et sur la théorie du traitement de cette maladie en réponse à une Note précédente de M. Joly. Ibid. pp. 693-697 : October 1866.

BLASIUS, WILHELM. Ueber die Gesetzmässigkeit in der Gewichtsabnahme der Lepidopteren von dem Zustande der ausgewachsenen Raupe an bis zu dem des entwickelten Schmetterlinges. [On the normality of the diminution of weight in the Lepidoptera, from the state of the mature larva to that of the fully developed insect.] Zeitschrift für wiss. Zoologie, Band xvi. pp. 135-177.

This paper contains an elaborate series of observations, with tabular statements of results, on the gradual diminution of weight which occurs in Lepidoptera during the pupa state and after their emergence from the pupa.

GIRARD, MAURICE. Note relative à des expériences sur l'action des courants électriques sur les Chrysalides des Lépidoptères. Annales Soc. Ent. France, 4^e série, tome vi. pp. 207-212.

The author has repeated Wagner's experiments on the influence of electric currents upon chrysalids, employing, instead of *Vanessa urtica*, *Papilio machaon* and *Orgyia pudibunda*. He finds that when the conducting-wires are applied to the surface of the chrysalids no currents pass through them, and suggests that the alterations recorded by Wagner as produced in the Butterflies evolved from those experimented on by him are due, not to the action of the currents, but to the effects of the manipulation to which they were subjected.

GUÉRIN-MÉNEVILLE, —. Sur les Maladies des vers à soie. Comptes Rendus, lxiii. pp. 416-418 : September 1866.

JOLY, N. Remarques à propos des idées émises par M. Béchamp, au sujet de la maladie actuelle des vers à soie. Comptes Rendus, lxiii. pp. 526-528 : September 1866.

LANDOIS, HERMANN. Die Raupenaugen (*Ocelli compositi* mihi). Zeitschr. wissensch. Zool. xvi. 1866, pp. 27-44, Taf. 2.

An elaborate anatomy of the eyes of caterpillars, with a comparison of their structure with that of the faceted eyes of perfect insects, from which it appears that these organs are nearly identical in their essential construction.

PASTEUR, —. Nouvelles études expérimentales sur la maladie des vers à soie. Comptes Rendus, lxxiii. pp. 897-903: November 1866.

——. Observations au sujet d'une Note de M. Balbiani relative à la maladie des vers à soie. Ibid. pp. 441-443: September 1866. Observations relatives à cette communication [de M. Béchamp]. Ibid. pp. 427-428.

GENERAL NOTES.

GABRIEL KOCH (Die Indo-Australische Lepidopteren-Fauna) has subjected the geographical distribution of this order of insects to an elaborate discussion. He maintains that, as regards the Lepidoptera, we may divide the earth's surface into three great regions:—the American, including the whole of the western continent south of 60° N. lat.; the European, including the whole continent of Europe, with the Mediterranean district, the northern and temperate parts of Asia, and apparently the whole continent of Africa, although this has Indian affinities; and the South Asiatic or Indian, of which the Australian and Polynesian regions are to be regarded as continuations. In support of these views, he dwells, in the first section of his Division I., upon the general laws of the specific diffusion of insects, especially Lepidoptera, in which he admits the coexistence of two momenta—namely, the *simultaneous production of identical species in different places* (which is adopted mainly to account for the occurrence of species having wingless females, *Psychides*, in widely separated localities), and the *gradual dispersion of species by the exercise of their powers of flight aided by atmospheric currents*. In connexion with the latter proposition, he discusses at considerable length the phenomena of the monsoons in the eastern seas, and argues from them in favour of the possibility of the conveyance of insects possessing considerable power of flight, like the Lepidoptera, through the chain of islands forming the Eastern archipelago, to the Australian and Polynesian regions. In a second section of the same division Koch discusses “the production of colours in the pupæ, and the formation of varieties.” He maintains that, although light may have some influence on the production of colour in insects, there are many cases in which brightly coloured species pass their pupa-stage either concealed in the burrows formed by their wood-eating larvæ, or buried to a considerable depth in the ground, and therefore sheltered from the direct influence of light; and suggests that the effect of light may be indirect, by its affecting the plants on

which the larvæ feed. The influence of the food-plant appears in all cases to be a very important one in determining variations; and the author seems to be almost as much impressed by it as Walsh, although he does not carry his conclusions to the same length. The causes of variation occupy the whole of this second section, the author's observations being directed more especially to the explanation of the changes taking place in Indian species during their migration to Australia, and after their settlement in that region. In the third and last section of the first division of his work (pp. 34-66) Koch enumerates the species occurring in both the South-Asiatic and Australian regions, many of which present variations consequent upon their change of abode, which have led to their being described as distinct species. These are:—

1. ORNITHOPTERA *priamus* (Linn.), with vars. *richmondia* and *pronomus* (Gray), *arruana* (Feld.), and *cresus* (Wall.); 2. PAPILIO *lycaon* (Boisd.); 3. *P. sarpedon* (Linn.)=*choredon* (Boisd.) and *medon* (Feld.); 4. *P. xuthus* (Linn.); 5. *P. agamemnon* (Linn.); 6. *P. erechtheus* (Don.); 7. *P. epius* (Fab.)=*stheneus* (MacL.); 8. PIERIS *philyra* (God.)=*plexaris* (Don.); 9. *P. ada* (Cram.), Amboyna and New Guinea; 10. *P. teutonia* (God.); 11. TERIAS *hecabe* (Linn.)=*herla* (MacL.); 12. *T. egnatia* (God.); 13. *T. leta* (Boisd.); 14. CALLIDRYAS *crocale* (Linn.); 15. *C. alcmeone* (Boisd.); 16. *C. hilaria* (Cram.); 17. *C. pyranthe* (Linn.); 18. DANAIIS *schenkii* (Koch, sp. n.); 19. *D. melissa* (God.)=*Euplexa hamata* (MacL.); 20. *D. chionippe*, var. *affinis* (Hübner.); 21. *D. chrysippus* (God.), vars. *alcippus* (Boisd.) and ? *petilia* (Stoll); 22. *D. darchia* (MacL.)=*polita* (Erichs.)=*fulliolus* (Fab.); 23. *D. orope* (Boisd.); 24. ARGYNNIS *niphe* (Linn.); 25. VANESSA *cardui* (Linn.) [its general distribution indicated]; 26. JUNONIA *orithya* (Linn.); 27. *J. vellida* (Fab.); 28. *J. ida* (Cram.); 29. LIMENITIS *heliadora* (Cram.); 30. DIADEMA *lasinassa* (Fab.), with vars. *auge*, *melita*, *antigone*, and *proserpina* (Cram.); 31. *D. alimena* (Linn.); 32. CHARAXES *sempronius* (Fab.)=*pyrrhus* (Cram.), *tyrtæus* (Feld.), and *Jasia australis* (Swains.); 33. CYLLO *banksia* (Fab.); 34. LASIOMMATA *achanta* (Don.); 35. MYCALESIS *remulia* (Cram.); 36. MESSARAS *lampetie* (Cram.)=*erymanthis* (Drury)=*susanna* (MacL.); 37. LYCÆNA *xanthospilos* (Hübner.); 38. *L. damaetes* ? (Fab.); 39. *L. bætica* (Ochs.); 40. HESPERIA *ladon* (Cram.); 41. NYCTALEMON *orontes* (Cram.); 42. NYCTEMERA *lactinea* (Cram.); 43. EUCHROMIA *irus* (Cram.); 44. MACROGLOSSA *cunninghami* (Boisd.); 45. *M. hylas*, var.; 46. CILÆROCAMPA *celerio* (Linn.); 47. *C. phoenix* (H.-Sch.)=*vigil* (Deless.); 48. *C. oldenlandiæ* (Fab.); 49. *C. scrofa* (Boisd.); 50. *C. erotus* (Cram.); 51. SPIIINX *convolvuli* (Linn.)=*roseafasciata* (Scott); 52. DEIOPEIA *pulchella* (Linn.); 53. *D. ducis* (Walk.); 54. *D. syringa* (Cram.); 55. ALOA *lactinea* (Cram.); 56. HYPSEA *silvandra* (Cram.); 57. *H. borbonica* (Boisd.); 58. PITANE *lydia* (Don.); 59. ? *P. medestina* (Walk.); 60. OIKETICUS *doubledaii* (Westw.); 61. ATTA-CUS *cynthia* (D'Aubent.); 62. OPHIDORES *fullonica* (Linn.)=*pomona* (Cram.); 63. *O. cajeta* (Seba); 64. *O. salamina* (Cram.); 65. LAGOPTERA *magica* (Hübner.); 66. *L. honesta* (Hübner.); 67. COCYTOIDES *cærulea* (Guér.); 68. SPIRAMA *retorta* (Linn.), with many vars.; 69. ACHÆA *melicerta* (Drury); 70. *A. mercatoria* (Fab.) and var. *tigrina*; 71. TRIGONODES *cephise* (Cram.); 72. *T.*

hypasia (Cram.); 73. *OPHIODES tirrhæa* (Cram.); 74. *OPHIUSA achatina* (Cram.); 75. *O. algira* (Linn.); 76. *ABROSTOLA transfixa* (Walk.); 77. *HELIOTHIS peltigera* (W., V.); 78. *H. marginata* (Klenn.); 79. *GRAMMODES mygdon* (Cram.); 80. *PRODINA retina* (Friv.); 81. *CATAGRAMMA festiva* (Don.).

Koch also mentions (*l. c.* p. 59) that he possesses several species of *Euplæa* and *Thecla*, and of *Noctuæ*, from Queensland, which he believes to be identical with species from the Indian archipelago, and he also notices some *Lycænæ* and *Hesperiæ* about which he is not certain. He believes the number of species common to the two regions and known to him to be more than 100. In an appendix (*l. c.* pp. 60–63), referring especially to Felder's "Species Lepidopterorum &c." (see 'Record,' 1864, p. 476), Koch enlarges his list of varieties of *Ornithoptera priamus*, refers *P. lycaon* and *evemon* (Boisd.) and *jason* (Linn.) to *P. eurypilus* (Linn.), and cites from Felder's catalogue as further examples of Indo-Australian distribution:—*P. canopus* (Westw.) = *hipponous* (Feld.); *P. ulysses* (Linn.) = *teligonus* (Feld.); *P. deiphobus* (Linn.) = *deiphilus* (Feld.); and *P. hector* (Linn.). *P. polydorus* (Linn.) is also noted as a doubtful species.

In the third great division of his work, Koch develops his views upon the general geographical distribution of the Lepidoptera upon the surface of the earth, in which he maintains, as already stated, that we may distinguish three great faunas:—the European, including Africa and the arctic regions; the Indian or South Asiatic, including the warmer parts of Asia, Malasia, Polynesia, and Australia; and the American. He indicates, in the first place, that the distribution of plants and the form of the land are the chief factors in determining the distribution, at all events, of phytophagous insects. The characteristics of each of the great divisions are then discussed in separate sections, both with regard to their climatal and other natural peculiarities and to their Lepidopterous inhabitants. Europe is said to be the region of the genera *Argynnis*, *Melitæa*, *Thais*, *Lycænæ*, *Satyrus*, *Zygæna*, *Deilephila*, and the *Noctuæ* generally; Africa the region of the genera *Anthocharis*, *Acraea*, *Charaxes*, and *Romaleosoma*; the South Asiatic or Indian fauna is characterized by the genera *Ornithoptera*, *Danais*, *Euplæa*, *Limenitis*, *Adolias*, *Diadema*, and *Parnassius*, whilst the Australian subregion gives *Antipodites*, *Agarista*, *Hecatesia*, *Synemon*, *Teara*, *Opsirhina*, and *Oiketicus*; and America is the region of the true *Papiliones*, the *Pieridæ*, *Heliconidæ*, *Nymphalidæ*, *Satyritæ*, *Erycinitæ*, *Lycænitæ* (especially *Thecla*), and *Hesperidæ*, and of the genera *Castnia*, *Glaucoptis*, *Euchromia*, and *Hyperchiria*. Africa, however, although represented as belonging to the European or what may be called the "western Old-World" region, especially as regards its northern portion, shows strong Indian affinities in the Lepi-

dopterous fauna of its southern and eastern parts; and these would doubtless appear still more strikingly from the consideration of Trimen's results, with which the author was unacquainted.

PRITTWITZ (Stett. ent. Zeit. 1866, pp. 259-275) notices Koch's results, with the addition of those derivable from Vollenhoven's *Pierides* of the Dutch East-Indian possessions. The view taken by Prittwitz of the general distribution of Lepidoptera differs somewhat from that advocated by Koch. He assumes four great regions, admitting Africa south of the Mediterranean district to a primary rank; his equivalent for Koch's European region starts from the Sea of Ochotsk, forming a broad band across the whole eastern hemisphere, and includes also the continent of North America, South America being regarded as a distinct region; the Indo-Australian region corresponds with that of Koch. As regards the conditions under which the forms of Lepidoptera occur in their different districts, Prittwitz holds that we may recognize:—

1. *Main groups*, that is to say, families rich in species and subgenera, which
 - (a) sometimes occur in remarkable quantities in a particular spot, and
 - (b) sometimes are diffused everywhere with slight modifications.
2. *Remains of groups*. A remarkable form, represented by a few very homogeneous species, may occur
 - (a) either upon a particular, limited space, or
 - (b) widely diffused, with a species here and there.

He illustrates these views by the following examples:—

- 1 a. *Melitæa* and *Argynnis* in the Mediterranean (European) region.
- 1 b. The *Vanessæ*, with their subordinate forms, the members of which are distributed all over the world.
- 2 a. The species of *Thais*, *Cyrestis*, and *Sericinus*.
- 2 b. The *Libytheæ*, *Brachyglossi*, and *Parnassie*.

Prittwitz remarks upon the species cited by Koch as common to the Asiatic and Australian regions. Of the Pieridæ described by Vollenhoven, *Eronia jobæa*, *Pieris aruna*, *P. bajura*, *P. celestina*, *P. mysis*, and *Terias puella* are Australian species not indicated by Koch. *Pieris teutonia* Prittwitz regards either as a persistent Australian form of *P. coronea*, or as a distinct Australian species. It is unknown to Vollenhoven. Prittwitz further remarks on the following species, chiefly with regard to their geographical distribution:—*Cyllo banksia* (Fab.); *Chærocampa phœnix* (H.-Sch.); *C. oldenlandiæ* (Fab.); *C. erotus* (Cram.) probably only an Australian species; *Ophideus fullonica* (Linn.) occurs in the Fiji Islands, as also *Lagoptera magica* (Hübner.);

Cocytodes cærulea (Guen.) = *Arcte polygrapha* (Koll.), the characters of genus and species are noticed (*l. c.* pp. 269–271); *Achaa melicerta* (Drury), Samoa; *Ophiusa achatina* (Cram.), Fiji Islands; *O. algira* (Linn.); *Heliothis peltigera* (W., V.), New Zealand; *Prodenia retina* (Friv.), Fiji Islands.

WALLACE & MOORE have published (*Proc. Zool. Soc.* 1866, pp. 355–365) a list of a small collection of Lepidoptera found in Formosa by Swinhoe. The collection contains 46 Rhopalocera and 93 Heterocera; one-third of the latter belong to the Noctuidæ. A few notes on the habits of some of the Butterflies are inserted.

MÖSCHLER has given (*Berl. ent. Zeits.* 1866, pp. 136–146) a list of the species of Lepidoptera collected by Count Hoffmannsegg in Andalusia in 1865, including notes on the variations of some of the species, and descriptions of several new and some known forms.

MANN has published a list of Lepidoptera observed by him in the country round Tułtscha in the Dobrudscha, from May to July 1865 (*Verh. zool.-bot. Ges.* in Wien, xvi. pp. 321–360). The list includes notices of the mode and time of occurrence of the species; and includes several hitherto regarded as Asiatic.

KEFERSTEIN publishes extracts from a letter from Dr. Behr, containing some notes on the occurrence of different forms of Lepidoptera, chiefly Rhopalocera, in California. *Stett. ent. Zeit.* 1866, pp. 100–101.

A. CONSTANT has published a catalogue of the Lepidoptera of the department of the Saône-et-Loire (see p. 434).

The *Entomologist*, vol. iii. contains notes on captures of Lepidoptera at Deal by H. J. Harding (p. 24), in Scotland and elsewhere by E. C. Buxton, with notes by Newman (pp. 24–26), at Taunton by A. J. Spiller (pp. 29–30), near Dumfries by W. Lennon (pp. 73–74), at Burford by E. H. Todd (pp. 167–168), at Bury St. Edmunds by A. H. Wratishaw (p. 189), at Ipswich by T. Last (*ibid.*).

Lists of captures of Lepidoptera in various parts of Britain are published,—by Geldart, the Lake-district (*Ent. M. Mag.* ii. p. 184), by W. R. Jeffrey near Saffron Walden (*l. c.* p. 185), by J. B. Hodgkinson, the north of England (*l. c.* pp. 186–188), by E. Skepper in Suffolk (*l. c.* p. 208), by E. Meek at Folkestone (*l. c.* p. 210) by A. Edmonds in Worcestershire (*l. c.* pp. 212–214, 235–236), by Canning (*l. c.* p. 261), by Horton at Witherslack (*Ent. M. Mag.* iii. p. 22), by Hodgkinson at Witherslack and Lytham (*l. c.* p. 37), by C. Campbell in the Isle of Man (*l. c.* pp. 88–90), by Blackburn in Perthshire (*l. c.* pp. 116–117), by Longstaff at Rugby (*l. c.* p. 138).

JORDAN has some remarks on Birchall's Catalogue of Irish Lepidoptera. *Ent. M. Mag.* iii. pp. 109–110 (see p. 435).

F. M. ALEXANDER publishes a list of Lepidoptera observed at Saugor in Central India. *Ent. M. Mag.* ii. pp. 208–209).

A. YOUNG publishes some further notes on Persian Lepidoptera. *Entomologist*, iii. pp. 72–73.

Notes on the unusual abundance of certain species of Lepidoptera in Holland during the year 1865 are communicated by Lewe van Middelstum, Snellen, Medenbach de Rooy, and De Graaf (*Tijdschr. voor Ent.* 1866, pp. 23–24). The species referred to are:—*Aglia tau*, *Macroglossa stellatarum*, *Orgyia ericæ*, *Hibernia rupicaprararia*, and *Neuronion popularis*. Snellen remarks on the injury caused to grass-lands by *Charcæa graminis*.

HOOGVEEEN mentions the injury done to the cocon-nut palm at Kadoe and other places in Java by a small caterpillar, which devours the entire leaves, so that only the stalks remain. No determination of the insect is given. *Natuurk. Tijdschr. voor Nederl. Indië*, xxviii. p. 433.

S. A. DAVIS refers to variations occurring in several species of Lepidoptera, namely, *Pieris napi* (dwarf), *Lycæna argiobus*, *Polyommatus phleas*, *Smerinthus populi* (albino), *Biston hirtarius* (wingless ♂), *Boarmia repandata*, and *Hibernia progemmaria*. *Ent. M. Mag.* ii. pp. 210-211.

Varieties of several species of Lepidoptera are noticed by W. INGALL, *Ent. M. Mag.* ii. p. 262.

JORDAN publishes a note on double-brooded insects, in which he indicates the effect of warmth and an abundant supply of food in hastening their development. He also refers to the probable influence of light upon the colouring of insects. *Ent. M. Mag.* iii. p. 21.

C. G. BARRETT publishes some observations on the hybernation of various species of Lepidoptera in the interior of an unoccupied building. The insects particularly noticed are *Vanessa urticae* and *Gonoptera libatrix*; they began to take up their position as early as the 11th August, and continued in many cases quite motionless throughout the autumn, although specimens of the moth and the autumn brood of the *Vanessa* were flying about freely out of doors. *Ent. M. Mag.* ii. pp. 190-191.

A discussion of the question whether males or females are the first to emerge from the pupa has been carried on in the *Entomologist*, vol. iii. by J. Greene (pp. 21-23, 53-57), H. Doubleday (pp. 35-36, 69-70), P. Andrews (pp. 36-38), J. S. Dell (pp. 38-39), J. Merrin (pp. 50-52), E. Horton (pp. 52-53), G. R. Crotch (pp. 67-68), R. S. Edleston (pp. 68-69), E. H. Todd (pp. 69 & 187), H. Moncreaff (pp. 70-71), C. S. Gregson (pp. 85-86), W. Machin (pp. 86 & 187-188), W. Johnson (pp. 86-87), N. C. Tuely (p. 87).

H. MONCREAFF remarks on the development of the wings in Lepidoptera, and especially on the bag-like appearance presented by them when half expanded. *Entomologist*, iii. p. 39.

E. HALLETT TODD records the expansion of the wings in specimens of *Pæcilocampa populi* and *Petasia cassinea* after a considerable interval of time, when the insects had been removed from the broken pupa-cases. *Entomologist*, iii. pp. 6-7.

Eudes-DESLONGCHAMPS publishes (*Bull. Soc. Linn. Norm.* x. pp. 30-36) a note on a specimen of *Sphæria robertsii* from New Zealand in his possession, and also a description of another species of *Sphæria*, also attacking caterpillars, and received by him from Mantchouria. The latter caterpillar is smaller than that from New Zealand; and its parasite is much larger in proportion, and shorter and thicker. It appears to be identical with the well-known Chinese species.

NEWMAN describes and figures (*Entomologist*, iii. pp. 74-75) some larvæ, which he believes to belong to *Heplialus lupulinus*, occupied by a *Sphæria*, and having in some cases a capitata column springing from behind the head in the manner of those from China and New Zealand. The specimens were obtained near Biggleswade, in wet clay, amongst the underground stems of *Tussilago farfara*.

H. LANDOIS (*Zeitschr. wiss. Zool.* xvi. pp. 133-134) recommends the use of collodion for transferring the coloured scales of Lepidoptera to paper, so as

to produce natural figures of the insects. A few drops of collodion are allowed to flow upon the paper until they moisten a space equal to the wings; these are then laid on and gently pressed down upon the paper. In a few minutes the preparation is dry and the wing may be removed, when the whole of the scales adhere to the paper. The author remarks upon the different colours displayed by the two surfaces of some scales, and adds that the collodion film itself, when detached, furnishes admirable and instructive transparent impressions of the scales.

T. GOOSSENS publishes a note on the preparation of Caterpillars. He proposes to adopt the method of squeezing out the contents of the body, inflating the empty skin, and drying it by heat, but adds, for those which lose their colour in this process, the application of the proper tint mixed with turpentine, and in some cases a subsequent immersion in melted wax. *Ann. Soc. Ent. Fr.* 4^e sér. v. pp. 493-495.

KNAGGS has continued his notes on the collecting and management of the larvæ of Lepidoptera (*Ent. M. Mag.* ii. pp. 277-278, and iii. pp. 37-41).

Notes on Lepidoptera frequenting the bloom of the Sallow, by BARRETT, *Ent. M. Mag.* ii. pp. 238-239.

C. G. BARRETT suggests a mode of collecting Lepidopterous Insects, especially *Tineida*, which repose in the chinks of the bark of trees, founded on their habit of flying off when disturbed by any movement of the air. He blows upon the surface of the tree, holding a net in a suitable position, and captures the moths as they fly off. *Ent. M. Mag.* iii. pp. 17-18.

C. G. BARRETT remarks on the moths attracted by gas-lamps. *Ent. M. Mag.* iii. pp. 42-44.

BARRETT remarks upon the capture of Lepidoptera when attracted by blackberries. *Ent. M. Mag.* iii. pp. 113-114.

BARRETT (*Ent. M. Mag.* ii. p. 263) publishes notes on the mode of occurrence of various Lepidoptera collected by him (*Crambus hamellus* and *latistrisus*, *Gelechia diffinis* and *velocella*, *Oncocera abenella*, *Pterophorus paludum*, *Eupithecia irriguata*). Also on Lepidoptera obtained from thatch (*l. c.* pp. 263-264).

A new form of moth-trap, with a lamp, is described by Knaggs, *Ent. M. Mag.* ii. pp. 199-202.

RHOPALOCERA.

TRIMEN has completed his work on South-African Butterflies (*Rhopalocera Africæ australis*), in which he describes in all 222 species as inhabiting that region; but in his interesting summary of the geographical distribution of the species he cites only 220, 2 of these species of *Pierides* having been apparently omitted. Of these 95 are peculiar to the South-African region, whilst 100 of the remainder are known only as inhabitants of Africa, 41 being confined to the southern tropical portion of the continent, and 59 extending north of the equator. Thus only 25 are common to Africa and other parts of the world; and of these 16 are referred to Africa and Asia alone, and 4 to Africa, Asia, and Europe.

TRIMEN, in his Notes on the Butterflies of the Mauritius (*Ent. Trans.* 3rd ser. v. pp. 329-344), enumerates 5 species not cited 1866. [VOL. III.] 2 G

by Boisduval as inhabitants of that island—namely, *Callidryas florella* (Fab.), *C. rhadia* (Boisd.), *Terias rahel* (Fab.), *Junonia rhadama* (Boisd.), and a new species? of *Libythea*, thus raising the number of known Mauritian species to 25, or 26 including *Thymele (Ismene) ramanatek* (Boisd.). Upon the habits &c. of these species the author gives some details. Of the 26 species, 18 occur in Bourbon, 19 in Madagascar, and 18 on the African continent; 8 are also found in Asia, 5 in Europe, 3 in Australia, and 2 in America. The only endemic species are *Papilio phorbanta* and *P. marchalii*. The Asiatic species are nearly cosmopolite, and this applies still more strictly to those occurring in other parts of the world. *Euplœa euphone* of Mauritius and Madagascar and *E. goudotii* of Bourbon are the only indications of Asiatic alliances in the Mascarene group; the latter occurs also in Natal, and the former is said to inhabit Zanzibar. Bourbon appears to possess at least two peculiar species of Butterflies, *Papilio disparilis* and *Neptis dumetorum*; *Lycœna mylica* (Guen.) is unknown to the author.

BIRCHALL (Ent. M. Mag. iii. pp. 5-6) gives the number of known species of Irish Butterflies at 43, leaving 21 of the British species unrepresented. Of these, 16 are also absent from Scotland; and Birchall suggests that this may be accounted for by the supposition that the separation of Ireland from England took place previously to the introduction of the bulk of the present fauna, whilst a connexion was still maintained with Scotland; this he thinks may explain the northern character of the Irish fauna.

REAKIRT (Proc. Ent. Soc. Phil. vi. pp. 122-123) remarks upon the relations of the Rhopalocera of the Colorado district with those of other parts of America. The closest affinity is with California, 23 species out of 72 being common to the two districts; the number common to the Colorado Territory and the whole of the Eastern States is only 21. The number of species peculiar to the Rocky Mountains is 26.

BEHR publishes a catalogue of the Rhopalocera of California (Stett. ent. Zeit. 1866, pp. 213-216).

FELDER publishes 4 plates (44-47), of which the text is still wanting; they contain figures of species of the following genera:—*Napeogenes* 2, *Athyrtis* 1, *Ithomia* 9, *Ceratinia* 1, *Oleria* 1, *Hymenitis* 1, *Mechanitis* 1, *Melinaea* 2, *Acræa* 7, *Eucides* 2, *Heliconius* 6.

MÜLLER cites two instances of hermaphrodites recorded by Nickerl and not referred to by Hagen. The species are *Satyrus semele* (Linn.) and *Lycœna argus* (Linn.). Ent. M. Mag. iii. p. 114.

Papilionides.

REAKIRT (Proc. Acad. Nat. Sci. Phil. 1866, pp. 341-342) gives the following synonymic indications with regard to species of *Papilionides* described chiefly by himself but previously characterized by Felder:—*Atrophaneura erythrosona* (Reak.) = *P. semperi* (Feld.); *P. palimurus* (R.) = *dædalus* (F.); *P. varasi* (R.) = *hystaspes* (F.); *P. horsfieldii* (R.) = *ledebouria* (Esch.); *P. eurypylus* (R.) = *gordion* (F.); *P. moorei* (R.) = *euphrates* (F.); *Leptocircus*

megea (R.)=*decius* (F.); *P. grotei* (Blake)=*gundlachianus* (F.). Also *P. alcamedes* (F.)=*caleli* (R.), and *P. aristomenes* (F.)=*tonila* (R.).

REAKIRT (Proc. Ent. Soc. Phil. vi.) remarks upon the characters, variation, &c. of the following known species occurring in the Colorado district:—*Papilio daucus* (Boisd.), p. 124; *P. turnus* (Linn.), *ibid.*; *P. rutulus* (Boisd.), p. 125; *P. eurymedon* (Boisd.), p. 126; *Parnassius smintheus* (Doubl.), p. 127, characters of 8 varieties, with comparative references to *P. sayii*, *P. clarus*, and *P. nomion*, pp. 129–131.

Papilio pammon. A. Young (Entomologist, iii. p. 40) remarks on this species as observed by him in India, and on its polymorphism. The insect is double-brooded, and *P. polytes* never occurs with the second brood. At Sealkote, 26 miles from the Sewalik hills, where the above observation was made, Young has taken *P. polytes*, but never *P. pammon*; *P. polytes* also occurs higher up the hills than *P. pammon*.

BUTLER, on the authority of Bönninghausen, states that the following supposed species are identical:—*Papilio torquatus* (Cram.) and *P. torquatus* (Esp.) ♂, and *P. polybius* (Swains.) and *P. argenteus* (Martyn) ♀.—*P. candius* (Hübner) is probably an Amazonian form of *P. argenteus*. Ann. & Mag. N. H. 3rd ser. xvii. pp. 435–436.

Butler's supposition that *Papilio candius* is an Amazonian form of *P. argenteus* is contradicted by him, Proc. Zool. Soc. 1866, p. 451.

HOFFFER remarks that *Papilio cenea* (Stoll) and *trophonius* (Westw.) are not the two sexes of the same species, as the Berlin Museum contains female specimens of both forms.—*P. cenea* is rather variable; one of the three specimens in the Berlin Museum presents such differences that Hopffer thinks it may prove to be a distinct species, for which he proposes provisionally the name *Cephonius*. Stett. ent. Zeit. 1866, pp. 131–132.

LUCAS notices the characters of the larva and pupa of *Sericinus telamon* (Don.). Bull. Soc. Ent. Fr. 1866, pp. xviii–xix.

New species :—

Papilio gundlachianus, Felder, Reise der Novara, Bd. ii. Abth. 2. p. 137, pl. 27. figs. 1, 2, Cuba (= *P. columbus*, Gundl., *P. grotei*, Blake).

Papilio indra, Reakirt, Proc. Ent. Soc. Phil. vi. p. 123, Colorado Territory.—*P. eridamas*, Reakirt, Proc. Ac. N. S. Phil. 1866, p. 248, Mexico; *P. asterioides*, Reakirt, *l. c.* p. 331, Mexico.

Papilio. Hopffer describes the following 13 new species of this genus (Stett. ent. Zeit. 1866):—*P. achelous*, p. 22, and *archytas*, p. 23, from Central America; *P. diodorus*, p. 23, *himeros*, p. 26, and *eurymander*, p. 29, from Brazil; *P. phylarchus*, p. 24, from Cayenne; *P. polycrates* (= *polydamas*, Esper, var. fig. 1), p. 24, from Pará; *P. pomponius*, p. 25, *neosilaus*, p. 26, *amphissus*, p. 27, and *alexiares*, p. 31, from Mexico; *P. warscewiczii*, p. 29, from Bolivia; and *P. phegeus*, p. 32, from Luzon.

Papilio oviedo, Gundlach, Repert. Cuba, i. p. 279.

Parnassius stoliczkanus, Felder, *l. c.* p. 138 [pl. 69. figs. 2, 3], Ladak.

Parnassius glacialis, Butler, Proc. Linn. Soc. ix. p. 50, from Japan.

Parnassius citrinarius, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 189, Japan.

Pierides.

VOLLENHOVEN, in his monograph of the species of this group

inhabiting the Dutch East-Indian Islands (Essai d'une Faune Entom. &c., 2^e Monogr. see p. 434), introduces no new systematic views, but, as regards the genera, follows the classification adopted by Doubleday and Westwood. The total number of species described by Vollenhoven is 95, belonging, in the following proportions, to 8 out of the 16 genera of *Pierides* admitted by the above-mentioned authors, namely:—*Pontia* 2, *Pieris* 67, *Thestias* 4, *Iphia*s 4, *Eronia* 4, *Callidryas* 3, *Rhodocera* 1, and *Terias* 10. These genera are tabulated by Vollenhoven (p. 2) and afterwards more fully characterized; the characters of the wings and antennæ are also given in outline on pl. 1. The following known species are described by Vollenhoven:—

PONTIA nina (Fab.), p. 3; *PIERIS hombronii* (Luc.), p. 5, pl. 2. fig. 3, ♀; *P. crithoë* (Boisd.) and *P. egialea* (Cram.), p. 7; *P. peribœa* (God.), p. 8; *P. hyparete* (Linn.), p. 9; *P. nysis* (Fab.) var. *lara* (De Haan), p. 12; *P. timorensis* (Boisd.), ibid.; *P. isse* (Cram.), p. 14; *P. philyra* (God.), p. 15; *P. dorymne* (Cram.), p. 16; *P. belisama* (Cram.), p. 16; *P. aruna* (Boisd.), p. 18; *P. descombesii* (Boisd.), ibid.; *P. zebuda* (Hew.), p. 19; *P. stenobœa* (Boisd.), p. 20; *P. autolithsbe* (Hübner), p. 20, pl. 3. fig. 5; *P. philonome* (Boisd.), p. 21; *P. judith* (Fab.), ibid.; *P. aspasia* (Stoll), p. 22; *P. lea* (Doubled.), p. 23; *P. cardena* (Hew.), p. 25; *P. timnatha* (Hew.), ibid.; *P. coronis* (Cram.), p. 26; *P. eperia* (Boisd.), p. 27; *P. pitys* (God.), p. 28; *P. rachel* (Boisd.), ibid.; *P. coronea* (Cram.), p. 29; *P. teutonia* (Fab.), p. 30; *P. leta* (Hew.), p. 31, pl. 4. fig. 3, ♀; *P. nomea* (Boisd.), p. 31; *P. polisma* (Hew.), p. 32; *P. paulina* (Cram.), p. 33; *P. ida* (Luc.), p. 34; *P. amasene* (Cram.), p. 35; *P. athama* (Luc.), p. 36; *P. neombo* (Boisd.), ibid.; *P. gabia* (Boisd.), p. 38; *P. ithome* (Feld.), p. 39, pl. 5. fig. 1, ♀; *P. ada* (Cram.), p. 41, pl. 5. fig. 3, ♀; *P. hippo* (Cram.), p. 42; *P. enarete* (Feisth.), p. 43; *P. jacquinotii* (Luc.), ibid.; *P. albina* (Boisd.), p. 44; *P. panda* (God.), ibid.; *P. liberia* (Cram.), p. 45, pl. 5. fig. 4, ♀; *P. clementina* (Feld.), p. 45; *P. celestina* (Boisd.), p. 46; *P. placidia* (Stoll), p. 46, pl. 5. fig. 5, ♀; *P. nero* (Fab.), p. 47; *P. zarinda* (Boisd.), p. 48; *P. duris* (Hew.), ibid.; *P. echidna* (Hew.), p. 49; *THESTIAS ludekingii* (Voll.), p. 49, pl. 5. fig. 6; *T. reinwardtii* (Voll.), p. 50, pl. 6. fig. 1; *T. balice* (Boisd.), p. 50; *T. venilia* (God.), p. 51; *IPHIAS glaucippe* (Linn.), p. 52; *I. leucippe* (Cram.), p. 54; *I. vossii* (Maitl.), p. 55, pl. 6. fig. 4; *ERONIA valeria* (Cram.), p. 56; *E. jobœa* (Boisd.), p. 57, pl. 7. fig. 1, ♀; *E. argolis* (Feld.), p. 58, pl. 7. fig. 2, ♀; *E. tritœa* (Feld.), p. 58, pl. 7. fig. 3, ♀; *CALLIDRYAS pyranthe* (Linn.), p. 59; *C. hilaria* (Cram.), p. 60; *C. alcmeone* (Cram.), p. 61; *C. scylla* (Linn.), p. 62; *RHODOCERA gobias* (Hew.), p. 63; *TERIAS harina* (Horsf.), p. 65; *T. tilaha* (Horsf.), ibid.; *T. hecabe* (Linn.), p. 66; *T. blanda* (Boisd.), p. 67; *T. lerna* (Feld.), p. 68; *T. candidu* (Cram.), ibid.; *T. puella* (Boisd.), p. 69; *T. drona* (Horsf.), ibid.; and *T. egnatia* (God.), p. 70.

The following species of this group previously characterized by C. & R. FELDER diagnostically are fully described and in most cases figured by them (Reise der Novara, Zool. Bd. ii. Abth. 2.):—*LEPTALIS flavia* (H.-Sch. MS.), p. 140; *L. nasua* (Moritz, MS.), p. 141, pl. 22. figs. 4–6; *L. arcadia*, p. 141, pl. 22. figs. 1–3; *L. hyposticta* (Mor. MS.), p. 142, pl. 22. figs. 7, 8; *L. cor-*

dillera, p. 145, pl. 22. fig. 11; *EUTERPE uricoecheæ*, p. 147, pl. 23. figs. 11, 12; *E. potamea* (Mor. MS.), p. 149; *E. philoscia* (Mor. MS.), p. 153; *E. corcyra*, p. 159, pl. 23. fig. 8; *PIERIS georgiana*, p. 160, pl. 24. figs. 4, 5; *P. blanca*, p. 160, pl. 24. figs. 6, 7; *P. clementina*, p. 162, pl. 25. fig. 6; *P. zamboanga*, p. 162, pl. 24. figs. 2, 3; *P. phæbe*, p. 163, pl. 25. fig. 5; *P. galathea*, p. 165; *P. boisduvaliana*, p. 168, pl. 24. fig. 8; *P. calymnia*, p. 171, pl. 23. fig. 7 (*Euterpe c.*); *P. ælia*, p. 171; *P. leucadia* (*Euterpe*), p. 172; *P. leucanthe*, *ibid.*; *P. ægis*, p. 175, pl. 24. fig. 1; *P. locusta*, p. 175, pl. 25. figs. 8, 9; *P. euthemia* (Mor. MS.), p. 177; *P. tovaria* (Mor. MS.), p. 178; *P. olympia*, *ibid.*; *P. suadella* (Mor. MS.), p. 179; *P. diana*, p. 180; *P. sevata* (Mor. MS.), *ibid.*; *P. menapia*, p. 181, pl. 25. fig. 7; *ANTHOPSYCHE heuglini*, p. 185, pl. 25. fig. 4; *ERONIA phocæa*, p. 193, pl. 27. figs. 5, 6; *CALLIDRYAS rurina* (Mor. MS.), p. 194, pl. 26. figs. 9-11; *COLIAS cerbera* (Mor. MS.), p. 195; *C. therapis* (Mor. MS.), *ibid.*, pl. 26. figs. 6-8; *TERIAS bogotana*, p. 198, pl. 26. figs. 3, 4; *T. fabiola* (Mor. MS.), p. 199; *T. limoneus*, (Mor. MS.), p. 200; *T. salome*, p. 201; *T. theodes* (Mor. MS.), *ibid.*; *T. theona*, p. 202; *T. vitellina* (Mor. MS.), *ibid.*; *T. platæa*, p. 203; *T. phœnicia*, p. 205; *T. lydia*, p. 206; *T. rhodia* (Mor. MS.), *ibid.*; *T. medutina* (Mor. MS.), p. 207; *T. nisella*, *ibid.*; *T. lerna*, p. 212, Amboyna.

Eronia jobæa (Boisd.). The ♀ of this species is also described by C. & R. Felder, *l. c.* p. 193.

The following Coloradian species are referred to by Reakirt (Proc. Ent. Soc. Phil. vi.) chiefly with regard to their variations:—*Pieris oleracea* (Harr.), p. 131; *P. vernalis* (Edw.), p. 132; *P. protodice* (Boisd.), p. 133; *P. callidice* (God.), p. 134; *Nathalis iole* (Boisd.), *ibid.*, with description of ♀; *Colias philodice* (Boisd.), p. 135; *C. alexandra* (Edw.), *ibid.*; and *C. eurytheme* (Boisd.), p. 136.

Euterpe swainsonii (G. R. Gray) and *E. leucodrosyme* (Koll.) are said to be ♂ and ♀ of the same species by Butler, on the authority of Bönninghausen. *Ann. & Mag. N. II.* 3rd ser. xvii. p. 436.

E. Saunders notices a gynandromorphous specimen of a species of *Euterpe* from Mexico, the right side ♂, the left ♀. *Proc. Ent. Soc.* 1866, p. xviii.

Butler reasserts the distinctness of his *Pieris avivolans* from *Hesperocharis graphites* (Bates), *Proc. Zool. Soc.* 1866, p. 451.—*Anthocharis leo* (Butl.) = var. ♂ *A. halimede* (Klug), and *Gonapteryx urania* (Butl.) = *G. walkichii* (E. Doubl.) according to Butler, *l. c.* p. 452.

The female of *Pieris polisma* (Hew.) is described and figured by Snellen van Vollenhoven, *Tijdschr. voor Ent.* 1866, p. 59, pl. 1. figs. 3-4.

Hewitson figures the ♀ of his *Pieris polisma*, *Exot. Butt.* July 1866, *Pieris*, pl. 8. fig. 55.

Hewitson (*Proc. Ent. Soc.* 1866, p. xxxv) mentions that Watson has detected on *Pieris thestylis* (Doubl.), *P. autothisbe* (Boisd.), and *P. clemathe* (Doubl.) a total absence of the plumules which abound on the wings of other species. He adds that the costal margin of the anterior wings in these species is strongly serrated, and that both he and Wallace had already separated them on this account.

Leuconea. Lucas (*Ann. Soc. Ent. Fr.* 4^e sér. v. pp. 501-504) discusses the characters on which this genus is founded, and describes a variety of *L. cratægi* from Pekin, under the name of *L. cratægoïdes* (*l. c.* p. 503, pl. 11. fig. 11). According to Bellier de la Chavignerie (*l. c.* p. 504, note), the

Greek specimens of *L. cratægi* are intermediate between the ordinary European form and the Chinese variety described by Lucas.

Colias. Staudinger (Stett. ent. Zeit. 1866, pp. 44–50) discusses the European species of this genus, and criticises the views put forward by Wernburg in 1865 (see 'Record,' 1865, p. 587). He admits 10 European species, namely:—*C. palæno* (Linn.), with vars. *europomene* (Ochs.) and *werdandi* (H.-Sch.); *C. nastes* (Boisd.), Labrador, vars. *werdandi* (Zett.), Lapland, and *melinos* (Eversm.), East Siberia; *C. phicomene* (Esp.); *C. hyale* (Linn.); *C. erato* (Esp.), with vars. *helichta* (Led.) and *pallida* (Staud.); *C. chrysothene* (Esp.); *C. hecla* (Lef.); *C. myrmidone* (Esp.); *C. edusa* (Fab.) and var. *helice* (Hüb.); and *C. libanotica* (Led.).—*C. pelidne* (Boisd.) is regarded by Staudinger as distinct from *C. palæno*; *C. helichta* is probably a hybrid between *C. edusa* and *erato*; *C. heldreichi* (Staud.) = *libanotica*; *C. helena* (H.-Sch.) = *edusa*; *C. eos* (H.-Sch.) probably = *thisoa* (Ménétr.); *C. chloë* (Eversm.) = *aurora*, white ♀.

New genus and species :—

Elodina, g. n., Felder, *l. c.* p. 215. Allied to *Terias*; antennæ long, club oval, excavated; eyes large; palpi slender, ascending, not equal to the forehead; last joint exerted, mucronate. Sp. *E. therasia*, sp. n., Feld. *l. c.* p. 215, Halmahera; *E. hypatia*, sp. n., Feld. *l. c.* p. 216, New Guinea.

Euterpe. The following 11 new species of this genus are described by C. & R. Felder:—*E. zenobia*, *l. c.* p. 146, pl. 23. figs. 5, 6, *E. tomyris*, *l. c.* p. 148, pl. 23. figs. 1, 2, *E. philais*, *l. c.* p. 149 (= *E. radiata*, Koll. ex parte), *E. philonarche*, *l. c.* p. 150, *E. philothea*, *l. c.* p. 151, *E. trezene*, *l. c.* p. 154, pl. 23. figs. 3, 4, *E. zancle*, *l. c.* p. 155, *E. philone*, *l. c.* p. 156 (= *E. potamea*, ♀, Feld. W. E. M.), *E. pitana*, *l. c.* p. 157, pl. 23. figs. 9, 10, *E. critias*, *l. c.* p. 158, pl. 23. figs. 13, 14, and *E. peridoïdes*, *ibid.*, from New Granada.

Euterpe arechiza, Reakirt, Proc. Acad. Nat. Sci. Phil. 1866, p. 244, Mexico.

Leptalis. C. & R. Felder (Reise der Novara, *l. c.*) describe the following 5 new species of this genus:—*L. aphrodite*, p. 139, and *L. timnorina*, *ibid.*, South Brazil; *L. cornelia*, p. 140, and *L. amphithea*, p. 144, Mexico; *L. arsinœ*, p. 143, pl. 22. figs. 9, 10, New Granada.

Leptalis mita, Reakirt, Proc. Acad. Nat. Sci. Phil. 1866, p. 340, Mexico.

Pieris. The following new species of this genus are described by C. & R. Felder (*l. c.*):—*P. lorquini*, p. 159, pl. 24. figs. 9, 10, Ceylon (= *P. rosenbergii*, Voll. sec. Feld. *l. c.* p. 312); *P. helferi*, p. 161, pl. 25. figs. 10, 11, Moulmein; *P. leptis*, p. 163, Java; *P. lynceola*, p. 164, Timor; *P. lycaste*, *ibid.*, Macassar; *P. cilla*, p. 165, Aru Islands; *P. sita*, p. 161, pl. 25. fig. 12, and *P. galena*, p. 165, Ceylon; *P. darada*, p. 166, Northern India; *P. psyche*, *ibid.*, New Caledonia; *P. larissa*, *ibid.*, origin unknown; *P. sabina*, p. 167, Guinea; *P. rueppellii* (Koch, MS.), *ibid.*, Northern Abyssinia; *P. wallaceana*, p. 168, Waigiou; *P. perictione*, *ibid.*, Aru Islands; *P. perithea*, p. 169, Fiji Islands; *P. periclea*, *ibid.*, Australia; *P. polyhymnia*, p. 170, *P. euryhymnia*, *ibid.*, *P. laria*, p. 171, New Granada; *P. agrippina*, p. 173, Port Natal; *P. bogensis*, *ibid.*, Bogos; *P. subeida*, p. 174, Central Africa; *P. semicæsia*, p. 176, New Granada; *P. pinara*, p. 179, New Granada; *P. dorylaea*, p. 182, Aru Islands.

Pieris. The following 15 new Malasian species of this genus are described

by Vollenhoven:—*P. cornelia*, Essai &c. p. 5, pl. 2. fig. 2; *P. chrysoorrhoea*, l. c. p. 6, pl. 2. fig. 4; *P. hæmorrhoea*, l. c. p. 10, pl. 2. fig. 5; *P. rosenbergii*, l. c. p. 11, pl. 2. fig. 6, pl. 3. fig. 1; *P. candida*, l. c. p. 11, pl. 3. fig. 2; *P. pæcilea*, l. c. p. 13, pl. 3. fig. 3; *P. herodias*, l. c. p. 14, pl. 3. fig. 4; *P. amalia*, l. c. p. 23, pl. 3. fig. 6; *P. hester*, l. c. p. 24, pl. 4. fig. 1; *P. enma*, l. c. p. 24, pl. 4. fig. 2; *P. sulphurea*, l. c. p. 32, pl. 4. fig. 4; *P. zoe*, l. c. p. 37, pl. 4. fig. 5; *P. hagar*, l. c. p. 38, pl. 4. fig. 6; *P. dice*, l. c. p. 39, pl. 4. fig. 7; *P. affinis*, l. c. p. 40, pl. 5. fig. 2.

Pieris lenoris, Reakirt, Proc. Acad. Nat. Sci. Phil. 1866, p. 336, and *P. pasion*, Reak. ibid., Mexico; *P. yreka*, Reakirt, l. c. p. 238, and *P. castorea*, Reak. ibid., California; *P. occidentalis*, Reakirt, Proc. Ent. Soc. Phil. vi. p. 133, Colorado Territory.

Pieris rüppellii, Koch, Indo-Austr. Lep.-Fauna, p. 88, Abyssinia*.

Pieris erastus, Hewitson, Exot. Butt. July 1866, *Pieris*, pl. 8. fig. 51; *P. bernice*, Hewits. l. c. figs. 52, 53, Gaboon; *P. cynis*, Hewits. l. c. fig. 54, Sumatra.—*Pieris chrysoamelana*, Vollenhoven, Tijdschr. voor Ent. 1866, p. 57, pl. 1. figs. 1, 2, from Kajoa; and *P. fatime*, Voll. l. c. p. 59, pl. 2. figs. 1, 2.—*Pieris formosana*, Wallace & Moore, Proc. Zool. Soc. 1866, p. 356, Formosa.

Pontia lignea, Vollenhoven, Essai, &c., 2^e Monogr. p. 4, pl. 1. fig. 1, Celebes.—*Pontia niobe*, Wallace & Moore, l. c. p. 357, Formosa.

Anthocharis cethura, Felder, l. c. p. 182, pl. 25. figs. 1, 2, Sonora.

Anthocharis amina, Hewitson, Exot. Butt. July 1866, *Anth.* figs. 1–3, Zambesi.

Anthocharis scolymus, Butler, Proc. Linn. Soc. ix. p. 52, from Japan.

Idmais fatma (Koll. MS.), Felder, l. c. p. 189, pl. 25. fig. 3, Kordofan; *I. miriam*, Feld. l. c. p. 190, pl. 27. figs. 3, 4, Arabia Petrea; *I. fuistina*, Feld. l. c. p. 190, of unknown origin.

Iphia felderi, Vollenhoven, l. c. p. 53, pl. 6. figs. 2 & 3, Halmahera and Morotai.

Eronia gæa, Felder, l. c. p. 190 (= *P. valeria*, var. A, Boisde.), Bengal; *E. ceylonica*, Feld. l. c. p. 191, Ceylon; *E. tritæa*, Feld. l. c. p. 192, Celebes.

Eronia varia, Trimen, Rhop. Afr. austr. p. 327, Caffraria.

Callidryas thaurama, Reakirt, Proc. Acad. Nat. Sci. Phil. 1866, p. 238, Madagascar.

Colias euxanthe, Felder, l. c. p. 196, Peru; *C. cogene*, Feld. ibid., pl. 27. fig. 7, and *C. ludakensis*, Feld. l. c. p. 197, pl. 27. figs. 8, 9, Himalaya.

Colias pallens, Butler, Proc. Linn. Soc. ix. p. 52, from Japan.

Terias. C. and R. Felder describe (l. c.) the following new species of this genus:—*T. damaris*, p. 198, Mexico; *T. ehloë*, p. 199, New Granada; *T. gaudamela*, p. 199, pl. 26. fig. 5 (= *T. bogotana* ♂, Feld. W. E. M.), New Granada; *T. constantia* (Mor. MS.), p. 200, Venezuela and Mexico; *T. tegea*, p. 203, New Granada; *T. mycale*, p. 204, Bahia; *T. lemnia*, p. 205, Bahia; *T. athalia*, p. 208, *T. smilacina*, ibid., New Granada; *T. phanospila*, p. 209, Java; *T. lorquinii*, ibid., *T. zita*, p. 210, *T. zama*, ibid., Celebes; *T. santana*, p. 211, Bengal; *T. senna*, p. 212, Malacca; *T. caudace*, p. 213, South Abyssinia; *T. zoraide*, ibid., origin unknown; *T. tondana*, p. 214, pl. 26. figs. 1, 2, Celebes; *T. eumide*, p. 214, Celebes.

Terias tomûna, Vollenhoven, l. c. p. 66, pl. 7. fig. 4, Celebes; and *T. impura*, Voll. l. c. p. 70, pl. 7. fig. 5, Timor.

* Also described by Felder.

Terias jamapa, Reakirt, *l. c.* p. 239, and *T. solana*, Reak. *l. c.* p. 240, Mexico.

Terias vagans, Wallace and Moore, *l. c.* p. 359, Formosa.

Hesperocharis nereis, Felder, *l. c.* p. 146, New Granada.—*Hesperocharis crocea*, Bates, Ent. M. Mag. iii. p. 49, and *H. costaricensis*, Bates, *ibid.*, from Costa Rica.

Anthopsyche. C. & R. Felder (*l. c.*) describe the following 9 new species of this genus:—*A. theopompe*, p. 183, Nubia; *A. antepompe*, p. 184, and *A. dedecora*, *ibid.*, North-east Africa; *A. demagore*, p. 186, of unknown origin; *A. epigone*, *ibid.*, Bogos; *A. acte*, p. 187, Port Natal; *A. rozane*, *ibid.*, of unknown origin; *A. stygia*, p. 188, and *A. dalila*, *ibid.*, Bogos.

Tryphysa nervosa, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 189, Japan.

Danaides.

The following species of this group, already diagnostically characterized by them, are fully described, and in many cases figured, by C. and R. Felder, Reise der Novara, Zool. Bd. ii. Abth. 2:—*Euplœa novaræ*, p. 317, pl. 39. fig. 7; *E. ledereri*, p. 317, pl. 40. figs. 5, 6; *E. scherzeri*, p. 335; *E. frauenfeldii*, p. 342, pl. 41. fig. 4, of which *E. esperi* (Feld.) is the ♀; *E. wallacei*, p. 346, pl. 39. figs. 5, 6; *Danaïs nesippus*, p. 347; *D. phyle*, p. 348, pl. 42. fig. 8; *D. vitrina*, p. 350, pl. 43. figs. 3, 4; *Ideopsis chloris*, p. 351, pl. 42. fig. 3; *I. anapis*, p. 351, pl. 43. fig. 6.

Euplœa. Butler has published (Proc. Zool. Soc. 1866, pp. 268–302) a monographic revision of the species of this genus, of which he enumerates rather more than 100 species, including those cited in a supplementary note (*l. c.* pp. 452–453.) Of the species, 45 are described as new. Of the known species a full synonymy is given, and many varieties are indicated; the following are figured:—*E. melina* (God.), fig. 1. p. 283; *E. hisme* (Boisd.), fig. 1, p. 286; and *E. ewnice* (God.), fig. 2, p. 286.

Euplœa eupator (Hewits.). The female figured by Hewitson, Exot. Butt. Oct. 1866, *Eupl.* pl. 2. fig. 1.

Trimen remarks on the peculiar anal appendages of the male *Euplœa*. Ent. Trans. 3rd ser. v. pp. 331–332.

Danaïs. Butler publishes (Proc. Zool. Soc. 1866, pp. 43–59) a revision of the species of this genus, with the synonyms and notices of some varieties of known species. He records 61 species, of which 16 are described as new. These numbers, however, are slightly modified by subsequent notes (*l. c.* pp. 171–175, 454–456), in which a few additional species are described; some of the synonymy is altered, and 4 of the supposed new species identified with previously described forms. Of previously described species Butler figures *D. mariana* (Butl.) = *pumila* (Boisd.), *l. c.* pl. 4. fig. 7, and *D. inuncta* (Butl.), pl. 4. fig. 8; also a gynandromorphous specimen of *D. ismare* (Cram.), *l. c.* p. 173. fig. 3.

Amauris (Hübner). Reakirt (Proc. Acad. Nat. Sci. Phil. 1866, pp. 240–241) proposes to adopt this genus (= *Danaïs* sect. i., Doubleday) and refers to it *Danaïs ochlea* (Boisd.), which he describes.

New species :—

Danais. Butler (Proc. Zool. Soc. 1866) describes the following new species :—*D. hecate*, p. 44, Ashantee (= *Euplœa niavius*, Westw. nec Linn.); *D. pullata*, p. 47, fig. 1, Dorey (= *D. mitylene* (Feld.), l. c. p. 454); *D. fulgurata*, p. 48, pl. 4, fig. 1, Celebes; *D. conspicua*, p. 49, pl. 4, fig. 2, Celebes (= *D. sicena*, Bois. MS.); *D. ismareola*, p. 50, Ternate; *D. leonora*, p. 51, Angola; *D. leopardus*, p. 52, India; *D. choaspes*, ibid., Celebes; *D. purpurata*, ibid., fig. 2, New Guinea; *D. fumata*, p. 53, Ceylon; *D. erebus*, p. 54, fig. 3, Philippine Islands (= *D. phyle* (Feld.), l. c. p. 456); *D. gloriola*, p. 56, pl. 4, figs. 3 & 4, Aru Islands; *D. crocea*, p. 57, pl. 4, figs. 5 & 6, Java, India, Borneo; *D. hermippus*, p. 171, Bogota; *D. nubila*, ibid., Gilolo; *D. savini*, p. 172, fig. 2, Gilolo and Batchian (= *D. chloris* (Feld.), l. c. p. 456); and *D. lutescens*, ibid., fig. 3, Ceram, Bouru.

Danais. C. & R. Felder describe (l. c.) the following new species of this genus :—*D. leucoglene*, p. 347, pl. 43, fig. 2, Celebes; *D. hermippus**, p. 348, New Granada; *D. taprobana*, p. 349, pl. 42, fig. 4, Ceylon; *D. larissa*, p. 349, Java; *D. neptunia*, ibid. pl. 43, fig. 1, Fiji Islands; *D. citrina*, p. 350, pl. 42, figs. 5–7, Key and Aru Islands.

Danais schenkii, Koch, Indo-Austr. Lep.-Fauna, p. 107, India and New Georgia.

Ideopsis phæstis, Felder, l. c. p. 351, pl. 43, fig. 5, Waigiou.

Hestia agamarschana (Nickerl, MS.), Felder, l. c. p. 351, pl. 43, fig. 7, Andaman Islands.

Euplœa. Butler (Proc. Zool. Soc. 1866) describes the following new species of this genus :—*E. semicirculus*, l. c. p. 269, cum fig., habitat unknown; *E. phæbus*, l. c. p. 270 (= *prothoë*, Westw.), Penang, Java; *E. elisa*, ibid., Ceylon; *E. camaralzeman*, l. c. p. 271, pl. 29, fig. 1, Siam; *E. splendens*, l. c. p. 272, Nepal; *E. modesta*, l. c. p. 273, Siam; *E. janus*, ibid., Java (= *Salpinx eleusina*, Cram.); *E. tisiphone*, l. c. p. 274, Philippine Islands; *E. felderi*, l. c. p. 275, Sumatra; *E. alecto*, ibid., Ceram; *E. vermiculata*, l. c. p. 276, Northern India (= *Lemnas mutabilis cora*, Hübn.); *E. megara*, ibid., Aru Islands; *E. ægyptus*, l. c. p. 277, Borneo and Sumatra; *E. moorei*, ibid., Sumatra; *E. crassa*, l. c. p. 278, Siam; *E. nox*, ibid., Aru Islands; *E. margarita*, l. c. p. 279, East Indies; *E. melancholica*, l. c. p. 280, Bouru and Amboyna; *E. picina*, ibid., pl. 30, fig. 1, Sumatra; *E. anthracina*, ibid., fig. 1, p. 281, Amboyna; *E. morosa*, l. c. p. 282, fig. 2, p. 281, Gilolo; *E. sepulchralis*, p. 282, fig. 2, p. 283, Java (= *E. melina*, Moore); *E. palla*, l. c. p. 284, Aru Islands; *E. tristis*, ibid., Aneiteum; *E. mæsta*, ibid., fig. 3, p. 281, Dorey and Sumatra; *E. athiops*, l. c. p. 285, Waigiou; *E. confusa*, ibid., fig. 3, p. 283, Waigiou; *E. iphianassa*, l. c. p. 287, fig. 3, p. 286, Aneiteum; *E. vestigiata*, l. c. p. 288, fig. 1, Java; *E. pumila*, l. c. p. 290, New Guinea; *E. inquinata*, l. c. p. 291, fig. 2, p. 288, India; *E. priapus*, ibid., pl. 29, fig. 2, Australia; *E. hyems*, l. c. p. 292, fig. 3, p. 288, Timor and Australia; *E. letifca*, ibid. pl. 29, fig. 3, Philippine Islands; *E. gloriosa*, l. c. p. 293, pl. 29, fig. 4, Celebes; *E. hevitsonii*, l. c. p. 295, pl. 30, fig. 2, Philippines (= *E. eunice*, Bois.); *E. viola*, ibid., pl. 30, fig. 3, Celebes; *E. hyacinthus*, l. c. p. 296, pl. 29, fig. 5, Celebes; *E. diana*, l. c. p. 297, pl. 29, fig. 6, Celebes; *E. cratis*, ibid., fig. 1, p. 298, Philippine Islands; *E. abjecta*, l. c. p. 299, Philippine Islands; *E. proserpina*, l. c.

* This name also employed by Butler.

p. 300, Fiji Islands; *E. melpomene*, *ibid.*, fig. 2, p. 298, Australia; and *E. ebenina*, *l. c.* p. 301, Aru Islands.

Euplexa. The following new species of this genus are described by C. and R. Felder (*l. c.*):—*E. semperi*, p. 314, Mindoro; *E. cuvieri* (Boisd. MS.), p. 315, pl. 39. figs. 1, 2, Halmahera; *E. castelnauii*, p. 315, Malacca; *E. euthoë*, p. 316, Aru Islands; *E. westwoodii*, p. 316, pl. 40. figs. 1–3, Celebes; *E. pasithea* (De Haan, MS.), p. 318, Amboyna; *E. bernsteinii*, p. 319, Aru Islands, Halmahera; *E. stantoni*, *ibid.*, Waigiou; *E. stephensii*, p. 320, Mysol; *E. macleayi*, *ibid.*, Fiji Islands; *E. assimilata*, p. 321, pl. 41. figs. 2, 3, and *E. fraterna*, p. 321, Aru Islands; *E. saundersii* (Boisd. MS.), p. 322, Java, New Guinea, &c.; *E. forsterii*, *ibid.*, Fiji Islands; *E. hopfferi*, p. 323, pl. 41. fig. 1, Aru Islands; *E. arisbe* (De Haan, MS.), p. 323, Timor; *E. trinemii*, p. 324, Halmahera, Obi; *E. erichsonii*, *ibid.*, North India, Cochin; *E. kollari*, p. 325, origin unknown; *E. rogenhoferi*, *ibid.*, North India; *E. hevitsonii*, p. 326, pl. 40. fig. 7; *E. configurata*, p. 326, pl. 42. figs. 1, 2, *E. vollenkovii*, p. 327, and *E. schlegelii*, *ibid.*, pl. 41. fig. 5, Celebes; *E. harrisii*, p. 328, Cochin; *E. hopei*, *ibid.*, North India; *E. payeni*, p. 329, Aru Islands; *E. consimilis*, *ibid.*, Java, Ceylon; *E. redtenbacheri*, p. 330, Aru Islands; *E. batesii*, p. 331, Halmahera; *E. pierretii*, *ibid.*, New Guinea, Dorey; *E. dalmanii*, p. 332, Halmahera; *E. guérini*, *ibid.*, Aru Islands; *E. horsfieldii*, p. 333, pl. 40. fig. 4, Celebes; *E. kirbyi*, p. 334, and *E. leachii*, *ibid.*, Celebes; *E. zinckenii*, p. 335, Amboyna, Java; *E. wallengrenii*, p. 336, Java; *E. vicina*, p. 337, Aru Islands; *E. double-dayi*, *ibid.*, North India; *E. eynudhovii*, p. 338, and *E. geyeri*, *ibid.*, Java; *E. groti*, p. 339, pl. 41. fig. 7, Cochin; *E. poeyi*, p. 340, Assam; *E. lorquinii* (Boisd. MS.), *ibid.*, South China; *E. siamensis*, p. 341, pl. 41. fig. 6, Siam, Cochin; *E. donovani*, p. 343, Celebes; *E. angasii*, *ibid.*, South Australia, New South Wales; *E. herrichii*, p. 344, pl. 39. figs. 3, 4, Fiji Islands; *E. lewinii*, p. 345, North Australia; *E. montrouzieri*, *ibid.*, New Caledonia; *E. eschscholtzii*, *ibid.*, Fiji Islands; *E. grayi*, p. 346, Aru Islands, Waigiou.

Euplexa papuana, Reakirt, Proc. Acad. Nat. Sci. Phil. 1866, p. 240, New Guinea.—*Euplexa swinhoei*, Wallace and Moore, Proc. Zool. Soc. 1866, p. 358, Formosa.—*Euplexa euctemon*, Hewitson, *l. c.* fig. 2, Menado.

Heliconides.

Heliconia. W. W. Saunders notices numerous insects belonging to this genus from the same locality in Cayenne; they formed seven or eight species of authors, but he believes them all to belong to *H. melpomene*. Bates remarks that he had taken the same insects on the Amazon; he regards them as forming 3 species, *H. melpomene*, *thelxiope*, and *vesta*. The types of these species are found in the forests, the intermediate varieties on the hilly ground towards Guiana. Proc. Ent. Soc. 1866, p. iii.

Ceratinia lycaste (Fab.). Reakirt (Proc. Ent. Soc. Phil. v. pp. 218–222) discusses the variations of this species, and describes several distinct varieties from different parts of North and South America. He also gives the synonymy of *C. daeta* (Boisd.), *l. c.* p. 222.

New species:—

Ithomia. The following new species are described by Bates (Ent. M. Mag. iii.):—*I. hippocrenis*, p. 51, from Panama; *I. heraldica*, *ibid.*, from Costa Rica; *I. adelphina*, p. 52, from Panama and New Granada; *I. spruceana*,

p. 52, note, from Chimborazo; *I. (Oleria) xanthina*, p. 52, from Panama; and *I. (Ceratonia) callispila*, p. 85, from Costa Rica.

Ithomia sosunga, Reakirt, Proc. Ent. Soc. Philad. v. p. 217, Honduras.

Mechanitis californica, Reakirt, l. c. p. 223, Los Angeles, California.

Mechanitis utemaia, Reakirt, Proc. Acad. Nat. Sci. Phil. 1866, p. 241, Honduras.

Melinæa paraiya, Reakirt, l. c. p. 242, South Brazil.

Olyras theon, Bates, Ent. M. Mag. iii. p. 50, from Guatemala.

Thyridia melantho, Bates, l. c. p. 50, from Panama.

Dircenna xenos, Bates, l. c. p. 50, from Costa Rica.

Tithorea umbratilis, Bates, l. c. p. 86, from Panama.

Tithorea hecalesina, Felder, l. c. p. 352, New Granada.

Lycorea demeter, Felder, l. c. p. 352, Cuba.

Heliconius wallacei (Bates, MS.), Reakirt, l. c. p. 242, Amazons (= *H. elytia*, var., Bates):

Heliconius octavia, Bates, l. c. p. 86, from Guatemala; *H. formosus*, Bates, l. c. p. 87, from Panama; *H. melicerta*, Bates, *ibid.*, from Panama and New Granada; and *H. albicilla*, Bates, l. c. p. 88, from Panama.

Acræides.

Acræa orizava, sp. n., Reakirt, Proc. Acad. Nat. Sci. Phil. 1866, p. 243, Mexico.

Nymphalides.

Reakirt (Proc. Ent. Soc. Phil. vi.) refers to the following species of this group, from the Colorado Territory, chiefly with regard to their variations:—*Euptoieta claudia* (Cram.), p. 136; *Argynnis aglaia* (Linn.), *ibid.*; *A. hesperis* (Edw.), p. 139; *Melitæa palla* (Boisd.), *ibid.*; *Eresia nycteis* (Doubl.), p. 141; *E. pallida* (Edw.), p. 142; and *Grapta comma* (Harr.), p. 143. Many other species are cited by Reakirt, but with no notes of importance upon them.

Argynnis. Lucas remarks (Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 219–220) upon the species of this genus collected in the neighbourhood of Pekin by Father David. These are 5 in number: 3 are European, *A. adippe*, *daphne*, and *laodice*; a fourth is *A. sagana* (Doubled.), and the fifth a new species. The Chinese specimens of *A. adippe* and *daphne* are larger, and differ in some other respects from European examples; *A. laodice* shows no change. Japanese specimens of *A. adippe* are also of large size.

Catagramma. Butler (Proc. Zool. Soc. 1866, pp. 578–580) refers to several species of this genus which have been erroneously identified; the specific name *elymena* has been applied to 3 species, *C. clymena* (Cram.), *janeira* (Feld.) and *china* (Hew.); and *C. codomanus* (Fab.) is distinct from *C. astarte* (Cram.).

Charaxes. Notes on species supplementary to his monograph (1865) by Butler, P. Z. S. 1866, p. 457.

Epicalia. Bates (Ent. M. Mag. ii. pp. 174–177) describes the general habits of the Amazonian species of this genus, and indicates the groups into which they may be divided in accordance with characters derived from the distribution of their colours. He refers especially to *E. ancea* (Linn.) and *E. batesii* (Feld.), describing and figuring the ♀ of the latter (l. c. p. 176) taken in copulation by Piffard in Demerara, and indicates that it seems to establish Felder's species.

Harma sangaris (Hewits.). The ♀ figured by Hewitson, Exotic. Butt. Oct. 1866, *Ater.* & *Harma*, fig. 14.

Harma fumana (Westw.). The ♀ of this species is described by Butler, who regards it as distinct from the insect described as *H. hypatha* by Hewitson. Ent. M. Mag. iii. p. 19.

Victorina aphrodite (Butl.)=*Amphirene superba* (Bates), according to Butler, Proc. Zool. Soc. 1866, p. 457.

Wocke reports the observation of a great migration of *Vanessa cardui* over the mountains in the direction of Wallachia. Jahresber. Schles. Gesellschaft für vaterl. Cultur, 1866, p. 9.

Timins on rearing *Charaxes jasius* and *Melitæa provencialis* in England. Proc. Ent. Soc. 1866, p. xxi. He considers *M. provencialis* and *desfontainesii* to be identical.

Vanessa urticae, var. *ichnusa*. A. Müller remarks upon the alleged occurrence of this Mediterranean form in Lancashire. Entomologist, iii. p. 164.

Vanessa urticae and *cardui*. Interesting varieties of these species are noticed by W. Ingall, Ent. M. Mag. ii. p. 261.

Vanessa cardui. Hellius remarks on the great variation in the size of this species in 1865. Ent. M. Mag. ii. p. 184.—On a gigantic specimen, 2 in. 10 lines, see Dorville, Proc. Ent. Soc. 1866, p. ii.

Vanessa levana and *prorsa*. Notes by Goossens on the occurrence of these insects. Bull. Soc. Ent. Fr. 1866, p. xxxii.

Vanessa levana. On the late occurrence of this species in 1865, leading to the supposition that there may have been 3 broods in that year, see Fallou, Bull. Soc. Ent. Fr. 1865, p. lix.

Vanessa c-album. Teich records the breeding of two nearly unicolorous specimens of this species from pupæ without *c*-marks. Stett. ent. Zeit. 1866, p. 132.

Argynnis lathonia. Timins remarks on the history of this species with reference to its times of appearance. Proc. Ent. Soc. 1866, p. xxxiii.

Argynnis selene, an aberrant form. Dorville, Proc. Ent. Soc. 1866, p. ii.

Argynnis paphia. Fallou describes a case of so-called hermaphroditism in this species (Ann. Soc. Ent. Fr. 4^e sér. v. pp. 496–498, pl. 11. fig. 10). The individual presents ♂ characters on the left side, ♀ on the right, the sexual peculiarities being exhibited even on the body. On both sides the characters resemble those of the typical form of the species.—Teich records the capture of an androgynous specimen. Stett. ent. Zeit. 1866, p. 132.

New species :—

Eueides leucomma, Bates, Ent. M. Mag. iii. p. 88, from Panama.

Eueides zorcaon, Reakirt, Proc. Acad. Nat. Sci. Phil. 1866, p. 243, Mexico, Honduras, &c.

Agraulis huascuma, Reakirt, l. c. p. 243, Mexico.

Argynnis edwardsii, Reakirt, Proc. Ent. Soc. Phil. vi. p. 137, Colorado Territory.

Argynnis midas, Butler, Proc. Linn. Soc. ix. p. 53, from Japan.

Argynnis leopardina, Lucas, Ann. Soc. Ent. Fr. 4^e sér. tome vi. p. 221, pl. 3. fig. 3, from Pekin.

Melitæa nigrella and *M. atronia*, Bates, Ent. M. Mag. iii. p. 133, from Guatemala.

Brenthis morristi, Reakirt, Proc. Acad. Nat. Sci. Phil. 1866, p. 246, and *B. nenoquis*, Reak. l. c. p. 247, California.

Eresia yorita, Reakirt, Proc. Ent. Soc. Philad. v. p. 224, Honduras; *E. comela*, Reakirt, ibid., Brazil; *E. geniqueh*, Reakirt, l. c. p. 225, Los Angeles, California; *E. batesii*, Reakirt, l. c. p. 226, United States; *E. cartota*, Reakirt, Proc. Ent. Soc. Phil. vi. p. 141 (= *Melitæa nycteis*, Edw. nec Doubled.); and *E. mata*, Reak. l. c. p. 142, Colorado Territory.

Eresia sydra, Reakirt, Proc. Acad. Nat. Sci. Phil. 1866, p. 335, Mexico.

Eresia paxilina, Bates, Ent. M. Mag. iii. p. 133, from Veragua.

Synchlœ quehtala, Reakirt, Proc. Acad. Nat. Sci. Phil. 1866, p. 248, Mexico; *S. ardema*, Reakirt, l. c. p. 336, Mexico.

Araschnia strigosa, Butler, Proc. Linn. Soc. ix. p. 54, from Japan.

Junonia ixia, Butler, Ent. M. Mag. ii. p. 227, from Western Africa.

Catagramma faustina, Bates, Ent. M. Mag. iii. p. 134, from Panama; *C. guatemalena*, Bates, ibid., and *C. pacifica*, Bates, l. c. p. 135, from Guatemala.

Athyma chevana, Moore, Proc. Zool. Soc. 1865, p. 763, pl. 41. fig. 1, Bengal.

Athyma lactaria, Butler, Ann. & Mag. N. H. 3rd ser. xvii. p. 98, *A. astræa*, Butl. l. c. p. 99, from Aru; *A. cerue*, Butl. ibid., from Amboyna; *A. badoura*, Butl. l. c. p. 100, from Celebes.

Abrota junna, Moore, Proc. Zool. Soc. 1865, p. 764, Bengal.

Limenitis calidasa (Moore), Butler, l. c. p. 285, from Ceylon.

Heterochroa phylaca, Bates, Ent. M. Mag. iii. p. 135, from Guatemala.

Romaleosoma [*Romaleosoma*] *regia*, Hewitson, Exot. Butt. July 1866, *Rom.* pl. 4. figs. 16-18, Gaboon; *R. ravola*, Hewits. l. c. figs. 19, 20, Old Calabar.

Aterica ampedusa, Hewitson, Exot. Butt. Jan. 1866, *Ater.* and *Eurypt.* pl. 5. figs. 3-5, *A. aridatha*, Hewits. l. c. figs. 6, 7, and *A. abasa*, Hewits. l. c. (not figured), *A. amaria*, Hewits. l. c. April 1866, pl. 6. figs. 8, 9, *A. tadema*, l. c. Oct. 1866, figs. 10-12, from Old Calabar.

Euryphene tentyris, Hewitson, Exot. Butt. Jan. 1866, *Ater.* and *Euryph.* pl. 5. figs. 21-22, *E. oxione*, Hewits. l. c. (not figured), and *E. eliensis*, Hewits. l. c. April 1866, pl. 6. figs. 23-26, from Old Calabar.

Harma hyarbita, Hewitson, Exot. Butt. April 1866, *Harma*, pl. 2. figs. 5, 6, *H. hypatha*, Hewits. l. c. figs. 7, 8, and *H. indamora*, Hewits. l. c. Oct. 1866, figs. 13 & 15, Old Calabar.

Adolias balarama, Moore, l. c. p. 766, pl. 41. fig. 3, North India.

Apatura athalia, Butler, Ent. M. Mag. iii. p. 76, from Celebes.

Apatura sordida, Moore, l. c. p. 765, pl. 41. fig. 2, Bengal.

Chlorippe (*Apatura*) *lavinia*, Butler, Proc. Zool. Soc. 1866, p. 39, pl. 3. fig. 1, Amazons and Venezuela.

Hypna globosa, Butler, Proc. Zool. Soc. 1866, l. c. p. 208, pl. 23. fig. 1, Bolivia; *H. huebneri*, Butl. ibid. pl. 23. figs. 2 & 3, Rio Negro, and var. *P. chytmemestra* (Don.), pl. 23. fig. 4; *H. velox*, Butl. l. c. p. 209, pl. 23. fig. 5, Veragua; *H. rufescens*, Butl. ibid. pl. 23. fig. 6, Venezuela; *H. elongata*, Butl. ibid. pl. 23. fig. 7, Santa Marta.

Paphia aureola, Bates, Ent. M. Mag. iii. p. 152 (from Panama); *P. chryso-phana*, Bates, ibid., from Panama and Veragua.

Eunica augusta, Bates, l. c. p. 135, from Guatemala.

Morphides.

Morpho. Butler describes the following varieties of known species of this genus (Ent. M. Mag. ii. pp. 202-204):—*M. menelaus*, var. *terrestris* and var.

melanippe; *M. achillena*, var. *vitrea*; *M. helenor*, var. *cælestis*; and *M. montezuma*, var. *hyacinthus*. The third and fifth of these varieties are referred to the respective species with doubt and as possibly distinct.

Satyrides.

Euptychia. Butler has published (Proc. Zool. Soc. 1866, pp. 458-504) a monographic revision of the species of this genus, of which he enumerates 131. Of these 60 are described as new. The synonymy of the known species is given in detail, and of several of them varieties are described, namely:—*E. ocirrhoë* (Fab.), *ocypete* (Fab.), *helle* (Cram.), *myncea* (Cram.), *mæpius* (God.), *renata* (Cram.), *fallax* (Feld.), *junia* (Cram.), *quantius* (God.), *byses* (God.), *herse* (Cram.), *areolata* (Sm. & Abb.).

Libythea antipoda (Boisd.) is described and figured by C. & R. Felder, Reise der Novara, Zool. Bd. ii. Abth. 2. p. 313, pl. 42. figs. 9 & 10.

Yphtima hebe (Trim.) is figured by Trimen, Rhop. Afr. austr. pl. 4. fig. 3.

Erebia ligea is found at Riga, according to Teich, in the years with even numbers. In 1865 he took an *Erebia*, which he at first regarded as this species, but which presents differences leading him to think that it may prove to be distinct. He has given it the provisional name of *Erebia livonica*. Stett. ent. Zeit. 1866, p. 133.

Chionobas norma. Teich publishes notes on the characters and habits of this insect. Stett. ent. Zeit. 1866, p. 133.

Satyrus tithonus with an additional ocellated spot on the fore wings. Dorville, Proc. Ent. Soc. 1866, p. ii.

Reakirt (Proc. Ent. Soc. Phil. vi.) cites several species as inhabitants of the Colorado Territory, and indicates the characters of the ♂ of *Satyrus ridingsii* (Edw.), l. c. p. 145.

Hipparchia semele. The larva described by Buckler, Ent. M. Mag. ii. p. 189.

Melanagria caucasica (Nordm.) = *clotho*, according to Lederer, Wien. ent. Mon. viii. p. 167.

New species:—

Corades cybele, Butler, Proc. Zool. Soc. 1866, p. 40, pl. 3. fig. 2, Bogotá.

Taygetis sylvia, Bates, Ent. M. Mag. iii. p. 153, from Panama and the Upper Amazons.—*Taygetis satyrina*, Bates, l. c. i. p. 179, Guatemala.

Dædalma emilia, Butler, l. c. p. 40, pl. 3. fig. 3, Bogotá; *D. inconspicua*, Butler, l. c. p. 77, Quito.

Debis isabella, Butler, l. c. p. 41, pl. 3. fig. 4, Philippine Islands.—*Debis embolina* (Walk.), Butler, l. c. p. 77, Ceylon.—*Debis diana*, Butler, Proc. Linn. Soc. ix. p. 55, Japan.—*Debis visrava*, Moore, Proc. Zool. Soc. 1865, p. 768, pl. 41. fig. 4, Bengal.

Cylo crameri, Butler, Ent. M. Mag. iii. p. 77, from Oceania.

Cylo aswa, Moore, l. c. p. 769, Bengal.

Zophoessa goalpara, Moore, l. c. p. 768, and *Z. baladeva*, Moore, l. c. p. 769, pl. 41. fig. 5, Bengal.

Pronophila hilara, Bates, Ent. M. Mag. i. p. 178, *P. napcea*, Bates, l. c. p. 179, and *P. dejecta*, Bates, ibid., Guatemala.

Antirrhæa casta, Bates, l. c. p. 179, Guatemala.

Hetera macleanmania, Bates, l. c. p. 180, Panama.

Hetera pellucida, Butler, Proc. Zool. Soc. 1866, p. 41, pl. 3. fig. 5, Cayenne; and *H. harpalyce*, Butl. l. c. p. 42, pl. 3. fig. 6, Upper Amazons?

Erebia sabacus, Trimen, Rhop. Afr. aust. p. 200, pl. 4. figs. 1, 2, South Africa.

Lasiommata mirifica, Butler, Ann. & Mag. N. H. 3rd ser. xvii. p. 286, of unknown origin.

Euodia (= *Enodia*) *joanna*, Butler, l. c. p. 286, Australia.

Cænonympha pamphiloides, Reakirt, Proc. Ent. Soc. Phil. vi. p. 146, note, California.—*Cænonympha ceres*, Butler, Ent. M. Mag. iii. p. 78, California.

Neonympha lupita, Reakirt, Proc. Acad. Nat. Sci. Phil. 1866, p. 331, Mexico; *Neonympha xicaque*, Reak. l. c. p. 336, Mexico.

Chionobas uhleri, Reakirt, Proc. Ent. Soc. Phil. vi. p. 143, Colorado Territory.

Ypthima argus, Butler, Proc. Linn. Soc. ix. p. 56, from Japan.

Euptychia. Of this genus Butler (Proc. Zool. Soc. 1866) describes 60 new species, namely:—*E. palladia*, p. 461, pl. 39. fig. 21, Tapajos; *E. terrestris*, p. 462, pl. 39. fig. 1, Para &c.; *E. usitata*, p. 463, pl. 39. fig. 2, Venezuela and Guatemala; *E. similis*, p. 463, Guatemala and Nicaragua; *E. pieria*, *ibid.*, pl. 39. fig. 3, Honduras; *E. austera*, p. 464, pl. 39. fig. 4, Bogota; *E. divergens*, *ibid.*, pl. 40. fig. 1, Rio Negro; *E. lethe*, p. 465, Venezuela; *E. erigone*, p. 466, pl. 39. fig. 5, St. Paulo; *E. argyrospila*, p. 467, Ega; *E. ocnus*, *ibid.*, Tapajos; *E. eriphule*, p. 468, pl. 39. fig. 6, Pernambuco; *E. electra*, *ibid.*, pl. 39. fig. 7, Bahia; *E. variabilis*, p. 469, pl. 39. fig. 8, Pernambuco and Rio Janeiro; *E. affinis*, *ibid.*, pl. 39. fig. 9, Rio Janeiro and Pernambuco; *E. marmorata*, p. 471, pl. 40. fig. 2, Rio Janeiro and Rio Grande; *E. ambigua*, p. 472, pl. 39. fig. 10, Rio Janeiro; *E. modesta*, p. 473, Para; *E. huebneri*, *ibid.*, pl. 39. fig. 11, Para; *E. atalanta*, p. 474, pl. 39. fig. 12, Venezuela; *E. undulata*, p. 475, pl. 39. fig. 13, Para; *E. binalineata*, *ibid.*, pl. 39. fig. 14, Venezuela, Pernambuco; *E. coius*, p. 477, pl. 39. fig. 15, Brazil, Para; *E. pharella*, p. 478, pl. 39. fig. 16, Rio Janeiro; *E. harmonia*, *ibid.*, pl. 39. fig. 17, Quito; *E. phineus*, *ibid.*, pl. 39. fig. 18, Venezuela; *E. nebulosa*, p. 479, Venezuela; *E. saturnus*, *ibid.*, pl. 39. fig. 19, Venezuela, Brazil; *E. vesta*, *ibid.* pl. 39. fig. 20, Venezuela; *E. enyo*, p. 480, pl. 39. fig. 22, Cuenca; *E. westwoodii*, p. 481, Venezuela (= *Neon. mollina*, Westw. & Hew.); *E. picea*, *ibid.*, Ega; *E. aegrotata*, p. 482, Para; *E. pilata*, p. 483, pl. 40. fig. 3, Ega; *E. brixiola*, *ibid.*, pl. 40. fig. 4, Para; *E. caelestis*, p. 484, pl. 40. fig. 5, Ega; *E. urania*, *ibid.*, pl. 40. fig. 6, Cameta; *E. philippa*, p. 485, Ega; *E. gigas*, p. 486, pl. 40. fig. 7, Mexico; *E. libyoides*, p. 487, Nicaragua; *E. obscura*, *ibid.*, Bolivia; *E. vastata*, *ibid.*, Rio Grande; *E. polyphemus*, p. 488, Bogota; *E. callichloris*, p. 490, pl. 43. fig. 10, Ega; *E. hewitsonii*, p. 491, pl. 40. fig. 4, Para; *E. agatha*, p. 492, pl. 40. fig. 8, Para; *E. ayaya*, *ibid.*, pl. 40. fig. 11, Tapajos; *E. batesii*, p. 493, pl. 40. fig. 16, Tapajos; *E. metagera*, p. 494, Upper Amazon; *E. hiemalis*, *ibid.*, Amazon; *E. junonia*, p. 495, Tapajos; *E. gemmula* (Doubled.), *ibid.*, Rio Janeiro; *E. latia*, p. 496, pl. 40. fig. 14, Bahia; *E. pyracmon*, p. 499, Oajaca; *E. saundersii*, p. 500, pl. 40. fig. 17, Ega; *E. mima*, *ibid.*, Tapajos; *E. insignis*, p. 501, pl. 40. fig. 12, origin unknown; *E. erichtho*, *ibid.*, pl. 40. fig. 15, Pernambuco, Rio, Ega, Para; *E. erycina*, p. 496, Brazil; *E. salviini*, p. 498, Panama.

Euptychia sericeella and *E. glaucina*, Bates, Ent. M. Mag. i. p. 202, Guatemala.

Mycalesis. Hewitson (Exot. Butt. Jan. 1866) describes the following new species of this genus:—*M. elionas*, l. c. *Mycal.* pl. 7. figs. 41, 42, *M. asochis*, l. c. figs. 46, 47, and *M. xeneas*, l. c. fig. 48, and pl. 8. fig. 49, from Old Calabar; *M. aramis*, l. c. fig. 43, Philippine Islands; and *M. eliasis*, l. c. figs. 44, 45, Congo. Also, l. c. July 1866, *M. rhacotis*, pl. 8. fig. 50, *M. rasesces*, figs. 51, 52, *M. sanaos*, figs. 53, 54, and *M. sciathis*, figs. 55, 56, from Old Calabar.

Libythea neratia, Felder, l. c. p. 313, Ilalmaheira.

Erycinides.

C. & R. FELDER (Reise der Novara, Zool. ii. Abth. 2) describe and generally figure the following species, of which diagnoses have already been published by them:—*Eurybia donna*, p. 288, pl. 36. figs. 5, 6; *Zemeros emesoides*, p. 289, pl. 36. figs. 9–11; *Erycina laodamia*, p. 290; *Necyria lindigii*, p. 291, pl. 36. figs. 3, 4; *N. fulminatrix*, p. 291, pl. 36. figs. 1, 2; *Calydna punctata*, p. 291, pl. 36. figs. 18, 19; *Amarynthia hypochalybe*, p. 293, pl. 37. figs. 21, 22; *Emesis cypria*, p. 293, pl. 36. figs. 12, 13; *Charis theodora*, p. 295, pl. 36. figs. 22, 23; *Diophthalma (Mesosemia) phelina*, p. 298, pl. 38. figs. 9, 10; *Lemonias albinus* (Moritz, MS.), p. 299, pl. 37. figs. 1–4; *L. kadenii*, p. 302, pl. 37. figs. 11, 12; *Apodemia (Lemonias) mormo*, p. 302, pl. 37. figs. 15, 16; *Dryas (Limnas) cinaron*, p. 306, pl. 38. figs. 13, 14; *Tmetoglene esthema*, p. 306, pl. 38. figs. 15, 16; *Ithomiopsis corena*, p. 307, pl. 38. figs. 1, 2.

BUTLER discusses the synonymy of *Erycina butes* (Clerck), placed with *E. rhetus* (Cram.) by Morisse as a synonym of *E. licarsis* (God.). He considers *E. licarsis* (Fab.) to be distinct from *E. butes*, and also regards *E. rhetus* as a distinct species. The species described as *E. licarsis* by Morisse is also distinct from *E. butes*, and Butler gives diagnoses of both. Ent. M. Mag. iii. pp. 53–54.

Nemeobius lucina, habits noticed by Barrett, Ent. M. Mag. iii. p. 114.

Mesene bomilcar (Stoll) and *M. phareus* (Fab.) are distinct according to Butler, Ent. M. Mag. iii. p. 105.

New genera :—

Cricosoma, g. n., Felder, l. c. p. 292. Allied to *Mesene*; head retracted; antennæ very slender, passing middle of costa, club distinct, arcuate; palpi scarcely reaching the face; fore wings with the costa deflexed in the middle, subcostal vein triramous, branches 1 and 2 straight, distant from each other and from the costal vein; abdomen stout, rather short, transversely banded. Sp. *C. leopardinum*, sp. n., Feld. l. c. p. 293, pl. 37. figs. 29, 30, Bahia.

*Synapta**, g. n., Felder, l. c. p. 294. Allied to *Emesis*; antennæ attaining nearly two-thirds of the costa, club very distinct, suboval, arcuate; fore wings with the costa much deflexed in the middle, subcostal vein triramous, branches 1 and 2 emitted before the closure of the cell. Sp. *S. arion*, sp. n., Feld. l. c. p. 294, pl. 36. figs. 20, 21, origin unknown.

Crocozona, g. n., Felder, l. c. p. 296. Allied to *Charis*; palpi slightly exceeding the face; antennæ slender, their joints scarcely perceptible, club very slender; fore wings with subcostal vein triramous, branch 1 connate with subcostal before the middle. Sp. *C. pheretima*, sp. n., Feld. l. c. p. 296, pl. 36. figs. 16, 17, New Granada.

Apodemia, g. n., Felder, l. c. p. 302. Allied to *Lemonias*, but with the

* This name must be changed, being preoccupied by a well-known and indeed celebrated genus of Holothurioid Echinodermata.

antennæ stout, scarcely exceeding half the length of the costa, distinctly ringed with white, club oval, abbreviated. Known sp.: *Lemonias mormo* (Feld.); *Apodemia sonorensis*, sp. n., Feld. *l. c.* p. 303, Sonora.

Xenandra, g. n., Felder, *l. c.* p. 304. Allied to *Limnas*; antennæ stout, club subovate, concave beneath; palpi short; fore wings with costa deflexed in middle. Sp. *X. heliodes*, sp. n., Feld. *l. c.* p. 304, pl. 38, figs. 19-22, Bahia.

Chamalimnas, g. n., Felder, *l. c.* p. 304. Allied to *Limnas*; head large; antennæ slender, passing middle of costa, club distinct, arcuate; branch 2 of subcostal vein rising far behind closure of cell. Sp. *C. tircis*, sp. n., Feld. *l. c.* p. 304, pl. 38, figs. 17, 18, Bahia.

*Oreas**, g. n., Felder, *l. c.* p. 305. Allied to *Limnas*; head small; collar distinct; antennæ slender, more than half as long as costa, club narrow, excavated; palpi slightly exceeding face; discoidal cells not reaching middle of wings, subcostal vein triramose, branch 2 emitted behind closure of cell. Sp. *O. marathon*, sp. n., Feld. *l. c.* p. 305, pl. 38, figs. 23, 24, and *O. ctesiphon*, Feld. *l. c.* p. 305, New Granada.

Dryas, g. n., Felder, *l. c.* p. 305. Allied to preceding, but head and body much stouter; palpi stout, setose, scarcely exceeding face, joints not easily distinguishable; inferior discoidal vein issuing from the middle of a transverse venule, branch 2 of subcostal vein remote from closure of cell, transverse venule straight. Sp. *Limnas cinaron* (Feld.).

Esthemopsis, g. n., Felder, *l. c.* p. 306. Allied to *Limnas*; head small; antennæ very slender, gradually passing into a very long club; palpi slender, reaching the face, last joint thin; abdomen elongated. Sp. *E. clonia*, sp. n., Feld. *l. c.* p. 306, pl. 38, figs. 11, 12, New Granada.

Lepicornis, g. n., Felder, *l. c.* p. 307. Allied to *Barbicornis*; antennæ short, thickish, club gradual, elongated, excavated, scaled; palpi rather thick, exceeding the face; wings entire, ecaudate; subcostal vein triramose, branches 1 and 2 near closure of cell, superior discoidal vein springing far behind cell, inferior above the middle of the discocellular venule. Sp. *L. melanchroia*, sp. n., Feld. *l. c.* p. 307, pl. 38, fig. 25, Mexico.

Amblygonia, g. n., Felder, *l. c.* p. 308. Allied to *Siseme*; head small, retracted, eyes and forehead densely pilose; palpi pilose, not passing face, joint 3 stout, obtuse; antennæ slender, long, club very narrow, flexile; discoidal cells short, subcostal vein tri- or biramose, branch 1 at apex of cell, 2 far behind this. Sp. *A. agathon*, Feld. *l. c.* p. 308, pl. 37, figs. 25, 26, Bahia; *A. amarynthina*, Feld. *l. c.* p. 309, New Granada.

Ithomiola, g. n., Felder, *l. c.* p. 311. Allied to *Nerias*; collar not distinct, palpi ascendent, joint 2 on a level with the vertex, 3 very short, nutant; antennæ slender, club very slender; wings elongate, subcostal vein in anterior quadriramose, branch 1 before, 2 at, 3 & 4 far behind apex of cell, inferior discoidal cell rising from above the middle of the transverse venule. Sp. *I. floralis*, Feld. *l. c.* p. 311, Surinam.

Metapheles, g. n., Bates, Ent. M. Mag. iii. p. 155. Allied to *Iphes*; colls short; second subcostal branch emitted far beyond apex of cell in fore wings. Sp. *M. dimora*, sp. n., Bates, *l. c.* p. 155, from Veragua.

New species :—

Limnas ubia, Felder, *l. c.* p. 303, Cayenne.

Lemonias. The following 5 new species are described (*l. c.*) by C. & R.

* Name already used for a genus of Antelopes.

Felder:—*L. sperthias*, p. 299, pl. 37. figs. 9, 10, *L. colchis*, p. 300, pl. 37. figs. 5, 6, Brazil; *L. cæcina*, p. 301, pl. 37. figs. 7, 8, Bahia; *L. chilensis*, p. 301, pl. 37. figs. 13, 14, Chili; *L. martialis*, p. 301, Surinam.

Lemonias domina, Bates, Ent. M. Mag. i. p. 204, Panama.

Nymphidium olinda, Bates, l. c. p. 204, Panama.—*Nymphidium præclarum* and *N. dorilis*, Bates, Ent. M. Mag. iii. p. 156, Panama.

Desmozona hemiranthe, Felder, l. c. p. 294, pl. 37. figs. 17, 18, Brazil.

Emesis toltec, Reakirt, Proc. Acad. Nat. Sci. Phil. 1866, p. 248, Mexico.

Eurygona chrysippe, Bates, l. c. p. 154, from Veragua.

Symmachia rubina, Bates, l. c. p. 155, from Panama.

Theope basilea, Bates, l. c. p. 155, from Panama.

Theope pieridoides, Felder, l. c. p. 292, pl. 37. figs. 19, 20, Bahia.

Mesene semiradiata, Felder, l. c. p. 292, pl. 37. figs. 27, 28, and *M. hyale*, Feld. l. c. p. 292, New Granada.—*Mesene argentea*, Bates, l. c. p. 154, Guatemala.—*Mesene rubella*, Bates, Ent. M. Mag. i. p. 204, Panama; *M. croceella*, Bates, *ibid.*, Guatemala.

Mesosemia gaudiolum, Bates, l. c. p. 202, and *M. vestalis*, Bates, l. c. p. 203, Guatemala.—*Mesosemia carissima*, Bates, Ent. M. Mag. iii. p. 153, Veragua.

Diophthalma (= *Mesosemia*). C. & R. Felder (l. c.) describe 4 new species of this genus, namely:—*D. macrina*, p. 296, *D. metwana*, p. 297, *D. meletia*, *ibid.*, and *D. anophthalma*, p. 298, pl. 38. figs. 7, 8, from New Granada.

Cremna phryxæ, Felder, l. c. p. 299, pl. 37. figs. 23, 24, Bahia.

Charis argyrodines, Bates, l. c. p. 154, from Guatemala and Nicaragua.

Charis. Hewitson (Exot. Butt. Oct. 1866) describes and figures the following new species of this genus:—*C. cadmeis*, fig. 1, *C. cæcias*, fig. 2, *C. caryatis* (= *C. cleonas*, God.), fig. 6, *C. chaonitis*, figs. 7, 8, and *C. cleadas*, fig. 10, from the Amazons; *C. calyitis*, fig. 3, from the Rio Grande; *C. cheilonis*, fig. 9, from Rio Janeiro; and *C. calicene*, figs. 4, 5, origin not stated.

Eurybia juturna, Felder, l. c. p. 288, Surinam.

Helicopsis selene, Felder, l. c. p. 289, Surinam.

Erycina pausias, Felder, l. c. p. 290, pl. 36. figs. 7, 8, and *E. cacica*, Feld. l. c. p. 290, New Granada.

Dodona adonira, Hewitson, Exot. Butt. Jan. 1866, *Dod. & Sosp.* figs. 1, 2, *D. dipxæ*, Hewits. l. c. fig. 3, and *D. ouida*, Hewits. l. c. figs. 4–6, from Darjeeling.

Sospita lydda, Hewitson, l. c. Jan. 1866, fig. 13, Hong Kong; *S. tantalus*, Hewits. l. c. figs. 14, 15, Old Calabar.

Aricoris petavia, Felder, l. c. p. 295, pl. 38. figs. 5, 6, Cayenne; *A. bahiana*, Feld. l. c. p. 295, pl. 38. figs. 3, 4, Bahia.

Siseme minerva, Felder, l. c. p. 308, pl. 36. figs. 14, 15, New Granada.

Pheles alicia, Bates, Ent. M. Mag. i. p. 203, Guatemala.

Nerias margarita, Felder, l. c. p. 310, Surinam.

Lycænides.

Amblypodia (Horsf.). C. & R. Felder give an amended character of this genus, to include *A. narada* (Horsf.) and its allies, and distinguish the group thus formed from *Arhopala* (Boisd.), *Myrina* (Feld.), and the other allied genera. Reise der Novara, Zool. Bd. ii. Abth. 2. p. 218.

The following species of *Lycænides* previously characterized by C. & R. Felder are fully described and many of them figured by them in Reise der

Novara, Zool. Bd. ii. Abth. 2:—*ANOPS barsine*, p. 220, pl. 28. figs. 16-17; *A. tagalica*, p. 221, pl. 28. figs. 19, 20; *ARIOPALA nakula*, p. 222, pl. 29. fig. 14; *A. nobilis*, p. 226, pl. 29. fig. 6; *A. vihara*, p. 228, pl. 29. fig. 7; *A. eridamus*, p. 229, pl. 29. figs. 16, 17; *A. disparilis*, p. 230, pl. 28. figs. 4, 5; *A. lycanaria*, p. 232, pl. 29. fig. 13; *A. aphimuta*, p. 232, pl. 29. fig. 8; *A. inornata*, p. 234, pl. 29. fig. 12; *MYRINA discophora*, p. 237, pl. 30. figs. 1, 2; *M. jalajala*, p. 238, pl. 30. figs. 7, 8; *M. mantra*, p. 238, pl. 30. fig. 14; *DIPSAS epirus*, p. 241; *HIPOLYCÆNA sipylus*, p. 242, pl. 30. figs. 15, 16; *H. astyla* (Boisd. MS.), p. 243, pl. 30. figs. 17, 18; *HYPOCHRYSOPS (Thecla) doleschallii*, p. 251, pl. 32. figs. 6, 7; *H. anacletus*, p. 252, pl. 32. figs. 3-5; *H. chrysanthis*, p. 256, pl. 32. figs. 1, 2; *PSEUDODIPSAS cone*, p. 258, pl. 32. figs. 8, 9; *P. lycanoides*, p. 258, pl. 30. fig. 25; *HOLOCHILA absimilis*, p. 261, pl. 32. figs. 14-16; *NAIS abneida*, p. 264, pl. 32. figs. 25, 26; *LYCÆNA cælius*, p. 265, pl. 33. figs. 11, 12; *L. hymetus*, p. 266, pl. 33. figs. 22-24; *L. inops*, p. 267, pl. 33. figs. 4-6; *L. illissus*, p. 269, pl. 33. figs. 25, 26; *L. amphissa*, p. 269, pl. 34. figs. 16, 17; *L. nemea*, p. 270, pl. 34. figs. 14, 15; *L. kankena*, p. 270, pl. 34. fig. 37; *L. kondulana*, p. 271, pl. 34. fig. 6; *L. alecto*, p. 272, pl. 34. fig. 23; *L. kinkurka*, p. 273, pl. 34. figs. 24, 25; *L. pactolus*, p. 274, pl. 34. figs. 1-3; *L. perusia*, p. 274, pl. 34. fig. 4; *L. macrophthalma*, p. 275, pl. 34. fig. 35; *L. nora*, p. 275, pl. 34. fig. 34; *L. ancyræ*, p. 276, pl. 34. fig. 5; *L. palmyra*, p. 276, pl. 34. figs. 28, 29; *L. strongyle*, p. 278, pl. 34. figs. 32, 33; *L. praxiteles*, p. 281, pl. 35. fig. 5; *MILETUS chinensis*, p. 284, pl. 35. figs. 35, 36.

The following known species of this group are figured by Trimen (Rhop. Afr. austr.):—*Lycæna lysimon* (Hübner), pl. 4. fig. 7; *L. emolus* (God.), pl. 4. figs. 8, 9; *L. niobe* (Trim.), pl. 4. fig. 10; *Amblypodia hirundo* (Wallengr.), pl. 4. fig. 11 (marked 4 on plate); *Zeritis zeuco* (Linn.), pl. 5. fig. 2; *Z. malagrida*, (Wallengr.), pl. 5. fig. 3; *D'Urbania amakosa* (Trim.), pl. 5. figs. 4, 5.

Hewitson figures *Pentila (Tingra) tropicalis* (Boisd.), Exot. Butt. Jan. 1866, *Pent.* figs. 1, 2; *Liptena aceræa*, Westw. l. c. *Lipt.* fig. 12.

Reakirt (Proc. Ent. Soc. Phil. vi.) cites several species of this group from the Colorado Territory, and refers particularly to the following:—*Thecla mopsus* (Hübner), p. 146; *Lycæna antægon* (Boisd.), p. 147; and *Polyommatus helloides* (Boisd.), p. 148.

Lycæna zephyrus (Friw.). This insect is regarded as a variety of *L. argus* by Lederer, and also as identical with *L. hesperica* (Ramb.). Lederer figures 2 varieties of this form. Ann. Soc. Ent. Belg. ix. p. 55, pl. 3. figs. 1, 2.

Lycæna corydon. Girard on an aberrant form of the ♀ of this species, Bull. Soc. Ent. Fr. 1865, p. lxxv.

Chrysophanus phlæas. Lucas (Ann. Soc. Ent. Fr. 4^e sér. v. pp. 499-500) describes a variety of this species from Tartary, larger, brighter in colour, and with its black spots larger, with yellowish white irids. Lucas also remarks upon the differences presented by the Abyssinian forms of this butterfly, which he thinks may form a new species under the name of *pseudophlæas* (ibid. note).

Polyommatus phlæas. Fallou notices 2 aberrant examples of this species, Bull. Soc. Ent. 1865, p. lxxv.

Lycæna corydon. The larva feeds on *Hippocrepis comosa* according to Gedge, Ent. M. Mag. iii. p. 70. Doubleday says it must also feed on other plants (l. c. p. 91).

Lycæna alexis. The larva described by Newman, Entomologist, iii. p. 15.

H. Moncreaff records the hibernation of larvæ of *Polyommatus phlæas*. Entomologist, iii. p. 41.

Thecla betula. Westwood remarks that the larva does not spin a silken girth-band. Proc. Ent. Soc. 1866, p. xxxiv.

New genera :—

Lycænesthes, g. n., Moore, Proc. Zool. Soc. 1865, p. 773. Allied to *Lycæna*; palpi long, compressed, porrected; antennæ finely pointed at extremity; fore wings rather acute at apex, subcostal vein with branch 1 arising at one-third length of wing, 2 and 3 equidistant, 4 remote, 5 joined to 3 at base; hind wings with 2 fine tail-like bundles of hair near anal angle. Sp. *L. bengalensis*, sp. n., Moore, l. c. p. 773, pl. 41. fig. 9, Bengal.

Poritia, g. n., Moore, l. c. p. 775 = *Pseudodipsas* (Feld.), ex parte. Eyes naked; palpi long, joint 3 slender, one-third as long as 2, pointed; abdomen two-thirds length of hind wing; wings short and very broad, costa of fore wing concave; hind wings rounded, scalloped; branch 1 of subcostal vein arising at one-third from base, 3 remote, 4 arising from 2. Sp. *P. hewitsoni*, sp. n., Moore, l. c. p. 775, pl. 41. fig. 10, Bengal.

Sterosis, g. n. (Boisd. MS.), Felder, l. c. p. 219. Allied to *Amblypodia*; very stout and robust; palpi scaly, slender, second joint scarcely exceeding the forehead; antennæ very stout, short, gradually thickened; wings covered with large spreading scales, subcostal vein of fore wings quadrimargose in ♀, hind wings caudate. Sp. *S. robusta* (Boisd. MS.), Felder, l. c. p. 219, pl. 27. figs. 10, 11, Halmahera.

Hypochrysois, g. n., Felder, l. c. p. 251 (= *Thecla* Sect. H, Felder, W. E. M. iv. p. 243). Palpi with adpressed scales, directed upwards, last joint acicular, subnutant, less than half length of second, the latter in ♀ exceeding the vertex; antennæ long, slender, with a long, narrow, nearly straight club. Known sp. *Thecla doleschallii*, *anacletus*, and *chrysanthis* (Feld.). New sp.: *H. theon*, Feld. l. c. p. 252, and *H. eucletus*, Feld. p. 253, Halmahera; *H. pythias*, Feld. p. 254, and *H. protogenes*, Feld. p. 255, Waigiou.

Lycænopsis, g. n., Felder, l. c. p. 257. Allied to preceding genus, but antennal club rather short, suboval, excavated beneath; last joint of palpi scarcely more than one-fourth the length of the second. Sp. *L. ananga*, sp. n., Feld. l. c. p. 257, pl. 32. figs. 10, 11, Malacca and Sumatra.

Allotinus, g. n. (Boisd. MS.), Felder, l. c. p. 285. Allied to *Miletus*; palpi with 3rd joint long, acicular; legs long, very slender, acicular, posterior tibiæ nearly equal to femora; anterior wings with subcostal vein triramous, branch 3 emitted far behind the cell, upper discoidal vein from the closing of the cell, uppermost discocellular venule distinct. Sp. *A. fallax* (Boisd. MS.), Feld. l. c. p. 285, pl. 35. figs. 24–26, Luzon; *A. major*, Feld. l. c. p. 286, pl. 35. figs. 29–31, and *A. albatrus*, Feld. l. c. p. 287, Celebes; *A. subviolaceus*, Feld. l. c. p. 286, pl. 35. figs. 27, 28, Java; *A. unicolor*, Feld. l. c. 286, Singapore.

New species :—

Lycæna nisa, Wallace and Moore, Proc. Zool. Soc. 1866, p. 360, Formosa.

Lycæna. Reakirt (Proc. Acad. Nat. Sci. Phil. 1866) describes 5 new species of this genus from California, namely:—*L. catalina* and *L. monica*, p. 244; *L. tejua* and *L. maricopa*, p. 245; and *L. tehama*, p. 246.

Lycæna isola, Reakirt, *l. c.* p. 332, Mexico.

Lycæna rapahoe, Reakirt, Proc. Ent. Soc. Phil. vi. p. 146, Colorado Territory; *L. cajona*, *l. c.* p. 147, note, California.

Lycæna ferrea, Butler, Proc. Linn. Soc. ix. p. 57, from Japan.

Lycæna. The following new species are described by C. & R. Felder (*l. c.*):—*L. philostratus*, p. 264, pl. 33. figs. 1, 2, Halmaheira; *L. apollonius*, p. 265, pl. 33. fig. 3, New Guinea; *L. wallacei*, p. 265, pl. 33. figs. 8–10, Waigiou; *L. taygetus*, p. 266, pl. 33. figs. 19–21, Australia and Fiji; *L. pindus*, p. 267, pl. 33. figs. 17, 18, Ternate; *L. caledonica*, p. 267, pl. 33. fig. 7, New Caledonia; *L. aleuas*, p. 268, pl. 33. figs. 15, 16, Mysol; *L. alcas*, p. 268, pl. 33. figs. 27, 28, Waigiou; *L. mindarus*, p. 268, pl. 33. figs. 13, 14, Dorey; *L. cleodus* (Boisd. MS.), p. 272, pl. 34. figs. 20–22, *L. suidas* (Boisd. MS.), p. 273, pl. 34. figs. 18, 19, *L. beröë* (Boisd. MS.), p. 275, pl. 34. fig. 36, and *L. sericina* (Boisd. MS.), p. 277, pl. 34. figs. 30, 31, Luzon; *L. mindora*, p. 277, pl. 34. figs. 9, 10, Mindoro; *L. arruana*, p. 277, pl. 34. figs. 7, 8, Aru Islands; *L. cagaya*, p. 278, pl. 34. figs. 11–13, and *L. athena* (Boisd. MS.), p. 279, pl. 34. figs. 26, 27, Luzon; *L. brahminia*, p. 279, pl. 35. figs. 15, 16, Bengal; *L. negus*, p. 279, pl. 35. figs. 1, 2, Bogos; *L. biocellata*, p. 280, pl. 35. fig. 14, South Australia; *L. diluta*, p. 280, pl. 35. figs. 12, 13, Bengal; *L. oxleyi*, p. 280, pl. 35. fig. 6, New Zealand; *S. sonorensis*, p. 281, pl. 35. figs. 3, 4, and *L. sagittigera*, p. 281, pl. 35. figs. 20, 21, Sonora; *L. zelmira*, p. 282, pl. 35. figs. 17–19, and *L. podarce*, p. 282, pl. 35. figs. 22, 23, California; *L. stoliczkana*, p. 283, pl. 35. figs. 10, 11, and *L. metallica*, p. 283, pl. 35. figs. 7–9, Ladak.

Anops celebensis, Felder, *l. c.* p. 220, pl. 28. figs. 14, 15, Macassar; *A. malayica*, Feld. *l. c.* p. 221, pl. 28. fig. 18, and *A. sperthis*, Feld. *l. c.* p. 222, Malacca; *A. egena*, Feld. *ibid.*, Halmaheira.

Archopala. The following new species of this genus are described (*l. c.*) by C. & R. Felder:—*A. aglais*, p. 223, pl. 29. fig. 11, Luzon; *A. araxes* (= *A. amantes*, var. *a.*, Hew.), p. 224, pl. 29. figs. 3–5, Celebes; *A. tyrannus*, p. 225, pl. 29. figs. 1, 2, Halmaheira; *A. gilolensis*, p. 225, Gilolo; *A. philander*, p. 226, pl. 29. fig. 9, Halmaheira; *A. phenops* (Boisd. MS.), p. 227, Luzon; *A. agnis*, p. 228, Malacca; *A. padus*, p. 230, Halmaheira; *A. chinensis*, p. 231, pl. 29. fig. 10, Shanghai; *A. antimuta*, p. 233, Malacca; *A. amphea*, p. 234, pl. 29. fig. 19, *A. alesia*, p. 235, pl. 29. fig. 18, and *A. arsenius*, p. 236, pl. 29. fig. 15, Luzon; and *A. asinarus*, p. 235, Cochin.

Polyommatus varunana, Moore, Proc. Zool. Soc. 1865, p. 772, pl. 41. fig. 6, *P. kandura*, Moore, *ibid.* pl. 41. fig. 7, and *P. sangra*, Moore, *ibid.* pl. 41. fig. 8, Bengal.

Polyommatus lycornas, Butler, Proc. Linn. Soc. ix. p. 57, from Japan.

Polyommatus castro, Reakirt, Proc. Ent. Soc. Phil. vi. p. 148, Colorado Territory; and *P. mariposa*, Reakirt, *l. c.* p. 149, note, California.

Zeritis chrysaor, Trimen, Rhop. Afr. aust. p. 263, South Africa; *Z. pyroëis*, Trimen, *l. c.* p. 264, pl. 5. fig. 1, Cape Town; *Z. phosphor*, Trimen, *l. c.* p. 269, pl. 4. fig. 12, Caffraria.

Myrina. C. and R. Felder (*l. c.*) describe 5 new species of this genus, namely:—*M. anasyja*, p. 237, pl. 30. figs. 3, 4, *M. usira*, p. 238, pl. 30. figs. 5, 6 Malacca (= *M. domina*, Hew. sec. Feld. *l. c.* p. 312); *M. jalysus*, p. 239, Celebes; *M. lorquinii*, p. 239, pl. 30. figs. 9–11, Aru Islands, Halmaheira; *M. danis*, p. 240, pl. 30. figs. 12, 13, Halmaheira.

Myrina ravata, Moore, *l. c.* p. 776, pl. 41. fig. 11, Bengal.

Dipsas westermanni (*Thecla*, Boisd. MS.), Felder, *l. c.* p. 241, pl. 30. figs. 21, 22, Luzon.

Hypolycaena dictæa, Felder, *l. c.* p. 242, pl. 30. figs. 19, 20, Waigiou (= *II. phorbas*, Hew. sec. Feld. *l. c.* p. 312).

Pseudolycaena. C. and R. Felder describe (*l. c.*) 17 new species of this genus, namely:—*P. paphia*, p. 243, pl. 28. figs. 12, 13, *P. antinous*, p. 244, pl. 28. figs. 8, 9, *P. boreas*, p. 244, pl. 31. fig. 12, *P. paupera*, p. 246, pl. 31. fig. 15, *P. tolmides*, p. 247, pl. 31. figs. 13, 14, *P. timæus*, p. 248, pl. 31. figs. 8, 9, *P. tityrus*, p. 248, pl. 31. figs. 1, 2, *P. paphlagon*, p. 249, pl. 31. figs. 10, 11, and *P. nana*, p. 250, pl. 31. figs. 21, 22, New Granada; *P. bathildis*, p. 245, pl. 31. figs. 19, 20, *P. cadmus* (Moritz, MS.), p. 247, pl. 31. fig. 5, *P. danaus*, p. 248, pl. 31. figs. 6, 7, and *P. viridicans*, p. 249, pl. 28. figs. 10, 11, Venezuela; *P. leucogyga*, p. 245, pl. 31. figs. 16–18, *P. platyptera*, p. 246, pl. 28. figs. 6, 7, *P. ægides* (Mor. MS.), p. 246, pl. 31. figs. 3, 4, and *P. spurius* (Mor. MS.), p. 250, pl. 31. figs. 23, 24, Venezuela and New Granada.

Pseudodipsas sumatræ, Felder, *l. c.* p. 259, pl. 36. figs. 24–26, Sumatra; *P. erycinoides*, Feld. *ibid.* pl. 30. figs. 23, 24, Java.

Austromyrina schraderi, Felder, *l. c.* p. 260, pl. 32. figs. 12, 13, New South Wales.

Thecla. Of this genus C. and R. Felder describe (*l. c.*) 5 new species, namely:—*T. albata*, p. 261, pl. 32. figs. 17, 18, and *T. commodus* (Mor. MS.), p. 262, pl. 32. figs. 19, 20, Venezuela and New Granada; *T. lozurina*, p. 262, pl. 32. figs. 21, 22, and *T. sabinus*, p. 263, pl. 32. fig. 24, New Granada; and *T. nicetus* (Mor. MS.), p. 263, pl. 32. fig. 23, Venezuela.

Thecla xami, Reakirt, Proc. Acad. Nat. Sci. Phil. 1866, p. 332, *T. zoë*, Reak. *l. c.* p. 333, and *T. barajo*, Reak. *ibid.*, Mexico; *T. julan*, Reak. *l. c.* p. 337, *T. cestri*, Reak. *l. c.* p. 338, *T. juica*, Reak. *ibid.*, *T. yojoa*, Reak. *l. c.* p. 339, and *T. istapa*, Reak. *ibid.*, Mexico.

Thecla ichnographia, Butler, Proc. Linn. Soc. ix. p. 57, from Japan.

Thecla cærulescens, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 191, Japan.

Amblypodia erichsonii (Boisd. MS.), Felder, *l. c.* p. 218, Luzon.

Iolais sidus, Trimen, Rhop. Afr. austr. p. 224, pl. 4. figs. 5, 6, Caffraria and Natal; *I. bowkeri*, Trimen, *l. c.* p. 225, pl. 4. fig. 4, Caffraria.

Ogyris otanes, Felder, *l. c.* p. 217, pl. 28. figs. 1–3, South Australia; *O. catharina*, Feld. *l. c.* p. 218, Australia.

Miletus zinckenii, Felder, *l. c.* p. 284, pl. 35. fig. 34, Java; *M. melanion* (Boisd. MS.), Feld. *ibid.* pl. 35. figs. 32, 33, Luzon; *M. learchus* (Boisd. MS.), Feld. *l. c.* p. 285, pl. 35. fig. 37, Luzon, Cochinchina.

Miletus drumila, Moore, Proc. Zool. Soc. 1865, p. 777, pl. 41. fig. 12, Bengal.

Aphnæus? *marmoreus*, Butler, Ent. M. Mag. ii. p. 169, White Nile.

Pentila peucetia, Hewitson, Exot. Butt. Jan. 1866, *Pent.* fig. 3, Zambesi.

Liptena. Hewitson (Exot. Butt. Jan. 1866) characterizes this genus, and describes the following new species:—*L. lagyra*, *l. c.* *Lipt.* fig. 4, *L. libentina*, *l. c.* figs. 8, 9, *L. libyssa*, *l. c.* figs. 5, 6, and *L. liræa*, *l. c.* figs. 10, 11, from Old Calabar; and *L. undularis* (Boisd. MS.), *l. c.* fig. 7, Congo.

Hesperüdes:—

The following known species of this group are figured by Trimen (Rhop. Afr. austr.):—*Pyrgus elma* (Trim.), pl. 5. fig. 8; *P. mohozitza* (Wallengr.),

pl. 5. fig. 9; *Cyclopides malgacha* (Boisd.), pl. 5. fig. 10; *Nisoniades motozi* (Wallengr.), pl. 6. fig. 3; *N. mokeezi* (Wallengr.), pl. 6. fig. 5; *Pamphila macomo* (Trim.), pl. 6. fig. 6; and *P. erimys* (Trim.), pl. 6. fig. 8.

Hesperia sylvanus. The life-history of this species is translated by Zeller from Snellen van Vollenhoven's continuation of Sepp. Stett. ent. Zeit. 1866, pp. 7-11. Zeller also quotes his own observations on the larva of this species from the Isis, 1840. Ibid. pp. 11-12, note.

New genera :—

Satarupa, g. n., Moore, Proc. Zool. Soc. 1865, p. 780. Allied to *Goniloba*; palpi densely pilose, erect, joint 3 minute, conical; legs slender, middle tibiæ with 1, and hind tibiæ with 2 pairs of spurs; fore wings acute, costa nearly straight; hind wings rounded in ♂, angulate in ♀. Sp. *Goniloba gopala* (Moore), l. c. pl. 42. fig. 1; *G. sambara* (Moore); and *S. bhagava*, sp. n., Moore, l. c. p. 781, Bengal.

Darpa, g. n., Moore, Proc. Zool. Soc. 1865, p. 781. Allied to *Goniloba*; hind tibiæ with only 1 pair of spurs; wings small, outer margins irregularly scalloped. Sp. *D. hauria*, sp. n., Moore, l. c. p. 781, pl. 42. fig. 2, Bengal.

Capila, g. n., Moore, l. c. p. 785. Allied to *Ismene*; palpi large, porrect, densely pilose, joint 3 conical, half as long as 2; hind tibiæ with a dense tuft of long hairs and 2 pairs of apical spurs; wings large and broad. Sp. *Ismene jayadeva* (Moore), l. c., pl. 42. fig. 3.

Pisola, g. n., Moore, l. c. p. 785. Allied to preceding; palpi large, densely pilose, joint 3 minute; body very stout. Sp. *P. zennara*, sp. n., Moore, l. c. p. 786, pl. 42. fig. 4, Bengal.

New species :—

Hesperia garitâ, Reakirt, Proc. Ent. Soc. Phil. vi. p. 150, *H. kiowah*, Reakirt, ibid., and *H. ridingsii*, Reakirt, l. c. p. 151, Colorado Territory.

Hesperia semamora, Moore, Proc. Zool. Soc. 1865, p. 791, Bengal.

Thanaos rusticanus, Bultor, Proc. Linn. Soc. ix. p. 58, from Japan.

Pamphila? *niveostriga*, Trimen, Rhop. Afr. aust. p. 298, pl. 6. fig. 7, and *P. zeno*, Trimen, l. c. p. 301, Caffraria.

Pamphila sagara, Moore, l. c. p. 792, Bengal.

Pyrgus montivagus, Reakirt, Proc. Acad. Nat. Sci. Phil. 1866, p. 334, Colorado Territory and Mexico; *P. macaira*, Reak. ibid., Mexico.

Pyrgus asterodia, Trimen, l. c. p. 289, pl. 5. fig. 6, and *P. sataspes*, Trimen, l. c. p. 290, pl. 5. fig. 7, South Africa.

Nisoniades mejicanus, Reakirt, l. c. p. 334, Mexico.

Nisoniades dasahara, Moore, l. c. p. 787, Bengal.

Nisoniades kobela, Trimen, l. c. p. 312, pl. 6. fig. 4, Caffraria.

Cyclopides inornatus, Trimen, l. c. p. 295, pl. 5. fig. 11, Caffraria.

Achlyodes hevitsonius, Reakirt, l. c. p. 340, Mexico.

Leucochitonea bicolor, Trimen, l. c. p. 307, pl. 6. fig. 1, Caffraria.

Ismene gomata, Moore, l. c. p. 783, *I. murdava*, Moore, l. c. p. 784, and *I. sasivarna*, Moore, ibid., Bengal.

Plesioneura. Moore describes the following new species from Bengal:—*P. sumitra*, l. c. p. 787; *P. ambareesa* and *P. chamunda*, l. c. p. 788; *P. alysos* and *P. dhanada*, l. c. p. 789.

Pterygospidea gana, Moore, l. c. p. 780, Bengal.

- Caprona canopus*, Trimen, *l. c.* p. 309, pl. 6. fig. 2, Caffraria.
Gonitoba poyas, Reakirt, Proc. Acad. Nat. Sci. Phil. 1866, p. 337, Brazil and Mexico; *G. azul*, Reak. *l. c.* p. 340, Mexico.
Carcharodus mazans, Reakirt, *l. c.* p. 335, Mexico.
Erycides lilea, Reakirt, *l. c.* p. 339, Mexico.

SPHINGIDÆ.

GROTE and ROBINSON have published (Proc. Ent. Soc. Phil. v. pp. 149-193) a complete synonymic catalogue of the *Sphingidæ* of Northern America, including Central America and the West Indies. It is followed by notes on many known species, and descriptions of new species and genera. The first portion of these notes is devoted to a brief discussion of the geographical areas included in the great region here illustrated, indicating that the authors adopt Dr. Leconte's division of the United States region into three districts (Atlantic, Central, and Western), but add to these a "tropical insular district" including the West Indies, and a "tropical continental district" comprehending Mexico, Honduras, Belize, and Yucatan. The following known genera and species are remarked upon in these notes:—

Lepisesia flavofusciata (Walk.) described (p. 171); *Sesia* restricted to *S. fuciformis* and *bombylififormis* (European) and *S. diffinis* (American), and characterized (p. 172), *S. thysbe* being taken as type of a new genus; *Sesia ruficaudis* (Kirby) = *Haemorrhagia ruficaudis* (G. & R.), described (p. 175); *Aellopos tantalus* (Linn.), synonymy (p. 176); *Amphion nesus* (Cram.), synonymy (ibid.); *Hemeroplanes pseudothyreus* (Grote), synonymy (ibid); *Perigonia restituta* (Walk. MS.), description (p. 177); *Proserpinus gaura* (Smith), synonymy (ibid); *Chærocampa*, grouping of species (p. 178); *Deilephila intermedia* (Kirby) and *lineata* (Fab.), synonymy (p. 179); *Philampelus vitis* (Linn.), synonymy and description (pp. 179-182) with indication of a new species; *P. lycaon* (Cram.), synonymy and figure (p. 183, pl. 3. fig. 4); *P. achemon* (Drury), synonymy (p. 184); *Pachylia ficus* (Linn.), synonymy (ibid.); *Smerinthus geminatus* (Say), synonymy (p. 185), hind wing figured (p. 186); *S. pavoninus* (Geyer) and *S. modestus* (Harris), characters and synonymy (ibid); *Macrosila quinque maculata* (Haw.), synonymy (p. 187); *Daremma repentinus* (Clem.) and *undulosa* (Walk.), synonymy (p. 189); *Ceratonia anyntor* (Hüb.) and *quadricornis* (Harr.), synonymy (p. 190); *Sphinx chersis* (Hüb.), synonymy (ibid.); *Hyloicus* (Hüb.), limits and species (pp. 190, 191); *Erinnyis ello* (Linn.), synonymy (p. 191). The authors also give notes on the following described species regarded by them as of doubtful authenticity (pp. 192-193):—*Macroglossa thetis* (Boisd.), *Sphinx japix* (Cram.), *Perigonia undata* (Walk.), *Deilephila oxybaphi* (Clem.), *Sphinx chiron* (Drury), *Chærocampa thalassina* and *drancus* (Clem.), *Pachylia lyncea* (Clem.), *Sphinx scyron* (Cram.), and *Hyloicus dynæus* (Hüb.).

POEY (Repert. Fis.-Nat. Cuba, i. pp. 243-263) publishes a review of Grote's paper on the *Sphingidæ* of Cuba (see 'Record,' 1865, pp. 571 & 600), in which he adds some synonyms to those cited by Grote, and indicates the comparative abundance or rarity of the species. *Caliomma parce* (Luc.) pro-

bably=*Sphinx parce* (Fab.) is identical with *Calliommata lycastus* (Cram.); *Chærocampa* No. 6 (II.-Sch.) = *C. irrorata* (Groté); *S. caricæ* (Linn.) and *S. hydaspus* (Cram.) = *Amphonyx antæus* (Drury); *Amphonyx duponchel* (Poey), characters of larva and pupa indicated, the imago emits a penetrating odour; *Sphinx* No. 3 (II.-Sch.) = *S. afflicta* (Grote); *Erinnyis rimosa* (Grote) = *Anceryx mnecus* (auct. ? II.-Sch.); *Anceryx* No. 7 (II.-Sch.) = *Erinnyis merianæ* (Grote); *E. melancholica* (Grote) and *œnotrus* (Cram.), differential characters discussed. *Sesia thisbe* (Fab.), doubtful as inhabiting Cuba; *Philampelus vitis* and *fasciatus*, the synonymy given in full according to Grote and the author, with the characters of the latter species (pp. 257-260). Further notes by Poey on the Cuban Sphingidæ (*Sph. linnei*, Gr. & Rob., *S. vitis*, Linn., *S. fasciata*, Sulz., *S. lineata*, Fab., *Deilephila calverleyi*, Gr., *S. hydaspus*, Cram., and *S. caricæ*, Linn.) occur in an appendix to the volume (l. c. pp. 411-412).

GROTE (Ann. Lyc. New York, viii. pp. 196-199) refers to the synonymy of some of his Cuban Sphingidæ, especially in relation to Herrich-Schäffer's results. Grote's *Erinnyis merianæ* = II.-Schäffer's No. 7; *E. rimosa* (Grote) = the species referred by II.-Schäffer with doubt to *Sphinx scyron* (Cram.). The latter Grote thinks incapable of identification. Grote also refers to the synonymy of *Enyo lugubris* (Linn.), *camertus* (Cram.), and *gorgon* (Cram.), which he regards as distinct species, and to that of *Philampelus vitis* (Linn.) and the allied forms. The total number of known Cuban species of Sphingidæ is raised by Grote in this paper to 51, of which he gives a list (l. c. p. 203).

Grote proposes the name of *Cautethia* for the genus of Sphingidæ named by him *Enosanda*, the latter name having been previously employed by Walker for a genus of Bombycidæ. Ann. Lyc. New York viii. p. 202.

Coquerel refers to an example of *Sphinx eson* (Cram.) which was found in Réunion attached to the bark of a tree by cryptogamic threads, said by Lucas to belong to *Torrubia sphingum* (Schw. & Tul.). Guérin also notices the occurrence of similar cryptogamous parasites on a *Sphinx* from the Mauritius. Bull. Soc. Ent. Fr. 1865, pp. lvii-lviii.

Acherontia atropos. Various notes on this species occur in the Entomologist, vol. iii. By P. Andrews (p. 2), C. A. Johns (p. 3), W. H. Taylor and T. A. Preston on the sound produced by the moth (pp. 3-4), A. Davidson on its occurrence in Orkney (p. 5), A. von Gleditsch on the emergence of imagos from pupæ which had produced parasites (p. 28), and S. Norman (p. 41.)

Guyon records an instance of *Macroglossa stellatarum* visiting the flowers represented on a wall-paper. Entomologist, iii. p. 6.

Deilephila elpenor. Girard notices the preference of the larva of this species for the Fuchsia as a food-plant, and its occurrence on this plant in considerable abundance about Paris. Bull. Soc. Ent. Fr. 1866, p. xlix.

The larvæ of *Macroglossa croatica* (Esp.) and *Deilephila alecto* (Linn.) are described by Lederer. Ann. Soc. Ent. Belg. ix. pp. 58 and 59.

Newman describes the larvæ of *Sphinx ligustri* (Entomologist, iii. pp. 34-35) and of *Smerinthus ocellatus* (l. c. pp. 91-92), and the life-history of *Pæcilocampa populi* (l. c. pp. 92-93) and *Chærocampa elpenor* (l. c. pp. 127-128).

The larvæ of *Macroglossa bombyliiformis* and *M. fuciformis* are described by Newman, Zoologist, 1866, pp. 350 & 351.

M'Lachlan (Ent. M. Mag. iii. pp. 137-138) notices the occurrence of a

larva of *Sphinx ligustri* feeding upon holly, and quotes an observation of Weymer's to the same effect. See also notes by Duer & Matthew, *l. c.* p. 163.

W. H. Flower has recorded the occurrence of 2 specimens of *Acherontia atropos* and 1 of *Sphinx convolvuli* on board a ship at a considerable distance from any land. Proc. Zool. Soc. 1866, p. 305.

New genera:—

Hæmorrhagia, g. n., Grote & Robinson, Proc. Ent. Soc. Phil. v. p. 173. Allied to *Sesia* (*Macroglossa*); palpi extending beyond clypeus; antennæ gradually narrowed to base; wings large and acuminate. Sp. *Sesia ruficaudis* (Kirby), *Sphinx thysbe* (Fab.), *M. fuscicaudis* (Boisd.); *H. gracilis*, sp. n., Grote & Robinson, *l. c.* p. 174, pl. 3. figs. 1 & 2, Canada and New York (= *ruficaudis*, Walk. nec Kirby).

Euproserpinus, g. n., Grote & Robinson, *l. c.* p. 177. Allied to *Proserpinus*; hind wings small, subtriangular, scarcely excavated before the anal angle; antennæ long, stout, flexuous; anal segment with a spreading tuft. Sp. *E. phæton* (Boisd. MS.), sp. n., Grote & Robinson, *l. c.* p. 178, California.

Cressonia, g. n., Grote & Robinson, *l. c.* p. 186 (with outlines of wings). Allied to *Smerinthus*; antennæ rather short, doubly bipectinate in ♂, simple in ♀; palpi acuminate, free, exceeding the forehead; wings excavated between the venules at outer margins, hind wings rounded in form. Sp. *S. juglandis* (Smith).

Diludia, g. n., Grote & Robinson, *l. c.* p. 188. Allied to *Macrosila*; outer margin of fore wings nearly straight, internal angle produced. Sp. *S. brontes* (Drury).

Syzygia, g. n., Grote & Robinson, *l. c.* p. 189. Allied to preceding; antennæ very long and stout; fore wings much rounded on outer margin, depressed at apex. Sp. *S. pamphilius* (Cram.) and *S. afflicta* (Grote).

New species:—

Perigonia divisa (H.-Sch. MS.), Grote, Ann. Lyc. N. York, viii. p. 199, and Poey, Rep. Cuba, i. p. 256, Cuba.

Hyloicus poeyi (Gundl. MS.), Grote, *l. c.* p. 200, Cuba.

Erinnyis congratulans (Gundl. MS.), Grote, *l. c.* p. 900, and *E. cinerosa*, Grote, *l. c.* p. 201, Cuba.

Ambulyx sexoculata, Grote, *l. c.* p. 204, Brazil.

Chærocampa (sic) *swinhoei*, Moore, Proc. Zool. Soc. 1866, p. 362, Formosa.

Philampelus linnei, Grote & Robinson, Proc. Ent. Soc. Phil. v. p. 182, pl. 3. fig. 3, Atlantic States and West Indies (= *S. vitis*, Cram. nec Linn.).

Basiana superba, Moore, *l. c.* p. 793, Bengal.

Darapsa bhaga, Moore, *l. c.* p. 794, Bengal.

Potidæa virescens, Wallengren, Kongl. Sv. Akad. Handl. v. 4. p. 17, Eastern Caffraria.

CASTNIIDÆ.

Vithora, g. n., Moore, Proc. Zool. Soc. 1865, p. 795. Allied to *Hespagarista*; body long; head and thorax with long hairs; palpi porrect, pilose, joint 3 cylindrical; middle tibiæ with 2 appendages, the inner longest; hind tibiæ thickened in middle, with 2 pairs of short appendages; hind tarsi shorter than the others; wings long and narrow, subcostal vein 6-branched, 1, 2, and

5 contiguous at base, 3 and 4 remote. Sp. *V. indrasana*, sp. n., Moore, *l. c.* p. 795, pl. 42. fig. 5, Bengal.

Phægorista bala, sp. n., Moore, *l. c.* p. 795, Bengal.

ZYGÆNIDÆ.

BIRCHALL (*Ent. M. Mag.* iii. p. 33) indicates the differential characters of *Zygæna minos* and *nubigena*, and figures 2 forms of each (*l. c.* pl. 1. figs. 5 & 6).

Zygæna trifolii and *filipendula*. Varieties with more or less confluent spots, noticed by W. Ingall, *Ent. M. Mag.* ii. p. 261.

Anthrocera trifolii. J. Hellins remarks on the hybernation and moulting of the larva of this species. *Ent. M. Mag.* iii. pp. 18-19.

Rogenhofer has found the larva of *Zygæna scabiosæ* (Esp.) feeding upon *Orobus niger*. *Verh. zool.-bot. Ges. in Wien*, xvi. p. 1000.

F. Löw records two fertile copulations of distinct species of this family, namely, *Z. carniolica* (Scop.) ♂ with *Z. ephialtes* (Linn.) ♀, and *Z. filipendula* ♂ with *Z. ephialtes* var. *trigonellæ* ♀. The eggs in the former case were lost; in the latter the larvæ were hatched and fed until they spun their cocoons, but died during the ensuing winter. *Verh. zool.-bot. Ges. in Wien*, xvi. p. 951.

New genera and species:—

Philopator, g. n., Moore, *Proc. Zool. Soc.* 1865, p. 800. Allied to *Chelura*; antennæ slightly pectinated to tips; palpi very small; proboscis short; fore wings elongated, apex rounded, 4 superior and 4 inferior veins. Sp. *P. basimaculata*, sp. n., Moore, *l. c.* p. 800, pl. 42. fig. 6, Darjeeling.

Cadphises, g. n., Moore, *l. c.* p. 800. Allied to preceding; antennæ closely pectinated to tips; palpi short; fore wings with 3 superior veins, the second trifurcate, and 4 inferior veins. Sp. *C. maculata*, sp. n., Moore, *l. c.* p. 801, pl. 42. fig. 7, Darjeeling.

Camerkes, g. n., Moore, *l. c.* p. 802. Allied to *Scaptosyle*; ♀ with an exerted ovipositor; palpi very short; antennæ long, closely pectinated in ♂, minutely pectinated and clavate in ♀; middle tibiæ with 2 minute apical spurs; fore wings long, narrow, subcostal vein 4-branched, branch 3 trifurcate. Sp. *C. euschemoides*, sp. n., Moore, *l. c.* p. 802, pl. 42. fig. 8, Cherra Poonjee, Silhet.

Epitoxis, g. n., Wallengren, *Kongl. Svenska Akad. Handl.* v. 4. p. 11. Allied to *Thyretes*; antennæ pectinated; palpi very short, hirsute; calcaria of posterior legs 4. Sp. *Thyretes amazoula* (Boisd.).

Asinusca, g. n., Wallengren, *l. c.* p. 13. Allied to *Syntomis*; antennæ thickened in middle, shortly pectinated or serrated below; palpi short, hirsute; proboscis short; abdomen subdepressed, hirsute; calcaria of posterior legs 4. Sp. *A. atricomis*, sp. n., Wallengr. *l. c.* p. 13, Eastern Caffraria.

Ceryx, g. n., Wallengren, *l. c.* p. 13. Allied to *Naclia*; antennæ simple, thicker in middle; palpi very short, hirsute; proboscis very short, almost 0; calcaria of posterior legs 4; wings slender, posterior short. Sp. *Naclia thyretiformis*, *anthraciformis*, and *fuscicornis* (Wallengr.).

Anteris, g. n., Wallengren, *l. c.* p. 16. Allied to *Neurosymphoca* (Wallengr.); antennæ thick, simple, clavate, club stout, elongate, fusiform; palpi short, squamoso-pilose; proboscis long, thick; calcaria of posterior legs only 2. Sp. *Neurosymphoca zelleri* (Wallengr.).

- Zygana abessynica*, Koch, Indo-Austr. Lep.-Fauna, p. 88, Abyssinia.
Thyretes caffra, Wallengren, *l. c.* p. 11, Caffraria.
Epicopeia varunæa, Moore, Proc. Zool. Soc. 1865, p. 799, and *E. philovenæa*,
 Moore, *ibid.*, and *E. diphileæ*, Moore, p. 800, Bengal.
Eterusia shahama, Moore, *l. c.* p. 801, Bengal.

SESIIDÆ.

STAUDINGER (Stett. ent. Zeit. 1866, pp. 50-51) remarks upon the following known species of this family. *S. luctuosa* and *doryceriformis* (Led.) are distinct species; *S. ceriiformis* (Led.) ♂ = *annellata*, var., ♀ ?; *S. ortalidiformis* (Led.), a species very nearly allied to *annellata*; *S. herrichii* and *colpiformis* (Staud.) = *doleriformis* (II.-Sch.).

Sesia bembeciformis. The life-history of this species is described by Gregson, Entomologist, iii. pp. 137-140.

Pansa, g. n., Wallengren, Kongl. Svenska Akad. Handl. v. 4. p. 9. Allied to *Sesia*; antennal club arcuate, with a minute apical tuft; palpi densely squamoso-pilose, last joint very short, slender, with long, divaricating hairs at apex; anterior legs much shorter than the rest, posterior very long, squamose, with rows of rigid hairs; veins 3 & 4 springing together from posterior angle of cell. Sp. *P. aureosquamata*, sp. n., Wallengr. *l. c.* p. 9, Eastern Caffraria.

Anaudia, g. n., Wallengren, *l. c.* p. 9. Allied to *Sesia*; antennæ thickened outwardly, recurved at apex, with a minute tuft; palpi subcylindrical, squamose, with a few rigid hairs; anal tuft horizontally compressed. Sp. *A. felderi*, sp. n., Wallengr. *l. c.* p. 10, Lake N'gami.

Sesia himmighoffeni, sp. n., Staudinger, Stett. ent. Zeit. 1866, p. 51; *S. ramburi*, Staud. *l. c.* p. 53; and *S. agdistiformis*, Staud. *l. c.* p. 54, from South Europe.

HEPIALIDÆ.

Hepialus humuli. Snellen describes and figures a variety of this species, Tijdschr. voor Entom. 1866, pp. 63-64, pl. 2. figs. 3-4.

Hepialus hectus, a variety described by P. Andrews, Entomologist, iii. p. 115.

Hepialus sylvinus. The larva described by Buckler, Ent. M. Mag. iii. pp. 136-137.

Xyleutes piger, sp. n., Grote, Proc. Ent. Soc. Phil. v. p. 254, Cuba.

Cossus cadambæ, sp. n., Moore, Proc. Zool. Soc. 1865, p. 822, Bengal.

BOMBYCIDÆ.

WALLENGREN (Kongl. Svenska Akad. Handl. v. 4. p. 33) proposes the formation of a new family (subfamily) for his new genus *Phiala*, which he says is intermediate between the true *Bombycides* and his *Orgyidæ* (= *Liparides* and *Dasychirides*). He characterizes the group as follows:—

Fam. *Phialidæ*. Retinaculum validum. Areola auxiliaris alarum anticarum nulla. Costa prima alarum anticarum radice simplici e basi oriens. Costa quinta (costa independens) alarum anticarum ad angulum anteriorem quam ad angulum posteriorem cellulæ propius accedens. Costa prima alarum posticarum e basi

libera et ibi areolam accessoriā formans. Calcaria pedum posticorum 2. Ocelli desunt.

WALLENGREN proposes to establish a family next to the *Notodontides*, under the name of *Hexaneuridæ* (*l. c.* p. 50), for the reception of a new genus (*Hexaneura*) and some others not characterized. He also proposes to refer to it his genus *Mallotodesma*. The characters of the so-called family are as follows:—

Cellula discoidalis alarum omnium simplex, indivisa. Costa independens alarum anticarum ad angulum posteriorem cellulæ quam ad angulum ejus anteriorem propius accedens. Costa prima alarum posticarum marginem anteriorem cellulæ totum formans et ex angulo hujus anteriore oriens. Ocelli desunt. Areola auxiliaris alarum anticarum deest. Calcaria pedum posticarum plerumque 2.

GROTE publishes (*Proc. Ent. Soc. Phil.* v. pp. 227–255) some notes on the *Bombycidæ* of Cuba, treating that family in a wide sense, as including the *Lithosiidæ* and *Arctiidæ*, as well as the true *Bombycidæ*. The species are neither numerous nor striking; and several subfamilies, such as the *Ceratocampides*, *Atacii*, *Platypterygides*, and *Cochlididæ*, are entirely unrepresented. The *Arctiidæ* are most numerous, but the genus *Arctia* itself is wanting. *Spilosoma jussiae* differs very slightly from *S. virginica* (*l. c.* p. 238); *Utetheisa bella*, *ornatrix*, and *speciosa* are regarded by Grote as forms of one species (*l. c.* p. 234), and this is the only species identical with a North American form. The other genera chiefly indicate tropical affinities.

Newman (*Entomologist*, iii.) describes the larvæ of *Notodonta trepida* (*l. c.* pp. 17–18), *Dicranura furcula* (*l. c.* pp. 97–98), *D. bifida* (*l. c.* pp. 98–99), and *Bombyx rubi* (*l. c.* pp. 93–94), and the life-history of *Trichiura crategi* (*l. c.* pp. 48–49) and *Orgyia pudibunda* (*l. c.* pp. 177–179).

Bombycides.

Bombyx callunæ (Palm.) is identical with *B. quercus* (Linn.), and *B. quercus* of Stephens &c. is distinct from the Linnæan species, according to Newman, who proposes for the latter the name of *B. familiaris*. *Entomologist*, iii. p. 27.

H. Laver has found that the fluid on the head of a newly emerged *Bombyx quercus* gave an alkaline reaction with litmus-paper. He suggests that an alkaline fluid may facilitate the escape of the insect from its cocoon. *Ent. M. Mag.* iii. p. 96.

Cnethocampa solitaria (Frey). The habits of the larva of this species are indicated by Lederer, *Ann. Soc. Ent. Belg.* ix. p. 62.

H. Vaughan mentions 2 double cocoons of *Eriogaster lanestris*. *Ent. M. Mag.* ii. p. 209.

GUÉRIN'S "Revue de Sériciculture Comparée" has been continued during the year 1866.

Pascoe calls attention to an account given by Consul Meadows, published in the 'Times,' of a Chinese Silkworm, the pupa of which is eaten. *Proc. Ent. Soc.* 1866, p. xxv.

Coquerel has published (Ann. Soc. Ent. Fr. 4^e sér. vi. pp. 341-344) a note on the silk-producing *Bombycidae* of Madagascar, which he says belong to four species, namely, *Bombyx radama* (Coq.), *B. diego* (Coq.), *Borocera cajani* (Vins.) = var. *B. madagascariensis* (Boisd.), and *Bombyx fleuriotti* (Guér.). Of these species he figures the ♂ and ♀ of *Bombyx radama* (l. c. pl. 5. fig. 1) and *Borocera madagascariensis*, var. *cajani* (pl. 5. fig. 2); also the larva and cocoon of the latter species (pl. 6. figs. 2 & 3) and the large common pouch containing cocoons of *B. radama* (pl. 6. fig. 1).

Maurice Girard has communicated to the Entomological Society of France notes on the rearing of some silkworms (Annales, vi. pp. 427-434). He refers to experiments made by the Baroness Pages, in which hybrids were produced between *Attacus bauhiniæ* (Guér.) from Senegal and the Indian *A. arrindia*, and to the progress made during the summer of 1866, both with varieties of the common silkworm and with some of the newly introduced species. A cocoon of *Attacus bauhiniæ* has furnished as parasites numerous specimens of a *Phasganophora* or *Conura*.

Balbani describes experiments to prove that it is by the antennæ that male *Bombycidae* (and probably other insects) are guided in their search for the females. Males of *Sericaria mori*, some with the antennæ cut off, were placed in a box, which was afterwards covered with the lid of another box in which females had been kept. The perfect males became agitated, whilst the mutilated ones remained still. Bull. Soc. Ent. Fr. 1866, p. xxxviii.

Lay notices the production of large quantities of silk by wild silkworms near Che-foo, and its use by the Chinese in many stuffs called "pongees." He calculates that 12,000 bales of the silk might be brought into the markets annually. Proc. Ent. Soc. 1866, p. xxv.

Girard communicates some notes by Sarell on his experiments in the introduction of new breeds of silkworms near Scutari. Bull. Soc. Ent. Fr. 1866, p. xi.

On the breeding of *Antheræa yama-mayu* in Holland notices were communicated to the Dutch Entomological Society by De Roo van Westmaas, J. Backer, De Graaf, and Verloren. Tijdschr. voor Ent. 1866, pp. 24-35.

Reports on the culture of the Japanese Silkworm (*Antheræa yama-mayu*) are published in the Tijdschrift voor Entomologie, 1866, pp. 67-86, from Bischoff at Munich, Stegmaier at Salzburg, Baumann and Stierlin at Bamberg, and Boveri at Verona. The same journal contains abstracts of reports on the same subject from Silesia, Erlangen, Brandenburg, and Berlin, l. c. pp. 86-93.

B. yama-mai. E. Mack records the results of some experiments in rearing this species in Hungary. Verh. des Ver. f. Naturk. zu Presburg, viii. Sitzungsber. p. 60 (December 1865). The same author adds further remarks on the epidemic disease of this silkworm. Ibid. ix. Sitzungsber. p. 4, 1866.

ALEXANDER WALLACE has published (Ent. Trans. 3rd ser. v. pp. 185-245) an elaborate memoir on the *Bombyx cynthia* and its culture in England in the open air. His experiments were made in the neighbourhood of Colchester, where he planted on a railway-embankment about 3000 *Ailanthus*-trees, upon which the larvæ were placed when half-grown. The author gives a full description of the insect in its various stages, illustrated with figures of the egg and of the larva in three states (pl. 16),

and of the cocoon and perfect moth (pl. 15), and describes the enemies and casualties to which it is exposed and what appears to him to be the best mode of treatment. He is sanguine as to the prospects of the profitable introduction of the culture of this silkworm into England, and gives full details of the expenses attendant on the establishment of an "Ailanthery."

Antheræa cynthia. This species, according to Guérin-Ménéville, is becoming naturalized in France, a brood of 25-30 larvæ having been found feeding on *Ailanthus*-trees in a garden near Paris, where the insect had never been introduced. Bull. Soc. Ent. Fr. 1866, p. 1. Facts confirmatory of Guérin's view are cited by other entomologists. *L. c.* p. li.

Remarks on the culture of *Bombyx cynthia* by Stevens & Westwood. Proc. Ent. Soc. 1866, p. xxv.

Alex. Wallace raises the question of the specific distinctness or identity of *Bombyx cynthia* and *ricini*. Proc. Ent. Soc. 1866, p. iii.

New genera :—

Bharetta, g. n., Moore, Proc. Zool. Soc. 1865, p. 820. Allied to *Andruca*; body stout, rather long; head prominent; palpi hairy, porrect; antennæ pectinated, recurved; legs stout, hind tibiæ with 2 short apical spurs; fore wings slightly acuminate. Sp. *B. cinnamomea*, sp. n., Moore, *l. c.* p. 820, pl. 43. fig. 6, Darjeeling.

Gangarides, g. n., Moore, *l. c.* p. 821 = *Apona* (Walk.) ex parte. Antennæ pectinated to near tip; palpi thick, joint 3 short, ascending; abdomen long; fore wings long, acuminate, costa arched, apical margin concave, subcostal vein with 2 branches. Sp. *Apona rosea* (Walk.); *G. dharmia*, sp. n., Moore, *l. c.* p. 821, pl. 43. fig. 7, Bengal.

Ludia, g. n., Wallengren, Kongl. Svenska Akad. Handl. v. 4. p. 25. Antennæ pectinate; palpi very short, hirsute; proboscis 0; tibiæ unarmed anteriorly at insertion of tarsi, posterior with 4 very short calcaria; wings ample, anterior acute, subfalcate, posterior not tailed. Sp. *Saturnia delegorguei* (Boisd.).

Epiphora, g. n., Wallengren, *l. c.* p. 26. Allied to *Saturnia*; antennæ doubly bipectinate (♂ ♀); palpi very short, pendulous, squamose; proboscis 0; posterior legs with 2 very short calcaria; wings ample, anterior with outer margin somewhat excised, posterior not tailed, cell open; ♀ winged. Sp. *E. scribonia* (Wallengr.).

Usta, g. n., Wallengren, *l. c.* p. 26. Allied to *Saturnia*; antennæ bipectinate (♂ ♀); palpi very short and pilose, pendulous; proboscis very short; anterior tibiæ with a strong spine at insertion of tarsi, posterior with 2 very short calcaria; wings subrotundate, cell closed, posterior not tailed; ♀ winged. Sp. *Saturnia wallengrenii* (Feld.).

Marmaroplegma, g. n., Wallengren, *l. c.* p. 29. Antennæ (♂) straight, broadly pectinated to apex; palpi very short, hirsute, pendulous; proboscis 0; head immersed in thorax; claws minute; wings elongate, subpatulous, anterior with 9, posterior with 8 veins. Sp. *M. paragauda* (Wallengr.).

Odontocheilopteryx, g. n., Wallengren, *l. c.* p. 30. Antennæ curved, pectinated, broadly in ♂, narrowly in ♀, pectination much attenuated towards apex; palpi produced, very pilose, thickened at apex, forming a prominence

with the hairs of the forehead; proboscis almost 0; claws minute; wings deflexed, inner margin of anterior tridentate. Sp. *O. myxa* (Wallengr.).

Olyra, g. n., Wallengren, *l. c.* p. 31. Allied to *Gastropacha*; antennæ nearly straight, briefly pectinated (♀), attenuated to apex; palpi elongate, villose; proboscis almost 0; claws minute; wings deflexed, rounded, anterior with 10, posterior with 8 veins. Sp. *Gastropacha caffra* (Wallengr.).

Concedes, g. n., Wallengren, *l. c.* p. 31. Allied to *Pæcilocampa*; antennæ curved, briefly pectinate (♀), obsoletely attenuated to apex; palpi elongate, villose; proboscis almost 0; wings elongate, deflexed, anterior with 9 veins. Sp. *Pæcilocampa carinata* (Wallengr.).

Labea, g. n., Wallengren, *l. c.* p. 32. Allied to preceding; antennæ curved, broadly pectinated (♂), gradually attenuated to apex; palpi short, very pilose; proboscis almost 0; wings deflexed, anterior elongate, anterior with 10, posterior with 9 veins. Sp. *Gastropacha obliquata* (Klug).

Phiala, g. n., Wallengren, *l. c.* p. 33. (See p. 476.) Antennæ pectinated in ♂, serrated in ♀; head retracted; palpi short, very pilose; proboscis almost 0; wings ample, rotundate, subpatulous, with very long fringes and 8 veins. Sp. *P. xanthosoma* and *dasy-poda* (Wallengr.).

New species :—

Bombyx flaveola, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 192, and *B. fuscata*, Motsch. *ibid.*, Japan.

Brahmæa whitei, Butler, Proc. Zool. Soc. 1866, p. 119. fig. 2, India; and *B. petiveri*, Butl. *l. c.* p. 120. fig. 3, Chusan [= *B. humulata*, (Brem.) *l. c.* p. 458].

Tagora pandya, Moore, *l. c.* p. 807, Bengal.

Adelocephala albolineata, Grote & Robinson, Proc. Ent. Soc. Phil. vi. p. 7, pl. 1. fig. 7, Mexico.

Lebeda vinata, Moore, *l. c.* p. 820, Darjeeling.

Andraca trilochooides, Moore, *l. c.* p. 820, Darjeeling.

Trabala mahananda, Moore, *l. c.* p. 821, Bengal.

Saturniides.

Actias selene. The larva described by Holdsworth, Proc. Ent. Soc. 1866, p. xliii.

Saturnia pyri. On the evolution of a ♀ of this species in September, see F. Löw, Verh. zool.-bot. Ges. in Wien, xvi. p. 950.

Saturnia anna, sp. n., Moore, Proc. Zool. Soc. 1865, p. 818, Darjeeling.

Loepa sikkima, sp. n., Moore, *l. c.* p. 818, Darjeeling.

Cricula drepanoides, sp. n., Moore, *l. c.* p. 817, Darjeeling.

Limacodides.

Miresa castaneipars, sp. n., Moore, *l. c.* p. 819, Darjeeling.

Psychides.

Oiketicus poeyi (Luc.) is described under the name of *Æceticus poeyi* by Grote, who thinks it may be identical with *Æ. fulgurator* (Hl.-Sch.). Proc. Ent. Soc. Phil. v. p. 247.

Oiketicus. Saunders notices the cases of a larva supposed to belong to this genus. Proc. Ent. Soc. 1866, p. xi. E. L. Layard adds that the young

larvæ of these insects construct their cases from the body of their parent, and MacLachlan confirms this in the case of *Fumea*, *l. c.* p. xii.

LUCAS describes and figures the case of an insect, probably belonging to this subfamily, from the southern part of Algeria (Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 223-224, pl. 3. fig. 4). It is of a quadrangular form and composed of little fragments of a plant arranged transversely and parallel to each other.

MILLIÈRE describes and figures the various states of *Psyche leschenaulti* (Staud.), Ann. Soc. Linn. Lyon, xiii. p. 21, pl. 65. figs. 1-3, *P. fulminella* (Staud.), *l. c.* p. 27, pl. 65. figs. 6-8, and *Fumea suriens* (Reutti), *l. c.* p. 26, pl. 65. figs. 4, 5.

CLAUS has bred the male of *Psyche helix*. Sitzungsber. Ges. Beförd. der Naturw., Stett. ent. Zeit. 1866, p. 358.

Hymenopsyche, *g. n.*, Grote, Proc. Ent. Soc. Phil. v. p. 248. Allied to *Oiketicus*; head small, more immersed; abdomen long, stout; tarsi naked, unguiculate; wings nearly hyaline; fore wings broad, hind wings small. Type *Oiketicus coniferarum* (Harr.). New sp. *H. thoracium*, p. 249, Cuba.

Psychonoctua, *g. n.*, Grote, *l. c.* p. 249. ♂ and ♀ winged (?); antennæ in ♂ half bipectinate, in ♀ long and simple; head projecting; clypeus broad; labial palpi not passing front. Sp. *P. personalis*, sp. n., p. 251, Cuba.

Perophora packardii, sp. n., Grote, *l. c.* p. 251, pl. 4. fig. 6, Cuba.

Dasychirides.

Parorgyia (Pack.). Grote & Robinson (Proc. Ent. Soc. Phil. vi. p. 2) discuss the synonymy of some species of this genus in connexion with *P. achatina*.

Parorgyia. Grote & Robinson (Proc. Ent. Soc. Phil. vi.) describe the following new species:—*P. clintonii*, p. 3, pl. 1. figs. 2 & 3, *P. obliquata*, Gr. & Rob. *l. c.* p. 4, pl. 1. fig. 4, *P. parallela*, Gr. & Rob. *l. c.* p. 5, pl. 1. fig. 5, and *P. cinnamomea*, Gr. & Rob. *l. c.* p. 6, pl. 1. fig. 6, Rhode Island.

Orgyia dubia (Hübner) = *seleniaca* (Fisch.) = *splendida* (Ramb.) occurs in Algeria. Lucas, Bull. Soc. Ent. Fr. 1866, p. x.

Orgyia antiqua. A. E. Eaton records a case of parthenogenesis in this species. Ent. M. Mag. ii. p. 188.

Gascoyne records the production of a second brood of *Orgyia gonostigma* in the summer of 1866. Entomologist, iii. pp. 152-153.

Orgyia gonostigma. The economy of this species is noticed by Clifford (Entomologist, iii. pp. 7-8) and Pisto (*l. c.* pp. 8-9).

Orgyia subfascia, sp. n., Moore, Proc. Zool. Soc. 1865, p. 803, Bengal.

Dasychira bhana and *D. flavimacula*, spp. nn., Moore, *l. c.* p. 804, Darjeeling.

Lymantria basinigra and *L. mathura*, spp. nn., Moore, *l. c.* p. 805, Bengal.

Euproctis rana, sp. n., Moore, *l. c.* p. 806, Silhet.

Jana cervina, sp. n., Moore, *l. c.* p. 807, Darjeeling.

Heracula, *g. n.*, Moore, Proc. Zool. Soc. 1865, p. 804. Allied to *Dasychira*; abdomen slender, palpi short, densely pilose, joint 3 conical; antennæ short, minutely serrated; fore wings broad, rounded at apex, with 4 superior veins, second 3-branched, cell closed; middle tibiæ with 1, hind tibiæ with 2 pairs of long apical spurs. Sp. *H. discivitta*, sp. n., Moore, *l. c.* p. 804, pl. 43. fig. 2, Darjeeling.

Phryne, *g. n.*, Grote, Proc. Ent. Soc. Phil. v. p. 246. Allied to *Euproctis*; 1866. [VOL. III.]

body finely scaled; head narrow across vertex; antennæ simple. Sp. *P. immaculata*, sp. n., Grote, *l. c.* p. 246, Cuba.

Pletura, g. n., Wallengren, Kongl. Svenska Akad. Handl. v. 4. p. 21. Allied to *Heterogenea*; antennæ in ♂ strongly bipectinate to middle, in ♀ simple; palpi long, straight, porrect, last joint very short; proboscis almost 0; calcaria of posterior legs 4; anterior wings with vein 8 simple, vein 9 biramose. Sp. *Heterogenea squamosa* (Wallengr.).

Aphuda, g. n., Wallengren, *l. c.* p. 22. Allied to preceding; antennæ in ♂ with one row of emarginate lamellæ beneath, from base to middle, in ♀ simple; proboscis 0; anterior wings with vein 8 triramose. Sp. *Heterogenea invitabilis* (Wallengr.); *A. plebeja*, sp. n., Wallengr. *l. c.* p. 22, River Kuisip.

Tæda, g. n., Wallengren, *l. c.* p. 23. Allied to preceding; antennæ in ♂ pectinated to apex; palpi very short, hirsute; proboscis 0; head retracted; anterior wings with vein 8 simple, vein 9 biramose. Sp. *T. ætitis*, sp. n., Wallengr. *l. c.* p. 23, Caffraria.

Ectropa, g. n., Wallengren, *l. c.* p. 23. Antennæ in ♂ pectinated to apex; palpi short, broad, porrect; proboscis 0; wings patulous, anterior subangulate, vein 8 triramose, posterior bidentate. Sp. *E. ancilis*, sp. n., Wallengr. *l. c.* p. 24, Eastern Caffraria.

Ornithopsyche, g. n., Wallengren, *l. c.* p. 35. Allied to *Orgyia*; antennæ strongly pectinated; palpi elongate, porrect, hirsute; proboscis almost 0; calcaria of posterior legs 4; anterior wings without auxiliary cell, basal accessory cell of posterior wings closed. Sp. *O. hypoxantha*, sp. n., Wallengr. *l. c.* p. 36, Eastern Caffraria.

Liparides.

Liparis chrysoorrhœa. II. Moncreaff has observed a larva of this species engaged in passing the hairs of the front of the body over the scarlet tubercles of the back, the latter being at the same time protruded. He found that an oily fluid was being exuded from the tubercles, which had an acid reaction with litmus-paper, produced inflammatory swellings when inoculated with a needle into the skin of his wrist, and proceeded from orange-coloured glands surrounded by strong muscles and situated in the base of the tubercles. He found the digestive organs of many larvæ of this species infested by numerous parasites, which, from his description, would appear to be Gregarinæ. Entomologist, iii. pp. 150-151.

Liparis dispar. Westwood details some experiments made by feeding larvæ of this species upon elm and whitethorn. No difference was observable in the larvæ, pupæ, or cocoons of the specimens fed upon the different plants; but on the emergence of the perfect insects, the males fed on elm were larger and finer than those fed on the whitethorn, whilst the reverse was the case with the females, the greater part of the latter produced by elm-fed larvæ being crippled. MacLachlan remarked that *Liparis dispar* was hardly a fair subject for experiment, as it now exists in this country only in a semidomesticated state. Proc. Ent. Soc. 1866, p. xliv.

Oreinobia, g. n., Wallengren, Kongl. Svenska Akad. Handl. v. 4. p. 34. Allied to *Psilura*; antennæ pectinated; palpi short, hirsute; proboscis almost 0; calcaria of posterior legs 2; basal accessory arcola of posterior wings nearly closed by the common superior trunk. Sp. *Psilura scurrilis* (Wallengr.).

Palasæa, g. n., Wallengren, *l. c.* p. 35. Allied to preceding; palpi short,

cylindrical, briefly hirsute; proboscis 0; calcaria of posterior legs 4; basal accessory areola of posterior wings open. Sp. *P. albinacula*, sp. n., Wallengr. *l. c.* p. 35, Eastern Caffraria.

Homæomeria, g. n., Wallengren, *l. c.* p. 36. Allied to *Leucoma*; antennæ strongly pectinated, attenuated to apex; palpi very short, cylindrical; proboscis almost 0; calcaria of posterior legs 2; basal accessory cell of posterior wings closed by the long cohesion of veins 1 & 2. Sp. *Leucoma flavicapilla* (Wallengr.).

Microgymna, g. n., Wallengren, *l. c.* p. 38. Allied to *Porthesia*; antennæ pectinated; pectination long in ♂, short in ♀; palpi short, slender, subpendulous; proboscis almost 0; calcaria of posterior legs 4; anterior wings with auxiliary cell. Sp. *Liparis picta* (Boisd.).

Creagra, g. n., Wallengren, *l. c.* p. 38. Allied to *Lælia*; palpi short, slender, subporrect; proboscis almost 0; calcaria 4; anterior wings with an auxiliary cell; basal accessory cell of posterior wings open. Sp. *Lælia aliena* and *prolixa* (Wallengr.).

Notodontides.

Datana (Walk.). The species of this genus are described and figured by Grote & Robinson (Proc. Ent. Soc. Phil. vi. pp. 8-15), who also describe the larvæ of most of the species. In 3 of the 6 species, of which *D. ministra* (Drury), *l. c.* p. 11, pl. 2. fig. 2, is one, the apical margin of the fore wing is excavated between the venules; in the others, including *D. contracta* (Walk.), *l. c.* p. 14, pl. 2. figs. 5, 6, and *D. perspicua* (Grote & Robinson) the apical margin of the fore wings is entire. The 3 new species will be indicated further on.

Notodonta dromedarius appears to be sometimes double-brooded, according to Jordan, Ent. M. Mag. ii. p. 260.

Ptilophora plumigera. G. Gascoyne publishes notes on the emergence of this species from the pupa. Entomologist, iii. pp. 10-11.

Pygæra bucephala is said to feed on the Cork-oak (*Quercus suber*) by Pisto, Entomologist, iii. p. 11, and also by G. F. Mathew (*l. c.* p. 44).

New genera:—

Paravetta, g. n., Moore, Proc. Zool. Soc. 1865, p. 814. Allied to *Notodonta*; palpi porrect, small, pilose, joint 3 minute, linear; antennæ three-fourths broadly pectinated in ♂; hind femora naked, middle tibiæ with 1, hind tibiæ with 2 pairs of apical spurs; fore wings elongate, straight, acuminate at apex, apical margin angulated, with 4 superior veins, 1, 2, and 4 contiguous at base. Sp. *P. discinota*, sp. n., Moore, *l. c.* p. 814, pl. 43. fig. 3, Darjeeling.

Carathis, g. n., Grote, Proc. Ent. Soc. Phil. v. p. 253. Wings narrow, without fringes; fore wings long, with a discal fold, costa slightly depressed in middle, apex prominent, apical margin oblique and slightly sinuate, median venules 1 and 2 springing from one point; hind wings small; antennæ tapering, with very small pectinations; palpi prominent, porrect, exceeding front. Sp. *C. gortynoides*, sp. n., Grote, *l. c.* p. 253, pl. 4. fig. 8, Cuba.

Hexaneura, g. n., Wallengren, *l. c.* p. 50. Allied to *Phalera*; antennæ (♂) broadly pectinate, lamellæ setiferous at apex; palpi short, densely hirsute beneath, last joint very short, subcordiform, naked; fore wings with 9, hind wings with 7 veins. Sp. *H. cinnamonæa* and *H. maculifera* (Wallengr.).

Henosis, g. n., Wallengren, *l. c.* p. 51. Antennæ pectinate in both sexes; palpi short, slender; trunk almost wanting; vein 1 of posterior wings entirely free. Sp. *Bombyx panda* (Boisd.).

Desmeocercera, g. n., Wallengren, *l. c.* p. 52. Allied to *Stauropus*; antennæ (♀) pectinate, nearly naked towards apex; palpi subascendent, somewhat dilated and obtuse at apex; trunk very short; wings shorter and broader than in *Stauropus*. Sp. *S. interpellatrix* (Wallengr.).

New species :—

Datana angusii, Grote & Robinson, Proc. Ent. Soc. Phil. vi. p. 9, pl. 2. fig. 1, United States; *D. major*, Gr. & Rob. *l. c.* p. 12, pl. 2. fig. 3, Maryland; and *D. integerrima*, G. & Rob. *l. c.* p. 12, pl. 2. fig. 4, United States.

Celodasys apicalis, Grote & Robinson, *l. c.* p. 15, pl. 2. fig. 7, Eastern States.

Heterocampa cubana, Grote, *l. c.* v. p. 252, pl. 4. fig. 7, Cuba.

Stauropus sikkimensis, Moore, Proc. Zool. Soc. 1865, p. 811, pl. 43. fig. 5, Darjeeling.

Celeia auritracta, Moore, *l. c.* p. 811, Bengal.

Menapia kamadena, Moore, *l. c.* p. 812, Bengal.

Cerura prasana, Moore, *l. c.* p. 812, and *C. damodara*, Moore, *ibid.*, Bengal.

Heterocampa sikkima, Moore, *l. c.* p. 812, and *H. argentifera*, *l. c.* p. 813, Darjeeling.

Ichthyura ferruginea, Moore, *l. c.* p. 813, and *I. indica*, Moore, *ibid.*, Bengal.

Notodonta basalis, Moore, *l. c.* p. 813, Darjeeling.

Anodonta pulcherrima, Moore, *l. c.* p. 814, Bengal.

Phalera tenebrosa, Moore, *l. c.* p. 815, Darjeeling.

Platypterycides.

Drepaulides? *rufulus*, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 192, and *D. palleolus*, Motsch. *l. c.* p. 193, Japan.

Creta pavaca, sp. n., Moore, Proc. Zool. Soc. 1865, p. 815, and *C. vatama*, Moore, *l. c.* p. 816, Darjeeling.

Drepana. Moore describes the following new species from Darjeeling :—*D. duplexa*, *l. c.* p. 816, pl. 43. fig. 8, *D. patrana*, *ibid.*, *D. vira*, *l. c.* p. 817, and *D. sadana*, *ibid.*

ARCTIIDÆ.

WALLENBREN (Kongl. Svenska Akad. Handl. v. 4. p. 46) proposes to form a distinct family for his genus *Leptosoma* and several new genera (not characterized here). He gives it the following characters:—*Leptosomatidæ*. Cellula discoidalis alarum omnium plica crassa divisa. Retinaculum distinctum. Costa independens alarum anticarum ad angulum posteriorem cellulæ quam ad angulum ejus anteriorem propius accedens. Costa prima alarum posticarum ad basin libera, areolam accessoriam contagione trunci communis costarum superioris semper clausam formans. Areola auxiliaris alarum anticarum adest. Ocelli ad-sunt.

Grote on the Cuban species, see BOMBYCIDÆ.

Lucas records the occurrence of *Arctia luctifera* and *lubricipeda* (Fab.) in the neighbourhood of Pekin. Bull. Soc. Ent. Fr. 1865, p. lxiv.

Arctia sordida (Hüb.). Transformations described and figured by Millière, Ann. Soc. Linn. Lyon, xiii. p. 27, pl. 65. figs. 6-8.

Arctia fuliginosa. According to H. Moncreaff (Entomologist, iii. p. 165), this species is double-brooded at Southsea. See also E. H. Todd (*l. c.* p. 188).

Jourdeuil (Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 127-128) describes a variety of *Chelonia quenselii*, destitute of black spots on the wings, the upper wings yellow, the lower ones with a reddish tinge. He proposes to call it *C. quenselii* aberration *falloui*.

Chelonia quenselii. Fallou on the habits of this species and his method of rearing it in captivity. Bull. Soc. Ent. Fr. 1866, pp. xlii-xliii.

Newman describes the larva of *Chelonia plantaginis* (Entomologist, iii. pp. 80-81) and the life-history of *Arctia fuliginosa* (*l. c.* pp. 140-141).

New genera:—

Eupseudosoma, g. n., Grote, Proc. Ent. Soc. Phil. v. p. 240. Allied to *Idalus* (Walk.); fore wings large, triangulate, apices produced, costa straight, inner margin short, discal cell open, median nervules 1, 2, and 3 springing nearly from one point; hind wings somewhat quadrangulate; head prominent; thorax globose and elevated; antennæ long, biserrate. Sp. *E. niveum* (Grote)=? *Chariclea*? *nivea* (H.-Sch.).

Robinsonia, g. n., Grote, *l. c.* p. 241. Allied to *Halisidota*; head small; clypeus and epicranium narrow; antennæ with long and slender pectinations on both sides in ♂; labial palpi short, joint 3 short; fore wings narrow, outer margin very oblique; wings closely scaled. Sp. *R. formula*, sp. n., Grote, *l. c.* p. 241, pl. 4. fig. 3, Cuba.

Euhalisidota, g. n., Grote, *l. c.* p. 243. Allied to *Halisidota*; wings large; fore wings with costa straight, outer margin rounded, median nervules 1 and 2 arising from one point, 4 springing from median vein about middle. Sp. *E. luxa*, sp. n., Grote, *l. c.* p. 244, pl. 4. fig. 5, Cuba.

Parvuchætes, g. n., Grote, *l. c.* p. 245. Allied to *Euchætes*, but squamation sparser, hind wings almost diaphanous; head wider behind; palpi smaller; fringes shorter. Sp. *P. cadaverosa* and *affinis*, sp. n., Grote, *l. c.* p. 245, Cuba.

Diota, g. n., Wallengren, *l. c.* p. 46. Allied to *Deiopeia*; antennæ in ♂ pectinate, attenuate to apex; palpi rather long, porrect, densely hirsute beneath, last joint long, cylindrical, naked; trunk elongate, thick. Sp. *Euchelia rostrata* (Wallengr.).

Alytarchia, g. n., Wallengren, *l. c.* p. 47. Allied to *Deiopeia*; antennæ in ♂ serrated beneath; palpi short, densely hirsute beneath; last joint short, naked, subcordiform; trunk long, thick; fore wings with no auxiliary areola. Sp. *Euchelia amanda* (Boisd.).

New species:—

Spilosoma. Moore describes the following new species from Darjeeling (Proc. Zool. Soc. 1865):—*S. multivittata*, *S. rubidorsa*, and *S. sordida*, p. 808; *S. rubilincta*, *S. flavaksis*, *S. lativitta*, and *S. stigmata*, p. 809; *S. sanguinalis*, *S. rubilinea*, and *S. discinigra*, p. 810.

Arctia nevadensis, Grote & Robinson, Proc. Ent. Soc. Phil. vi. p. 1, pl. 1. fig. 1, Nevada.

Ammalo impunctus, Grote, Proc. Ent. Soc. Phil. v. p. 236, Cuba.

Epantheria albicornis, Grote, *l. c.* p. 239, pl. 4. fig. 4, Cuba.

Halisidota cinetipes, Grote, *l. c.* p. 242, and *H. cubensis*, Grote, *l. c.* p. 243, Cuba.

Ocnogyna nogelli, Lederer, Ann. Soc. Ent. Belg. ix. p. 77, pl. 3. figs. 3-6, Anatolia.

LITHOSIIDÆ.

Grote on the Cuban species, see BOMBYCIDÆ.

Lithosia caniola. On the occurrence of this species on the Hill of Howth, near Dublin, see Birchall, Ent. M. Mag. iii. pp. 33-34. The insect is also figured by him, *l. c.* pl. 1. fig. 4.

Doubleday remarks that *Lithosia caniola* was taken by King at Torquay. Ent. M. Mag. iii. p. 67.

Birchall states that *L. caniola* has been taken by Perceval Wright near Waterford. Ent. M. Mag. iii. p. 110.

Grotea, g. n., Moore, Proc. Zool. Soc. 1865, p. 797. Allied to *Barsine*; palpi erect, joint 3 short; body robust, abdomen long; wings large; subcostal vein of fore wing with 5 branches, 1, 2, and 5 joined at base, 3 and 4 remote. Sp. *G. elegans*, sp. n., Moore, *l. c.* p. 797, pl. 43. fig. 1, Bengal.

Cytorus, g. n., Grote, Proc. Ent. Soc. Phil. v. p. 232. Allied to *Crocota*; head large; antennæ short and stout, tapering, biserrate; wings broad, rounded; prothoracic pieces broad; labial palpi flexuous, terminal joints somewhat depressed, exceeding the front. Sp. *C. latus*, sp. n., pl. 4. fig. 1, Cuba.

Setoctena, g. n., Wallengren, Kongl. Svenska Akad. Handl. v. 4. p. 39. Allied to *Earias*; antennæ long, crenulated; palpi slender cylindrical, ascendent; proboscis stout; calcaria of posterior legs 4; anterior wings with auxiliary cell; basal accessory areola of posterior wings closed. Sp. *S. ledereri*, sp. n., Wallengr. *l. c.* p. 39, River Swakop; and *S. stâlii*, sp. n., Wallengr. *l. c.* p. 40, Lake N'Gami.

*Melania**, g. n., Wallengren, *l. c.* p. 40. Allied to *Lithosia*; antennæ not serrated (♀), basal joint incrassated, without a tuft; palpi slender, elongate, acute; a vein issuing from transverse venule near posterior angle of cell. Sp. *Lithosia nigropunctata*, *punctipennis*, and *pustulata* (Wallengr.).

Levis, g. n., Wallengren, *l. c.* p. 41. Allied to *Lithosia*; antennæ (♂) densely pilose beneath, basal joint incrassated, without a tuft; palpi slender, short, acute; no vein issuing from transverse venule; no accessory areola in front of the cell. Sp. *Lithosia bipunctigera* (Wallengr.).

Lepista, g. n., Wallengren, *l. c.* p. 42. Allied to *Lithosia*; antennæ (♂) subpectinate, basal joint thickened, without a tuft; palpi slender, short, acute; an accessory areola in front of the cell. Sp. *Lithosia pandula* (Boisd.).

Sozusa, g. n., Wallengren, *l. c.* p. 42. Allied to *Lithosia*; antennæ (♀) sparsely furnished with longish setæ; palpi short; one vein springing from anterior margin of cell, united by a venule with the basal vein, forming an accessory areola. Sp. *Lithosia scutellata* (Wallengr.).

Manulea, g. n., Wallengren, *l. c.* p. 43. Allied to *Lithosia*; antennæ with bristles, biserrate in ♂; two veins springing from anterior margin of cell and auxiliary areola, the inner one anastomosing with that from the base to form an accessory areola. Sp. *Lithosia gilveola*, *complana*, *lurideola*, &c.; *L. gracilipennis* (Wallengr.).

* Name previously employed for a genus of Mollusca.

Pusiola, g. n., Wallengren, *l. c.* p. 44. Allied to *Lithosia*; antennæ (♂) with minute, dense, biseriate hairs; palpi very short; no auxiliary areola in anterior wings. Sp. *Lithosia flavicosta* and *L. cinerella* (Wallengr.); *P. zelleri*, sp. n., Wallengr. *l. c.* p. 45, Eastern Caffraria.

Tuniola, g. n., Wallengren, *l. c.* p. 45. Allied to *Setina*; antennæ in ♂ pectinate, in ♀ serrate and pilose; palpi very short; trunk almost wanting; vein 1 of posterior wings united with vein 2 almost throughout length of cell, only separated from it close to the angle of the cell. Sp. *Setina sagenaria* (Wallengr.).

Lithosia. Moore (Proc. Zool. Soc. 1865) describes the following new species from Bengal:—*L. disjuncta*, p. 797; *L. varana*, *ibid.*; *L. beema*, *L. remeluna*, *L. basinota*, and *L. reticulata*, p. 798.

Bizone divakara, sp. n., Moore, *l. c.* p. 798, Bengal.

Earias fulvidana, sp. n., Wallengren, Svensk. Akad. Handl. v. 4. p. 39, Lake N'Gami.

Crocota heros, sp. n., Grote, Proc. Ent. Soc. Philad. v. p. 232, pl. 4. fig. 2, and *C. disparilis*, Grote, *l. c.* p. 233, Cuba.

NOCTUIDÆ.

Triphæna. Rondani gives a tabular synopsis of the species of this genus inhabiting Italy (Archivio Canestr. iv. pp. 193–196). He enumerates 8, namely:—*T. limogrisea* (Fab.), *subsequa* (Hübner.), *pronuba* (Linn.), *imnuba* (Treits.), *fimbria* (Linn.), *interjecta* (Hübner.), *orbona* (Fab.), and *ianthina* (Fab.).

Rogenhofer (Verh. zool.-bot. Ges. in Wien, xvi. pp. 999–1000) remarks upon the following species as occurring in Austria:—*Agrotis hastifera* (Donzel); *Dasypolia templi*, a variety (*alpina*) from Innsbruck; *Dianthæcia silenes* (Hübner); *Luperina rubella* (Dup.); *Orthosia rutiella* (Esp.); *Cleophana olivina* (H.-Sch.); *Calophasia platyptera* (Esp.); *Cosmia abluta* (Hübner.); *Plusia deaurata* (Esp.).

Goossens records the occurrence of *Nola centonalis* and *Nonagria lutosa* near Paris. Bull. Soc. Ent. Fr. 1866, p. xv.

Knaggs (Ent. Ann. 1867, pp. 131–134) discusses the question of the identity or discrepancy of *Nonagria extrema* (Hübner.) and *Tapinostola bondii* (Knaggs). He thinks *N. extrema* (Hübner.) is probably identical with *N. helmanni* (Eversm.) rather than with his *N. bondii*.

Nonagria netrica of British authors = *N. arundineti* (Schmidt), according to Newman, Entomologist, iii. p. 27.

Dianthæcia. Gregson records the capture of a peculiar and permanent variety of *D. cæsia* (W. V.) = *D. dichroma* (Esp.) in the Isle of Man; he proposes to name it var. *mananui*. Entomologist, iii. pp. 103–104, and 128–130. See also Parry, *l. c.* p. 116.

On the occurrence of *Dianthæcia cæsia* in the Isle of Man, see Bond, Proc. Ent. Soc. 1866, p. xvii, and Gregson on an old specimen captured in Yorkshire, *l. c.* p. xviii.

Birchall figures *Dianthæcia capsophila*, Ent. M. Mag. iii. pl. 1. fig. 9, *D. barrettii*, *l. c.* fig. 7, and *D. compta*, *l. c.* fig. 8.

Xylina zinckenii (Treits.) is recorded as a new British species by Knaggs, Ent. M. Mag. iii. p. 163; figured Ent. Ann. 1867, frontisp. fig. 7.

Agrotis segetum with fore wings nearly black. Dorville, Proc. Ent. Soc. 1866, p. ii.

Triphena orbona with fore wings mottled and hind wings very pale. Derville, Proc. Ent. Soc. 1866, p. ii.

Zeller has translated Snellen's remarks on *Senta maritima*, in which Schmidt's account of the carnivorous habits of the larva is confirmed. It feeds both upon animal and vegetable matters. Stett. ent. Zeit. 1866, pp. 333-356.

The following species of this family are described and figured, with their transformations, by Millière (Ann. Soc. Linn. Lyon, xiii.) :—*Crymodes exulis* (Lefebv.), p. 29, pl. 65. figs. 9-11; *Cleophana arcata* (Guen.) = *serrata* (Hüb.), p. 32, pl. 66. figs. 3, 4; *Hydrilla oblitterata* (Dalm.), p. 34, pl. 67. figs. 7-10; *Agrotis agathina* (Dup.), var. *scopariæ* (Mill.), p. 50, pl. 67. figs. 7-10; *Gortyna xanthenes* (Germ.), p. 71, pl. 69. figs. 10, 11; *Plusia accentifera* (Lefebv.), p. 76, pl. 70. figs. 2-4; and *P. daubei* (Boisd.), p. 79, pl. 70. figs. 5-7.

Millière (Ann. Soc. Linn. Lyon, xiii.) describes and figures a variety of *Pseudophia ilhanaris* (Hüb.), p. 61, pl. 68. fig. 9, and *Plusia beckeri* (Staud.), p. 74, pl. 70. fig. 1.

Luperina literosa (Haw.). The larva of this species is described by Snellen, Tijdschr. voor Entom. 1866, pp. 64-66.

Catocala pacta. Notes on the metamorphosis of this species by Teich, Stett. ent. Zeit. 1866, p. 134.

Lederer describes the larva of *Acronycta orientalis* (Mann), Ann. Soc. Ent. Belg. ix. p. 63, and notices the habits of several other larvæ of this family observed by him in Anatolia.

Newman (Entomologist, iii.) describes the larvæ of *Aplecta advena* (p. 18), *Rusina tenebrosa* (p. 19), *Heliothis marginata* (pp. 20-21), *Cucullia umbratica* (pp. 49-50), *Leucania comma* (pp. 99-100), *Mamestra albicolor* (pp. 100-101), *Amphipyra tragopogonis* (pp. 101-102), *Catocala sponsa* (pp. 102-103), *Dianthæcia cæsia* (pp. 114-115), *Hecatera dysodea* (pp. 182-183) and *H. serena* (pp. 183-184). He also gives the life-histories of *Cucullia chamomilleæ* (l. c. pp. 19-20), *Cymatophora ridens* (pp. 146-148), and *Noctua confua* (pp. 181-182). Hellins describes the larvæ of *Luperina cæspitis* (Ent. M. Mag. ii. pp. 211-212) and *Grammesia trilinea* (l. c. pp. 278-279), and Buckler those of *Leucania pallens* (Ent. M. Mag. iii. pp. 68-69), *L. conigera* (l. c. p. 137), and *Hadena suasa* (l. c. p. 136).

The larva of *Hadena suasa* is also described by Newman, Zoologist, 1866, p. 351.

Künckel publishes a note on the devastation caused in the beet-crop of the north of France by the larva of *Agrotis segetum*. This has been the subject of an investigation by Blanchard; and early sowing is recommended as the best remedy. Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 129-131.

A notice of the ravages of the "army-worm" (the larva of *Heliothis armigera*) is given by Dunning. Proc. Ent. Soc. 1866, p. xxvi.

New genera :—

Tephrias, g. n., Wallengren, Svenska Akad. Handl. v. 4. p. 57. Allied to *Noctua*; palpi subascendent, middle joint very large, securiform, last joint very minute; posterior tibiæ incrassate, with a large tuft of hairs. Sp. *T. plumipes* (Wallengr.).

Colpocheilopteryx, g. n., Wallengren, l. c. p. 60. Allied to *Eurhipia*; antennæ thick and moniliform in ♂; head with a short thick tuft round the

base of each antenna; palpi ascendent, middle joint broad, last joint shorter and thinner; fore wings angulated between veins 3 and 4. Sp. *Eurhipia operatrix* (Wallengr.).

Metapioplasta, g. n., Wallengren, *l. c.* p. 70. Allied to *Acontia*; palpi short, squamose, last joint nearly naked, very short, ovate; forehead prominent, with three corneous points; hind wings with a distinct sinus in exterior margin. Sp. *Acontia simo* (Wallengr.).

Ulothrichopus, g. n., Wallengren, *l. c.* p. 76. Allied to *Sphingomorpha*; fore wings less acute, outer margin rounded; hind wings not sericeo-pilose; independent vein united with the inferior common trunk above its 2 branches. Sp. *U. tortuosus* (Wallengr.).

New species :—

Bryophila mæonis, Lederer, Ann. Soc. Ent. Belg. ix. p. 78, pl. 3. fig. 8, Anatolia.

Polia ionis, Lederer, *l. c.* p. 78, pl. 3. fig. 9, Anatolia.

Acronycta occidentalis, Grote & Robinson, Proc. Ent. Soc. Phil. vi. p. 16, Eastern and Middle States, and *A. funeralis*, Gr. & Rob. *l. c.* p. 17, pl. 3. fig. 8, Ohio.

Mamestra bridghamii, Grote & Robinson, *l. c.* p. 17, pl. 3. fig. 1, Rhode Island.

Mamestra biguttula, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 194, Japan.

Xylophasia vulgaris, Grote & Robinson, *l. c.* p. 18, pl. 3. fig. 2, Middle States.

Anthæcia hirtella, Grote & Robinson, *l. c.* p. 19, pl. 3. fig. 3, Rhode Island.

Ædia nigrescens, Grote & Robinson, *l. c.* p. 20, pl. 3. fig. 4, and *Æ. pallescens*, Gr. & Rob. *l. c.* p. 21, pl. 3, fig. 5, Texas.

Catocala. Grote & Robinson describe :—*C. badia*, *l. c.* p. 22, pl. 4. fig. 1, Atlantic district; *C. ponderosa*, *l. c.* p. 23, pl. 4. fig. 2, United States; *C. fratercula*, *l. c.* p. 24, pl. 4. fig. 3, New York, Rhode Island; *C. præclara*, *l. c.* p. 25, pl. 4. fig. 4, New York; *C. formula*, *l. c.* p. 27, pl. 4. fig. 5, New York, Rhode Island; *C. scintillans*, *l. c.* p. 28, pl. 4. fig. 6, Pennsylvania.

Catocala tmolia, Lederer, *l. c.* p. 79, pl. 3. fig. 10, Anatolia.

Heliodes theophila, Staudinger, Stett. ent. Zeit. 1866, p. 56, from Parnassus.

Amphipyra corvina, Motschulsky, *l. c.* p. 194, Japan.

Xylina ruficauda, Motschulsky, *l. c.* p. 195, Japan.

Habrostola niveola, Motschulsky, *l. c.* p. 195, Japan.

Plusia virgo, Motschulsky, *l. c.* p. 195, Japan.

Villosa leichardtii, Koch, Indo-Austr. Lep.-Fauna, p. 108, pl. 1, North Australia.

Agrotis ? *varians*, Wallengren, *l. c.* p. 54, Natal (Swakop).

Perigea vexabilis, Wallengren, *l. c.* p. 55, Eastern Caffraria; *P. natalensis*, Wallengr. *ibid.*, Swakop; *P. urba*, Wallengr. *ibid.*, Kuisip.

Tapinostola tænioleuca, Wallengren, *l. c.* p. 58, Kuisip.

Thalpochares paractata, Wallengren, *l. c.* p. 71, Lake N'Gami.

Xanthoptera anuchoresis, Wallengren, *l. c.* p. 71, Caffraria.

Euchidia maculipennis, Wallengren, *l. c.* p. 72, Caffraria.

Bocula ? *tripalis*, Wallengren, *l. c.* p. 72, Eastern Caffraria.

- Polydesma determinata*, Wallengren, *l. c.* p. 79, Caffraria.
Pandesma opposita, Wallengren, *l. c.* p. 79, Caffraria.
Thermesia zygia, Wallengren, *l. c.* p. 82, and *T. vestispica*, Wallengr. *l. c.*
 p. 83, Eastern Caffraria.
Herminodes poderis, Wallengren, *l. c.* p. 83, Eastern Caffraria.

GEOMETRIDÆ.

The larvæ, or life-histories *, of the following species are described :—

ACIDALIA manconiata by Buckler (*Ent. M. Mag.* ii. p. 189), *A. subsericeata* by G. Gibson (*l. c.* p. 236), *A. ornata* by Hellins (*Ent. M. Mag.* iii. p. 44), *A. contiguaria* by Hellins (*l. c.* p. 69) and by Newman (*Entomologist*, iii. pp. 112–113), *A. remutata* by Newman (*Entomologist*, iii. p. 96), *A. veterata* (Gregs.) by Gregson (*l. c.* pp. 158–161) and *A. fumata* by Newman (*l. c.* pp. 161–162), *SCORIA dealbata* by Hellins (*Ent. M. Mag.* ii. p. 190) and by Newman * (*Entom.* iii. pp. 141–143), *EMMELESIA albulata* by Hellins (*Entom. M. Mag.* ii. p. 261) : also by Newman the larvæ of *Lobophora viretata* (*Entom.* iii. pp. 15–16), *Tephrosia cervinaria* (*l. c.* pp. 16–17), *Pericallia syringaria* (*l. c.* pp. 81–82), *Campptogramma trilineata* (*l. c.* pp. 82–83), *Thera obeliscata* (*l. c.* p. 83), *Metrocampa margaritata* (*l. c.* pp. 94–95), *Hemitea thymiarum* (*l. c.* pp. 95–96), *Larentia multistriata* (*l. c.* p. 113), and *Scotosia curtata* (*l. c.* pp. 113–114). Of the following, life-histories are given :—*Ypsipetes elutaria* by Newman (*l. c.* pp. 96–97), *Cidaria sagittata* by Newman (*l. c.* pp. 145–146), *Coremia ferrugata* by Newman (*l. c.* pp. 143–145), *Aplasta ononaria* by Newman (*l. c.* pp. 162–163), and *Eupithecia rectangulata* by Gregson (*l. c.* p. 181).

Rogenhofer (*Verh. zool.-bot. Ges. in Wien*, xvi. p. 1000) refers to the following as Austrian species of this family :—*Eugonia effractaria* (Frey) ; *Cidaria lugdunaria* (H.-Sch.), *lapidata* (Hübner), and *infiduria* (Laharpe) ; and *Eupithecia pygmaea* (Hübner).

Anthometra concoloraria (Led.). Remarks on the occurrence of this species in France, and its systematic position, by Mabille, *Bull. Soc. Ent. Fr.* 1866, pp. li–lii.

Goossens records the occurrence of *Stegania permutaria*, *Cheimatobia boreata*, *Thera firmata*, and *Phibalapteryx aquata* near Paris. *Bull. Soc. Ent. Fr.* 1866, p. xv.

Thera obeliscata and *T. variata*. Doubleday maintains the specific distinctness of these two forms. *Entomologist*, iii. p. 84.

Gregson & Newman (*Entom.* iii. pp. 160–161) discuss the specific value of the so-called species *Acidalia subsericeata* (Haw.) and *A. manconiata* (Knaggs), for which Gregson proposes the new name *A. veterata*. Knaggs (*Ent. Ann.* 1867, pp. 134–135) seems to think that all the forms are identical.

Tephrosia crepuscularia. A dark variety of this species occurring in Wales is noticed by Llewelyn, *Ent. M. Mag.* iii. p. 20.

* The species marked with an asterisk are those of which the history is given.

G. Gascoyne records an instance of *Abraxas grossulariata* hibernating in the pupa-state. Entomologist, iii. p. 10.

A variety of *Melanippe fluctuata* is noticed by Dunning, Proc. Ent. Soc. 1866, p. xxvi.

A dark variety of *Cabera pusaria* noticed by MacLachlan, Proc. Ent. Soc. 1866, p. xxii.

Notes on varieties of *Eurranthis plumistaria* (Bkh.), *Fidonia famula* (Esp.), and *Cidaria bilineata* (Linn.), obtained by Hoffmannsegg in Andalusia, are given by Möscher, Berl. ent. Zeits. 1866, pp. 137-138.

The transformations of the following species are described and figured by Millière, Ann. Soc. Linn. Lyon, xiii. :—*Acidalia lævigata* (Scop.), p. 11, pl. 64. figs. 1-3; *A. rusticata* (W. V.), p. 14, pl. 64. figs. 4-6; *A. osseata* (W. V.), p. 16, pl. 64. figs. 7-10; *A. interjectaria* (Boisd.), p. 19, pl. 64. figs. 11-14; *Larentia tophaceata* (W. V.), p. 53, pl. 68. figs. 1-4; and *L. multistrigaria* (Haw.), var. *olbiaria* (Mill.), p. 56, pl. 68. figs. 5-8.

Dunning notices the transformations of a species of *Agathia* found near Shanghai. Proc. Ent. Soc. 1866, p. xxvi.

Boarmia rhomboidaria. The larva feeds on ivy near Worcester. E. Horton, Ent. M. Mag. ii. p. 262.

Todd confirms Horton's statement that the larva of *Boarmia rhomboidaria* feeds on ivy. Ent. M. Mag. iii. p. 20.

Ennomos. J. Hellins describes the eggs, and notices the habits of the British species of this genus. Ent. M. Mag. iii. pp. 159-162.

Lobophora viretata. The young larvæ feed on the berries of *Actæa spicata* and afterwards on the leaves of the plant. They change in earthen cocoons on the surface of the ground. Hoffmann, as recorded by Stainton, Ent. M. Mag. ii. p. 214.

Cidaria sagittata. The larva feeds on the seeds and older leaves of *Thalictrum flavum*, according to Fryer, Ent. M. Mag. iii. p. 110.

Aplasta ononaria (Fuessly) is recorded as a new British species by Piffard, Ent. M. Mag. iii. p. 110.

Cabera pusaria, a variety described by W. O. Hammond, Ent. M. Mag. iii. p. 111.

Ellopiæ fasciaria and *prasinaria*. Newman (Entomologist, iii. pp. 179-181) cites Millière's remarks upon these species.

Hibernia. In a further note, Girard indicates that female moths must be attracted to ascend the lamp-posts by the light, and mentions further observations. Bull. Soc. Ent. Fr. 1865, pp. lxx-lxx.

New genus and species :—

Helomata, g. n., Grote & Robinson, Proc. Ent. Soc. Phil. vi. p. 29. Allied to *Baptria* and *Erateina*; head small; antennæ rather long and stout, slightly ciliated beneath in ♂; wings large; fore wings slightly excavated in apical margin; hind wings with no abdominal fold. Sp. *Baptria infulata* and *elaborata* (Grote); *H. cycladata*, sp. n., Grote & Robinson, l. c. p. 30, pl. 3. fig. 7, New York.

Biston necessarius (Zeller), Lederer, Ann. Soc. Ent. Belg. ix. pp. 69 & 79, pl. 3. figs. 11, 12, Anatolia.

Larentia geminata, Grote & Robinson, l. c. p. 29, pl. 3. fig. 6, New York.

Acæna maculicaudaria, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. l. p. 196, Japan.

- Geometrina viridescens*, Motschulsky, *l. c.* p. 196, Japan.
Zerene seriaria, Motschulsky, *l. c.* p. 196, Japan.
Biston fasciaria, Motschulsky, *l. c.* p. 197, Japan.
Boarmia gaschkevitchii, Motschulsky, *l. c.* p. 197, Japan.
Cidaria dimidiaria, Motschulsky, *l. c.* p. 197, Japan.
Eupithecia rosmarinata, Millière, Ann. Soc. Linn. Lyon, xiii. p. 4, pl. 63. figs. 4-8, Provence; *E. massiliata*, Mill. *l. c.* p. 44, pl. 67. figs. 1, 2, Marseilles.
Eupithecia multilineata, Mann, Verh. zool.-bot. Ges. in Wien, xvi. p. 339, taf. 1 B. fig. 1, Dobrudscha.

PYRALIDÆ.

Anerastia farrella. Snellen remarks on the characters of this species, which he says belongs to the genus *Epischnia*, and is identical with *E. leucoloma* (H.-Sch.). Tijdschr. voor Entom. 1866, pp. 61-63.

Rhodaria sanguinalis (Linn.) described and figured with its transformations by Millière, Ann. Soc. Linn. Lyon, xiii. p. 1, pl. 63. figs. 1-3. Also *Acrobasis porphyrella* (Dup.), *l. c.* p. 46, pl. 67. figs. 3-6.

Möschler (Berl. ent. Zeits. 1866, p. 138) indicates a variety of *Botys sanguinalis* (Linn.), and describes *Myelois cruentella* (Dup.), from Andalusia.

Botys terrealis. The life-history described by Newman, Entomologist, iii. pp. 184-185.

Hyppena munitalis (Mann). The larva described by Lederer, Ann. Soc. Ent. Belg. ix. p. 68.

Harding notices the habits of *Melissoblyptes bipunctatus*, Entomologist, iii. p. 154, and correction, *l. c.* p. 187.

Botys lineolalis, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 198, Japan.

Frauenfeld records the occurrence of a swelling of the stem of *Senecio nemorensis*, containing in a chamber the remains of a larva probably belonging to an insect of this family. Verh. zool.-bot. Ges. in Wien, xvi. p. 556.

Crambus topiarius, sp. n., Zeller, Stett. ent. Zeit. 1866, p. 155, taf. i. fig. 14, from North America (Maine).

Catharylla interrupta, sp. n., Zeller, *l. c.* p. 156, taf. 1. fig. 15, Venezuela.

Schcenobius macrinellus, sp. n., Zeller, *l. c.* p. 152, taf. 1. fig. 12, Venezuela.

Myelois lydella, sp. n., Lederer, Ann. Soc. Ent. Belg. ix. p. 80, pl. 3. fig. 13, Anatolia.

Schcenobius luteellus, sp. n., Motschulsky, *l. c.* p. 199, Japan.

Pempelia deformella, sp. n., Möschler, Berl. ent. Zeits. 1866, p. 147, from Sarepta.

Nephoterjx nucleolella, sp. n., Möschler, *l. c.* p. 147, from Sarepta.

Scoparia basistriyalis, sp. n., Knaggs, Ent. M. Mag. iii. p. 1 (with figure of this species and of *S. ambiguus*), Britain.

Diptychopora, g. n., Zeller, Stett. ent. Zeit. 1866, p. 153. Allied to *Crambus*; ocelli 2; labial palpi short, slender, ascendent, acute; max. palpi triangular; anterior wings with the posterior margin slightly biemarginate, posterior pectinate, median vein bifid. Sp. *D. kuhlweini*, sp. n., Zell. *l. c.* p. 154, taf. 1. fig. 13, from Rio Janeiro.

TORTRICIDÆ.

Eupecclia albicapitana is figured by Birchall, Ent. M. Mag. iii. pl. 1. fig. 1.

Tortrix ochreana (Hübner), a new British species, recorded by Knaggs, Ent. M. Mag. iii. p. 163, and figured Ent. Ann. 1867, frontisp. fig. 6.

Sericoris euphorbiana captured at Folkestone by E. Meek, Ent. M. Mag. iii. p. 91.

Euchromia rufana, a note on this species by Hodgkinson, Ent. M. Mag. iii. p. 139.

Variations in *Tortrix rigana* (God.), *Conchylis zephyrana* (Pr.), and *Grapholitha minutana* (Hübner) are noticed by Möscher, Berl. ent. Zeits. 1866, pp. 139–141.

Lodeesen remarks upon the habits and characters of *Tortrix pilleriana*. Tijdschr. voor Ent. 1866, pp. 21–22.

F. Löw records the rearing of the following species:—*Pædisca fœneana* (Tr.), from a dingy white larva in the dry stem of some unknown herbaceous plant; *Conchylis posterana* (Zell.)=*ambiguana* (Tr.), from dry heads of *Cirsium eriophorum*; and *Grapholitha gallicolana* (Heyd.), from galls of *Cynips cerricola*. Verh. zool.-bot. Ges. in Wien, xvi. p. 950.

Conchylis zoegana (Linn.). Frauenfeld describes the pupa of this species, the full-grown larvæ of which he found in company with those of *Apion penetrans*, in the root of *Centaurea paniculata*. Verh. zool.-bot. Ges. in Wien, xvi. p. 980.

Grapholitha navana. The life-history described by Newman, Entomologist, iii. p. 185.

Grapholitha nebritana (Tr.). Zeller translates the life-history of this species from Snellen van Vollenhoven's continuation of Sepp (Stett. ent. Zeit. 1866, pp. 12–14), and adds some remarks on the characters of the species (ibid. pp. 14–16, note).

New genus and species:—

Hypostromatia, g. n., Zeller, Stett. ent. Zeit. 1866, p. 141. Allied to *Conchylis*. Capilli hirsute; ocelli 2; palpi moderate, porrect, joint 3 slender, exerted; haustellum very short; anterior wings elongate, branch 1 of median vein arising behind the middle; posterior margin of hind wings not sinuate near apex, subcostal vein with a tuft of long hairs at the base (♂?). Sp. *H. versicolorana* (Moritz), Zell. l. c. p. 142, taf. 1. fig. 4, from Columbia.

Tortrix rubricana, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 199, and *T. punctana*, Motsch. ibid., Japan.

Tortrix recurvana, Zeller, Stett. ent. Zeit. 1866, p. 143, taf. 1. fig. 5, *T. exustana*, Zell. l. c. p. 144, taf. 1. fig. 6, *T. colubrana*, Zell. l. c. p. 145, *T. simiana*, Zell. l. c. p. 147, taf. 1. fig. 11, from Columbia.

Penthina (*Sericoris*) *muscosana*, Zeller, l. c. p. 148, taf. 1. fig. 8, and *P. (S.) magicana* (Moritz), Zell. l. c. p. 150, taf. 1. fig. 9, from Columbia.

Sciaphila (?) *lacertana* (Moritz), Zeller, l. c. p. 151, taf. 1. fig. 10, from Columbia.

Olindia rosmarinana, Millière, Ann. Soc. Linn. Lyon, xiii. p. 8, pl. 63. figs. 9–12, Provence.

Conchylis andorrana, Millière, l. c. p. 66, pl. 69. figs. 4, 5, Arriège.

Teras (*Rhacodia*) *citharexylana* (Moritz), Zeller, l. c. p. 138, taf. 1. fig. 2; *T. gradatulana*, Zell. ibid., taf. 1. fig. 1; *T. aurolymbana* (Kaden), Zell. l. c. p. 139, taf. 1. fig. 3, and *T. nereidana*, Zell. l. c. p. 140, taf. 1. fig. 7, from Columbia.

Grapholitha albicana, Motschulsky, *l. c.* p. 199, Japan.—*Grapholitha tebrapiana*, Möschler, Berl. ent. Zeits. 1866, p. 148, from Sarepta.—*Grapholitha gammana*, Mann, Verh. zool.-bot. Ges. in Wien, xvi. p. 347, taf. 1 b. fig. 2, Dobrudscha.—*Grapholitha peregrinana*, Möschler, *l. c.* p. 139, and *G. conjunctana*, Möschl. *l. c.* p. 140, from Andalusia.

Phtoroblastis interscindana, Möschler, *l. c.* p. 141, from Andalusia.

Dicerorampha flavidorsana, Knaggs, Ent. Ann. 1867, p. 148, frontisp. fig. 5, Hampshire and Devonshire.

TINEIDÆ.

Cerostoma chazariella (Zell.) is figured by Mann, Verh. zool.-bot. Ges. in Wien, xvi. taf. 1 b. fig. 8.

Gelechia triammulella. Stainton (Ent. M. Mag. iii. pp. 97–101) cites the various notices of this species, which he believes to be identical with *G. sepiella* (Staudel, *vide infra*).

STAINTON indicates an apparently undescribed species of *Coleophora* (*C. graminicolella*, Heinem.) as new to Britain. Ent. Ann. 1867, pp. 163–164.

Nepticula centifoliella is recorded as a species new to Britain, by Stainton, Ent. M. Mag. iii. p. 115.

Gelechia tarquiniella and *Tinea confusella* are figured by Birchall, Ent. M. Mag. iii. pl. 1. figs. 2 & 3.

Lemnatophila alienella occurs near Paris. Goossens, Bull. Soc. Ent. Fr. 1866, p. xv.

JORDAN records his observations on Microlepidoptera in South Devonshire in September and October 1865. Ent. M. Mag. ii. pp. 193–197.

STAINTON notices some Tineidæ from the south of France, including *Depressaria rutana* (Fab.) and a *Gelechia*, allied to *G. costella*. He remarks that the latter is hardly known on the continent. Proc. Ent. Soc. 1866, p. xxvi.

SNELLEN VAN VOLLENHOVEN mentions a specimen of *Yponomeuta euonymi* which emerged bearing the larval head. Tijdschr. voor Ent. 1866, p. 24.

STAINTON refers to various species of this family from the south of France, also to the larva apparently of a *Gelechia*, found under the bark of the spindle-tree, always at the spot where there was a packet of the last year's "frass" of *Yponomeuta*. Proc. Ent. Soc. 1866, p. x.

STAINTON also notices his having bred from galls found on *Gypsophila saxifraga*, at Mentone, a species of the genus *Gelechia*. Proc. Ent. Soc. 1866, p. xv.

STAINTON (Ent. M. Mag. iii. pp. 54–57 & 78–82) publishes numerous observations on species of this family, chiefly relating to the œconomy of the insects. He refers to *Incurvaria masculella*, *Micropteryx unimaculella*, *M. fastuosella*, *Cerostoma nemorella*, *Theristis caudella*, *Eidophasia messingiella*, *Depressaria capreolella*, *D. carduella*, *Gelechia desertella*, *G. alceella*, *G. tenebrella*, *G. tenebrosella*, *Cleodora striatella*, *Butalis incongruella*, *Rösterstammia exxlebelli*, *Glyphipteryx haworthana*, *Antispila pfeifferella*, *Gracilaria falconipennella*, *G. elongella*, a larva of *Ornix* on *Pyrus torminalis*, *Coleophora apicella*, *Elachista ochreella*, *Lithocolletis nigrescentella*, *Nepticula decentella*, and *N. basiguttella*.

STAINTON (Ent. Ann. 1867, pp. 17–30) publishes observations on the œconomy &c. of the following species of this family:—*Hyponomeuta egregiella* (Dup.), *Prays oleellus* (Boy.), *Psoricoptera gibbosella* (Zell.), *Gelechia intami-*

natella (Staint.), *G. vorticella* (Zell.), *G. sangiella* (Staint.), *G. atrella* (Haw.), *Acrolepia vesperella* (Zell.), *A. betuletella* (Curt.), *Gracilaria fidella* (Reutti), *Stathmopoda guerinii* (Staint.), with notices of gall-eating Tineid larvæ, *S. pedella* (Linn.), *Batrachedra præangusta* (Haw.), and *Laverna rhamniella* (Zell.).

BARRETT publishes some notes on species of this family:—*Argyresthia dilutella*, the larva feeding in an isolated juniper bush; *A. aurulentella*; *A. andereggiella* occurring among apple-trees; *Laverna raschkiella* and *lacteella*, habits. Ent. M. Mag. ii. pp. 279–280.

Laverna atra. The life-history described by Gregson, Entomologist, iii. pp. 148–150.

Plutella porrectella. The life-history described by Newman, Entomologist, iii. p. 185.

Gracilaria fidella. Stainton notices the habits of this species, Ent. M. Mag. iii. p. 116.

Gracilaria omisella. C. G. Barrett notices a brood of this species which hybernated in the pupa state. Barrett also notices *G. phasianipennella* and *G. falconipennella*, Ent. M. Mag. ii. p. 211.

Lithocolletis corylifoliella mines the leaves of *Sorbus torminalis* and *S. aria*. C. G. Barrett, Ent. M. Mag. iii. p. 19.

Nepticula aurella. C. Healy gives the life-history of this species. Ent. M. Mag. iii. pp. 7–8, 27–29, and 61–63.

Stathmopoda? guerinii. Stainton notices the habits of this species, the larva of which lives in large galls upon *Pistacia terebinthus*. They were found by Staudinger, who says that the galls were occupied by thousands of *Aphides*. Proc. Ent. Soc. 1866, p. xxxi. Stainton also notices a larva, supposed to be that of *Stathmopoda pedella*, found in the berries of the alder. Ibid. See also l. c. p. xxxv.

Gelechia. Stainton notices the habits of *G. vicinella* and *G. atrella*. Proc. Ent. Soc. 1866, p. xxv.

Stainton thinks that the insect injuring the rye-crops about St. Etienne is the larva of *Ochsenheimeria taurella*. Proc. Ent. Soc. 1866, p. xix.

Millière (Ann. Soc. Linn. Lyon, xiii.) describes and figures the various states of *Gelechia acuminatella* (Sircom), p. 62, pl. 69. figs. 1–3, and *Depressaria propinquella* (Treits.), p. 68, pl. 69. figs. 6–9.

Gelechia paucipunctella (Zell.). This species was reared by F. Löw in spring from the dry heads of a species of *Inula*. Verh. zool.-bot. Ges. in Wien, xvi. p. 949.

Stainton translates Réaumur's account of the habits of *Gelechia cerealella*. Réaumur seems to think that the larva eats its own excrements. Ent. M. Mag. iii. p. 45.

Gelechia costella. Stainton describes the habits of the larva of this species. Ent. M. Mag. iii. p. 115.

Coleophora cæspitiella (Zell.). The life-history of this species is translated by Zeller from Snellen van Vollenhoven's continuation of Sepp. Stett. ent. Zeit. 1866, pp. 15–21.

Orthotelia sparganella. Teich on the habits of this species, Stett. ent. Zeit. 1866, p. 134. The pupæ had only 2 points on the head.

Choreutis byerkanderella (Thunb.). The pupa is described by Frauenfeld, who found it in mines in the leaves of *Carduus crispus*. Verh. zool.-bot. Ges. in Wien, xvi. pp. 980–981.

Psecadia funerella (Fab.). Frauenfeld refers to the metamorphoses of this species, the larva of which he found on the leaves of *Symphytum officinale*. Verh. zool.-bot. Ges. in Wien, xvi. p. 555.

Teichobia verhuellella (Heyd.). The mode of life of this species, the larva of which mines the pinnules of *Pteris aquilina*, is described by Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvi. pp. 552-554.

New species :—

Butalis pudorinella, Möschler, Berl. ent. Zeits. 1866, p. 149, from Sarepta.

Parasia castiliella, Möschler, l. c. p. 142, from Andalusia.

Coleophora hispanicella, Möschler, l. c. p. 143, from Andalusia.

Coleophora botaurella, Möschler, l. c. p. 149, from Sarepta.

Lithocolletis meridionella (sp. n.? *L. endryella*, Mann?), Möschler, l. c. p. 144, from Andalusia.

Elachista heinemanni, Frey, Mitth. schw. ent. Ges. ii. p. 137, and *E. sublimis*, Frey, l. c. p. 140, from the Engadine.

Glyphipteryx nicæella, Möschler, l. c. p. 146, from Andalusia.

Myrmecozela? *danubiella*, Mann, Verh. zool.-bot. Ges. in Wien, xvi. p. 349, taf. 1 B. figs. 3, 4, Dobrudscha (= *ochroleucella*, Mann, *olim*).

Cerostoma instabilella, Mann, l. c. p. 351, taf. 1 B. figs. 5-7, Dobrudscha.

Gelechia rhodoptera, Mann, l. c. p. 353, taf. 1 B. fig. 8, and *G. istrella*, Mann, l. c. p. 354, taf. 1 B. fig. 9, Dobrudscha.

Gelechia sepiella, Steudel, Stett. ent. Zeit. 1866, p. 312, from Kochendorf.

Melissoblastes (?) *cephalonica*, Stainton, Ent. M. Mag. ii. p. 172, bred from dried currants.

PTEROPHORIDÆ.

Pterophorus lienigianus. The characters of this species are indicated by Gregson, Entomologist, iii. pp. 186-187.

Pterophorus plagiodactylus. The life-history of this species is described by Gregson, Entomologist, iii. p. 186.

Oxyptilus hoffmannseggi, sp. n., Möschler, Berl. ent. Zeits. 1866, p. 145, from Andalusia.

DIPTERA.

(Including APHANIPTERA.)

* *Descriptive Papers.*

BIGOT, J. Nouveau genre et nouvelle espèce de Diptères (*Anæropsis lorquini*). Annales Soc. Ent. France, 4^e sér. tom. vi. pp. 201-202 : October 24, 1866.

BRAUER, F. *Pharyngobolus africanus*, m. Ein Oestride aus dem Rachen des afrikanischen Elephanten. Nachtrag zur Monographie der Oestriden. Verhandl. zool.-bot. Gesellsch. in Wien, xvi. pp. 879-883, tafel 19. figs. 1-2.

———. Ueber *Æstromyia leporina*, m., Pallas. Nachtrag zur Monographie der Oestriden. Ibid. pp. 647-648.

COHN, FERDINAND. Ueber die bandfüssige Halmfliege (*Chlo-*

rops teniopus). Jahresber. schles. Gesellsch. für vaterl. Cultur, 1866, pp. 71-79.

FRAUENFELD, GEORG VON. Zoologische Miscellen, vii. 2. Beschreibung der Larven und Puppen von *Ditomyia fasciata* (Mg.). Verhandl. zool.-bot. Gesellsch. in Wien, Band xvi. p. 200. And viii. 4. *Thereva*. Ibid. pp. 447-450.

JAENNICKÉ, F. Beiträge zur Kenntniss der europäischen Stratiomyden, Xylophagiden, und Cœnomyiden, sowie Nachtrag zu den Tabaniden. Berliner entom. Zeitschrift, 1866, pp. 217-237. Beiträge zur Kenntniss der Tabaniden Europa's. Ibid. pp. 65-91.

These papers consist chiefly of a revision of the species found in the neighbourhood of Frankfort on the Maine and in the Upper Engadine, with remarks on synonymy and descriptions of some new species.

LOEW, H. Ueber zu Dürrenberg beobachtete halophile Dipteren. Zeitschr. ges. Naturw. 1864, xxiii. pp. 336-347.

——. Ueber die in der zweiten Hälfte des Juli 1864 auf der Ziegelwiese bei Halle beobachteten Dipteren. Ibid. 1864, xxiv. pp. 377-396: November.

Contains a list of species observed, with notes on some of them and descriptions of new species. The latter and the more important notices of known species will be recorded in their proper places.

——. Ueber einige bei Danzig gefangene Dipteren bei denen die Flügel verkümmert sind oder ganz fehlen. Schrift. naturf. Gesellsch. Danzig, neue Folge, Band i. pp. 8.

——. Diptera Americæ septentrionalis indigena. Centuria septima. Berliner entom. Zeitschrift, 1866, pp. 1-54.

This paper includes descriptions of 100 species of Diptera, chiefly from the continent of North America, but with the addition of some from Cuba and New Granada. The following known species are described:—*Plesiomma funesta*, *P. macra*, and *Baccha parvicornis* (Loew).

——. Beschreibung einiger afrikanischen Diptera nemocera. Ibid. pp. 55-62.

MEINERT, F. Endnu et par Ord om *Miastor*, tilligemed bemærkninger om spiredannelsen hos en anden Cecidomyia-larve og om æggets dannelse og udvikling i dyreriget overhovedet. [Another word or two on *Miastor*, together with remarks on gemmiparous reproduction in another Cecidomyide larva, and on the origin and development of the egg in the animal kingdom generally.] Naturhist. Tidsskr. 3rd series, vol. iii. pp. 1-14.

MIK, JOSEF. Beitrag zur Dipterenfauna des österreichischen 1866. [VOL. III.] 2 K

Küstenlandes. Verhandl. zool.-bot. Gesellsch. in Wien Band xvi. pp. 301-310, Tafel 1.

Contains a note of species recently detected by the author, chiefly in the neighbourhood of Görz, and descriptions of some new species.

MURIE, JAMES. On the occurrence of *Æstrus tarandi*, Linn., in a Reindeer in the Society's Garden. Proc. Zool. Soc. 1866, pp. 590-592.

SCHINER, J. R. Die Wiedemann'sehen Asiliden, interpretirt und in die seither errichteten Gattungen eingereiht. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvi. pp. 649-722, Tafel 12 (read June 6, 1866).

In this elaborate paper Schiner refers the species of *Asilidæ* described by Wiedemann to their modern genera, the stability of which he discusses. Several new generic groups are proposed; and the memoir concludes with a list of the described species belonging to the family, generically arranged in accordance with the author's views. The accompanying plate contains figures of 3 characteristic Asilide wings.

— Nachtrag zu Schiner's Vortrag über die Asiliden Wiedemann's. Ibid. pp. 845-848 (read October 3, 1866).

Contains characters of 2 new genera, and remarks upon those proposed by Loew in the Berl. ent. Zeitschr. 1866.

— Bericht über die von der Weltumseglungsreise der k. Fregatte Novara mitgebrachten Dipteren. Ibid. Band xvi. pp. 927-934 (read November 7, 1866).

Report on the Nematocera of the voyage of the 'Novara,' with characters of some new genera.

WAGNER, BALTHASAR. *Diplosis tritici*, Kirby, sp., und *Dipl. aurantiaca*, n. sp. Stettiner entom. Zeitung, 1866, pp. 65-96 & 169-187, Tafel 3.

WALKER, F. Synopsis of the Diptera of the Eastern Archipelago discovered by Mr. Wallace, and noticed in the 'Journal of the Linnean Society.' Journ. Linn. Soc. vol. ix. pp. 1-30.

This paper consists of a table showing the geographical distribution of the species of Diptera recorded by Walker as contained in the collections formed by Wallace in the Malasian region, with an introductory summary.

(*Aphaniptera*.)

GUYON, —. Histoire naturelle et médicale de la Chique (*Rhynchoprion penetrans*, Oken), insecte parasite des régions tropicales des deux Amériques. (Continued. See 'Record,' 1865, p. 637.) Revue et Magasin de Zoologie, 1866, pp. 64-70, 111-117, 326-338, 359-363, and 445-461.

† *Anatomical and Physiological Papers.*

- HANIN, M. Neue Beobachtungen über die Fortpflanzung der viviparen Dipterenlarven. [New observations on the reproduction of the viviparous Dipterous larvæ.] Zeitschrift für wissensch. Zoologie, Band xv. pp. 375-391, Taf. 27: 1865.
- KUPFFER, C. Ueber das Faltenblatt an den Embryonen der Gattung *Chironomus*. [On the folded lamina in the embryos of the genus *Chironomus*.] Archiv für mikrosk. Anat. Band ii. pp. 385-398, Taf. 20.
- [LEUCKART, R. On the Asexual Reproduction of Cecidomyide Larvæ. Translated in Ann. & Mag. Nat. Hist. 3rd ser. xvii. pp. 161-173, plate 1.]
- MECZNIKOW, E. Embryologische Studien an Insecten. Zeitschr. für wiss. Zoologie, xvi. pp. 389-500, taf. 23-32.
The first two sections of this elaborate paper relate to the embryonic development of Diptera, and describe the embryology of *Simulia*, with remarks upon some other forms (pp. 392-406, taf. 23), and the development of the viviparous larvæ of the *Cecidomyidæ* (pp. 407-421, Taf. 24, 25, and 27 B).
- MEINERT, F. Weitere Erläuterungen über die von Prof. Nic. Wagner beschriebenen Insectenlarvæ, welche sich durch Sprossenbildung vermehrt. (Translated by Siebold.) Zeitschrift für wissensch. Zoologie, Band xiv. pp. 394-399.
[—]. Observations on the Reproduction of the Cecidomyidæ. Ann. Sci. Nat. série 5, tome vi. pp. 16-18. Transl. Ann. & Mag. Nat. Hist. 3rd ser. xviii. pp. 496-498.]
- PAGENSTECHER, H. A. Die ungeschlechtliche Vermehrung der Fliegenlarven. [The Asexual reproduction of the larvæ of Diptera.] Zeitschrift für wissensch. Zoologie, Band xiv. pp. 400-416, Taf. 39-40 (1864).
- WAGNER, NICOLAS. Ueber die viviparen Gallmückenlarven. [On the viviparous Cecidomyide larva.] Zeitschrift für wissensch. Zoologie, Band xv. pp. 106-115, Taf. 8: 1865.
- WEST, TUFFEN. On the structure of the Egg in *Scatophaga*. Trans. Micr. Soc. Lond. vol. xiv. pp. 67-68, pl. 7. figs. 1-7.
Relates especially to the curious appendages of the upper extremity of the egg.
- WEISMANN, AUGUST. Die nachembryonale Entwicklung der Musciden nach Beobachtungen an *Musca vomitoria* und *Sarcophaga carnaria*. [The postembryonal development of the Muscidæ, from observations on *Musca vomitoria* and *Sarcophaga carnaria*.] Zeitschrift für wissensch. Zoologie, Band xiv. pp. 187-336, Tafel 21-27: 1864.

WEISMANN, AUGUST. Die Metamorphose der *Corethra plumicornis*. Zeitschrift für wissenschaft. Zoologie, Band xvi. pp. 45-127, Taf. 3, 4: 1866.

In this most important memoir Weismann traces the development of *Corethra plumicornis* through the various preparatory stages of its existence, indicating in great detail the mode of evolution of the various organs, and the manner in which the vital functions are performed at each step in the process of development. His concluding remarks are as follows:—"The pupa of *Corethra* evidently differs both morphologically and physiologically from the pupa of the *Muscidæ*; it does not merely *become* the body of the imago, but *is* nothing else from the first, and requires only a slight perfecting to enable it to emerge as an insect capable of flight and reproduction. A pupa-sleep, in the literal sense, consequently is here entirely wanting; all the functions of animal life go on uninterruptedly in the pupa, except that the inception of fresh nourishment ceases. All the processes which occupy the period of latent vitality in *Musca*, during which the blood no longer circulates, and every sensation and movement, as well as inception of food, ceases—all the processes which may be comprised under the term 'formation of the pupa' take place in *Corethra* within the larval period, and the pupal period here can be compared only to the last two days of the Muscoid pupa, in which the imago is already near perfection, so that when artificially freed from the cask-like shell it is already more or less capable of moving and living.

"From all this we may distinguish two diametrically opposite forms of insect-metamorphosis:—one represented by *Corethra*, approaching most nearly to development without metamorphosis; the other by *Musca*, departing most widely from the ametabolous development, and representing the most extreme form of metamorphosis. . . . In the one case a *continuous*, in the other a *discontinuous* development takes place. . . .; and the two forms may be briefly characterized as follows:—

"Type *Corethra*:—The segments of the larva are converted directly into the corresponding segments of the body of the imago, the appendages of the head into the corresponding ones of the head of the imago; those of the thorax are produced after the last moult of the larva as diverticula of the hypodermis round a nerve or trachea, from the cellular envelope of which the formation of tissue in the interior of the appendage issues. The larval muscles of the abdominal segments are transferred unchanged into the imago; the thoracic muscles peculiar to the imago, as also some additional abdominal muscles, are developed in the last larval periods from indifferent cellular cords which are indicated even in the egg. The genital glands date back to the embryo, and are gradually developed; all the other systems of

organs pass with little or no alteration into the imago. Fatty body none or inconsiderable. Pupa-state short and active.

“Type *Musca*:—The thorax and head of the imago are produced independently of the corresponding sections of the hypodermis of the larva, and the abdomen alone directly by the conversion of the eight hinder larval segments. The thorax and head, with their appendages, are developed from imaginal disks, which are of embryonic origin, and are firmly attached in the interior of the body-cavity of the larva to nerves or tracheæ. It is only after the formation of a cask-like pupa-shell from the chitinous skeleton of the larva that the imaginal disks coalesce to form the thorax and head. Destruction of all the larval systems of organs, either total or by histolysis. New formation of them with the aid of the granular globules produced from the breaking-up of the fatty body. Genital glands indicated in the embryo, and gradually developed. Pupa-state long-continued and with latent vitality.”

As the two types are most clearly discriminated by the presence or absence of true imaginal disks, the author suggests that the metabolic insects might be divided into the two primary groups, *Insecta discota* and *adiscota*.

WALKER (Journ. Linn. Soc. ix. pp. 1–30) publishes a table of the distribution of the species of Diptera collected by Wallace in the Eastern Archipelago. The numbers of species in the different localities are as follows:—Malacca 51, Singapore 67, Borneo 129, Celebes 236, Amboyna 50, Aru 166, Batchian 75, New Guinea 70 or more. Walker has seen about 300 species from the Philippines, many undescribed. In the introductory summary Walker refers to the different families and to the peculiarities in their mode of representation in the islands.

LOEW (Zeitschr. ges. Naturw. xxiii. pp. 336–347) has noticed the Diptera haunting the salt-springs and other saline localities of the neighbourhood of Dürrenberg. The species observed by him, and of the habits of which he gives a more or less detailed account, were:—*Lispe crassiuscula*; *Halmopota salinaria* (the larva of which lives in the evaporating-troughs of the salt-works, and the economy of the insect is described at some length, *l. c.* pp. 337–343); *Ephydra riparia* (the larvæ found with those of the preceding species); *Thinophilus flavipalpis* (Zett.); *Medeterus tenuicauda* (Loew); and a new and peculiar species of *Atissa*.

LOEW communicates (Zeitsch. ges. Naturw. xxiv. pp. 377–396) the results of 4 mornings spent in collecting Diptera on the Ziegelwiese near Halle in the second half of July 1864. The number of species obtained by him was 185, several of which (*Ceratopogon*, *Campsicnemus*, *Tetanocera*) are described as new. The paper includes synonymic notes on several of the other species.

SIEBKE (Entomologische Untersögelser, 1865) gives a list of the Diptera

taken by him in the country surrounding the Christianiaffjord, including characters of the sexes of several known species.

GIRARD communicates a note on the production of serious gangrenous symptoms by the bite of some unrecorded species of fly. Bull. Soc. Ent. Fr. 1866, p. xi.

H. WEIJENBERGH notices the occurrence of yellow larvæ (Dipterous?) in wounds of the flesh of living toads. Tijdschr. voor Ent. 1866, pp. 94-95.

CECIDOMYIDÆ.

MEINERT (Naturh. Tidsskr. 3rd ser. vol. iii. pp. 1-14) refers to various points connected with the natural history of *Miastor metraloas*, and discusses the opinions expressed by Schiner, Siebold, and Loew as to its systematic position, and those of Leuckart on the physiology of its gemmiparous larval reproduction. He also characterizes a new genus and species, the larva of which is also gemmiparous.

Diplosis. B. Wagner has published (Stett. ent. Zeit. 1866, pp. 65-96 & 169-187) a detailed account of two species of this genus hitherto confounded under the name of *Tipula tritici* (Kirby). He describes the second species as *D. aurantiaca*. The paper includes a discussion of the literature of the subject, descriptive of the insects in all their stages and of their mode of life, indications of their parasites, remedial measures, &c. These details are illustrated in the accompanying plate (Taf. iii.), of which figs. 1-16 relate to the natural history of *D. tritici*.

Cecidomyia destructor is not noticed as injurious in Austria in 1866. Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvi. p. 642.

Frauenfeld notices the occurrence of a *Cecidomyia* in the distorted flowers of *Teucrium scordium*. Verh. zool.-bot. Ges. in Wien, xvi. p. 555.

Rondani publishes a note on the Hymenopterous parasites of *Cecidomyia frumentaria*. Archivio Canestrini, iv. pp. 189-191. (See also 'Record,' 1865, p. 639.) He describes them as 3 new species, *Epimeces canestrinii*, *Platygaster generalii*, and *Lassthia litigiosa*, the last the supposed *Methoca* of Generali and Canestrini.

Oligarces, g. n., Meinert, l. c. p. 13 (♀). Haustellum nullum; palpi nulli. Tarsi 2-articulati. Antennæ moniliformes, 11-articulatæ. Alæ costis binis vel ternis abbreviatis, cyanescentibus. Sp. *O. paradoxus*, sp. n., Meinert, l. c. p. 14, bred from larvæ living under the bark of poplars.

Diplosis aurantiaca, sp. n., B. Wagner, Stett. ent. Zeit. 1866, p. 82, Taf. 3. figs. 17-22 (with details and larva, see *ante*).

MYCETOPHILIDÆ.

Ditomyia fasciata (Meig.). Frauenfeld describes the larva and pupa of this species, found by him in *Polyporus squamosus*. Verh. zool.-bot. Gesellschaft. in Wien, xvi. p. 200.

Pseudosciara, g. n., Schiner, Verh. zool.-bot. Ges. in Wien, xvi. p. 930. Allied to *Sciara*; ocelli 2; antennæ 12-jointed, joints of flagellum long; palpi 4-jointed, last 2 joints long and slender; tibiæ with large spurs; mediastinal vein rudimentary, subcostal reaching the margin far beyond the middle, discoidal distinctly hairy, forked beyond the termination of the sub-

costal, stem much longer than fork, postical forked before middle of wing, fork suddenly widened. *P. hirtella*, sp. n., Columbia (not described).

Macrocera formosa, sp. n., Loew, Berl. ent. Zeits. 1866, p. 6, New York.

Sciophila bimaculata, sp. n., Loew, l. c. p. 6, North America.

BIBIONIDÆ.

Bibio monacanthus, sp. n., Loew, Berl. ent. Zeits. 1866, p. 60, and *B. breviceps*, Loew, l. c. p. 62, Cape; *B. caffer*, Loew, l. c. p. 61, Caffraria.

Crapitula ? *japonica*, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 183, Japan.

CHIRONOMIDÆ.

Macropeza albitarsis (Meig.). Loew (Zeitschr. ges. Naturw. xxiv. pp. 384-389) discusses the characters and synonymy of this species at considerable length, dwelling especially upon the characters of the ♂, which he fully describes and regards as identical with *Ceratopogon valvatus* (Winn.). The insect described by Schiner as the ♂ of this species, and upon which he founds his generic characters, is a ♀.

Ceratopogon. Loew (Zeitschr. ges. Naturw. xxiv. pp. 383-384) publishes notes on some species of this genus, namely:—*C. serripes*, *C. maculipes* (Meig.), *C. erythrocephalus* (Staeg.) = *rufipectus* (Winn.), and *C. circumdatus* (Staeg.) = *solstitialis* (Winn.).

Ceratopogon setiger, sp. n., Loew, Zeitschr. ges. Naturw. xxiv. p. 380, and *C. mundus*, sp. n., Loew, l. c. p. 381, near Halle (1864).

Menge figures the wing, antenna, and palpus of a *Chironomus* found in amber with 3 specimens of a species of *Mermis*. Schr. nat. Ges. in Danz. neue Folge, i. p. 6. figs. 9-10.

Telmatogeton, g. n., Schiner, Verh. zool.-bot. Ges. in Wien, xvi. p. 931. Allied to *Thalassomyia* (Schin.); antennæ 7-jointed and similar in both sexes; palpi 4-jointed, basal joint small, remainder nearly equal, densely hairy; venation of wings nearly as in *Chironomus*; empodium very large. Type *T. st. pauli*, sp. n., from St. Paul (not described).

Paltostoma, g. n., Schiner, Verh. zool.-bot. Ges. in Wien, xvi. p. 931. Allied to *Blepharicera*; ocelli distinct; antennæ rather long, 13-jointed, joints naked, nearly equal; proboscis horny, long, reaching beyond base of abdomen; legs very long and slender, tarsi with basal joint elongate, claws large, pulvilli rudimentary; wings large and broad; costal vein thickened to apex where the lower branch of the cubital terminates, discoidal, postical, and anal veins simple, strongly bent down. Type *P. superbiens*, sp. n., Columbia (not described). (Forming with *Blepharicera* and *Tanyrhina* (Loew) a separate family, *Blepharicceridæ*.)

Tanypus. Loew (Berl. ent. Zeits. 1866) describes the following 7 new North American species:—*T. scapularis* (p. 2), *humeralis* (p. 3), *thoracicus*, *bellus* (p. 4), *pusillus*, *hirtipennis*, and *pilosellus* (p. 5).

Corynoneura lemnae, sp. n., Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvi. p. 974, Austria. The larva and pupa are described and figured by Frauenfeld (l. c. pp. 973-974).

CULICIDÆ.

Anopheles costalis, sp. n., Loew, Berl. ent. Zeits. 1866, p. 55, from Caffraria.

TIPULIDÆ.

Tipula albovittata (Macq.) is described by Loew as a species of *Holorusia*. Berl. ent. Zeits. 1866, p. 57.

Tipula bicolor, sp. n., Loew, Berl. ent. Zeits. 1866, p. 55, from Siemen; *T. strigata*, Loew, l. c. p. 56, from Nubia.

Pachyrrhina crocea, sp. n., Loew, l. c. p. 58, from Caffraria.

Pachyrrhina aurantiaca, sp. n., Mik, l. c. p. 304, Görz.

Linnobia atomaria, sp. n., Loew, l. c. p. 58, from Caffraria.

Gnophomyia inconspicua, sp. n., Loew, l. c. p. 59, from Caffraria.

Cylindrotoma glabrata (Meig.) ♂ described by Siebke, Entom. Unders. p. 46.

Stygeropsis dimidiata, sp. n., Loew, Berl. ent. Zeits. 1865, p. 129, Hudson's Bay; and *S. fuscipennis*, Loew, Illinois.

Thaumastoptera, g. n., Mik, Verh. zool.-bot. Gesellsch. in Wien, xvi. p. 302. Allied to *Linnobia*; antennæ rather short, 16-jointed; radial vein not furcate anteriorly; posterior transverse vein on the middle of the wing, and posterior basal cell scarcely more than half the length of the anterior one. Sp. *T. calceata*, sp. n., Mik, l. c. p. 303, Taf. 1 A. fig. 7 (wing), Görz.

Cloniophora, g. n., Schiner, Verh. zool.-bot. Ges. in Wien, xvi. p. 932. Allied to *Gynoplistia*; epistoma produced into a short muzzle; antennæ 18-jointed, joint 2 short, cuplike, 3-13 with lateral processes on the inside; ovipositor nearly half as long as abdomen; legs stout, tibiæ spurred, empodium large; mediastinal vein long, united near its apex by a transverse vein with the subcostal. Type *Gynoplistia subfasciata* (Walk.).

Paratropesa, g. n., Schiner, l. c. p. 932. Cubital vein forked; discoidal cell emitting 4 simple veins; uppermost simple branch springing from the middle of the discoidal cell. The venation of the wing is described at considerable length, as illustrating the author's view of the venation in the Diptera. Type *P. singularis*, sp. n., South America (not described).

Peripheriptera, g. n., Schiner, l. c. p. 933. Head nearly triangular when seen from above, shortly pedunculate; antennæ short, 14-jointed, joint 2 thick and short, remainder roundish, close together, gradually decreasing; legs very long and slender, tibiæ not spurred; wings clavate in outline, mediastinal vein long, with a transverse vein to the subcostal about the middle, subcostal bent down to radial, which originates beyond middle of wing and is simple, discoidal cell emitting 3 veins. Type *P. nitens*, sp. n., South America (not described).

STRATIOMYIDÆ.

Odontomyia ornata. Jaennicke (Berl. ent. Zeits. 1866, p. 218) records his having bred this insect from a larva found in water near Frankfort.

Jaennicke (l. c.) also discusses the characters and distribution, with special reference to the neighbourhood of Frankfort, of the European species of this family. The larva of *Ephippium thoracicum* was taken by Von Heyden in a nest of *Formica fuliginosa* (l. c. p. 226). Several new species are described.

New species :—

Pachygaster robustus, Jaennicke, Berl. ent. Zeits. 1866, p. 219 (= *P. tarsalis*, Zett. part.), *P. argentifer*, Jaenn. l. c. p. 221 (= *P. minutissimus*, Zett. part.), and *P. tenellus*, Jaenn. l. c. p. 222 (= *P. minutissimus*, Zett. part.), Germany.

Nemotelus siculus, Jaennicke, l. c. p. 224, from Sicily; *N. algericus*, Jaenn. l. c. p. 225, from Algeria.

- Oxycera engadinica*, Jaenicke, *l. c.* p. 227, from the Engadine.
Stratiomys rhætica, Jaenicke, *l. c.* p. 228, from the Engadine.
Stratiomyia maculosa, Loew, Berl. ent. Zeits. 1866, p. 12, from California;
S. laticeps, Loew, *ibid.*, and *S. picipes*, Loew, *l. c.* p. 13, from North America.
Odontomyia heydenii, Jaenicke, *l. c.* p. 231, from the Engadine.
Sargus ceriferus, Jaenicke, *l. c.* p. 232, from Genoa.
Sargus. Four new North American species are described by Loew, namely,
S. elegans and *lucens*, *l. c.* p. 7, and *S. tricolor* and *pleuriticus*, *l. c.* p. 8.
Chrysonotus nigricornis, Loew, *l. c.* p. 9, from North America.
Euparyphus. Loew describes the following species from North America:—
E. tetraspilus, *l. c.* p. 9, *brevicornis* and *stigmaticalis*, *l. c.* p. 10, and *bellus*, *l. c.* p. 11.

XYLOPHAGIDÆ.

JAENNICKE (Berl. ent. Zeits. 1866, pp. 233–236) discusses the characters, habits, and distribution of the species of this family found in the neighbourhood of Frankfurt and in the Engadine. He considers *Beris clavipes* (Linn.) to be a var. ♀ *B. vallata* (Först.); *B. chalybeata* (Först.) = *fuscipes* (Meig.). The species of *Subula* and *Xylophagus* are reared abundantly from rotten wood; *Cænomyia ferruginea* (Scop.) inhabits elevated localities, which renders the supposed habitat of its larva (rotten poplars) somewhat doubtful (p. 236).

TABANIDÆ.

JAENNICKE has published notes on the European species of *Tabanidæ*, but also including notices of several species from Southern Europe, and one from Algeria, in Von Heyden's collection (Berl. ent. Zeits. 1866, pp. 65–91). The total number of species referred to in this paper is 44, namely, of *Hæmatopota* 2, *Hexatoma* 1, *Tabanus* 32, *Chrysops* 7, and *Pangonia* 2. Eleven new species of *Tabanus* and 1 of *Chrysops* are described. Jaenicke states in opposition to Loew that the eyes of the naked-eyed *Tabani* present no traces of hairs, and adds that the colour of the axillary tubercles varies in the same species, and is probably dependent on age. The information given refers chiefly to the local distribution of the species; but there are also remarks on their characters, and in some instances on synonymy. Thus, according to the author, *T. luridus* (Fall.) and *T. solstitialis* (Meig.) are varieties of *T. tropicus* (Linn.); and *T. spodopterus* (Meig.) is a variety of *T. bovinus* (Linn.). See also supplementary notes, *l. c.* p. 237.

Tabanus. Jaenicke (Berl. ent. Zeits. 1866) describes the following new European species of this genus:—*T. heydenianus*, p. 68, Switzerland; *T. apiarius*, *ibid.*, Algeria; *T. wideri*, p. 72, Italy and south of France; *T. bisignatus*, p. 74, France and Germany; *T. engadinensis*, p. 75, and *T. hæmatopotoides*, p. 77, Switzerland; *T. megacephalus*, p. 82, Andalusia; *T. paradoxus*, p. 83, Switzerland; *T. ornatus*, p. 84, Catalonia; *T. regularis*, p. 85, south of France; and *T. atropos*, p. 87, Italy. *T. braueri*, Loew, *l. c.* p. 83 = *T. vicinus* (Egger), the latter name previously used by Macquart.

Chrysops aurantiacus, sp. n., Jaenicke, *l. c.* p. 88, from Andalusia.

ACROCERIDÆ.

Thyllis nigroænea, sp. n., Motsch. Bull. Soc. Nat. Mosc. xxxix. 1. p. 183, Japan.

SCENOPINIDÆ.

Atrichia, g. n., Loew, Berl. ent. Zeits. 1866, p. 42. Allied to *Scenopinus*; body elongate, thin; legs slender; first posterior cell closed at a distance from the margin. Sp. *A. longurio*, sp. n., Loew, *ibid.*, from Mexico.

ASILIDÆ.

SCHINER, in his memoir on Wiedemann's *Asilidæ* (Verh. zool.-bot. Ges. in Wien, xvi. pp. 649-722) gives lists and analytical tables of all the published genera belonging to this family, which he refers to the 3 subfamilies *Dasy-pogoninæ*, *Laphrinæ*, and *Asilinæ*. The number of previously characterized genera belonging to each subfamily is—*Dasy-pogoninæ* 68, *Laphrinæ* 26, *Asilinæ* 42; but these numbers are greatly reduced by the author as follows:—Of the DASYPOGONINÆ: *Gonyptes* (Lat.) = *Leptogaster* (Meig.); *Gastri-chelius* (Rond.) = *Trichis* (Loew); *Blepharepium* (Rond.) is insufficiently characterized but = *Laparus*, *Saropogon*, or *Dasy-pogon* s. str.; *Cheilopogon* (Rond.) = *Dasy-pogon* p.; *Dactiliscus* (Rond.) = *Habropogon* (Loew); *Elasmocera* (Rond.) = *Xiphocerus* (Mcq.); *Megapollyon* (Walk.) = *Micro-stylum* (Mcq.); *Euarmostus* (Walk.) = *Cyrtopogon* (Loew); *Morinma* (Walk.) = *Lastaurus* (Loew); *Clavator* (Phil.) = *Hyphenetes* (Loew); *Cabasa* (Walk.) probably = *Dasy-pogon* p.; *Deromyia* (Phil.) probably = *Cyrtophrys* (Loew); *Phellus* (Walk.) prob. = *Phoneus* (Mcq.). Deducting these, the number of known genera of *Dasy-pogoninæ* here tabulated is 53, to which the author adds 7 new ones, raising the whole number to 60. (To these must be added Loew's new genera, *vide infra*.) Of the 26 genera of LAPHRINÆ: *Chærades* (Walk.) = *Laphria* s. str.; *Nusa* (Walk.) = *Anclrenosoma* (Rond.); *Ampyx* (Walk.) = *Megapoda* (Mcq.); *Cormansis* (Walk.) = *Atomosia* (Mcq.); *Aeurana* (Walk.) = *Laxene-cera* (Mcq.); *Dyseris* (Loew) = *Laxene-cera* (Mcq.); *Scandon* (Walk.) = *Therutria* (Loew), leaving 19 known genera, to which Schiner adds 6 new ones. Of the ASILINÆ *Teretromyia* (Big.) is uncertain; *Helig-monewra* (Big.) = *Mochtherus* (Loew); *Eristicus* (Loew) = *Erax* p.; *Blepharotes* (Westw.) = *Craspedia* (Mcq.); and *Trupanea* (Mcq.) forms several genera, for none of which can Scopoli's name be retained. This leaves 37 genera, to which Schiner adds 7 new ones, and in a supplementary notice 2 more, raising the total number to 46.

Wiedemann's species belonging to this family are recapitulated by Schiner in their original order (*l. c.* pp. 675-695), and referred to their modern genera; out of 298 species described by Wiedemann the author has seen 214. The discussion of Wiedemann's species is followed by a catalogue of the described genera and species of *Asilidæ*, arranged in accordance with the author's views, and embodying the synonymy evolved in the preceding portions of the paper (*l. c.* pp. 695-722).

Holopogon fumipennis (Meig.). The larva and pupa are described by Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvi. pp. 976-977.

New genera :—

Gonioseelis, g. n., Schiner, *l. c.* p. 670. Allied to *Stenopogon* (Loew); anterior femora clubbed, nearly triangular, spinous beneath. Type *Dasy-pogon hispidus* (Wiedem.).

Allopogon, g. n., Schiner, *l. c.* p. 670. Allied to *Pegesimallus* (Loew); 4th hinder marginal cell closed. Sp. *D. vittatus*, *tessellatus*, and *neemus* (Wiedem.).

Lochites, g. n., Schiner, *l. c.* p. 671. Allied to *Dasygogon*; 3rd joint of antennæ narrow at base, then broad and round, clavate in outline, style apparently wanting. Type *D. ornatus* (Wiedem.).

Aphamartania, g. n., Schiner, *l. c.* p. 671. Allied to *Cylindrophora* (Phil.). tarsi with normal arolia. Type *A. frauenfeldi*, sp. n., Chili.

Cacodæmon, g. n., Schiner, *l. c.* p. 671. Allied to *Teratopus* (Loew); occiput not cushion-like; posterior femora thickened. Perhaps = *Prokepsis* (Walk.). Type *D. lucifer* (Wiedem.) = *D. satanas* (W.).

Archilestes, g. n., Schiner, *l. c.* p. 672. Allied to *Dicranus* (Loew); tarsi with normal arolia; head discoidal; joint 3 of antennæ elongated and linear; 4th hinder marginal cell closed. Types *D. capnopterus* (Wiedem.) and *D. magnificus* (Walk.).

Obelophorus, g. n., Schiner, *l. c.* p. 672. Allied to preceding genus; anterior tibiæ unarmed; upper arm of the cubital fork with a recurrent appendicular vein at its base; body stout, densely hairy; ovipositor of ♀ prominent. Type *D. terebratus* (Mcq.). Perhaps = *Phellus* (Walk.).

Aphestia, g. n., Schiner, *l. c.* p. 673. Allied to *Atomosia*; body not coarsely punctate; joint 3 of antennæ three times as long as first two joints together. Type *A. brasiliensis*, sp. n. (not described).

Cerolainia, g. n., Schiner, *l. c.* p. 673. Allied to *Atomosia*; form slender; second posterior marginal cell narrowed towards margin, first widened; joint 1 of antennæ linear, at least as long as joint 3. Type *A. xanthoptera* (Wiedem.).

Eumecosoma, g. n., Schiner, *l. c.* p. 673. Allied to *Atomosia*; abdomen narrowed at base; wings and legs very long. Type *Laphria pleuritica* (Wiedem.).

Hyperechia, g. n., Schiner, *l. c.* p. 673. Allied to *Dasyllis* (Loew); legs very short, densely hairy; proboscis short and thick; antennæ very small; first hinder marginal cell closed and pedunculated. Type *Laphria xylocopiformis* (Walk.).

Maira, g. n., Schiner, *l. c.* p. 673. Allied to *Laphria*; head broad, discoidal; mystax confined to the epistomal margin; proboscis long; legs long, posterior femora much thickened, unarmed beneath. Type *Laphria spectabilis* (Guér.) = *kollari* (Dolesch.), *socia*, *replens*, *comes*, and *consobrina* (Walk.), and *splendida* (Guér.).

Apoxyria, g. n., Schiner, *l. c.* p. 674. Allied to *Hoplistomera* (Mcq.); face with prominent tubercles; first hinder marginal cell open. Type *A. apicata*, sp. n. (not described).

Proctophorus, g. n., Schiner, *l. c.* p. 674. Allied to *Philodicus* and *Alcinus* (Loew); abdomen rather short, incurved; genitalia of ♂ large, foot-like. Type *Asilus pyr-rhomystax* (Wiedem.).

Polysarca, g. n., Schiner, *l. c.* p. 674. Allied to *Proctacanthus* (Mcq.); abdomen short and stout; body naked; outer inferior cubital cell short. Type *A. violaceus* (Koll. MS.), from Elizabethopol.

Eecritosia, g. n., Schiner, *l. c.* p. 674. Allied to *Proctacanthus*; abdomen short and stout; body densely hairy; outer inferior cubital cell short. Type *A. barbatus* (Fab.).

Threnia, g. n., Schiner, *l. c.* p. 674. Allied to *Rhadinargus* (Loew); abdomen with bristles on the segments. Type *A. carbonarius* (Wiedem.).

Glaphyropyga, g. n., Schiner, *l. c.* p. 674. Allied to *Senoprosopis* (Mcq.)

and *Mochtherus* (Loew); joint 3 of antennæ very long, compressed. Type *A. himantocerus* (Wiedem.).

Allocotosia, g. n., Schiner, *l. c.* p. 845. Allied to *Ommatius*; thorax less robust; epistome nearly plane; joint 3 of antennæ very long, slender, conical; arista short, rather closely pectinated. Type *O. auratus* (Fab.).

Emphysomera, g. n., Schiner, *l. c.* p. 845. Allied to *Ommatius*; epistome quite flat; abdomen strongly clavate; posterior femora much thickened; wings not dilated at anterior margin. Type *O. conopsoides* (Wiedem.).

Ethodopa, g. n., H. Loew, Berl. ent. Zeits. 1866, p. 16. Allied to *Dioctria*; lowest third of face convex, with a dense mystax; posterior femora and all the tibiæ with short but strong setæ. Sp. *E. pubera*, sp. n., Loew, *l. c.* p. 15, Nebraska.

Pygostolus, g. n., H. Loew, *l. c.* p. 16. (*Dasygogoninae*.) Anterior tibiæ spurred; abdomen depressed, wider towards apex in ♂; face broad, not tuberculate; thorax gibbous legs stout, posterior tibiæ clavate, posterior tarsi thick; wings long, all the posterior cells open. (Schiner, Verh. zool.-bot. Ges. in Wien, xvi. p. 846, says that he cannot distinguish this genus from *Brachyrhopola*.) Sp. *P. argentifer*, sp. n., Loew, *l. c.* p. 16, and *P. pictus*, Loew, *l. c.* p. 17, Columbia; *P. dives*, Loew, *l. c.* p. 17, California.

Diognites, g. n., H. Loew, *l. c.* p. 21. Allied to *Saropogon*; 4th posterior cell closed; head broader and more disciform; abdomen and legs much longer and more slender. Spp. nn. *D. platypterus* (p. 20), *discolor* (p. 21), *ternatus*, *misellus* (p. 22), *angustipennis* (p. 23), *umbrinus* (p. 24), United States; *D. hypomelas* (p. 24), New Mexico; *D. bilineatus* (p. 23), Cuba (with *D. ternatus*).

Scleropogon, g. n., H. Loew, *l. c.* p. 26. Allied to *Stenopogon*; face and forehead narrower; joint 3 of antennæ shorter and with a longer style; 1st posterior cell closed before margin of wing, 3rd very much dilated. Sp. *S. picticornis*, sp. n., Loew, *l. c.* p. 26, from California.

Ospriocerus, g. n., H. Loew, *l. c.* p. 29. Allied to *Stenopogon*; joint 3 of antennæ longer, style obsolete; 4th posterior cell closed before margin of wing. Sp. *Dasygogon spathulatum* (Bell.) = *D. æacus* (Wiedem.); *Ospriocerus æacides*, sp. n., Loew, *l. c.* p. 29, from California; and *O. rhadamanthus*, Loew, *ibid.*, from New Mexico.

Dizonias, g. n., H. Loew, *l. c.* p. 30. Allied to *Stenopogon*; wings black; abdomen with 2 white bands on segments 2 & 3; joint 3 of antennæ very long, slender, naked above, apical style obtuse, obsolete; abdomen cylindrical; 1st posterior cell narrowed towards apex, 3rd very broad, 4th closed before margin of wing. Sp. *Dasygogon quadrimaculatus* (Bell.); *Dizonias phænicurus*, sp. n., Loew, *l. c.* p. 29, Tamaulipas; *D. bicinctus*, Loew, *l. c.* p. 30, New Mexico.

Sphageus, g. n., H. Loew, *l. c.* p. 32. Allied to *Bathypogon*; face convex, not tuberculate; joint 3 of antennæ much longer, style obsolete; 3rd posterior cell less dilated, closed at the margin; anterior femora with strong spines. Sp. *S. chalcoproctus*, sp. n., Loew, *l. c.* p. 31, Cuba.

Dicolonus, g. n., H. Loew, *l. c.* p. 32. Allied to *Laphria*; head small; facial tubercle and anterior margin of forehead convex; joint 3 of antennæ sublinear, as long as the other two, terminal style short, very thick and obtuse; posterior cells open, 1st narrowed, 3rd not dilated towards apex; anterior tibiæ not calcarate. Sp. *D. simplex*, sp. n., Loew, *l. c.* p. 32, California.

Ablautus, g. n., H. Loew, l. c. p. 37. Allied to *Anarolius* and *Rhadinus*; antennæ much shorter; face flat, forehead not dilated; anterior facets of eyes larger; thorax not maned; fourth posterior cell open. Sp. *A. trifarius*, sp. n., Loew, l. c. p. 36, California.

New species :—

Midas. Loew (Berl. ent. Zeits. 1866) describes the following five North American species :—*M. rufiventris*, *luteipennis*, and *xanthopterus*, p. 14; *M. simplex* and *venosus*, p. 15.

Plesiomma leptogastra, Loew, l. c. p. 18, and *P. indecora*, Loew, l. c. p. 19, Cuba; *P. unicolor*, Loew, l. c. p. 20, New Mexico.

Microstylun galactodes, Loew, l. c. p. 25, New Mexico.

Stenopogon. Loew (Berl. ent. Zeits. 1866) describes five new North American species :—*S. modestus* (p. 26), *inquinatus*, *consanguineus* (p. 27), *latipennis*, *longulus* (p. 28).

Lasiopogon bivittatus, Loew, l. c. p. 33, California.

Heteropogon gibbus, Loew, l. c. p. 33, Pennsylvania.

Cyrtopogon chrysopogon, Loew, l. c. p. 34, *C. marginalis*, Loew, l. c. p. 35, and *C. melanopleurus*, Loew, *ibid.*, from the United States.

Holopogon seniculus, Loew, l. c. p. 36, Nebraska.

THEREVIDÆ.

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvi. pp. 447-450) describes and figures the pupa and perfect ♂ of *Psilocephala melaleuca* (Loew), and gives an analysis of previous observations on the preparatory states of species of the genus *Thereva* and its subgenera *Psilocephala* and *Dialinura*.

LEPTIDÆ.

Atherix ibis. A. Chapman records the occurrence of a mass of these flies 8-10 inches long and 3-5 inches thick on a small branch of alder. Ent. M. Mag. iii. p. 94.

DOLICHOPODIDÆ.

Rhaphium denticulatum (Meig.). ♀ characterized by Siebke, Entom. Unders. p. 28.

Dolichopus. Loew (Berl. ent. Zeits. 1866) describes five new North American species. *D. pugil*, *terminalis* (p. 43), *detersus*, *platyprosopus*, and *sarotes* (p. 44).

Systemus ornatus, sp. n., Mik, Verh. zool.-bot. Gesellsch. in Wien, xvi. p. 305, Taf. 1 A. figs. 1-6 (details), Görz. This species may form the type of a new genus, for which the author proposes the name of *Oncopygius*.

Gymnopternus phyllophorus, sp. n., Loew, l. c. p. 45, North America.

Paraclius claviculatus, sp. n., Loew, l. c. p. 45, New York.

Tachytrechus binodatus, sp. n., Loew, l. c. p. 46, Saratoga.

Psilopus opacus, sp. n., Loew, l. c. p. 63, Sicily.

Campsicnemus pectinulatus, sp. n., Loew, Zeitsch. ges. Naturw. xxiv. p. 390, and *C. varicornis*, sp. n., Loew, l. c. p. 391, near Halle (1864).

PHORIDÆ.

Phora. Loew (Berl. ent. Zeits. 1866) describes five new North American species :—*P. clavata*, *microcephala*, p. 51, *pachyneura*, *incisuralis*, p. 52, and *nigriceps*, p. 53; also *P. scalaris*, p. 53, from Cuba.

Phora tubericola, sp. n., Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvi. p. 972, Austria. The larva lives in a species of Truffle, *Cheromyces mæandri-formis* (Vitt.).

MUSCIDÆ.

H. Löw (Schr. naturf. Ges. in Danzig, neue Folge, Bd. i.) refers to the characters of *Crassiseta* (*Elachiptera*) *brevipennis* (Meig.) and *Apterina* (*Borborus*) *pedestris* (Meig.) among other species of Diptera with imperfectly developed or abortive wings found in the neighbourhood of Danzig. The other insects referred to are a new species of *Anthomyza* and a species of Haliday's genus *Epidapus*, which Löw hesitates either to describe as new or to identify with Haliday's species *E. venaticus*. The colour of the body is reddish brown instead of black, and that of the legs pale yellowish instead of testaceous. The author thinks that his specimen may be an immature individual of Haliday's species, although it possesses tibial spurs, which are not indicated in Westwood's figure of *E. venaticus*. The species described by Löw were taken by Menge.

Tachinides.

F. Löw (Verh. zool.-bot. Ges. in Wien, xvi. p. 948) remarks upon the occurrence of several species of this subfamily. He obtained *Nemoræa 4-pustulata* (Fab.) from *Sphinx ligustri*, *Phorocera unicolor* (Fall.) from *Cræsus laticrus*, and *Masicera sylvatica* (Fall.) from *Saturnia pyri*.

Euthera, g. n., H. Loew, Berl. ent. Zeits. 1866, p. 47. Eyes naked; face naked and keeled; antennæ linear, longer than face, with a naked seta; third longitudinal vein straight, and first posterior cell truncate, closed far from the margin. Sp. *E. tentatrix*, sp. n., Loew, l. c. p. 46, from New York.

Rhinophora signata, sp. n., Mik, Verh. zool.-bot. Ges. in Wien, xvi. p. 307, Görz; *R. distinguenda*, Mik, l. c. p. 308, Trieste.

Ageolocera cinerea, sp. n., Mik, l. c. p. 309, Görz.

Anthomyides.

Anthomyza. Loew (Zeitschr. ges. Naturw. xxiv. p. 394) notices the synonymy of this genus, and rejects Zetterstedt's name *Anthophilina* and Macquart's *Leptomyza*, on the ground that there is no reason why the names *Anthomyza* and *Anthomyia* should not coexist. Loew thinks that *Geomyza brevipennis* (Zett.) and *G. sabulosa* (Hal.) are identical, and refers the species to *Anthomyza* as *A. sabulosa*.

Aricia maculifrons (Zett.). ♀ characterized by Siebke, Entom. Unders. p. 35.

Anthomyza saliens, sp. n., H. Löw, Schr. nat. Ges. in Danzig, neue Folge, i. p. 5, Prussia (wings rudimentary).

Helomyzides.

Limnia manni (Schin.) = *Tetanocera trivittata* (Loew), according to Loew, Zeitschr. ges. Naturw. xxiv. p. 393.

The structure of the egg in *Scatophaga* is described by T. West, Trans. Micr. Soc. Lond. xiv. pp. 67-68, pl. 7. figs. 1-7.

Helomyza maxima (Schin.). The larva of this species is described by Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvi. p. 971). It lives in a white Truffle (*Cheromyces mæandri-formis*, Vitt.).

Leucopis griseola (Fall.) has been obtained by F. Löw from the galls of *Chermes ulmi*. Verh. zool.-bot. Ges. in Wien, xvi. p. 949.

Tetanocera halensis, sp. n., H. Loew, Zeitsch. ges. Naturw. xxiv. p. 391, near Halle (1864).

Lauzanides.

Lauzania flaviceps, sp. n., Loew, Berl. ent. Zeits. 1866, p. 49, from North America (Columbia).

Ortalides.

F. Löw notices his having reared the following species of this group from plants not recorded for them by Schiner, namely:—*Trypeta colon* (Meig.) and *Urophora solstitialis* (Linn.) from *Centaurea paniculatum*, *Urophora congrua* (Löw) from *Lappa communis*, *Tephritis cluta* (Meig.) from *Cirsium lanceolatum*, and *T. leontodontis* (Deg.) from *Crepis biennis*. Verh. zool.-bot. Ges. in Wien, xvi. p. 949.

Psairoptera bipunctata (Loew). ♀ described with a variety by Siebke, Entom. Unders. p. 40.

Empyclocera, g. n., H. Loew, Berl. ent. Zeits. 1866, p. 238. Allied to *Chryso-myza*; head much larger, forehead much longer; antennæ distant, immersed in oval pits which do not reach the buccal margin; palpi rather large; proboscis thick; eyes elongated perpendicularly. Sp. *E. melanorrhina*, sp. n., Loew, l. c. p. 239, and *E. nigrimana*, sp. n., Loew, l. c. p. 240, from Sarepta.

Sepsides.

Anæropsis, g. n., Bigot, Ann. Soc. Ent. Fr. 4e sér. tome vi. p. 201. Allied to *Calobata*; head dilated laterally into two long oculiferous processes. Sp. *A. lorquini*, sp. n., Big. l. c. p. 202, from Waigiou.

Calobata. The following 5 new species are described by Loew (Berl. ent. Zeits. 1866):—*C. platycyema* and *C. angulata* (p. 47), from New Granada; *C. maculosa* (p. 48) and *C. placida* (p. 49), from Cuba; and *C. nebulosa* (p. 48), from Florida.

Psilides.

Eugène Faulconier notices the occurrence of a species of *Piophilæ* in great numbers in hermetically closed cavities in blocks of stone, containing the remains of toads, enclosed alive for the purpose of experiment by Aug. Duméril. Bull. Soc. Ent. Fr. 1865, pp. lxxiii-lxix.

Oscinides.

Chlorops. Loew (Zeitschr. ges. Naturw. xxiv. pp. 395-396) refers to several species of this genus, namely:—*C. speciosa* (Meig.), to which he refers *C. nasuta* (Zett.) except some of its varieties; *C. tæniopus* (Meig.), to which he thinks the statements of former authors with regard to *C. lineatus* refer; *C. messoria* forms a distinct genus, *Diplotoxa* (Loew); *C. cereris* includes 3 species differing from the other species of *Chlorops* in the general structure of the body, and in the absence of a curved spur at the apex of the intermediate tibia, so that they may form a distinct genus, *Centor* (Loew); *C. tarsata* (Meig.) = *divergens* (Loew); *C. albitarsis* (Meig.) = *tarsata* (Fall., Zett.).

Chlorops tæniopus (Meig.). Cohn (Jahresber. schles. Gesellsch. für vaterl. Cultur, 1866, pp. 71-79) describes the natural history of this species, which since 1863 has made its appearance in Silesia as an injurious insect to wheat and barley. He also discusses the nature of the effect produced upon the plants by the attacks of the larva.

Gaurax anchora, Loew, Bull. ent. Zeits. 1866, p. 51, New York.

Geomyzides.

Drosophila multipunctata, sp. n., Loew, Berl. ent. Zeits. 1866, p. 50, from North America (Columbia).

Hydromyzides.

Hydrellia albilabris (Meig.). The metamorphoses of this species are described by Frauenfeld, Verh. zool.-bot. Ges. in Wien, xvi. pp. 973-974. The larva lives in the interior of the fronds of *Lemma*, upon the parenchyma of which it feeds, and changes to the pupa state within a frond.

Atissa durrenbergensis, sp. n., Loew, Zeitschr. gesamt. Naturw. xxiii. pp. 343-347, Dürrenberg (1864).

Ephydra obscuripes, sp. n., Loew, Berl. ent. Zeits. 1866, p. 50, from Massachusetts.

ÆSTRIDÆ.

Brauer describes the larva of *Æstrus* (*Æstromyia*) *leporinus* (Pallas) obtained from a specimen of *Lagomys curzonica*. Verh. zool.-bot. Ges. in Wien, xvi. pp. 647-648.

Brauer also describes the larva and pupa of a species of this family from the œsophagus of an African elephant. He names the species *Pharyngobolus africanus* (g. and sp. n.), and infers from its structure that it belongs to a genus allied to *Cephalomia* and *Æstrus* on the one hand, and to *Pharyngomyia* and *Cephenomyia* on the other. Verh. zool.-bot. Ges. in Wien, xvi. pp. 879-883, taf. 19. figs. 1 & 2.

Murie records the occurrence of living pupæ of *Æstrus tarandi* (Linn.) in the skin of a reindeer in the Zoological Gardens in London. Two pupæ were obtained; and the flies, when excluded, were covered with minute active Acari. The pupa-case is figured. Proc. Zool. Soc. 1866, pp. 590-592.

Hering records the occurrence of the larvæ of an *Æstrus* (apparently *Æ. bovis*) in tumours on the belly of a field-mouse. Württ. Jahreshfte, 1864, p. 47.

SYRPHIDÆ.

Cheilosia cynocephala (Loew). The metamorphoses of this species are described by Frauenfeld (Verh. zool.-bot. Ges. in Wien, xvi. pp. 975-976). The larva lives in mines in *Carduus nutans*.

According to F. Löw the larvæ of *Eristalis* use their respiratory tube sometimes as a prehensile organ before pupation. Verh. zool.-bot. Ges. in Wien, xvi. p. 949.

Baccha notatu, sp. n., Loew, Berl. ent. Zeits. 1866, p. 37, from Cuba.

Ocyptamus longiventris, Loew, l. c. p. 38, from Washington; *O. conformis*, Loew, ibid., *O. latusculus* and *scutellatus*, spp. nn., Loew, l. c. p. 39, from Cuba.

Microdon inæqualis, sp. n., Loew, l. c. p. 40, from Cuba.

CONOPIDÆ.

Oncomyia (= *Occemyia* Rob.-Desv.) *abbreviata*, sp. n., Loew, Berl. ent. Zeits. 1866, p. 41, and *O. loraria*, Loew, ibid., from North America.

Dalmannia nigriceps, sp. n., Loew, l. c. p. 40, from Virginia.

Myopa clausa, sp. n., Loew, l. c. p. 41, from Maine.

Zodion nanellum, sp. n., Loew, l. c. p. 42, from Washington.

HIPPOBOSCIDÆ.

F. Löw notices the occurrence of the species of this family as parasites upon species of swallows and swifts. Verh. zool.-bot. Ges. in Wien, xvi. p. 949.

APHANIPTERA.

GUYON has continued his treatise on the Chigoe (*Rhynchoprion penetrans*) in the Revue et Magasin de Zoologie, 1866, pp. 64, 111, 326, 359, and 445. He describes the localities in which these insects occur, and records among their natural enemies the Kakerlac (*Blatta americana*, Linn.), on the authority of Abbeville, and Bees, on that of Rodschied, and suggests that, as he has found *Chelifer caneroides* to be destructive to our common Flea, some Chelifers may probably be found to put a similar check upon the multiplication of the Chigoe. In discussing the question of the specific identity of all the Chigoes, which he answers in the affirmative, the author ascribes the slight differences which have been indicated to differences of habitat, according as the insect is parasitic upon man or upon animals. He mentions that men are especially attacked by the Chigoe when living in the midst of great numbers of domestic animals, regarding the latter as necessary for the preservation of the species, and citing the pigs as particularly infested by these parasites. The description of the structure of the insects is translated from Karsten. In the last portion of his memoir, here published, Guyon gives a full account of the extrusion of the eggs, which, he says, issue from the spot occupied by the parasite through the passage by which it arrived at its destination. He states that when the parasite has taken up its position in the skin a vascular apparatus, through which blood circulates, makes its appearance in the abdomen, and that the abdomen itself performs a series of movements of systole and diastole, which continue for some little time after the extraction of the insect. These movements are said by him to be isochronous with the arterial pulses of the individual in which the parasite resides. Guyon describes a curious membrane surrounding the body of the parasite during its development, and which he seems to think presents an analogy to the placenta of mammals. The viviparity of the Chigoe is denied by the author, the mature extruded generative products being neither larvæ nor pupæ, but true eggs.

NEUROPTERA.

* *Separate Work.*

BRAUER, FRIEDRICH. Neuropteren der Reise der österreichischen Fregatte Novara um die Erde, &c. Zool. Band ii. pp. 104, with 2 plates. Vienna, 1866.

In this portion of the great work on the voyage of the Austrian Frigate Novara, Brauer fully describes the new species and genera of the Linnean order Neuroptera obtained during the voyage. Most of these have already been briefly characterized by the author (see 'Record,' 1864, p. 562, and 1865, pp. 669 & 676). The total number of new species is 56, of which 19 belong to the Neuroptera and 37 to the section Pseudoneuroptera of the next order. Brauer gives a table of the known species of the genus *Anax*.

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† *Papers published in Journals, &c.*

BRAUER, FRIEDRICH. Zusätze und Berichtigungen zu Hagen's Hemerobidarum Synopsis synonymica, und Beschreibung einer neuen Nympliden-Gattung: *Myiodactylus osmyloides* aus Australien. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvi. pp. 983-992, Tafel 19. (Read December 5, 1866.)

HAGEN, H. Entdeckung der Phryganide, welche die schneckenartige Gehäuse (*Helicopsyche*) bewohnt. Stettiner entom. Zeitung, 1866, pp. 244-245.

——. Description of a genus of Caddis-flies, of which the larvæ construct cases known as *Helicopsyche*. Ent. Monthly Mag. 1866, ii. pp. 252-255 (*cum figg.*).

——. Hemerobidarum Synopsis synonymica. Stettiner entom. Zeitung, 1866, pp. 369-462.

In this memoir Hagen treats the *Hemerobiidæ* (= *Megaloptera*, Burm.) in the same way that he has already done the *Phryganidæ* (see 'Record,' 1864, p. 564). The paper commences with an analysis of the subfamilies into which he divides his primary group, and of the genera belonging to each. The author then gives a synonymic catalogue of all the described species, arranged in the alphabetical order of the genera under which they have been placed by different authors, the generic and specific names regarded as established being indicated by an †. The habitats of the species are also stated. It is impossible to overrate the value of such catalogues as this, constituting as they do a complete analysis of the literature of the group to which they relate.

——. Die Neuropteren Spaniens nach Ed. Pictet's Synopsis des Névroptères d'Espagne, und Dr. Staudinger's Mittheilungen. Ibid. pp. 281-302.

This paper includes a notice of Pictet's work (see 'Record,' 1865, p. 668), with remarks upon the synonymy of the species and indications of some additional forms. Of the latter a few are described as new.

MACLACHLAN, R. Ueber *Lasiocephala taurus*, Costa. Stettiner entom. Zeitung, 1866, pp. 361-362.

——. Description d'un genre nouveau et d'une espèce nouvelle d'Insectes Trichoptères Européens (*Molannodes zelleri*). Annales Soc. Ent. Fr. 4^e série, tome vi. pp. 175-180, pl. 9. figs. 1-5 : October 24, 1866.

Besides the description, this paper contains a brief historical notice of the principal works in which European *Trichoptera* are described.

——. Descriptions of new or little-known genera and species of exotic *Trichoptera*, with observations on certain species

described by Mr. F. Walker. Trans. Ent. Soc. London, vol. v. p. 247-278, pl. 17-19: June 1866.

MACLACHLAN, R. A new genus of *Hemerobidæ*, and a new genus of *Perlidæ*. Trans. Ent. Soc. London, 3rd series, vol. v. pp. 353-354: December 1866.

— Description of a new Neuropterous insect belonging to the genus *Corydalis*, Latreille. Journal of Entomology, vol. ii. pp. 499-500, pl. 20: June 1866.

— Notes on three little-known species of British *Hemerobidæ*. Ent. Monthly Mag. vol. ii. pp. 268-270: May 1866.

HAGEN, in his "Synonymic Synopsis of the *Hemerobidæ*" (Stett. ent. Zeit. 1866) divides that group into subfamilies as follows:—

Caput verticale, maxilla libera, palpi 5-articulati; palpi labiales 3-articulati; tarsi 5-articulati; alæ reticulatæ, deflexæ, posticæ area abdominali nulla. Larva suctoria.

Subf. MYRMELEONIDÆ. Antennæ breves clavatæ; alæ spatio apicali areolis oblongis regularibus. (Gen. 16; sp. 287.)

Subf. ASCALAPHIDÆ. Antennæ longæ clavatæ; alæ spatio apicali areolis paucis irregularibus. (Gen. 11; sp. 91.)

Subf. NEMOPTERIDÆ. Os rostratum; alæ posticæ lineares, elongatæ. (Gen. 1; sp. 17.)

Subf. MANTISPIDÆ. Pedes antici raptorii. (Gen. 2; sp. 59.)

Subf. HEMEROBIDÆ. Antennæ moniliformes, breves. (Gen. 8; sp. 125.)

Subf. CHRYSOPIDÆ. Antennæ setacæ. (Gen. 6; sp. 162.)

Subf. CONIOPTERYGIDÆ. Corpus farinosum. (Gen. 2; sp. 10.)

The total number of species here recorded is 751, belonging to 56 genera; several of the latter are characterized as new.

MYRMELEONTIDÆ.

HAGEN divides his subfamilies *Myrmeleonidæ* and *Ascalaphidæ* (see above) forming this group into the following genera (Stett. ent. Zeit. 1866, pp. 372 & 373):—

I. MYRMELEONIDÆ.

1. *Palpares* (Ramb.). Alæ posticæ postcosta furcata, anastomosi marginali ramo recurvo; spatium costale uniareolatum; alæ latæ, maculatæ; abd. maris forcipatum.

2. *Stenares*, g. n. Alæ post. postc. furc., anast. marg. ramo recurvo; spatium costale bi- vel triareolatum; alæ elongatæ, maculatæ; abd. maris forcipatum. Sp. *Palpares harpyia* (Gerst.), *Myrm. hyæna* (Dalm.), and *M. improbus* (Walk.).

3. *Pamezis*, g. n. Alæ post. postc. furc., anast. marg. ramo recurvo; antennæ apice orbiculares; alæ latæ, maculatæ, subcosta apice incrassata. Sp. *M. conspurcatus* and *contaminatus* (Br.), *luteus* (Thunb.), and a new species (Seba, Thes. iv. tab. 86. fig. 20).

4. *Tomatares*, g. n. Alæ post. postc. furc., anast. marg. ramo recurvo; ant. apice orbic.; alæ latæ maculatæ; abdomen maris forcipatum. Sp. *Myrm. astutus* and *compositus* (Walk.) and *clavicornis* (Lat.), and *Palpares citrinus* (Hag.).

5. *Dimares*, g. n. Alæ post. postc. simplici; alæ latiores, maculatæ. Sp. *Myrm. elegans* (Perty) and *subdolos* (Walk.).

6. *Stilbopteryx* (Newm.) = *Azesia* (Lefebvre). Alæ post. postc. simpl.; ant. apice orbic.; alæ elongatæ, anticæ coloratæ.

7. *Acanthaelisis* (Ramb.). Alæ post. postc. furc., anast. marg. simplici; calcaribus fractis; alæ elongatæ; abd. maris forcipatum.

8. *Glenurus*, g. n. Alæ post. postc. furc., anast. marg. simpl.; alæ coloratæ, anticæ margine postico medio ocellato; antennæ elongatæ. Sp. *Myrm. anomalus*, *guttatus*, *insignis*, and *pulchellus* (Ramb.), *circuifer*, *eccentros*, *falsus*, *malus*, *peculiaris*, and *tacitus* (Walk.), *erythrocephalus* (Leach), *gratus* and *obsoletus* (Say), *pantherinus* (Fab.), and *singularis* (Westw.).

9. *Creagris* (Hagen). Alæ angustæ elongatæ, furca postcostæ longa, parallela.

10. *Gymnocnemis* (Schneid.) = *Aplectrocnemus* (Costa). Pedes calcaribus nullis.

11. *Megistopus* (Ramb.). Tarsi articulo primo sequentibus breviori.

12. *Formicaleo* (Leach). Alæ post. postc. furc., anast. marg. ramo simpl.; calcaria longitudine articulorum quatuor tarsorum.

13. *Myrmecalurus* (Costa). Alæ post. postc. furc., anast. marg. ramo simpl.; abd. maris ante apicem penicillatum; alæ latiores; calcaria longit. artic. 2 basalium.

14. *Macronemurus* (Costa). Alæ post. postc. furc., anast. marg. ramo simpl.; abd. maris alis longius, apice forcip.; alæ angustæ; calcaria longit. artic. 2 basalium.

15. *Myrmeleon* (Linn.). Alæ post. postc. furc., anast. marg. ramo simpl.; calcaria longit. artic. basalis.

16. *Euptilon* (Westw.). Antennæ pectinatæ (probably founded on a *Formicaleo* with false antennæ and abdomen).

II. ASCALAPHIDÆ.

* Oculi integri. (*Olophthalmi*.)

17. *Haplogenus* (Burm.) = *Amœa*, *Orphne*, and *Ptynx* (Lefebvre). Reticulatio serrata; calcaria longiora; alæ maris (?) basi excisæ et appendiculatæ.

18. *Byas* (Ramb.). Reticulatio aperta; calcaria breviora.

† Oculi bipartiti. (*Schizophthalmi*.)

19. *Ascalaphus* (Fab.). Alæ triangulares, spatio anticarum costali basi latiori; abdomen maris forcipatum.

20. *Puer* (Lefebvre). Ocul. parte inferiore parva; alæ posticæ triangulares, postcosta simplici recta.

21. *Theleproctophylla* (Ramb.) = *Deleproctophylla* (Lefebvre). Ocul. parte inferiore parva; alæ post. postc. simpl. incurva.

22. *Cordulecerus* (Ramb.). Alæ post. dilatæ, postcosta simplici.

23. *Suphalasca* (Lefebvre). Alæ post. æquales, postc. simpl.

24. *Hybris* (Lefebvre). Alæ latiores, posticarum postc. furcata; abd. elongatum maris forcipatum.

25. *Ogcogaster* (Westw.). Alæ latiores, posticarum postc. furcata; abd. dilatato.

26. *Bubo* (Ramb.) = *Proctarrelabis* (Lefebvre). Alæ angustæ, postic. postc. furcata.

27. *Colobopterus* (Ramb.). Alæ angustæ, excisæ, postic. postc. furcata.

MACLACHLAN notices the want of all observations on the eggs of *Myrmeleon formicarius*. The egg-like bodies mentioned by Geoffroy as being discharged by these insects immediately on leaving the cocoon are said by MacLachlan to be solid, and probably equivalent to the meconium. The eggs of *Ascalaphus macaronius* were observed by Kollar deposited on the stem of a grass; and MacLachlan has received those of an Indian species of this family on a twig of mulberry. His larvæ of the common ant-lion lived in England nearly a year before changing to pupæ. Bull. Soc. Ent. Fr. 1866, p. xvi. See also Proc. Ent. Soc. Lond. 1866, p. vi.

Formicaleo longicornis (Br.) and *Myrmeleon nicobaricus* (Br.) are fully described by Brauer, Reise der Novara, Neur. pp. 42 & 43.

HAGEN (Stett. ent. Zeit. 1866, p. 288) describes the larva of *Palpares hispanus* (Hag.). He also refers to the character and distribution of *Acanthaclysis occitanica* (Voll.) and *A. batica* (Ramb.), l. c. pp. 288-289; to *Creagrís plumbeus* (Oliv.) = *pictus* (Burm.) and several nearly allied or identical forms, l. c. pp. 289-290; to the distribution of *Macronemurus appendiculatus* (Latr.) and *Myrmecechurus trigrammus* (Pall.), l. c. p. 290; and adds *Formicaleo tetragrammicus* (Fab.) and *Myrmeleon formicalynx* (Linn.) to Pictet's list of Spanish *Myrmeleontidæ*.

HEMEROBIIDÆ.

HAGEN (Stett. ent. Zeit. 1866, pp. 374-377) divides the insects of this family into the following genera. His subfamily *Nemopteridæ* (see p. 515) includes the single genus *Nemoptera*,—*Halter*, *Brachystoma*, and *Himantopterus* being regarded as subgenera. The *Mantispidæ* include the genera *Mantispa* and *Trichoscelia*, and the *Coniopterygidæ* are formed by *Coniopteryx* and *Aleuronia*. The genera of the *Hemerobidæ* and *Chrysopidæ* are more numerous, as shown in the following synopsis:—

A. Subcosta cum radio conjuncta; sector primus radio parallelus, sectores cæteros emittens.

1. *Nymphes* (Leach). Spatium subcostale transversalibus permultis; ala transversalibus multis; plantula magna bifida.

2. *Osmylus* (Lat.). Ocelli 3; spatium subcostale transversali una basali; ala transversalibus permultis; sector primus radio approximatus.

3. *Gen. nov.* Ocelli 3; spatium subcostale apice transversalibus pluribus; ala transversalibus permultis; sector primus radio separatus. Type *Osmylus strigatus* (Br.).

4. *Polystæchotes* (Burm.). Spatium subcostale transversali una basali; ala transversalibus serie gradata singula; sector primus radio approximatus.

5. *Psychopsis* (Newm.) = *Arteriopteryx* (Guér.). Spatium costale latum biarcuatum; spatium subcostale transversalibus permultis; ala seriebus 3 gradatis.

6. *Ormismocerus* (Blanch.)?

7. *Sisyra* (Burm.). Spatium subcostale latum liberum; ala transversalibus paucis.

8. ♀ *Nov. gen.* Type *Micromus areolaris* (Hag.).

B. Subcosta et radius separati; sector primus radio parallelus, sectores cæteros emittens.

9. *Ithone* (Newm.) incl. *Varnia* (Walk.). Spatium subcostale transversalibus basalibus 3; ala transversalibus permultis; spatium costale ramo basali recurvo.

10. *Bertha* (Walk.) incl. *Dasypteryx* (Stein) and *Isoscelipteron* (Costa). Spatium subcostale transversali una basali; ala serie gradata singula.

11. *Dilar* (Ramb.) = *Cladocera* (Hoffingg., Hag.). Antennæ maris pectinatæ; femina vagina ovipara longa; spatium subcostale transversalibus multis; ala transversalibus pluribus.

12. *Sartena* (Hagen). Spatium subcostale latum liberum; ala seriebus gradatis 2.

13. *Psectra*, g. n. Spatium subcostale medio transversalibus 2; ala transversalibus paucis; alæ posticæ maris minutæ. Type *Hemerobius dipterus* (Br.).

C. Subcosta et radius separati; radius sectores omnes emittens.

14. *Micromus* (Ramb.). Spatio costali angusto, ramo recurvo nullo; spatium subcostale transversali singula basali; ala seriebus gradatis 2.

15. *Hemerobius* (Linn.) incl. *Mucropalpus* (Ramb.). Spatio costali latiori, ramo recurvo basali; spatium subcostale transversali singula basali; ala seriebus gradatis 2.

16. *Megalomus* (Ramb.). Spatio costali lato, ramo recurvo basali; spatium subcostale transversalibus basalibus paucis; sectores plures; ala seriebus gradatis 2; apex alæ rotundatus.

17. *Drepanopteryx* (Leach). Differt a *Megalomo* sectoribus pluribus, ala apice acuta, postice excisa.

18. *Drepanicus* (Blanch.) ?

VI. CHRYSOPIDÆ.

(Subcosta et radius separati; sector primus radio fere parallelus, fractus.)

19. *Chrysopa* (Leach) = *Æblops* (Billb.). Spatium costale basi angustum; area cubitalis imperfecta; alæ apice rotundatæ.

20. *Belonopteryx* (Gerst.). Spatium costale basi et medio angustum; area cubitalis imperfecta; alæ apice acutæ.

21. *Hypochrysa*, g. n. Spatium costale basi angustum; area cubitalis imperfecta; alæ apice rotundatæ; subcosta ante alæ apicem cum costa conjuncta. Sp. *Chrysopa nobilis* (Heyd.) and *raphidioides* (Hag. MS.).

22. *Ankylopteryx* (Brauer). Spatium costale basi dilatatum; area cubitalis imperfecta; alæ apice rotundatæ.

23. *Apochrysa* (Schneid.). Spatium costale æquale, latum; area cubitalis perfecta, angusta; alæ apice rotundatæ.

24. *Meleoma* (Fitch). (Unknown to the author; like *Chrysopa*: with a horn between the antennæ.)

BRAUER (Verh. zool.-bot. Ges. in Wien, xvi. pp. 983-989) criticises Hagen's Synonymic Synopsis of the *Hemerobiidæ*, especially in connexion with the references to observations on the metamorphoses of these insects. He also refers to the following genera:—*Ormismocerus* (Blanch.) is more nearly allied to *Corydalis* and *Rhaphidia* among the *Sialidæ* than to the *Hemerobiidæ*; *Bertha* (Walk.) = *Isoscelipteron* (Costa), see also 'Record,' 1864, p. 563; *Megalomus* and *Drepanopteryx* are best distinguished by certain peculiarities

in the venation of the wings here indicated by Brauer; *Drepanicus* = *Trichoscelia*; *Dendroleon* (Brauer) = *Glenurus* (Hag.).

Myiodactylus, g. n., Brauer, Verh. zool.-bot. Ges. in Wien, xvi. p. 989. Allied to *Nymphes*; wings broad, rounded at apex, 5th & 6th longitudinal veins simple; tibiæ unarmed. Sp. *M. osmyloides*, sp. n., Brauer, l. c. p. 991, pl. 19. fig. 3 (with details), Moreton Bay.

Rapisma, g. n., MacLachlan, Ent. Trans. 3rd ser. v. p. 353. Allied to *Ithone*; head concealed under front of prothorax, anterior wings subcoriaceous, base of costal area very broad, veinlets very numerous. Type *Hemerobius viridipennis* (Walk.).

BRAUER (Reise der Novara, Neur. p. 34) fully describes the characters of his genus *Ankylopteryx*, and figures the wing (tab. I. fig. 9); he also describes the species *A. anomala*, l. c. p. 35, *A. immaculata*, p. 36, *A. doleschali*, p. 37, *Apochrysa coccinea*, p. 30, *A. nicobarica*, p. 32, *Chrysopa V-rubrum*, p. 39, *C. næsomympa*, ibid., and *C. atala*, p. 40.

Hagen (Stett. ent. Zeit. 1866, p. 290) remarks on variations occurring in *Nemoptera lusitanica* (Linn.).

Hagen (Stett. ent. Zeit. 1866, p. 291) remarks on the variations of *Mantispa perla*, and on the supposed species to which these have given rise; *M. pagana* (Fab.) = *styriaca* (Poda).

Dilar (Rambur). Hagen (Stett. ent. Zeit. 1866, pp. 291-297) discusses the position of this genus, which he considers to belong to the *Hemerobiidæ* in the immediate vicinity of *Ithone*. He characterizes the genus at great length, and also describes the three species *D. nevadensis* (Ramb.) and *D. meridionalis* and *turcicus* (Hag.). Other known species are *D. nietneri*, from Ceylon, and *D. parthenopæus* (Costa), from Sicily.

Osmylus maculatus (Fab.) = *chrysops* (Linn.) according to Hagen, l. c. p. 297.

Hemerobius pygmæus (Ramb.). Hagen notices the variations of this species, with which *H. parvulus* (Ramb.) may be identical (l. c. p. 297).

Chrysopa. Hagen (l. c. pp. 297-301) notices the species of this genus described by E. Pictet from the Spanish peninsula, and remarks on the characters of *C. stigmatica* (Ramb.), which occurs also in Syria, *C. quadarramensis* (Pict.), *C. pallens* (Ramb.), *C. vulgaris* (Schn.), *C. microcephala* (Brauer), *C. nigropunctata* (Pict.), *C. aspersa* (Wesm.), *C. zelleri* (Schn.), *C. granadensis* (Pict.), and *C. riparia* (Pict.).

MACLACHLAN characterizes *Hemerobius pellucidus* (Dale, Walk.) = *fuscescens* (Wall.) and *H. dipterus* (Burm.) as British species (Ent. M. Mag. ii. p. 269). *H. nitidulus* (Dale, Walk.) is also described under the now name of *Sisyra dalii* (l. c. p. 268). *H. humuli* (Steph.) = var. *H. nervosus* (Fab.); and *H. lutescens*, *affinis*, *paganus*, *apicalis*, *subfasciatus*, *irroratus*, and *margi-natus* (Steph.) = *H. humuli* (Linn.), l. c. p. 270.

W. W. SAUNDERS describes some eggs, probably of *Chrysopa*, from New South Wales, very peculiarly arranged. Proc. Ent. Soc. 1866, p. vii.

Sisyra dalii and *S. terminalis* occur near Reigate. MacLachlan, Ent. M. Mag. iii. p. 68.

SIALIDÆ.

Sialis fuliginosa, its occurrence in Dorsetshire noticed by MacLachlan, Ent. M. Mag. iii. p. 95.

Corydalis hecate, sp. n., MacLachlan, Journ. of Ent. ii. p. 499, pl. 20 (♂ ♀), Brazil.

PANORPIDÆ.

HAGEN (Ent. M. Mag. iii. p. 132) characterizes the 4 known species of *Boreus*, namely:—*B. hiemalis* (Linn.), *B. westwoodii* (Hag.), *B. nivoriundus* (Fitch), and *B. brunalis* (Fitch).

BRAUER's observations on the larvæ of the *Fanorpidæ* are abstracted in Zeitschr. ges. Naturw. xxiii. p. 517.

PHRYGANIDÆ.

BRAUER (Reise der Novara, Neuropteren) describes in detail the new genera and species of this family collected during the voyage of the 'Novara,' namely:—*Hydromanicus*, p. 5; *H. irroratus*, p. 6; *Nyctiophylax*, p. 7; *N. sinensis*, p. 8; *Macronema pseudonema*, p. 9; *Tetracentron*, p. 11; *T. sarothropus*, p. 12; *Mystacides brasiliannus*, p. 14; *Anomalostoma*, p. 15; *A. alloneura*, p. 16; *Calamoceras*, p. 21; *C. marsupus*, p. 23; *Setotricha*, p. 24; *S. ptychopteryx*, p. 25. Tab. 1 contains figures of details (chiefly wings) of the following species:—*Hydromanicus irroratus*, fig. 2; *Nyctiophylax sinensis*, fig. 3; *Macronema pseudonema*, fig. 4; *Tetracentron sarothropus*, fig. 5; *Anomolocera alloneura*, fig. 6; *Calamoceras marsupus*, fig. 7; and *Setotricha ptychopteryx*, fig. 8.

MACLACHLAN (Ent. Trans. 3rd series, vol. v.) refers to the following known species of this family:—*Holostomis maclachlani* (White) is a *Phryganea*, and is described and figured, l. c. p. 249, pl. 17. fig. 1; *Macronema albovirens* (Walk.) and *agrophum* (Kol.) are referred by Hagen to *Leptonema pallida* (Guér.), but MacLachlan regards the former as distinct; *M. signata*, *inscripta*, and *pulcherrima* (Walk.) are probably varieties of one species; *Hydropsyche multifaria* and *transversa* (Walk.) and probably *H. cicaria* (Walk.) belong to *Macronema* (l. c. p. 264). MacLachlan appends to his paper (l. c. pp. 275–277) some notes on the species of Trichoptera described by Walker in Ent. Trans. 2nd ser. v. pp. 176–180), and states that *Leptocerus niveistigma*, *aljurans*, and *quadrifusca* belong to *Macronema*; the genus *Musama* belongs to the *Sericostomida*, and one of its species (*M. claudens*) to the genus *Barypenthus* (Burm.); the characters of the species are discussed (p. 276), and the wings and other details of *M. claudens* and *aperiens* are figured (pl. 18. figs. 2 & 3). Walker's genus *Curgia* is very closely allied to, if not identical with, *Chimarra*; its characters are indicated, its spur-formula is 0.4.4 (p. 277). Other species described by Walker and here noticed are *Phryganea divulsa*, *Limnophilus griseus*, *Macronema parcitans*, and *Curgia braconoides*.

MACLACHLAN (Stett. ent. Zeit. 1866, pp. 361–362) from the examination of an authentic specimen confirms Hagen's opinion that *Lasiocephala taurus* (Costa) = *Mormonia basalis* (Kol.), and gives the synonymy of that species.

Helicopsyche. Hagen (Ent. M. Mag. ii. p. 252) describes the generic characters of the insect bred by Bland from cases of *Helicopsyche* (See 'Record,' 1865, p. 672). The insect is identical, or nearly so, with *Notidobia borealis* (Hag.), which is also described (l. c. p. 253), and its case is *Helicopsyche glabra* (Hag.). *Notidobia lutea* (Hag.) is also described (l. c. p. 254) as a second species of *Helicopsyche*. The wings, head, and palpi of *H. borealis* are figured (p. 253). Hagen also remarks upon the European form (*H. shuttleworthi*), of which the case only is known; he seems to think it may belong to some insect of a new genus allied to *Dasytoma*, or perhaps to

Molannodes (MacL.), which includes *Pot. pictetii* (Kol.). MacLachlan remarks that his genus *Molannodes* belongs to the *Leptocerides*, and adds that, according to Scudder, the cases of *Helicopsyche* are found in America attached to Unios (*l. c.* p. 255). See also Stett. ent. Zeit. 1866, pp. 244–245, where Hagen states that the Ceylonese species inhabiting spiral cases, as noticed by Brauer ('Record,' *l. c.*), are *Mormonia ursina*, *vulpina*, and *mustelina*, and probably *H. piscina*. The European species is probably *M. irrorata* (Curt.) = *Seric. hirtum* (Pict.).

Apatania. MacLachlan (*Ent. M. Mag.* iii. p. 113) notices a species of this genus found in Arundel Park, of which he has only seen females, although he has captured about 100 specimens. It is nearly allied to *A. vestita*; but MacLachlan thinks it is distinct, and proposes for it the provisional name of *A. muliebris*.

The occurrence of *Limnephilus striola* (Kol.) in Cheshire is recorded by B. Cooke, *Ent. M. Mag.* ii. p. 204.

New genera :—

Molannodes, g. n., MacLachlan, *Ann. Soc. Ent. Fr.* 4^e sér. tome vi. p. 178. Allied to *Molanna*; joint 1 of max. palpi shorter; fore wings shorter and broader, with the discoidal branch furcate. Sp. *M. zelleri*, sp. n., MacLachlan, *l. c.* p. 179, pl. 9. figs. 1–5, from Meseritz.

Pycnocentria, g. n., MacLachlan, *Ent. Trans.* 3rd ser. v. p. 251. Allied to *Silo*; spurs 2. 2. 4; both pairs of wings in ♂ with a longitudinal fold. Sp. *P. funerea*, sp. n., MacL. *l. c.* p. 252, pl. 18. fig. 1 (details), from New Zealand.

Ganonema, g. n., MacLachlan, *l. c.* p. 253. Allied to *Leptocerus*, but spurs 2. 4. 4; head nearly quadrate, produced between the antennæ; joint 5 of max. palpi slender, equal to 3; anterior wings much dilated at apex, costal margin arcuate, radius and first apical sector confluent. Sp. *G. palliorne*, sp. n., MacL. *l. c.* p. 254, pl. 19. fig. 1 (details), from Sumatra.

Asotocerus, g. n., MacLachlan, *l. c.* p. 254. Allied to preceding, perhaps only ♂ of *Ganonema*; antennæ slender, three times as long as the wings; fore wings widened in the middle, narrowed at base and apex, the latter truncate. Sp. *A. ochraceellus*, sp. n., MacL. *l. c.* p. 255, pl. 17. fig. 2, and pl. 19. fig. 2 (wings), from Sarawak.

Notanatotica, g. n., MacLachlan, *l. c.* p. 256. Allied to *Leptocerus*; spurs 2. 2. 2, apical, small; joints 1 & 4 of max. palpi equal, 2, 3, & 5 equal, twice as long as 4; fore wings long and narrow, margins nearly parallel. Known sp. *Leptocerus magnus* (Walk.), p. 257, pl. 19. fig. 3 (details); *L. oppositus* (Walk.); *L. canescens* (MacL.) probably ♀ of *magnus*; *L. cognatus* (MacL.), and probably *L. cephalotes* (Walk.) and *exiguus* (MacL.). *N. gilolensis*, sp. n., MacL. *l. c.* p. 258, from Gilolo.

Stenopsyche, g. n., MacLachlan, *l. c.* p. 264. Allied to *Polycentropus*; spurs 3. 4. 4; apical forks 1–5 present in fore wings, which are long, narrow, and lanceolate. Sp. *S. griseipennis*, sp. n., MacL. *l. c.* p. 265, pl. 17. fig. 5, from the East Indies.

Leptopsyche, g. n., MacLachlan, *l. c.* p. 266. (*Hydropsychidæ.*) Spurs 2. 4. 4; antennæ slender, three times as long as the wings, joint 1 bulbous; wings nearly naked, anterior long, narrow, rounded at apex, discoidal cell open. Sp. *L. gracilis*; sp. n., MacL. *l. c.* p. 267, pl. 19. fig. 8 (details), Dorey.

Nesopsyche, g. n., MacLachlan, *l. c.* p. 268. (*Hydropsychidæ*.) Spurs 3. 4. 3, inner apical spur of post. tibiæ very long, and twisted almost spirally. Sp. *N. flavisignata*, sp. n., MacL. *l. c.* p. 269, pl. 17. fig. 6, and pl. 19. fig. 6 (details), from Macassar.

Sciops, g. n., MacLachlan, *l. c.* p. 270*. Allied to *Hydropsyche*; spurs 2. 4. 4; head smooth above; antennæ obsoletely serrated within; wings smooth, broad; maxillary palpi with joint 3 twice as long as 2, 2 & 4 equal. Sp. *S. unicolor*, sp. n., MacL. *l. c.* p. 271, pl. 19. fig. 7 (details), from Celebes; *S. octomaculata*, sp. n., MacL. *l. c.* p. 272, pl. 17. fig. 8, from Borneo.

Psilochorema, g. n., MacLachlan, *l. c.* p. 273. (*Hydropsychidæ*.) Antennæ not much longer than the wings; head transverse, produced between the antennæ; ocelli conspicuous; anterior wings narrow, with margins nearly parallel, discoidal cell closed, with a small abnormal cell; spurs 2. 4. 4. Sp. *P. mimicum*, sp. n., MacL. *l. c.* p. 274, pl. 18. fig. 4 (details), from New Zealand.

New species:—

Helicopsyche ceylanica, Brauer, Reise der Novara, Neur. p. 26, pl. 1. fig. 1 (case, larva, and nymph), from Ceylon (see 'Record,' 1865, p. 673).

Phryganea japonica, MacLachlan, Ent. Trans. 3rd ser. v. p. 248, Japan.

Limnephilus (Glyphotælius) admorsus, MacLachlan, *l. c.* p. 250, from Japan.

Setodes hemerobioides, MacLachlan, *l. c.* p. 259, from Macassar.

Anisocentropus flavicaput, MacLachlan, *l. c.* p. 260, from Northern Australia.

Macronema sandersii, MacLachlan, *l. c.* p. 261, pl. 17. fig. 3 (♂), pl. 19. fig. 4 (details), from Mysol; *M. wallacei*, MacL. *l. c.* p. 262, pl. 17. fig. 4 (♀), from New Guinea; *M. dulce*, MacL. *ibid.*, from Mysol.

Hydropsyche edwardsii, MacLachlan, *l. c.* p. 269, pl. 17. fig. 7, from Melbourne.

Polycentropus orientalis, MacLachlan, *l. c.* p. 272, from Macassar.

ORTHOPTERA.

(*Orthoptera genuina*.)

KAUP, J. Description of two new species of the genus *Bacillus*, Latr. Proc. Zool. Soc. 1866, pp. 577-578.

MURRAY, A. On the Habits of the *Prisopi*. Ann. & Mag. Nat. Hist. 3rd series, vol. xviii. pp. 265-268.

(*Pseudo-Neuroptera*.)

BRAUER, F. Die Neuropteren der Reise der Novara, &c. Sec NEUROPTERA.

——. Beschreibungen neuer exotischer Libellen. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvi. pp. 563-570.

EATON, A. E. Notes on some species of the Orthopterous genus *Cloëon*, Leach (as limited by M. Pictet). Ann. & Mag. Nat. Hist. 3rd series, 1866, vol. xviii. pp. 145-148.

* Said by MacLachlan (Proc. Ent. Soc. 1866, p. xxviii, to be identical with *Hydromanicus* (Brauer).

- HAGEN, H. A. On some aberrant genera of *Psocina*. Ent. Monthly Mag. vol. ii. pp. 170-172 (conclusion): 1866.
- . *Psocinorum et Embidinorum Synopsis synonymica*. Verhandl. zool.-bot. Gesellsch. in Wien, Band xvi. pp. 201-222 (read December 6, 1865).
- . Beiträge zur Kenntniss und Synonymie der Psociden. Stett. entom. Zeit. 1866, pp. 188-196, and pp. 233-244.
- . See NEUROPTERA.
- MACLACHLAN, R. New genera and species of *Psocidæ*. Trans. Ent. Soc. London, 1866, vol. v. pp. 345-352.
- . See NEUROPTERA.
- SCUDDER, S. H. Notes upon some Odonata from the Isle of Pines. Proc. Bost. Soc. Nat. Hist. vol. x. pp. 187-198: February 1866.
- Contains descriptions of Dragonflies collected in the Isle of Pines; many of them are new.
- . Notes on some Odonata from the White Mountains of New Hampshire. Ibid. pp. 211-222: April 1866.
- Contains descriptions of several new species.

(*Thysanura*.)

- MEINERT, F. Campodeæ: en Familie af Thysanurerernes Orden. Naturhistorisk Tidsskrift, ser. 3. Bd. iii. pp. 400-440, Tab. 14 (1865); translated in Ann. & Mag. Nat. Hist. ser. 3. vol. xx. pp. 361-378.

(*Anatomical and Physiological Papers*.)

- BASCH, S. Untersuchungen über das Skelet und die Muskeln des Kopfes von *Termes flavipes* (Kollar). [Investigations of the skeleton and muscles of the head of *Termes flavipes*.] Zeitschrift für wissenschaft. Zoologie, Band xv. pp. 56-75, Taf. 5 (1865).
- HENSEN, V. Ueber das Gehörorgan von *Locusta*. [On the auditory organ of *Locusta*.] Zeitschrift für wiss. Zoologie, Band xvi. pp. 190-207, Taf. 10.
- The author has examined the structure of the peculiar auditory organs discovered by Von Siebold in the anterior tibiæ of *Locusta*, and describes it in great detail in the present paper.
- LUBBOCK, JOHN. On the development of *Chloëon* (*Ephemeræ dimidiatum*).—Part 2. Trans. Linn. Soc. vol. xxv. pp. 477-492, plates 58-59.
- In this memoir the author concludes his history of the metamorphoses of *Chloëon dimidiatum* by describing the three last stages (the eighteenth to the twentieth) of its preparatory con-

dition, and also the general characters of the imago. He discusses the phenomena of respiration in this insect and the bearing of his observations upon the subject of the respiration of insects in general, and dwells particularly upon the nature of the metamorphoses of insects and their relation to questions of general zoology.

THYSANURA.

MEINERT publishes (Naturh. Tidsskr. ser. 3. Bd. iii. pp. 400-440) an important memoir on the family *Campodeæ* (= *Iapygidæ*, Hal.), including the two genera *Campodea* (Westw.) and *Iapyx* (Hal.). In his introductory observations he remarks upon the general classification of Insects in accordance with the structure of the mouth, and indicates some new views upon this subject derived from a consideration of the mode of attachment of the buccal organs to the head. Thus, in the mandibulate series, the mandibles and maxillæ are articulated directly to the horny case of the cranium, and left freely outside of the mouth; and Meinert remarks that, from this point of view, the Lepidoptera (Glossata) really belong to what we must still call the mandibulate section, agreeing essentially in their mouth-structure with the Hymenoptera (Piezata), to which in other respects they are so nearly allied. In the true sucking Insects, on the contrary, the mandibles and maxillæ are retractile within the mouth, so that only their points are exposed; and the author indicates that, as a general rule, this difference of structure holds good also in the case of the larvæ. The Thysanura present in some respects an intermediate form, the mandibles and maxillæ being certainly organized for biting, but at the same time retractile within the mouth, and articulated, not to the cranium, but to a chitinous plate contained within its cavity. Meinert remarks further upon the larval characters permanently presented by the Thysanura, from which, however, he excludes the *Lepismidæ*, regarding them as belonging to the Ulonata (Orthoptera) and as nearly approaching *Blatta*. The structure of the insects referred to the family is described in great detail by Meinert, and his descriptions are illustrated by numerous figures. He gives the following character of the *Campodeæ* (l. c. p. 403):—

Pedes cursorii, tarsi distinctis, elongatis, biungulatis. Corpus elongatum, abdomine distincte 10-articulato. Spiracula perspicua, saltem terna. Abdominis laminæ ventrales 7 priores appendiculatæ. Cerci duo, e segmento decimo, ultimo, orientes. Antennæ setacæ vel filiformes.

Meinert insists particularly upon the presence of ten segments in the abdomen as supporting his view of the structure of the same part in *Forficula*. The two genera and their known species are characterized; and Meinert remarks that Haliday, in characterizing *Iapyx*, seems to have overlooked the chitinous plate

supporting the buccal organs, and to have been mistaken in his interpretation of some of the latter. Thus Haliday's labium, according to Meiner, is made up of the outer part of the maxillæ and the paraglossæ; his maxillæ are the inner lobes of those organs; and his labial palpi maxillary palpi. The amended characters of the genera are given by Meiner as follows:—

Iapyx (Hal.), p. 413. Cerci breves, inarticulati, cornei, forcipis instar; segmentum ultimum maximum, pænultimum breve, scuto ventrali fisso; mandibulæ paululum compressæ, serratæ; mala interior maxillæ lobis 5 laciniatis instructa; palpi max. biarticulati; labium verrucis (palpariis?) 2 anticis permagnis instructum; palpi labiales conici, setis simplicibus muniti; antennæ setaceæ, articulo ultimo parvo, minore quam pænultimo, conico; oculi 0; unguiculi simplices, inæquales, onychio unguliformi; spiracula dena. Sp. *Iapyx solifugus* (Hal.), figured with details, *l. c.* pl. 14. figs. 1-11.

Campodea (Westw.), p. 421. Cerci longi, multiarticulati, filiformes; segmentum pænultimum longitudine segmenti ultimi, scuto ventrali integro; mandibulæ apice compressæ, dentatæ, appendice lamelliformi instructæ; mala interior maxillæ in dentes 8 incisa; palpi max. inarticulati; palpi labiales breves, fere membranacei, setiferi, duas longas setas ensiformes apice gerentes; verrucæ 2 setiferæ pone labium; antennæ filiformes vel submoniliformes; oculi 0 (vel seni congregati evanidi?); unguiculi curvati, ad basin processibus binis longis tenuibus curvatis instructi; spiracula terna. New sp. *C. fragilis*, Meiner, *l. c.* p. 28, pl. 14. figs. 12-22 (details), Copenhagen.

Achorutes murorum. F. Löw publishes some notes on the habits of this species. Verh. zool.-bot. Ges. in Wien, xvi. pp. 945-946.

PSEUDO-NEUROPTERA.

TERMITIDÆ.

BRAUER (Reise der Novara, Neur.) describes in detail the following species of this family:—*Culotermes improbus* (Hag.), *l. c.* p. 45, and his *Stolotermes ruficeps*, p. 46, *Eutermes funigatus*, p. 48, and *Rhinotermes intermedius*, p. 49.

HAGEN (Stett. ent. Zeit. 1866, p. 283) regards *Termes flavipes* (Burm.) as = immature *T. lucifugus*.

SMITH (Ent. Trans. 3rd ser. v. p. 327) notices a small species of *Termes* (*T. cumulans*, Hag.?) as destructive to coffee in Brazil. Layard calls attention to the ravages of a white ant in St. Helena. Proc. Ent. Soc. 1866, p. xii.

Termes longirostris, sp. n., Brauer, *l. c.* p. 47, Nicobar Islands.

EMBIIDÆ.

HAGEN publishes (Verh. zool.-bot. Gesellsch. in Wien, xvi. pp. 220-221) an alphabetical synopsis of the genera and species

of this family, in which he recognizes 3 genera, including 10 known species. He remarks on its near relationship to the *Termitidæ* and also to the *Psocidæ*, the latter manifested especially by *Embidopsocus*, "a true *Psocus* with the facies of an *Embia* and the wings of a Termite." *Olyntha staphilinoidea* (Walk.) is the larva of a *Forficula*.

HAGEN (Stett. ent. Zeit. 1866, p. 283) mentions that he has the larva of an *Embia* from Spain. It appears to belong to *E. solieri* (Ramb.).

PSOCIDÆ.

HAGEN (Stett. ent. Zeit. 1866, pp. 188-196 and 233-244) has subjected the synonymy of the described species of this family to a careful revision, in which he takes up the works of different authors in chronological order. His results may be stated as follows:—

Linné describes 8 species of *Psocidæ* under the following names:—*Hemerobius sexpunctatus*, *flavicans*, *bipunctatus*, *pedicularius*, *cruciatu*s, *Phryganea saltatrix* (uncertain, but probably nearly allied to *P. bifasciatus*, Steph. = *4-maculatus*, Lat.), *Termes pulsatorium* (probably = *Clothilla studiosa*, Westw.) and *fatidicum* (= *Atropos pulsatoria*, auct.). Linné's *Cynips fagi* (S. N. i. 919) is also said to be a *Psocus*. Schrank's *Hemerobius aphidioides* = *Psocus immunis* (Steph.). Fabricius describes some Linnean species, and also the following as new:—*Hemerobius striatulus* (= *Psocus stigmaticus*, Latr.), *abdominalis*, Syst. Ent. (probably = *flavicans*, Linn.); *abdominalis*, Ent. Syst. (= *pedicularius*, Linn.); *longicornis* (= *lineatus*, Latr.), *fasciatus*, *4-punctatus* (= *cruciatu*s, Linn.), *variegatus*, and *picicornis*. O. F. Müller describes 6 new species, of which *Hemerobius nemoralis* is unknown to the author, *H. unipunctatus* probably = *aphidioides* (Schr.), *trifasciatus* = *fasciatus* (Fab.), *pusillus* is probably a species of *Cæcilius*, *longicornis* = *longicornis* (Fab.), *gibbus* probably = *bipunctatus* (Linn.), and *Termes divinatorium* = *Atropos pulsatoria* (auct.) = *fatidicum* (Linn.). Latreille, who established the genus *Psocus*, and afterwards formed a distinct family for these insects, described several new species, namely *Psocus ciliatus*, *morio*, *4-maculatus*, *fuscopterus* (probably = *vittatus*, Dalm.), *bifasciatus* (not determined), *lineatus* (= *longicornis*, Fab.), and *picicornis* (probably = *fasciatus*, Fab. ♂). Stephens (Illust. Brit. Ent.), following Leach in dividing the *Psocidæ* into the 2 genera *Psocus* and *Atropos*, describes 42 species of the former genus, which Hagen regards as reducible to about 20, and 2 species of *Atropos*—*A. pulsatorium* (= *divinatorium*, Müll.) and *A. fatidicus* (not determined). The synonymy of the species of *Psocus* described by Stephens is considered by Hagen to be as follows:—*P. picicornis*, *atomarius*, *picicornis*, *fasciatus*, and *variegatus* = *variegatus* (Fab.) and perhaps partly *fasciatus* (Fab.); *P. maculatus* and *subfasciatus* = *sexpunctatus* (Linn.) ♂ ♀; *P. lineatus* = *longicornis* (Fab.); *P. nebulosus* and *similis* = ♂ and ♀ of one species; *P. bifasciatus*, *contaminatus*, and *megastigmus* = *4-maculatus* (Lat.); *P. subnebulosus*, not determined; *P. immunis* and *longicornis* = ♂ and ♀ of one species = *naso* (Ramb.) = *obliterata* (Zett.); *P. venosus* = *immaculatus* (Steph.); *P. vittatus* = *fuscopterus* (Lat.); *P. ochropterus*, *flavidus*, *flavicans*, and *obsoletus* = *boreellus* (Zett.) = *flavidus* (Ramb.); *P. hyalinus*, *bipunctatus*, and *sexpunctatus* belong to a species not

elsewhere described; *P. 4-maculatus* is represented by specimens of *phæopterus* and *flaviceps*; *P. striatulus* and *flaviceps* form one species; *P. immaculatus*, *rufescens*, and *flavescens* constitute one species=*subfumipennis* (Zett.)=*strigosus* (Brauer); *P. 4-punctatus*, *costalis*, and *subocellatus*=*cruciatus* (Linn.); *P. subpunctatus* probably=*flavidus* (Steph.); *P. maculipennis*, not identified; *P. nigricornis* and *phæopterus* form one species; *P. nigricans* and *abdominalis* and probably *dubius*=*pedicularius* (Linn.). Of the species referred to by Curtis several are identical with Stephens's: his *P. pilicornis*=*fasciatus* (Fab.); *P. variegatus*=*nebulosus* (Steph.); *Cæcilus fenestratus*=*vittatus* (Steph.)=*fuscopertus* (Lat.); *C. strigosus*=*flavidus* (Steph.); *C. irroratus*=*flaviceps* (Steph.); *C. vitripennis*=*immunis* (Steph.), as also probably *C. longicornis*; *C. morio* probably=*morio* (Lat.). Curtis's collection contains a *Psocus vittatus*=*immaculatus* (Steph.), *P. striatus*=*P. phæopterus* (Steph.) and *P. ochropterus*, a species allied to 4-maculatus. Westwood's *Clothilla studiosa*=*T. pulsatorium* (Linn.); he also established the genus *Lachesilla*. Burmeister recognizes only 3 genera of *Psocidæ*,—*Troctes*=*Atropos* and *Lachesilla*, *Psocus*=*Psocus* and *Cæcilus*, and *Thyrsophorus* (g. n.). Burmeister's 2 species of *Troctes* probably belong to the common *Atropos*. Of the species of *Psocus* cited by him, *P. strigosus*=*immaculatus* (Steph.), *pedicularius* is new, *domesticus*=*pedicularius* (Linn.), *lasiopterus* is probably new, *longicornis*=*immunis* (Steph.), *fenestratus*=*vittatus* (Dalm.), *pilicornis*=*variegatus* (Fab.) ♂, 4-maculatus=4-maculatus (Westw.), *nervosus* probably=*fasciatus* (Fab.). *Thyrsophorus* includes *T. speciosus* and *pennicornis*, from Brazil. Hagen remarks that Burmeister's first division of the genus *Psocus* is not equivalent to *Cæcilus* (Curt.). Rambur describes a *Thyrsophorus spinolæ*=*speciosus* (Burm.), *Psocus affinis* and *infuscatus*=*nebulosus* (Steph.), *P. naso*=*immunis* (Steph.), *P. microphthalmus*=*venosus* (Burm.), *P. subfasciatus* and *P. obscurus* probably new, *P. conspurcatus*=4-maculatus (Westw.), *P. binotatus*=*pedicularius* (Linn.); *P. pedicularius* and *lucifugus* are not determined by Hagen. Walker recognizes the genera *Thyrsophorus*, *Psocus*, *Atropos*, *Clothilla*, and *Lepinotus*. Of *Thyrsophorus* he describes 6 species, reducible to 3, his *T. anticus* alone being distinct from Burmeister's species. In the genus *Psocus* 61 species are cited; the synonymy of many of these coincides with that given for the Stephensian species, but his *P. pilicornis*=*vittatus* (Dalm.), *magnus*=*venosus* (Burm.), *venosus*=*immaculatus* (Steph.), *pupillatus*=*albuguttatus* (Dalm.). Of Zetterstedt's species, *P. subfasciatus*=*bifasciatus* (Latr.), *obliteratus*=*aphidioides* (Schr.)=*naso* (Ramb.)=*immunis* (Steph.), *subfumipennis*=*immaculatus* (Steph.), as also probably *flavicans*, *borellus*=*flavidus* (Steph.), and *striatus* probably=*borellus*. Hagen also indicates the recent memoirs in which new species have been described, and states that the number in his collection is about 116.

HAGEN has also published (Verh. zool.-bot. Gesellsch. in Wien, xvi. pp. 201-220) an alphabetic synonymic synopsis of the genera and species of this family, on the same plan as the synopsis of *Phryganidæ* published by him in 1864 (see 'Record,' 1864, pp. 562, 563). He admits 136 species as belonging to the group, referred to 21 genera, which he tabulates as follows (*l. c.* p. 203) :—

Family PSOCINA.

Division 1. *Atropina*. Ocelli 0.

- I. Tarsi triarticulate.
 A. Meso- and metathorax connate 1. *Atropos* (Leach).
 B. Meso- and metathorax free.
 a. Anterior wings coriaceous, rudimentary. 2. *Clothilla* (Westw.).
 b. Anterior wings membranaceous. 3. *Psocilla* (Hag.).
 II. Tarsi biarticulate 4. *Lachesilla* (Westw.).

Division 2. *Psocina*. Ocelli 3.

- I. Wing-veins rudimentary 5. *Embidopsocus* (Hag.)¹.
 II. Wing-veins distinct.
 A. Anterior wings scaly.
 a. Reticulation irregular 6. *Amphientomum* (Pict.).
 b. Reticulation regular.
 α. Anterior wings ovate. 7. *Perientomum* (Hag.).
 β. Anterior wings appendiculate 8. *Syllysis* (Hag.).
 B. Anterior wings hyaline.
 a. Prothorax free.
 α. Wings acuminate 9. *Thylax* (Hag.).
 β. Wings ovate 10. *Empheria* (Hag.).
 b. Prothorax obtected.
 α. Tarsi 3-articulate.
 1. Discoidal area closed 11. *Myopsocus* (g. n.)².
 2. Discoidal area open 12. *Elipsocus* (g. n.)³.
 β. Tarsi biarticulate.
 1. Joint 3 of antennæ slender.
 aa. Reticulation simple.
 * Pterostigma free.
 † Discoidal area closed 13. *Psocus* (Lat.).
 †† Discoidal area open.
 — Posterior area elliptical. 14. *Cecilius* (Curt.).
 = Posterior area elongate.
 Furca regular 15. *Epipsocus* (g. n.)⁴.
 Furca irregular 16. *Polypsocus* (g. n.)⁵.
 ≡ Posterior area 0 17. *Peripsocus* (g. n.)⁶.
 ** Pterostigma not free 18. *Stenopsocus* (g. n.)⁷.

¹ This genus is omitted in the alphabetical synopsis.

² Sp. *Psocus lugens* and *unduosus* (Hag.) and *M. rapidus* (Hag. MS.).

³ Sp. *Ps. boops*, *impressus*, *pumilus*, and *signatus* (Hag.), *conterminus* (Walsh), *flavicans* (Linn.), and *quadrifasciatus* (Westw.), and *Hemerobius aphidioides* (Schr.).

⁴ Sp. *Psocus ciliatus* and *debilis* (Pict.), *delicatus*, *lanatus*, *molestus*, *pictus*, *tener*, and *zonatus* (Hag.).

⁵ Sp. *Ps. corruptus* (Hag.) + *abruptus* (Hag.) ♀.

⁶ Sp. *Ps. æthiops*, *madidus*, and *piger* (Hag.), *Peripsocus pellucidus* (Hag. MS.), *Ps. alboguttatus* (Dalm.), *madescens* (Walsh), and *phæopterus* (Steph.).

⁷ Sp. *Hemerobius cruciatus* (Linn.) and *striatulus* (Fab.), *Ps. apertus* and *uniformis* (Hag.), and *innaculatus* (Steph.).

bb. Reticulation complex, irregular.

19. *Calopsocus* (g. n.)¹.

2. Joint 3 of antennæ thick.

Joint 3 of antennæ short 20. *Dypsocus* (g. n.)².

Joint 3 of antennæ long 21. *Thyrsophorus* (Burm.).

MACLACHLAN notices the occurrence of differences of venation in the wings of the two sides of single specimens of *Psocidæ*, reproducing, entirely or partially, the distinctive peculiarities of different genera. Proc. Ent. Soc. 1866, p. xlv.

Psocus nigricornis and *australis* (Br.) are fully described by Brauer, Reise der Novara, Neur. p. 50.

Thyrsophorus leucotelus (Walk.) probably = ♀ *pennicornis* (Burm.). MacLachlan, Ent. Trans. 3rd ser. v. p. 346.

Hagen (Ent. M. Mag. ii. p. 171) characterizes his genus *Empheria* and its species, *E. reticulata* (Hag.), found in Prussian amber.

Atropos (pulsatoria). Doubleday states that he believes a ticking sound to be produced by this insect. Proc. Ent. Soc. 1866, p. iv.

Newman describes the emergence of a minute *Psocus* (*P. pulicarius*?) from specimens of *Atropos pulsatoria*. Entomologist, iii. p. 66.

New genera and species :—

(For some new genera established by Hagen, see Table, p. 526.)

Embidopsocus, g. n., Hagen, Ent. M. Mag. ii. p. 170. Resembling *Termes* and *Embia*; antennæ slender, short, 15-jointed, not ciliated; prothorax transverse, tripartite, narrower than head; fore wings narrow at base, flat, costa uniting with subcosta at middle, median vein running to apex, base of posterior margin with a small oblique vein; hind wings with one weak vein near anterior margin; tarsi short, with nearly equal joints. Sp. *E. luteus*, sp. n., Hagen, l. c. p. 171, from Cuba.

Thylax, g. n., Hagen, l. c. p. 172. Allied to *Empheria*; antennæ 40-jointed; wings long, very narrow, lanceolate, median vein and subcosta united by a transverse vein before the pterostigma. Sp. *T. fimbriatum*, sp. n., Hagen, l. c. p. 172, from Zanzibar, in gum Animé.

Neurosema, g. n., MacLachlan, Ent. Trans. 3rd ser. v. p. 346. Anterior wings with a strong transverse fold near the apex, and densely reticulated, before this fold, with numerous irregular hyaline venules, dividing the wing into a great number of cells. Sp. *N. apicalis*, sp. n., MacL. l. c. p. 347, from New Guinea and Salwatty.

Eremopsocus, g. n., MacLachlan, l. c. p. 347. Antennæ 10-jointed?, thickened in ♂, filiform in ♀; discoidal cell large, quadrate, closed, posterior marginal cells 4, the lower ones small; palpi with last joint clavate. Sp. *E. infumatus*, sp. n., MacL. l. c. p. 348, from Brazil.

Psocus. The following 9 new species of this genus are described by MacLachlan :—1. *P. griscipennis*, l. c. p. 348, from Australia; 2. *P. fraternus*, p. 349, from Assam; 3. *P. pallipes*, ibid., from Australia; 4. *P. femoratus*, ibid., from North China; 5. *P. grisescens*, p. 350, from Natal; 6. *P. infectus*, ibid., from New Granada; 7. *P. cosmopterus*, ibid., from Malacca; 8. *P.*

¹ Sp. *Ps. infelix* (Hag.).

² Sp. *Ps. coleoptratus* and *dolabratus* (Hag.).

striatifrons, p. 351, from South Australia; and, 9. *P. imbecillus*, *ibid.*, from the Mauritius. Species 1 and 2 belong to *Myopsocus* (Hag.); 4, 5, 6, 7, and *P. reponens* (Walk.) to *Psocus* (prop.); 8 to *Stenopsocus* (Hag.); and 9 to *Cæcilius* (Curt.). See MacLachlan, *l. c.* p. 352.

Thyrsophorus bellus, MacLachlan, *l. c.* p. 345, from Brazil.

LIBELLULIDÆ.

BRAUER (Reise der Novara, Neur.) gives full descriptions of the following species already briefly characterized by him (see 'Record,' 1865, p. 680):—*Agrion asiaticum*, *l. c.* p. 52, *hieroglyphicum*, p. 54, *aurora*, p. 56, *spinicauda*, p. 57, and *cerinorubellum*, p. 59; *Anax julius*, p. 63, and *concolor*, p. 66; *Æschna macromia*, p. 68, *excisa*, p. 69; *cornigera*, p. 70, *castor*, p. 72, and *tahitensis*, p. 73; *Staurophebia magnifica*, p. 74, tab. 2. fig. 1; *Gynacantha ida*, p. 75, tab. 2. fig. 2; *Macromia elegans*, p. 76, tab. 2. fig. 4; *Cordulia novæzealandiæ*, p. 78, tab. 2. fig. 3; *Gomphromacromia paradoxa* (1864), pp. 80–81, tab. 2. fig. 5; *Tramea brevistyla*, p. 83; *Libellula corallina* (*Erythemis*), p. 84, *bipunctata*, p. 86, *chloropleura*, p. 88, *anomala*, p. 90, *albicauda*, p. 91, *leontina*, p. 93, *caledonica*, p. 94, *petalura*, p. 96, *subfusiolata*, p. 97, *infernalis* (*Dythemis*), p. 98; *Nannophya australis*, p. 99; and *Agrionopectera nicobarica*, pp. 100–101, tab. 2. fig. 6. Details of the following species are figured in tab. 1:—*Agrion cerinorubellum*, fig. 10, *asiaticum*, fig. 11, *aurora*, fig. 12, *spinicauda*, fig. 13; *Anax julius*, fig. 14, *concolor*, fig. 15; *Æschna cornigera*, fig. 16, *castor*, fig. 17, *macromia*, fig. 18, and *excisa*, fig. 19.

BRAUER also gives (*l. c.* pp. 60–63) a tabular synopsis of the species of the genus *Anax*, of which he indicates 17, including his 2 new species.

SCUDDER (Proc. Bost. Soc. Nat. Hist. x. pp. 187–198) indicates the species of this family collected in the Isle of Pines. The known species described in detail are:—*Agrion* (*Ischnura*) *cæcum* (Hag.), p. 189; *Dythemis frontalis* (Burm.), p. 193; *Diplax ochracea* (Burm.), p. 196; *D. justiniana* (Selys) and *D. abjecta* (Ramb.), p. 197. Scudder also remarks upon the characters of the following species, with especial reference to their colour during life:—*Æschna virens* (Ramb.), p. 190; *Tramea insularis* (Hag.) and *Libellula awripennis* (Burm.), p. 191; *L. angustipennis* (Ramb.), p. 192; *Dythemis pleurosticta* (Burm.), p. 194; and *Perithemis domitia* (Drury), p. 198.

SCUDDER also remarks on the characters of the following known species from New Hampshire:—*Æschna constricta* (Say), *l. c.* p. 212, and *Diplax rubicundula* (Say), *l. c.* pp. 219–222.

HAGEN (Stett. ent. Zeit. 1866, pp. 286–287) adds to Pictet's list of Iberian Libellulidæ *Anax irene* (Fouc.), *Libellula albistyla* (Selys), and *L. pedemontana* (Allioni).

Lestes fusca (Van der Linden). F. Löw notices the finding a specimen of this species under a stone near Tolmein in Illyria, and cites it in evidence of the hibernation of the species. Verh. zool.-bot. Ges. in Wien, xvi. p. 947.

Lestes macrostigma (Eversm.) occurs in Corsica. MacLachlan, Ent. M. Mag. iii. p. 141.

New species:—

Agrion maria, Scudder, Proc. Bost. Soc. N. H. x. p. 188, Isle of Pines.

Tramea lövii (Kaup, MS.), Brauer, Verh. zool.-bot. Ges. in Wien, xvi. p. 563, and *T. rosenbergi* (Kaup, MS.), Brauer, *l. c.* p. 564, Ceram.

Cordulia eremita, Scudder, *l. c.* p. 215, *C. forcipata*, Scud. *l. c.* p. 216, *C. shurtleffi*, Scud. *l. c.* p. 217, *C. walshii*, Scud. *ibid.*, and *C. elongata*, Scud. *l. c.* p. 218, New Hampshire.

Mesothemis poeyi, Scudder, *l. c.* p. 194, and *M. gundlachii*, Scud. *l. c.* p. 195, Isle of Pines.

Cordulegaster lateralis, Scudder, *l. c.* p. 211, New Hampshire.

Æschna eremita, Scudder, *l. c.* p. 213, and *Æ. propinqua*, Scud. *l. c.* p. 214, New Hampshire.

Macromia cubensis, Scudder, *l. c.* p. 190, Isle of Pines.

Libellula vinosa, Scudder, *l. c.* p. 192, Isle of Pines.

Libellula coronata (Kaup, MS.), Brauer, *l. c.* p. 565, Ceram.

Polynœura decora (Kaup, MS.), Brauer, *l. c.* p. 567, Amboyna; *P. ramburii* (Kaup, MS.), Brauer, *l. c.* p. 568, Celebes.

Perithemis duivenbodii, Brauer, *l. c.* p. 569, New Guinea.

EPHEMERIDÆ.

Ephemeră hispanica (Ramb.) = *E. danica*, var., according to Hagen (Stett. ent. Zeit. 1866, p. 284). Hagen adds to Pictet's list of Spanish Ephemeridæ *Palingenia virgo* (Oliv.), *Cloe pumila* (Brauer), and a new species of *Potamanthus* (*l. c.* pp. 284-285).

Tuffen West describes the skin cast by a small species of this family [*Baëtis*?] in its last moult. Trans. Micr. Soc. Lond. xiv. pp. 69-70, pl. 7. figs. 8-11.

On the occurrence of *Palingenia horaria* (Linn.) near Olmütz, see F. Löw, Verh. zool.-bot. Ges. in Wien, xvi. p. 947.

Oligoneuria rhenana made its appearance as early as the 25th and 26th July in 1865. A. Müller, Ent. M. Mag. ii. p. 182.

Cloëon. Eaton publishes (Ann. & Mag. N. H. 3rd ser. xviii. pp. 145-146) some remarks on this genus, in which he states that they are partly phytophagous in their diet, and that the rectum is subservient to respiration, as in the *Libellulidæ*. Eaton proposes a new genus for *C. dipterum*, and characterizes the restricted genus *Cloëon* as follows:—Pupa with 7 pairs of single branchial plates; imago with 4 wings and 2 anal setæ. The species *Cloëon rhodani* (Pict.), *C. pumilum* (Burm.), and *C. bioculatum* (Linn.) are also characterized (*l. c.* p. 147). Eaton also remarks on the distribution of the British *Ephemeridæ* (*l. c.* p. 148).

Cloëopsis, g. n., Eaton, Ann. & Mag. N. H. 3rd ser. xviii. p. 146. Pupa with 6 pairs of double branchial plates and 1 pair of single ones; imago dipterous, with 2 anal setæ. Sp. *C. diptera* (Linn.).

PERLIDÆ.

Gripopteryx reticulata and *tessellata* (Br.) are fully described by Brauer, Reise der Novara, Neur. p. 51.

Dictyopteryx hispanica (Ramb.) = *Perla rectangula* (Pict.). Hagen, Stett. ent. Zeit. 1866, p. 283.

Stenoperla, g. n., MacLachlan, Ent. Trans. 3rd ser. v. p. 354. Allied to *Eusthenia* (Wstw.); antennæ short, slender; ocelli 3; abdomen slender, tails short, slender; wings wrapping the body, anterior long, very narrow, posterior much wider, folded. Type *Chloroperla prasina* (Newm.).

ORTHOPTERA GENUINA.

PHASMIDÆ.

COQUEREL, referring to Westwood's paper on the subject (see 'Record,' 1864, p. 572), maintains the specific unity of the insects ascribed by him to *Monandroptera inuncans* (Serv.), and says that all intermediate forms occur. He confirms Westwood's opinion as to *Monandroptera spinigera* (Luc.). Bull. Soc. Ent. Fr. 1866, pp. xxiii-xxiv.

Prisopus. According to Murray, *Prisopus flabellicornis* (Stoll) is aquatic in its habits during the day, which it passes adhering to stones in the more rapid parts of streams and rivulets. At night it emerges and flies about. In adhesion the hollowed under surface of the body seems to act as a sucker. Murray supposes that Stoll described his "Grillon aquatique cornu" (= *Ilenicus stollii*, G. R. Gray) as having aquatic habits by applying to it the accounts he had received of *Prisopus*, both insects being in his collection. Ann. & Mag. N. H. 3rd ser. xviii. pp. 265-268.

Bacillus gerhardii, sp. n., Kaup, Proc. Zool. Soc. 1866, p. 577, and *B. geiosovii*, Kaup, l. c. p. 578, New Zealand.

GRYLLIDÆ.

Xya obscura, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 182, Japan.

LOCUSTIDÆ.

Lucas notices a pale yellowish variety of *Locusta viridissima*. Bull. Soc. Ent. Fr. 1866, p. xxxix. A similar variation in several males of the same species is noticed by Girard. Ibid., pp. xlviii-xlix.

Mecconema subpunctatum, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 181, and *M. ? albicorne*, Motsch. ibid., Japan.

ACRYDIIDÆ.

An account of the ravages of great numbers of Locusts in 1864 in the French colony of the Senegal is cited by Guérin from the 'Moniteur de la Flotte.' Rev. et Mag. de Zool. 1866, pp. 316-320.

Pachytylus migratorius. Mann has some remarks on the occurrence and habits of this insect in the Dobrudscha. Verh. zool.-bot. Ges. in Wien, xvi. p. 324.

Dunning communicated to the Entomological Society of London a notice of the ravages committed by Locusts in Algeria in the summer of 1866. Proc. Ent. Soc. 1866, p. xxiii.

Truxalis lata, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 181, and *T. (Opsomela?) japonica*, sp. n., Motsch. ibid., Japan.

RHYNCHOTA.

A. *Work in progress.*

MAYR, GUSTAV L. Hemiptera (Heteroptera) der Reise der österreichischen Fregatte Novara um die Erde, &c. Zool. Band ii. Abth. 1. pp. 204, with 5 plates. Vienna, 1866.

In this part of the entomological section of the great work on

the voyage of the 'Novara,' Mayr describes in detail the new genera and species of Heteroptera briefly characterized by him in the Verhandl. zool.-bot. Gesellsch. in Wien (see 'Record,' 1864, p. 575, and *infra*, p. 537), and adds a considerable number of valuable remarks on the general classification of these insects. A few new genera and species are described; and most of the new genera established by Mayr are illustrated in the five plates accompanying the work.

B. *Separate Work.*

STÅL, CAROLUS. Hemiptera Africana. Tom. ii. & iii., Stockholm, 1865; & iv., *ibid.*, 1866.

These volumes contain the conclusion of Stål's descriptions of the Rhynchota of Africa, of which the first volume was noticed in last year's 'Record' (p. 686). The analytical tables of genera throughout include the characters of many new genera from other parts of the world, of which no further notice is taken in this work; the typical species are indicated or described in Stål's "Analecta Hemipterologica," published in the 'Berliner entomologische Zeitschrift' for 1866,—a most inconvenient and reprehensible course of proceeding.

C. *Papers published in Journals, &c.*

DOUGLAS, J. W. On some peculiarities in the Development of Hemiptera-Heteroptera. Ent. Monthly Mag. vol. ii. pp. 270-272.

— About aquatic Hemiptera; including notices of new British species. Ent. Monthly Mag. vol. iii. pp. 25-27.

DOUGLAS, J. W., & SCOTT, JOHN. Additions to the British Fauna (*Hemiptera*). Entom. Monthly Mag. vol. ii. pp. 217-220, 246-249, & 272-276, & vol. iii. pp. 13-16.

FIEBER, F. X. Neue Gattungen und Arten in Homopteren (*Cicadina*, Bur.). Verhandl. zool.-bot. Gesellsch. in Wien, Band xvi. pp. 497-516, Tafel 7 (read June 6, 1866).

Contains analytical tables of the European genera, and descriptions of new species belonging to 3 groups—*Fulgoridæ*, *Paropidæ*, and *Jassidæ* with the exception of the *Delphacides* (which are treated in a separate paper) and the *Issides* (which are not described). The generic characters are illustrated in outline on the accompanying plate.

— Grundzüge zur generischen Theilung der Delphacini. *Ibid.* pp. 517-534, Tafel viii.

This may be regarded as a continuation of the preceding memoir.

FREY-GESSNER, —. Verzeichniss schweizerischen Insekten.

(Concluded.) Mittheil. schweiz. entom. Gesellsch. Band ii. pp. 7-30 and 115-132.

Contains the list of the Swiss species of *Supericornia*, *Capsina*, and *Scutata*, with remarks on the localities and times of their occurrence, and the plants on which they are found, and occasional notices of varieties.

MACLACHLAN, R. A few words on the gall-making *Aphides* of the Elm. Ent. Monthly Mag. vol. iii. pp. 157-159.

MARSHALL, T. A. An essay towards a knowledge of British Homoptera (*continued*). Ent. Monthly Mag. vol. ii. pp. 177-181, 197-199, 220-224, 250-252, & 265-268, & vol. iii. pp. 9-12, 29-31, 82-85, 103-104, 125-128, & 149-152.

MAYR, GUSTAV L. Diagnosen neuer Hemipteren. III. Verhandl. zool.-bot. Gesellsch. Wien, xvi. 1866, pp. 361-366.

In this paper Mayr publishes the diagnoses of a few more new species of Heteropterous Rhynchota obtained during the voyage of the 'Novara,' and fully characterized in his work on the Hemiptera of that voyage.

MULSANT, E., & REY, CL. Histoire Naturelle des Punaises de France. Annales Soc. Linn. de Lyon, tome xii. pp. 285-348 & 365-412, pl. i. (January 6, 1866), and tome xiii. pp. 291-367 (June 30, 1866).

The former part of this work, including the descriptions of the French Scutellerides, was noticed as a separate work in the 'Record' for last year (pp. 686, 689, & 690); it is reproduced here page for page, except that, as indicated above, the pagination of a whole sheet (from p. 349 to p. 364) has been omitted! Consequently pp. 1-64 of the separate issue correspond with pp. 285-348, and pp. 65-112 with pp. 365-412 of the paper in the Ann. Soc. Linn. Lyon. The second portion includes only the first family, *Cydnians*, of the second tribe, *Pentatomides*; it has also been published as a part of the separate work.

NITZSCH, C. L. Beobachtungen der Arten von *Pediculus*. Zeitschrift für die ges. Naturw. xxiii. pp. 21-32: 1864.

Published by Giebel from one of Nitzsch's MSS.

SCOTT, JOHN. See DOUGLAS.

SIGNORET, V. Revue du groupe des Tettigométrides. Annales Soc. Ent. France, 4^e sér. tome vi. pp. 139-160, pl. 1: August 22 and October 24, 1866 (read November 22, 1865).

STÅL, C. Analecta Hemipterologica. Berliner entom. Zeitschrift, 1866, pp. 151-172 & 381-394.

In this paper the author publishes numerous notes on the synonymy of species of *Rhynchota*, with especial reference to his 'Hemiptera Africana,' the many problematical new genera characterized in the tables of which are here enumerated, with

the necessary indications of their typical species. A good many new species are described. The paper forms to a certain extent a supplement to the 'Hemiptera Africana.'

* *Anatomical and Physiological Papers.*

BALBIANI. On the Reproduction and Embryogeny of the Aphides. *Comptes Rendus*, June 1866, pp. 1231-1234, pp. 1285-1289, and pp. 1390-1394. Translated in *Ann. & Mag. Nat. Hist.* 3rd ser. vol. xviii. pp. 65-69 & pp. 106-109.

In these papers Balbiani maintains that the viviparous *Aphides* are true hermaphrodites.

DOHRN, A. Zur Anatomie der Hemipteren. *Stettiner entom. Zeitung*, 1866, pp. 321-352, Tafel 4.

This paper, which is a German translation of the author's Latin inaugural dissertation, contains a general account of the anatomy of the Heteroptera from personal examination. It treats in considerable detail of the structure of the generative organs, the copulatory parts of which are of much significance in classification. The author thinks that variations in the structure of these parts have much to do with the production of new species, in accordance with the Darwinian hypothesis.

KÜNCKEL, J. Recherches sur les organes de sécrétion chez les Insectes de l'ordre des Hémiptères. *Comptes Rendus*, tome lxiii. pp. 433-436: September 1866. Abstract in *Ann. & Mag. Nat. Hist.* 3rd ser. vol. xviii. pp. 427-428.

In this paper Künckel describes the salivary and odoriferous glands of the Heteroptera. The inferior salivary glands are distinct from the superior, and not, as Léon Dufour supposed, reservoirs for their secretion. The secreted fluid is slightly alkaline. The odoriferous glands in the larvæ and pupæ are said to be situated in the dorsal region of the abdomen, where their presence is indicated by horny shields, in which the ostioles open.

LANDOIS, LEONARD. Untersuchungen über die auf dem Menschen schmarotzenden Pediculinen. I. Anatomie des *Phthirus inguinalis*, Leach. *Zeitschr. wissensch. Zool.* xiv. pp. 1-26, Tafeln 1-5; and II. Historisch-kritische Untersuchungen über die Läuse such. *Ibid.* pp. 27-41. III. Anatomie des *Pediculus vestimenti*, Nitzsch. *Ibid.* xv. pp. 32-55, Taf. 2-4 (1865). IV. Zur Anatomie des *Pediculus capitis*. *Ibid.* pp. 494-503, Taf. 38 (1865).

MECZNIKOW, E. Untersuchungen über die Embryologie der Hemipteren. Vorläufige Mittheilung. *Zeitschrift für wissensch. Zoologie*, xvi. pp. 128-132: 1866.

———. Embryologische Studien an Insecten. *Ibid.* pp. 389-500, Taf. 23-32.

Besides some forms of Diptera, the author, in this valuable memoir, describes the embryology of *Corixa* (pp. 422-436, Taf. 26 & 27 A), and the development of the viviparous Aphides (pp. 437-467, Taf. 28-31) and the embryology of *Aspidiotus nerii*, with comparative remarks on the phenomena presented by other Rhynchota, especially *Coccus*, *Aphis*, and *Psylla* (pp. 468-478, Taf. 32).

MARSHALL (Ent. M. Mag. iii. p. 92) notices some of the species of this order, taken by him at Freshwater Bay, Pembrokeshire. Marshall also (*l. c.* pp. 118-119) notices the species taken by him at Loch Rannoch, Perthshire.

HETEROPTERA.

DOUGLAS (Ent. M. Mag. ii. pp. 270-272) notices the occurrence of some malformations in the antennæ of species of this suborder, one of the antennæ being shorter than the other, and consisting of one joint less. The author mentions numerous species of *Lygæidæ* in which this peculiarity is often met with, and also a few *Scutata* and *Supericornia*. One or two special modes of aberration are also noticed by Douglas, and the whole are probably due to injury sustained by the organ in its preparatory states. The Recorder has figured one of these malformations occurring in *Pæcilotoma grandicornis* (Erichs.) in Brit. Mus. Cat. Hem. part i. pl. 6. fig. 2 c (1851).

SCUTATA.

MULSANT & REY, in the second part of their 'Histoire Naturelle des Punaises de France' (Ann. Soc. Linn. Lyon, xiii. p. 292), propose the following division of their tribe of Pentatomides into families:—

- I. Tibiæ spinous; pronotum not foliaceous at the sides; scutellum laterally sinuated beyond the middle 1. *Cydnians*.
- II. Tibiæ usually unarmed, sometimes spinulose, but then the scutellum sinuated before the middle.
 - A. Mesosternum channelled.
 1. Pronotum foliaceous at the sides 2. *Sciocoriens*.
 2. Pronotum not foliaceous; anterior margins of antepectus produced to the eyes 3. *Æliens*.
 - B. Mesosternum with a raised line; posterior margin of pronotum not wider than base of scutellum.
 1. Abdomen not armed with a spine advancing to intermediate coxæ.
 - a. Scutellum sinuated at about two-fifths of its sides.
 4. *Eysarcoriens*.
 - b. Scutellum usually sinuated at or beyond the middle of its sides.
 5. *Pentatomiens*.
 2. Abdomen armed with a spine reaching at least the intermediate coxæ 6. *Acanthosomiens*.
 - C. Mesosternum with a raised line; posterior margin of pronotum usually wider than base of scutellum, or rostrum not received in a channel beneath head 7. *Asopiens*.

MAYR (Reise der Novara, Zool. ii. Hemipt.) follows Stål in separating the *Thyreocoridae* from the rest of the Scutelleride forms as a distinct family, *Arthropterida*, and in combining the true *Cydnides* with *Corimelæna* &c. to form a family *Cydnida*. The remainder of the Scutata constitute, as with Stal, one great family, *Pentatomida*, which Mayr divides into the subfamilies *Scutellerida*, *Asopida*, *Pentatomida*, *Tessaratomida*, and *Acanthosomida*. Of the genera belonging to the first of these subfamilies, the *Scutellerida*, Mayr gives an analytical table (*l. c.* pp. 12-20), in which he particularly notices the characters of the orifices of the odoriferous apparatus. In the following pages Mayr also characterizes in detail the new genera established by him in papers read before the Zoologisch-botanischen Gesellschaft in Vienna (see 'Record,' 1864 and 1865).

Scutellerides.

Lobothyreus (Pachyc.) lobatus (Hope) is described and figured by Mayr, Reise der Novara, Zool. ii. Hem. p. 31, tab. 1. fig. 1.

Diolcus (Mayr) appears to be a dismemberment of *Symphylus* (Dall.) separated on account of the long furrow of the odoriferous orifice, *l. c.* pp. 16 & 26.

Sergia (Stål) includes both *Argocoris* and *Deroplax* (Mayr). Mayr, *l. c.* p. 15.

Sphaerocoris punctarius (Westw.) = *Cimex testudo grisea* (De G.). Stål, Hem. Afr. iv. p. 252.

Graptocoris (Stål). *Callidea stali* (Voll.) is referred to this genus by Stål. Berl. ent. Zeits. 1866, p. 155.

Calliphara. The genus *Callidea* is divided by Stal (Hem. Afr. i. p. 34) into a considerable number of genera, several of which are new. He adopts Germar's name *Calliphara* for one of these sections, in which the scutellum is narrower than the abdomen, leaving the whole costal margin of the hemelytra free, and the tibiæ are sulcate above. Of the species forming this group he gives a synopsis (Berl. ent. Zeits. 1866, pp. 151-154), with notes on their synonymy and descriptions of some of the species from the type specimens. The species are:—*C. peronii* (Guér.) = *Callidea regia* (Voll.), described, p. 151; *C. imperialis* (Fab.); *C. billardieri* (Fab.) = *Scutellera splendida* (Montr.); *C. æsar* (Voll.); *C. prasinia* (Guér.), described as distinct from *C. excellens* (Burm.); *C. buquetii* (Guér.); *C. eximia* (Voll.); and a new species.

Calliphara munda, sp. n., Stål, Berl. ent. Zeits. 1866, p. 153, from China.

Eucorysses. This genus is adopted by Stål (Hem. Afr. i. p. 34), who characterizes the 3 species composing it (Berl. ent. Zeits. 1866, p. 154), namely:—*E. grandis* (Thunb.), incl. var. *T. baro* (Fab.); *E. sexmaculatus* (Leach) = *Scutellera arrogans* (Montr.); and *E. atricapillus* (Guér.), incl. var. *C. variabilis* (Voll.).

Philya, g. n., Stal, Hem. Afr. i. p. 33. Allied to *Scutellera*; body obovate; tibiæ cylindrical, not sulcate. Sp. (Berl. ent. Zeits. 1866, p. 151) *Tetyra serrator* (Fab.), *Callidea jactator* (Stål) = *gloriosa* (Voll.), *C. ditissima* (Voll.), *fastuosa* (Voll.), *elegans* (Montr.), *Scutellera metallica* (Montr.), and *leucoyanca* (Montr.).

Lamprophara, g. n., Stål, l. c. p. 34. Allied to *Calliphara* (Stål), but with the tibiæ cylindrical. Type *Callidea bifasciata* (White). Berl. ent. Zeits. i. p. 155.

Cosmocoris, g. n., Stål, l. c. p. 34. Allied to *Callidea* (*Chrysocoris*); scutellum transversely strongly elevated at base. Sp. *Call. sellata* (White), *chromatica* (White), *excavata* (Guér.) = *gibbosa* (Voll.), *quadrinaculata* (Voll.), and *schlegelii* (Voll.). B. e. Z. 1866, p. 155.

Lamprocoris, g. n., Stål, l. c. p. 34. Allied to *Callidea* (*Chrysocoris*); tibiæ cylindrical; joint 3 of antennæ only twice as long as 2. Type *Callidea lateralis* (Guér.). B. e. Z. 1866, p. 155.

Graptophara, g. n., Stål, l. c. p. 34. Allied to preceding, but joint 2 of antennæ scarcely shorter than 3. Type *Callidea reynaudii* (Guér.). B. e. Z. 1866, p. 154.

Plataspides.

Brachyplatys pallipes (Fab.) = *Cimex testudo nigra* (De G.). Stål, Hem. Afr. iv. p. 252.

Oncylaspis, g. n., Stål, Hem. Afr. i. p. 2. Allied to *Brachyplatys*; eyes oblique, deeply immersed; thorax deeply rotundato-sinuate in front, with its anterior angles prominent. Type *Plataspis ruficeps* (Dall.), see B. e. Z. 1866, p. 151.

Asopides.

Dorycoris (Mayr) = *Claudia* (Stål), see Mayr, Reise der Novara, Zool. ii. Hem. ii. p. 33, where a question of priority is raised which applies to several of Mayr's genera. The first volume of Stål's 'Hemiptera Africana' bears date 1864, but was not published, according to Mayr, until the spring of 1865, whilst Mayr's descriptions appeared within the year 1864; nevertheless he has in all cases suppressed his own names.

Allocotus rogenhoferi (Mayr) is figured by Mayr, l. c. tab. 1. fig. 2.

Arma abbreviata, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 187, Japan.

Cydnides.

The tables given by MULSANT & REY (Punaises de France, Ann. Soc. Linn. Lyon, xiii.) of the "Branches," "Rameaux," and genera into which they divide this group, may be abridged and combined as follows:—

- I. Femora with flexible or spiniform hairs near their posterior edge; prosternum to coxæ shorter than head; mesosternum with hairs.
 - A. Ocelli indistinct; eyes scarcely if at all visible above.

CÉPHALOCITÉAIRES.

 1. Membrane of elytra short, not veined (*Céphalocéates*).
Genus *Cephalocteus* (Duf.).
 2. Membrane long, veined (*Amblyottates*).
Genus *Amblyottus* (A. & S.).
 - B. Ocelli distinct; eyes very apparent CYDNAIRES.
 1. Scutellum more than half as long as the abdomen.
(*Cydnates*.)

- a. Head pectinated at margin *Cydnus* (Fab.).
 b. Head not pectinated.
 * Lateral margins of pronotum recurved and concealed below lateral angles *Macroscythus* (Fieb.).
 † Lateral margins of pronotum visible throughout.
Geotomus, g. n.

2. Scutellum not more than half as long as the abdomen.

(*Brachypeltates*.)

Genus *Brachypelta* (A. & S.).

II. Femora smooth or unarmed near their posterior edge; prosternum to coxæ longer than head; mesosternum smooth.

A. Metasternum without a longitudinal lamina separating the coxæ; mesosternum more or less keeled SÉHIRAÏRES.

1. Eyes half immersed in the sides of the head, suborbicular from above.

a. Antepectus granulated on its sides *Sehirus* (A. & S.).

b. Antepectus punctate, but less granular. *Canthophorus*, g. n.

2. Eyes in a transverse obtuse cone, at least two-thirds beyond sides of head *Gnathoconus* (Fieb.).

B. Metasternum with a furrowed longitudinal lamina between the coxæ; mesosternum with a deep rostral furrow.

OCHÉTOSTÉTHAIRES.

Genus *Ochetostethus* (Fieb.).

The genus *Cydnus* (= *Cydnus*, A. & S.) is divided by Mulsant & Rey into various subgenera: *Byrsinus* (Fieb.), sp. *C. fossor* (M. & R. p. 308) = *B. scarabæoides* (Fieb. nec Fab.); *Psammozetus* (M. & R.), sp. *C. albipennis* (Costa), *flavicornis* (Fab.), and *fuscipes* (sp. n.); *Trichosternus* (M. & R.), sp. *C. pilosus* (H.-Sch.) and *nigrita* (Fab.); *Tomintotus* (M. & R.), sp. *C. signoreti* (sp. n.).

Sehirus is limited by Mulsant & Rey to *C. morio* (Linn.) = *affinis* (H.-Sch., Fieb.), *C. ovatus* (H.-Sch.), and *S. luctuosus* (M. & R.) = *morio* (Fab., Fieb.).

Canthophorus (M. & R.) is really a new name for Amyot and Serville's genus *Tritomegas*, as all the species referred to it have joint 2 of the antennæ shorter than 3. It is divided by them into the subgenera:—*Tritomegas* (A. & S.), sp. *C. sexmaculatus* (Ramb.) and *bicolor* (Linn.); *Crocistethus* (Fieb.), sp. *C. waltli* (Fieb.); *Canthophorus* (M. & R.), sp. *C. dubius* (Scop.) and *maculipes* (M. & R.); and *Adomerus* (M. & R.), sp. *C. biguttatus* (Linn.). The latter does not appear in the table of subgenera.

Mayr (Reise der Novara, Zool. ii. Hemipt. pp. 6–8) discusses the characters of the known genera of this group.

Dismegistus binotatus (Westw.) = *Cimex sanguineus* (De G.). Stål, Hem. Afr. iv. p. 252.

Geotomus, g. n., Muls. & Rey, l. c. p. 324 (see table, above). Sp. *Cydnus punctulatus* (Costa) and *C. elongatus* (H.-Sch.).

New species:—

Macroscythus javanus, Mayr, l. c. p. 8 (Verh. &c. l. c. p. 361), Batavia.

Cydnus ceylonicus, Mayr, l. c. p. 9 (Verh. &c. l. c. p. 362), Ceylon and Java.

Cydnus fuscipes, Muls. & Rey, Pun. de France, Ann. Soc. Linn. Lyon, xiii. p. 312, Montpellier; *C. signoreti*, Muls. & Rey, l. c. p. 319, Montpellier; *C. fossor*, Muls. & Rey, l. c. p. 308 (= *Byrsinus scarabæoides*, Fieb.).

Gnathoconus concolor, Muls. and Rey, *l. c.* p. 363 (= *Cydnus fumigatus*, Costa?), var.

Sehirus luctuosus, Muls. & Rey, *l. c.* p. 342 (= *C. morio*, Fab.).

Sehirus triguttulus, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 186, Japan.

Sciocorides.

Dryptocephala spinosa (Mayr) is described and figured by Mayr, *Reise der Novara*, Zool. ii. Hem. p. 41, tab. 1. fig. 5.

Pododus and *Menaccarus* (Am. & Serv.). Mayr (*l. c.* pp. 42, 43) discusses the characters of these genera.

Halydides.

The following known species of this subfamily are figured by Mayr (*Reise der Novara*, Zool. ii. Hem.):—*Ogmocoris* (*Ateloc.*) *hypomelas* (Burm.), tab. 1. fig. 3; and *Eurystethus nigropunctatus* (Mayr), *l. c.* p. 40, tab. 1. fig. 4.

Empicoris. *Cimex peregrinator* (Linn.) is described by Stål from the Linnean type as a species of this genus. Berl. ent. Zeits. 1866, p. 155.

Brochymena. *Pentatoma poeyi* (Guér.) is described by Stål as a species of this genus. Berl. ent. Zeits. 1866, p. 156.

Orthoschizops frondosa (Germ.) = *Cimex reticulatus* (Thunb.), Stål, Hem. Afr. iv. p. 253.

Orthoschizops hians, sp. n., Stål, Hem. Afr. iv. p. 253 = *O. reticulata* (Stål, H. A. i. nec Thunb.).

Pentatomides.

The following described species of this subfamily are figured by Mayr (*Reise der Novara*, Zool. ii. Hem.):—*Halyomorpha* (*Halyis*) *timorensis* (Hope), tab. 1. fig. 7; *Loxa curvidens* (Mayr), tab. 1. fig. 8; *Euschistus inermis* (Mayr), tab. 1. fig. 11; *E. fallax* (Mayr), tab. 2. fig. 12; *Rhopalomorpha similis* (Mayr), tab. 2. fig. 14; and *Cylindrocema plana* (Mayr), tab. 2. fig. 15.

According to Mayr (*l. c.* p. 51), *Zalega* (A. & S.) and *Diceræus* (Dall.) are synonymous with *Dichelops* (Spin.), to which also he refers *Diploxys lineola* (A. & S.). According to Mayr this species and *D. melacanthus* (Dall.) are synonyms of *Halyis furcata* (Fab.)

Oxycoris, Mayr = *Tyoma* (Spin.); but Mayr retains the former name, as *Tyoma* is merely an anagram of Amyot (*l. c.* p. 58).

Brachymenum (Mayr) = *Eurus* (Dall.). Mayr, *l. c.* p. 61.

Cappæa (Ellenr.). Mayr reestablishes and characterizes this genus (*l. c.* p. 65). *C. multilinea* (Ell.) = *Pentatoma taprobanensis* (Dall.).

Ancyrocoris (Mayr) = *Diploxys* (A. & S.) according to Stål, Hem. Afr. iv. p. 253.

Pentatoma sufflava (Sign.) described by Stål, Hem. Afr. iv. p. 253.

Agonoscelis sanguinea (Westw.) = *Cimex venosus* and *villosus* (Thunb.); Stål, Hem. Afr. iv. p. 254.

Cuspicona viridis (Montr.) is characterized by Stål, Berl. ent. Zeits. 1866, p. 156.

Banasa (Stål). *Edessa glauca* (Fab.) = *Pentatoma punctum* (Montr. & Sign.) is described as a species of this genus by Stål. Berl. ent. Zeits. 1866, p. 156.

Poriptus (*Buceroocoris*, Mayr) *excellens*, sp. n., Mayr, *l. c.* p. 52, tab. 1. fig. 9 (Verh. &c. *l. c.* p. 363), Brazil.

Mormydea [sic] *basicornis*, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 187, Japan.

Sangarius, g. n., Stål, Hem. Afr. i. p. 219. Allied to *Duadicus*; belly and all the sterna sulcate; head longer than thorax, bucculæ scarcely elevated; rostrum long; antennæ 4-jointed, second joint very long. Sp. *S. paradoxus*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 157, from Western Australia.

Pancatius, g. n., Stål, Hem. Afr. i. p. 220. Allied to *Duadicus*; head obtuse, lateral margins deeply sinuate, lateral lobes contiguous in front; anterior angles of thorax lobate. Sp. *P. lobulatus*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 157, from North Australia.

Oncocoris, g. n., Mayr, Reise der Novara, Zool. ii. Hem. p. 44 (Verh. & c. l. c. p. 362). Allied to *Halyomorpha* (Mayr); eyes very prominent; head elongate, middle lobe as long as lateral; antennæ long, basal joint passing apex of head; bucculæ not reaching base of head; joint 2 of rostrum longest; abdomen not furrowed, segments 2 and 3 with a narrow longitudinal impression on each side; tibiæ broadly sulcate externally. Sp. *O. punctatus*, sp. n., Mayr, l. c. p. 46, tab. 1. fig. 6, Sydney.

Copecoris, g. n., Mayr, l. c. p. 55 (Verh. & c. l. c. p. 363). Allied to *Diceræus* (Dall.); lateral lobes of head contiguous but separately acuminated; lateral processes of pronotum very large, truncated. Sp. *C. abscessus*, sp. n., Mayr, l. c. p. 57, tab. 1. fig. 10, Brazil.

Edessides.

MAYR (Reise der Novara, Zool. ii. Hem. p. 68) remarks on the characters presented by the metasternal keel in various species of *Brachystethus*, and proposes the formation of a subgenus for the reception of *B. quinqueidentatus* (Spin.), which he thus characterizes:—"Bothrocoris. Scutelli anguli antici foveola profunda; metasterni carina antice subacuta, haud emarginata; ostioli odorifici sulcus abbreviatus."

Placocoris viridis (Mayr) is figured by Mayr, l. c. tab. 2. fig. 13.

Plisthenes, g. n., Stål, Hem. Afr. i. p. 224. Allied to *Oncomeris*; ocelli much further from each other than from the eyes, on the line between the bases of the latter. Type *Tessarotoma dilatata* (Montr.). B. e. Z. 1866, p. 157.

Arona, g. n., Stål, l. c. p. 224. Allied to *Lyramorpha*; head elongate; basal joint of antennæ not passing apex of head; scutellum rounded at apex. Type *Rhaphigaster longitudinalis* (Hope). B. e. Z. 1866, p. 157.

Virbius, g. n., Stål, l. c. p. 225. Allied to *Pycanum*; posterior tibiæ slightly curved, shorter than the femora, which are somewhat incrassate. Sp. *Pycanum imperiale* (Dohrn) and *P. angulatum* (Stål). B. e. Z. 1866, p. 158.

SUPERICORNIA.

STÅL (Hem. Afr. ii. p. 1) divides his *Coreida* into the following two subfamilies:—

1. *Coreida*. Segmentis dorsalibus abdominis quarto et quinto basi medio sinuatis.

2. *Rhopalida*. Segmento dorsali abdominis quarto basi et apice vel apice saltem medio sinuato.

The latter includes only the two genera *Serinetha* and *Corizus*.

The *Berytida* constitute a distinct family in Stål's classification (*l. c.* p. 119).

MAYR also (*Reise der Novara*, Zool. ii. Hem.) adopts the same divisions, but gives the name of *Corizida* to the second. The following previously described species are figured by him:—*Acroelytrum muricatum* (Mayr), tab. 2. fig. 16; *Anorbus robustus* (Mayr), fig. 17, which appears to be a true *Mictis*; *Euthochtha* (*Coreus*) *galeator* (Fab.), fig. 18 (head); *Athaumastus* (*Crinocerus*) *lugens* (Stål), fig. 19; *Metapodius mercur* (Mayr), fig. 21; *Odontoparia nicobarensis* (Mayr), fig. 22; *Theognis erythrinus* (Mayr), tab. 3. fig. 24; *T. pulcher* (Mayr), fig. 25; *T. ingens* (Mayr), fig. 26; *Cebrenis colorata* (Mayr), fig. 27; *C. clavicornis* (Mayr), fig. 28; and *Catorhintha pallida* (Mayr), fig. 29. Most of these species are also described, and Mayr fully characterizes the genera of which he published diagnoses in the *Verhandl. zool.-bot. Ges. in Wien* for 1865 (see 'Record,' 1865, p. 695).

Mictides.

Pachylis. According to Stål (*Berl. ent. Zeits.* 1866, p. 158) Thunberg has described *P. laticornis* (Fab.) under the following names:—*Pendulinus striatus*, *bipunctatus*, *bidentatus*, *gigas*, and *grossus*.

Derepteryx (White). Stål makes this genus include *Petascelis bilobus* (Sign.), *Cimex falx* (Drury) = *P. lunatus* (Sign.), *Mictis alata* (Westw.), *M. rothii* (Dall.), and *M. foliaceipes* (Stål). *Hem. Afr.* ii. pp. 13–16.

Petalops elatus (Fab.) = *Cimex thoracicus* (Thunb.) according to Stål, *Berl. ent. Zeits.* 1866, p. 158.

Crinocerus. Mayr (*l. c.* p. 87) objects to the suppression of some of the genera of Amyot and Serville made by the Recorder in 1852, and maintains that the species referable to *Crinocerus* as defined by Burmeister constitute several genera, which he tabulates as follows¹:—

- I. Marginal furrows of the tylus running backward from its apex past the antenniferous tubercles to the forehead, of uniform strength.
 - A. Antero-lateral margins of pronotum toothed.
 - * All the femora strongly tubercular; shoulders rounded; abdomen with curved lateral margins. EUTHOCHTHA (Mayr).
 - † Only the posterior femora tubercular; shoulders pointed; lateral margins of abdomen parallel.
 - a. Pleurum with no tubercles or lobes above the posterior coxæ.
CRINOCERUS (s. s.).
 - b. Pleurum with a tubercle or lobe above the posterior coxæ.
HYMENOPHORA (A. & S.).
 - B. Antero-lateral margins of pronotum not toothed.
 - * Antenniferous tubercles contiguous; joint 1 of antennæ longer than 2, 3 cylindrical ATHAUMASTUS (Mayr).
 - † Antenniferous tubercles distant; joint 1 of antennæ shorter than 2, 3 somewhat compressed THLASTOCORIS (g. n.).
- II. Marginal furrows of tylus terminating before the antenniferous tubercles.

¹ The characters are abridged and the arrangement altered from the so-called analytical method.

- A. Head with no tubercle behind the eyes; antenniferous tubercles unarmed SAGOTYLUS (Mayr).
 B. Head with a tubercle behind each eye; antenniferous tubercles with a tooth CAMPTISCHIUM (A. & S.).

Mozena (A. & S.). Mayr (*l. c.* p. 94) discusses the characters and relations of this genus, which he regards as most nearly allied to *Archimerus*.

Merocoris (Perty). This genus is divided by Mayr (*l. c.* p. 95) into two subgenera: *Merocoris*, with the species *tristis* (Perty) and *elevatus* (Spin.), and *Corynocoris*, including *typhocus* (Fab.) and *distinctus* (Dall.).

Mictis. Stål describes the following 11 new African species of this genus: —*M. luctuosa*, *l. c.* p. 27 (= *M. curvipes*, Sign. nec Fab.), Madagascar; *M. tartarca*, *l. c.* p. 30, Gaboon; *M. mayri*, *l. c.* p. 32, Abyssinia; *M. melancholica*, *l. c.* p. 35, origin unknown; *M. caffra*, *l. c.* p. 41, Caffraria; *M. gracilicornis*, *l. c.* p. 42, Calabar; *M. monacha*, *l. c.* p. 43, origin unknown; *M. tenuicornis*, *ibid.*, Guinea; *M. carmelita*, *l. c.* p. 44, *M. capucina*, *l. c.* p. 45, and *M. africana*, *ibid.*, Caffraria.

Menenotus tuberculipes, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 187, Japan.

Thlastocoris, g. n., Mayr, *l. c.* pp. 88 & 91, note (Verh. *l. c.* p. 364). See table, above. Sp. *T. latus*, sp. n., Mayr, *l. c.* p. 91, note, tab. 2. fig. 20, Surinam.

Petillia, g. n., Stål. Hem. Afr. ii. p. 2 (= *Trematocoris*, Mayr = *Mictis* § iii. Dall.). Head in front of eyes a little longer than diameter of eyes; abdomen scarcely if at all dilated. Sp. *Mictis tragus* (Fab.), *lobipes* (Hope), *dentipes* (A. & S.), and *calcar, grossa*, and *valida* (Dall.). B. e. Z. 1866, p. 158.

Gelonus, g. n., Stål, *l. c.* p. 3. Allied to *Amorbus*; middle lobe of head distinct, between antenniferous tubercles somewhat prominent but not elevated. Type *Amorbus discolor* (Dall.). B. e. Z. 1866, p. 158.

Myrsilus, g. n., Stål, *l. c.* p. 3. Allied to *Nematopus*; head immersed to eyes, not callous behind eyes; scutellum longer than broad. Sp. *Nematopus flaviceps* (Guér.) and *albithorax* (Boisd.). B. e. Z. 1866, p. 158.

Sulpicia, g. n., Stål, *l. c.* p. 10. Allied to *Petascelis*; anterior femora bidentate anteriorly near apex; posterior tibiæ shorter than femora. Sp. *Petascelis distinctus* (Sign.).

Cipia, g. n., Stål, *l. c.* p. 11. Allied to preceding; posterior tibiæ a little longer than femora; antenniferous tubercles produced inwards at apex. Sp. *Petascelis dilatatus* (Sign.).

Mygdonia, g. n., Stål, *l. c.* p. 16. Allied to *Mictis*; posterior tibiæ dilated on both sides. Known sp. *Cimex bellicosus* (Fab.), *C. valgus* (Linn.), *Mictis cruciata* (Dall.), *Lygæus laevis* (Pal. B.), *Mictis spinulosus* (Sign.), *Lygæus hottentottus* (Pal. B.), *Mictis tuberculatus* (Sign.) and *M. cornuta* (Dall.) = *sulcicornis* (Sign.). New sp. *Mygdonia rufidorsis*, Stål, *l. c.* p. 21, Calabar; *M. granulata*, Stål, *l. c.* p. 22, Guinea; and *M. histricea*, Stål, *l. c.* p. 24, Grand Bassam.

Puppeia, g. n., Stål, *l. c.* p. 25. Allied to *Mictis*; metasternum bituberculate; rostrum reaching intermediate coxæ. Sp. *Mictis cinctus* (Sign.).

Cosutia, g. n., Stål, *l. c.* p. 46. Allied to *Mictis*; prothorax with a collar; posterior tibiæ somewhat compressed, with a tooth beneath in ♂. Sp. *Mictis metallicus* (Sign.), *M. stali* (Sign.), *Cimex flaveolus* (Drury).

Phelaus, g. n., Stål, *l. c.* p. 49. Allied to *Physomerus*; prothorax rounded behind, not truncate over scutellum; mesosternum with a furrow in front,

margins of furrow sometimes elevated into laminae. Sp. *Physomerus dilaticornis* (Sign.), *P. terminalis* (Burm.), and *Lygæus spinipes* (Pal. B.).

Homæocerides.

Plapigus (Stål). *Pendulinus spinosus* (Thunb.) is referred to this genus, and described from the type by Stål, Berl. ent. Zeits. 1866, p. 159.

Chondrocera foliaceata (Blanch.) is described as a species of *Plapigus* by Stål, Berl. ent. Zeits. 1866, p. 381.

Pendulinus ater (Thunb.) = larva of *Galesus hasticomis*, according to Stål, Hem. Afr. iv. p. 255.

Diocles, g. n., Stål, Hem. Afr. ii. p. 68. Allied to *Homæocerus*; joints 3 & 4 of rostrum equal; head immersed up to eyes in the thorax; apical angle of corium slightly produced; abdomen wider than hemelytra. Sp. *D. dilutus*, sp. n., Stål, l. c. p. 68, Caffraria.

Tliponius, g. n., Stål, l. c. p. 5. Allied to *Homæocerus*; head callous behind eyes; joints 3 & 4 of rostrum of equal length. Sp. *Cimer unipunctatus* (Thunb.) and *Gonocerus marginellus* (H.-Sch.). Berl. ent. Zeits. 1866, p. 160.

Anisoscelides.

Theognis (Stål) = *Anisoscelis* (Lat., Dall.). Of this genus, Mayr (Reise der Novara, ii. Hem. pp. 101-104) shortly characterizes all the species known to him.

Cyllarus, g. n., Stål, Hem. Afr. ii. p. 86. Allied to *Ljbas*; joint 4 of rostrum longest; rostrum very long; bucculae a little shorter than head; abdomen not sulcate. Sp. *Gonocerus longirostrum* (Sign.) = *C. longirostris* (Stål), l. c.

Serinetha corniculata, sp. n., Stål, Berl. ent. Zeits. 1866, p. 381, East Indies.

Stenocephalides.

Stål adopts the Fabrician name *Gerris* in place of *Leptocorisa* (Latr.). Hem. Afr. ii. p. 87. (The type of the Fabrician genus, *G. varicornis*, undoubtedly belongs here, but the expediency of the alteration is doubtful.)

Lyrrnessus tibialis (Stål) = *Leptocorisa geniculata* (Guér.) according to Stål. Berl. ent. Zeits. 1866, p. 159.

Mutusca, g. n., Stål, l. c. p. 6. Allied to *Leptocorisa*; joint 1 of antennæ incrassate, gradually becoming more slender towards apex. Sp. *Leptocorisa brevicornis* (Dall.) and *prolixus* (Stål). B. e. Z. 1866, p. 160.

Dulichius, g. n., Stål, l. c. p. 89. Allied to *Marcus*; joint 1 of rostrum shorter than head; veins of membrane distinct, emitted from a transverse vein; abdomen not constricted towards base; antennæ slender, joint 4 very long. Sp. *D. trispinosa*, sp. n., Stål, l. c. p. 90, Caffraria.

Stenocephalus punctarius, sp. n., Stål, l. c. p. 89, Island of Réunion.

Alydides.

Stål refers *Alydus flavolinea*, *fabricii*, and *stålîi* (Sign.) and *A. flavovittatus* (Stål) to his genus *Riptortus*, changing the first to *R. flavo-lineatus* (Stål). Hem. Afr. ii. pp. 93-94.

Nariscus, g. n., Stål, l. c. p. 100. Allied to *Hypselopus*; joint 1 of antennæ shorter than head, slightly passing its apex; posterior tibia with 2 rows of spines. Sp. *Hypselopus cinctiventris* (Germ.).

Nemausus, g. n., Stål, l. c. p. 101. Allied to *Hypselopus*; joint 1 of posterior tarsi a little longer than the other two together; joint 1 of antennæ shorter than head. Sp. *Hypselopus sordidatus* and *inornatus* (Stål), and *Alydus maculatus* (Thunb.) = *H. linearis* (Stål).

Coreides.

Cletus (Stål). Mayr (Reise der Novara, Zool. ii. Hem. pp. 118-119) gives an analytical table of the species of this genus known to him, which he divides into two subgenera—*Cletomorpha*, including *C. bellulus* (Stål), and *Cletus*, including various species of *Gonocerus* of authors.

Chariesterus gracilis (Lap.) = *Pendulinus armatus* (Thunb.) according to Stål, who describes Thunberg's type. Berl. ent. Zeits. 1866, p. 159.

Acanthocoris scaber (Linn.) = *C. sordidus* (Thunb.) = *Alydus scaber* (Thunb.) = *C. scabrator* (Fab.) according to Stål. Berl. ent. Zeits. 1866, p. 158.

Cimex muricatus (Thunb.) = *Petalocnemis muricata* is described by Stål, Hem. Afr. iv. p. 254.

Petalocnemis sabulosa, sp. n., Stål, l. c. p. 60, Caffraria.

Chærommatus argillaceus, sp. n., Stål, l. c. p. 61, Madagascar; and *C. indutus*, sp. n., Stål, l. c. p. 62, Caffraria.

Prismatocerus auriculatus, sp. n., Stål, l. c. p. 64, Caffraria; and *P. discolor*, sp. n., Stål, l. c. p. 65, Caffraria.

Cneius, g. n., Stål, Hem. Afr. ii. p. 4. Allied to *Chærommatus*; femora toothed at apex; posterior legs about equidistant from each other and from the sides of the body; head callous on each side at base; thorax without collar; abdomen a little wider than hemelytra; apical angle of corium not produced. Sp. *C. dentipes*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 160, from North Australia.

Tagus, g. n., Stål, l. c. p. 67. Allied to *Prismatocerus*, joints 2 & 4 of rostrum shorter than 3; last joint of antennæ fusiform, short. Sp. *T. productus*, sp. n., Stål, l. c. p. 67, Sennaar, Senegal.

Mevania, g. n., Stål, l. c. p. 110. Allied to *Clavigralla*; scutellum flattish; joint 1 of antennæ shorter than head, incrassate, thinner towards base; head multispinose. Sp. *Clavigralla spiniceps* (Sign.).

Myla, g. n., Stål, l. c. p. 111. Allied to preceding; joint 1 of antennæ about equal to head, not thinner towards base; head unarmed. Sp. *M. nigripina*, sp. n., Stål, l. c. p. 111, Guinea.

Capyis, g. n., Stål, l. c. p. 119. Allied to *Apophymus*; head armed with a long, curved, spiniform process; rostrum reaching posterior coxæ, joint 1 passing base of head; antennæ very long, joint 1 = 2 + 3. Sp. *Neides malacaiplus* (Stål).

Rhopalides.

Maccevetus lativentris, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 188, Japan.

LYGÆODEA.

This family (*Lygæida*, Stål) is divided by Stål (Hem. Afric. ii.) into 10 subfamilies, tabulated as follows (l. c. pp. 120-121):—

I. Abdominal segments of nearly equal length.

A. Anterior acetabula excised from the disk of the prostethium, distant from posterior margin. *Blissida*.

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B. Anterior acetabula excised from the posterior margin of the prostethium.

1. Ventral sutures all reaching lateral margins.

a. Hemelytra only partially dilated and wider than abdomen.

* Hamus emitted from the inferior vein in wings.

α. Pro- and mesosterna with no distinct furrow.

a. Anterior femora scarcely thicker than posterior, unarmed, or armed with a few spinules.

** Membrane with a cell in inner basal angle.

αα. Cell emitting two veins *Lygæida*.

ββ. Cell emitting one vein *Malcida*.

†† Membrane without basal cell *Geocorida*.

b. Anterior femora much thicker than posterior, multispinose beneath, anterior tibiæ shorter than femora.

Pachygronthida.

β. Pro- and mesosterna with a distinct furrow.

Cryptorhamphida.

† Hamus emitted from the connecting vein . . . *Phygadicida*.

b. Hemelytra wider than abdomen, all the costal margin of corium dilated *Cymida*.

2. Third suture not reaching margin *Rhyparochromida*.

II. Abdomen narrowed at base, segments 2 and 3 longest.

Colobathristida.

The genera referred to six of these groups are as follows:—BLISSIDA—*Blissus* (Klug), *Bochrus*, and *Papirius* (Stål); LYGÆIDA—*Lygæus* (Fab.), *Astacops* (Boisd.), and *Nysius* (Dall.); GEOCORIDA—*Geocoris* (Fall.), *Henes-taris* (Spin.), *Ninus*, *Germalus*, and *Hæmus* (Stål); PACHYGRONTHIDA—*Pachygrontha* (Germ.), *Ædancala* (Am. & Serv.), *Teraerius* and *Phleggyas* (Stål); CYMIDA—*Cymodema* (Spin.) and *Orycarenus* (Fieb.); RHYPAROCROMIDA—*Clerada* (Sign.), *Myodocha* (Latr.), *Cnemodus* (H.-Sch.), *Plociomera* (Say), *Beosus* (Am. & Serv.), *Lethæus* (Dall.), *Heræus*, *Fontejus*, *Gyndes* (Stål), and three new genera. The other subfamilies are not noticed.

Lygæus. Mayr (Reise der Novara, Zool. ii. Hem. pp. 123–125) proposes a division of this genus into 8 groups, under each of which he cites the species belonging to it with which he is acquainted. He also remarks upon the characters and synonymy of some of the species, such as *L. elatus* (Stål), *pallidocinctus* (Stål), *turcicus* (Fab.), *fasciatus* (Dall.), and *militaris* (Fab.).

Cænocoris nicobarensis (Mayr) is figured by Mayr, *l. c.* Taf. 3. fig. 30.

Aphanus clavatus (Dall.) = *Plociomera nodosa* (Say) and *Rhypar. cephalotes* (Dall.) belongs to *Gyndes* (Stål). See Stål, B. e. Z. 1866, p. 161.

Cnemodus brevipennis (H.-Sch.) = *Astemma mavortia* (Say). See Stål, *ibid.*

Lygæus maculicollis (Germ.) = *L. rubricosus* (Stål). Stål, *l. c.* p. 162.

Tetralacus. *Alydus marginatus* (Thunb.) is characterized and referred to this genus by Stål = *Serinetha sine* (Stål). Berl. ent. Zeits. 1866, p. 163.

Pendulinus uniguttatus and *guttatus* (Thunb.) = *Beosus uniguttatus* (Stål); *Cimex caffer* (Thunb.) is also a *Beosus* and = *Rhypp. pedestris* (Panz.). Stål, *l. c.* p. 382.

Beosus caffer (Stål) changed to *B. mendicus*, Stål, Hem. Afr. iv. p. 255.

Douglas & Scott indicate that in their volume on the British Hemiptera *Ischnorhynchus geminatus* (Fieb.) is described under the name of *I. resedæ* (Panz.), and give a description of the latter. Ent. M. Mag. ii. p. 217. Both species are British.

F. Löw obtained *Plinthisus nemoralis* (Fab.) from galls of *Chermes bursa-virus* on the petioles of *Populus pyramidalis*. Verh. zool.-bot. Ges. in Wien, xvi. p. 946.

New genera :—

Pactye, g. n., Stål, Hem. Afr. ii. 152. Allied to *Clerada*; head gradually narrowed behind eyes, forming a cylindrical neck; prothorax constricted in middle, anterior lobe narrow, lateral margins obtuse. Sp. *P. ciconia*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 160, from Sarawak.

Panchæa, g. n., Stål, l. c. p. 156. Allied to *Clerada*; ocelli not more distant than eyes; rostrum short, thick; first 2 joints very short, annuliform; 3rd longest. Sp. *P. depressa*, sp. n., Stål, l. c. p. 156, Sierra Leone.

Narbo, g. n., Stål, l. c. p. 153. Body elongate; joint 1 of antennæ longer than head; head immersed to eyes; prothorax elongated, distinctly constricted, margins subcarinate; legs long and slender, joint 1 of posterior tarsi 3 times as long as 2 + 3. Sp. *N. longipes*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 161, from Sarawak.

Euander, g. n., Stål, l. c. p. 154. Allied to *Rhyparochromus*; prothorax as wide as head and eyes, its lateral margins obtuse, incised at apex; joint 1 of posterior tarsi twice as long as 2 + 3. Sp. *Rhypar. lacertosus* (Er.) and *pictipennis* (Dall.). See B. e. Z. 1866, p. 161.

Polycrates, g. n., Stål, l. c. p. 161. Allied to *Rhyparochromus*; prothorax strongly constricted behind middle, basal margin straight, lateral margins of anterior lobe keeled; anterior femora multispinose. Sp. *Pachymerus consutus* (Germ.) = *R. curvipes* (Stål).

Phoroneus, g. n., Stål, l. c. p. 162. Allied to *Rhyparochromus*; head immersed to eyes; joint 1 of antennæ reaching apex of head; prothorax slightly impressed behind middle, basal margin straight, lateral margins keeled; posterior tarsi with joint 1 longer than 2 + 3. Sp. *Rhyp. crassifemur* (Stål).

Pæantius, g. n., Stål, l. c. p. 163. Allied to *Beosus*; joint 1 of antennæ not reaching apex of head; posterior femora passing apex of abdomen. Sp. *Rhyp. nigropictus* (Stål).

Androgeus, g. n., Stål, l. c. p. 173. Allied to *Lethæus*; longitudinal veins of membrane not united by a transverse vein; joint 1 of antennæ reaching apex of head. Sp. *Lethæus* ? *marginatus* (Sign.).

New species :—

Lygæus. Stål (Berl. ent. Zeits. 1866) describes the following 6 new species of this genus :—*L. mactans* and *L. decoratus*, p. 162, and *L. cardinalis*, p. 163, from North Australia; *L. luctuosus*, p. 162, from Brazil; *L. pedestris*, ibid., from Sicily and Tunis; and *L. circumseptus*, ibid., from Columbia.

Lygæus teniatus, Stål, Hem. Afr. ii. p. 133, Cape of Good Hope; *L. minus*, Stål, l. c. p. 136, Nubia, Senegal.

Astacops afzelii, Stål, l. c. p. 125, Sierra Leone.

Astacops nigripes, Stål, Berl. ent. Zeits. 1866, p. 163, from Manilla; *A. villicus* and *A. nugar*, Stål, l. c. p. 164, from New Guinea.

Astacops plagiata, Stål, Ann. Soc. Ent. Fr. 4^e sér. v. p. 186, Mysol; *A. degeeri*, Stål, l. c. p. 187, North Australia; and *A. feberi*, Stål, *ibid.*, Waigiou (erroneously placed under *Cæcigenia* in 'Record,' 1865).

Tetraluccus rusticus, Stål, Berl. ent. Zeits. 1866, p. 163, from North Australia.

Pachygrontha bipunctata, Stål, Hem. Afr. ii. p. 149, Mauritius.

Oxycaenus tabidus, Stål, l. c. p. 152, Cape of Good Hope.

Lethæus tartareus, Stål, l. c. p. 174, Cape of Good Hope (= *L. africanus* (Dall.), South African form); and *L. guttulatus*, Stål, l. c. p. 175, Sierra Leone.

Plociomera afra, Stål, l. c. p. 160, Caffraria; and *P. capucina*, Stål, *ibid.*, Bourbon.

Plociomerus rufipes, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. l. p. 188, Japan.

Beosus albofasciatus, Stal, l. c. p. 165, Cape; *B. mucronatus*, Stål, l. c. p. 168, Nubia; *B. placidus*, Stål, l. c. p. 170, Bourbon; and *B. cænosus*, Stål, l. c. p. 172, Caffraria.

Blissus rusticus, Stål, l. c. p. 123, and *B. oblongus*, Stål, l. c. p. 124, Cape of Good Hope.

CÆCIGENIA.

MAYR remarks on the synonymy of *Cimex augur* (Thunb.) and its varieties (Reise der Novara, Zool. ii. Hem. p. 131), and figures *Dindymus circumcinctus* (Stål), l. c. Taf. 3. fig. 31 and 32.

Stål (Hem. Afr. iii.) divides this family into the two subfamilies *Largida* and *Pyrrhocorida*, which he characterizes as follows:—

Largida. Sixth ventral segment in ♀ cleft to base.

Pyrrhocorida. Sixth ventral segment entire in both sexes.

The former subfamily, besides the genera usually referred to it, includes some belonging to the *Pyrrhocorides* of Amyot & Serville, such as *Lohita* and *Physopelta* of those authors, which certainly have but little immediate affinity to the true *Largi*.

Roscius, g. n., Stål, l. c. p. 8. Allied to *Odontopus*; apical margin of corium much longer than suture of clavus. Sp. *Pyrrhocoris elongatus* (Schaum).

Scantius, g. n., Stål, l. c. p. 10. Allied to *Pyrrhocoris*; joints of rostrum nearly of equal length, joint 1 shorter than head, or not extended beyond eyes. Sp. *Lygæus forsteri* (Fab.) and *Dermatinus? aurantiacus* (Sign.).

Dindymus ventralis, sp. n., Mayr, l. c. p. 132, Taf. 8. fig. 33 (Verh. &c. l. c. p. 364), Sydney.

CAPSINA.

The number of African species of this family described by STÅL (Hem. Afr. iii.) is very small; they are referred by him to the known genera *Sphinctothorax* (Stål), *Megacælum* (Fieb.), *Deræocoris* and *Eurymerocoris* (Kirschb.), and to a new genus, *Volumnus* (Stål.)

Teratocoris. Douglas & Scott add *T. dorsalis* (Fieb.) to the British list, and characterize the genus and species. Ent. M. Mag. ii. pp. 218 and 219. This species is figured in Ent. Annual, 1866, fig. 4.

Douglas & Scott also characterize as British species *Ætorhinus* (*Capsus*)

bilineatus (Fall.), *l. c.* p. 246, and *Globiceps dispar* (Fieb.), *l. c.* p. 249. Also the genus *Tytthus* (Fieb.), *l. c.* p. 246; *Sthenarus* (*Capsus*) *roseri* (H.-Sch.), *l. c.* p. 272; *Agalliaestes* (*Phytocoris*) *albipennis* (Fall.), *l. c.* p. 273; *Bothynotus minki* (Fieb.), *l. c.* pp. 274-275 (figured Ent. Ann. 1866, fig. 3).

Douglas & Scott change the name of their genus *Sphyracephalus* to *Sphyrops*, the former name being preoccupied. Ent. M. Mag. iii. p. 16.

Bold records the frequent suppression of a joint in one antennæ of *Scolopostethus affinis*. Ent. M. Mag. ii. p. 207.

Volumnus, g. n., Stål, *l. c.* p. 19. Allied to *Megacœlum*; head with no longitudinal impressed line behind; rostrum reaching intermediate coxæ. Sp. *Capsus stramineicolor* and *obscuricornis* (Stål).

Tytthus insignis, sp. n., Dougl. & Scott, Ent. M. Mag. ii. p. 247 (cum fig.), from Esher.

Globiceps ater, sp. n., Dougl. & Scott, *l. c.* p. 248, from Leicester.

Agalliaestes wilkinsonii, Dougl. & Scott, *l. c.* p. 273, from Scarborough.

MEMBRANACEA.

STÅL (Hem. Afr. iii.) arranges the African species of this group in 3 distinct families, under the denominations of *Acanthiida*, *Tingidida*, and *Aradida*. The first of these includes only the genus *Acanthia* with 2 species, *A. villosa* (Stål) and *rotundata* (Sign.); in the second he admits 3 genera, *Zosmenus*, *Cantacader*, and *Monanthia*; but in the third the author tabulates a considerable number of genera, several proposed by himself, although only 2 of these appear to be new. Stål proposes the name of *Calisius* for Costa's genus *Aradacanthia*. The species described are referred to the 3 genera *Brachyrhynchus*, *Mezira*, and *Aradus*.

Stål (*l. c.* pp. 33 and 34) refers Signoret's *Crimia rugosa* and *Mezira rugosa* to the genus *Brachyrhynchus*, and proposes to change the name of the latter to *B. monedula* (Stål).

Monanthia lunulata (Mayr) is described and figured by Mayr, Reise der Novara, Zool. ii. Hem. p. 163, Taf. 4. fig. 46.

Phymata spinosissima (Mayr) described and figured by Mayr, *l. c.* p. 168, Taf. 5. fig. 49.

Neuroctenus (Fieb.). Mayr (*l. c.* p. 165) discusses the characters and affinities of this genus, which he regards as most nearly allied to *Aneurus*. Of described species he thinks that *Mezira litigiosa*, *ovata*, and *bimaculata*, and *Brachyrhynchus caffer* (Stål), probably belong to this genus.

Arictus, g. n., Stål, Hem. Afr. iii. p. 31. Allied to *Dysodius*; head with a spine behind eyes; joint 1 of antennæ slightly exceeding apex of head; margins of prothorax deeply sinuate, lobed in front; membrane reticulate. Type *Aradus thoracocerus* (Montr.). B. e. Z. 1866, p. 164.

Cinyphus, g. n., Stål, *l. c.* p. 31. Allied to *Dysodius*; abdominal segments not lobate; head with a tooth behind eyes; basal margin of thorax somewhat sinuated, lateral margins sinuated, lobate in front. Type *Dysodius emarginatus* (Stål). B. e. Z. 1866, p. 164.

Neuroctenus hochstetteri, sp. n., Mayr, *l. c.* p. 166, Taf. 4. fig. 47 (Verh. *l. c.* p. 365), New Zealand; *N. brasiliensis*, Mayr, *l. c.* p. 167, Taf. 4. fig. 48 (Verh. &c. *l. c.* p. 365), Brazil.

REDUVIDÆ.

STÅL (Hem. Afr. iii.) distributes the species belonging to this group under 3 families:—*Nabida*, with a quadriarticulate rostrum, including the genera *Nabis* and *Metastemma* and their allies; *Henicocephalida*, with the thorax trilobate and the hemelytra entirely membranaceous, including only the genus *Henicocephalus* (*Enicocephalus*, Westw.) = *Systelloderus* (Blanch.) = *Oncylocotis* (Stål); and *Reduviida*, containing the great majority of the species, and divided into 14 subfamilies as shown in the following table:—

- I. Anterior coxæ short.
 A. Rostrum unarmed.
1. Claws dentate at base, or appendiculate (except in *Amphibolus*).
 1. *Reduviida*.
 2. Claws simple, or tarsi heteromerous.
 - a. Joint 3 of antennæ inserted at apex of 2.
 - * Anterior tarsi uniarticulate 2. *Ectinoderida*.
 - † Anterior tarsi of 2 joints 3. *Salyavatida*.
 - ‡ Anterior tarsi of 3 joints.
 - a. Anterior tibiæ with a fovea above at apex.
 4. *Apiomerida*.
 - β. Anterior tibiæ with no apical fovea.
 - a. Hemelytra with a hexagonal discoidal cell, or with a very large triangular area 5. *Stenopodida*.
 - b. Hemelytra with no discoidal cell.
 - ** Scutellum with 2, 3, or 4 points at apex.
 6. *Ectrichodida*.
 - †† Scutellum triangular, usually acute or spinose at apex.
 - aα. Membrane large or moderate; ocelli usually distinct.
 - Anterior coxæ short, subcylindrical.
 7. *Acanthaspida*.
 - = Anterior coxæ longer, externally flat or concave.
 8. *Piratida*.
 - ββ. Membrane very large; corium with a single vein; ocelli 0 9. *Tribelocephalida*.
 - b. Joint 3 of antennæ inserted before apex of 2.
 10. *Holoptilida*.
 - B. Second joint of rostrum thickened towards base, and armed with 2 very slender, setiform spines 11. *Saica*.

II. Anterior coxæ more or less elongate; legs long, very slender.
 A. Anterior tarsi biunguiculate.

 1. Ocelli 2 12. *Bactrodida*.
 2. Ocelli 0 13. *Plaxarida*.

B. Anterior tarsi uniunguiculate; ocelli 0 14. *Emesida*.

Of these groups, all except 4, 12, & 13, are represented in Africa.

Stål indicates the following generic synonyms:—*Harpactor* (Lap.) = *Sthienera* (Spin.) = *Piezopleurā* (A. & S.); *Plaxogaster* (A. & S.) = *Passa-*

leutus (A. & S.) = *Aricosus* (Stål); *Helonotus* (A. & S.) = *Lanittus* (Stål); *Euagoras* (Burm.) = *Darbanus* (A. & S.); *Euagoras* (A. & S.) = *Zelus* (Fab., Stål); *Reduvius* (Fab., Stål) = *Hæmatochares* (Stål olim) = *Harpactor* (auctt.); *Psytala* (Stål) = *Platyeris* (Lap.); *Plymus* (Stål) + *Mardania* (Stål) = *Acanthaspis* (A. & S.); *Clopophora* + *Phonergates* (Stål) = *Phonergates* (Stål); *Triatoma* + *Conorhinus* (Lap.) = *Conorhinus* (Lap., Stål); *Platychiria* (H.-Sch.) = *Petalochirus* (Burm.); *Ctenocnemis* (Fieb.) = *Sas-trapada* (A. & S.).

Pleogaster flavopustulatus (Costa) = *Epidaus transversus* (Burm., Stål); *Reduvius scutellaris* (Thunb.) = *Harpactor hæmorrhoidalis* (Fab.). Stål, Berl. ent. Zeits. 1866, p. 383.

Mayr (Reise der Novara, Zool. ii. Hem.) fully describes and figures the following species of this family previously characterized by him:—*Sycanus tricolor*, Taf. 3. fig. 34; *Phemius rubripennis*, fig. 35; *Ptilocnemus sidnicus*, fig. 36; *Lisarda javana*, Taf. 4. fig. 38; *Sphæridops inermis*, fig. 39; *Spiniger brunneus*, fig. 40; *S. nihiaceus*, fig. 41; *Pirates albomaculatus*, fig. 42; *Larymna colorata*, fig. 43; *Sphinctocoris corallinus*, fig. 44; and *Debilina inermis*, fig. 45.

Larymna. Of this genus Mayr tabulates the known species (*l. c.* p. 156).

New genera:—

(*Nabida*, Stål.)

Arbela, g. n., Stål, *l. c.* p. 42. Allied to *Nabis*; ocelli closely approximate; joint 1 of antennæ a little longer than head; thorax slightly constricted in the middle. Sp. *A. elegantula*, sp. n., Stål, *l. c.* p. 42, Isle of Bourbon.

(*Reduviida*, Stål.)

Archilochus, g. n., Stål, *l. c.* p. 56. Allied to *Pristhesancus*; posterior angles of prothorax not produced; scutellum without a tubercle. Sp. *Reduvius quadridens* (Fab.).

Veleda, g. n., Stål, *l. c.* p. 47. Allied to *Acholla* (Stål); anterior lobe of prothorax, and head behind eyes, spinose; joint 1 of rostrum longer than 2. Sp. *V. raptrix*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 164, from North Australia.

Vesbius, g. n., Stål, *l. c.* p. 50. Allied to *Peprius* (Stål); femora slightly nodulose, not clavate; joint 2 of rostrum a little longer than 1. Sp. *Cimer purpureus* (Thunb.) = *Harpactor milthimus* (H.-Sch.). B. e. Z. 1866, p. 164.

Vadimon, g. n., Stål, *l. c.* p. 64. Allied to *Peprius* and *Phonoctonus* (Stål); oblong-ovate; head with a minute tubercle behind each antenna; rostrum nearly straight, joint 2 twice as long as 3, 1 & 3 equal; abdomen much dilated; femora slightly nodulose. Sp. *Pleogaster?* *nodosus* (Sign.).

Vestula, g. n., Stål, *l. c.* p. 65. Allied to *Pisibius* (Stål); head elongate, eyes placed a little before its middle; lateral angles of posterior lobe of thorax acuminate, somewhat prominent; femora slightly nodulose. Sp. *Euagoras lineaticeps* (Sign.) = *Darbanus rugulosissimus* (Stål); *V. paupera*, sp. n., Stål, *l. c.* p. 66, Calabar; and *V. obscuripes*, sp. n., Stål, *ibid.*, Grand Bassam.

Vesulus, g. n., Stål, *l. c.* p. 51. Allied to *Pnirus* (Stål); oblong; head with 2 small tubercles behind antennæ; joints 1 & 2 of rostrum nearly equal in length; hemelytra much exceeding apex of abdomen. Sp. *V. atripes*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 165, from Aru.

Tunes, g. n., Stål, l. c. p. 52. Allied to *Eulyes*; last segment of abdomen scarcely dilated; head longer than thorax, eyes before the middle; joint 2 of rostrum about twice as long as 1; legs long, slender. Sp. *T. saucius*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 165, from the Fiji Islands.

Velinus, g. n., Stål, l. c. p. 52. Allied to *Eulyes*; abdomen scarcely dilated behind; head longer than thorax; legs slightly nodulose. Sp. *Reduvius malayus* and *lobatus* (Stål) and *Euaagoras nigrigenu* (A. & S.). B. e. Z. 1866, p. 165.

Ulpus, g. n., Stål, l. c. p. 68. Allied to *Velinus* (Stål); posterior lobe of prothorax bituberculate; penultimate and 2 preceding segments of abdomen produced into short, rounded lobes. Sp. *Montina nodosipes* (Sign.).

Vitumnus, g. n., Stål, l. c. p. 68. Allied to *Cutocoris* (Stål); joint 1 of rostrum scarcely longer than 2; head bituberculate in front. Sp. *Harpactor scenicus* (Stål), incl. vars. *H. sedulus*, *nigripes*, *miniatus*, and *sobrinus* (Stål); *V. oculatus*, sp. n., Stål, l. c. p. 70, Senegal.

Zamolvis, g. n., Stål, l. c. p. 70. Allied to preceding; anterior lobe of prothorax granular; joint 1 of rostrum shorter than 2. Sp. *Harpactor gracilis* (Stål).

Anytus, g. n., Stål, l. c. p. 74. Allied to *Reduvius*; joint 1 of rostrum longer than 2 + 3. Sp. *Harpactor sulcicollis* (Stål).

Vatinus, g. n., Stål, l. c. p. 74. Allied to *Reduvius*; anterior femora spinulose beneath; head above and anterior lobe of prothorax rough. Sp. *Harpactor ochripes* (Stål).

(*Ectinoderida*, Stål.)

Amulius, g. n., Stål, Hem. Afr. iii. p. 99. Allied to *Ectinoderus*; joint 1 of antennæ shortest, 2 longest. Type *Ectinoderus quadripunctatus* (Stål). B. e. Z. 1866, p. 165.

(*Piratida*, Stål.)

Tyddes, g. n., Stål, Hem. Afr. iii. p. 113. Allied to *Phorus* (Stål); spongy part of anterior tibiæ produced in the form of a lamina, rather more than half length of tarsi. Type *Pirates rufus* (Serv.), B. e. Z. 1866, p. 165.

(*Acanthaspidida*, Stål.)

Voconia, g. n., Stål, Hem. Afr. iii. p. 120. Allied to *Conorhinus*; eyes placed about middle of head; eyes and ocelli about an equal distance apart; antennæ short, inserted at eyes; scutellum with a long spine at apex. Sp. *V. pallidipes*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 165, from Moreton Bay.

Veseris, g. n., Stål, l. c. p. 121. Allied to *Sphæridops*; antenniferous tubercles unarmed; joint 1 of antennæ somewhat longer than head, 2 twice as long; joint 2 of rostrum scarcely longer than 3; prosternum excavated, rounded behind. Type *Sphæridops rugosicollis* (Stål), B. e. Z. 1866, p. 166.

Vellejus, g. n., Stål, l. c. p. 122. Allied to *Opsicætus*; ocelli near eyes; anterior and posterior angles of prothorax armed with spines; joint 2 of rostrum scarcely longer than 1; scutellum with a spine obliquely directed upwards. Type *Opsicætus multispinus* (Stål), B. e. Z. 1866, p. 166.

Varus, g. n., Stål, l. c. p. 141. Allied to *Opsicætus*; joint 2 of rostrum scarcely longer than 1. Sp. *Reduvius flavo-annulatus* and *Opinus ochripes* (Stål).

Velitra, g. n., Stål, *l. c.* p. 122. Allied to *Cerilocus* (Stål); prothorax rounded behind; scutellum produced at apex, longer than broad. Sp. *Opinus rubro-pictus* (A. & S.) and *Cerilochus albo-plagiatus* (Stål), B. e. Z. p. 166.

Vescia, g. n., Stål, *l. c.* p. 123. Allied to *Holotrichius*; head with a long porrect spine between antennæ; ocelli 0; joints 1 & 2 of rostrum equal in length. Sp. *V. spicula*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 166, from North Brazil.

(*Salyavatida*, Stål.)

Valentia, g. n., Stål, Hem. Afr. iii. p. 144. Allied to *Petalochirus*; anterior tibiæ not dilated, with a fovea above for the reception of the tarsus; antenniferous tubercles prominent. Type *Petalochirus apetalus* (Vuillefr.), B. e. Z. 1866, p. 166.

(*Stenopodida*, Stål.)

Cannus, g. n., Stål, Hem. Afr. iii. p. 153. Allied to *Diaditus* (Stål); joint 1 of rostrum equal in length to the anteoctular part of head; head armed with 2 spines between antennæ, postocular part short, ocelli elevated. Sp. *Stenopoda capensis* (Stål).

*Bæbius**, g. n., Stål, *l. c.* p. 154. Allied to *Oncocephalus* (Klug); head spinulose behind eyes; anterior lobe of prothorax with 2 spinules on its disk; legs long, slender, anterior femora slightly thickened. Sp. *Stenopoda caffra* (Stål).

Apronius, g. n., Stål, *l. c.* p. 150. Allied to *Oncocephalus*; head beneath with 4 spines; anterior femora much thickened. Sp. *A. rapax*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 167, from Minas Geraes.

Nitornus, g. n., Stål, *l. c.* p. 150 = *Oncocephalus* (Am. & Serv. nec Klug); margin of abdomen with apices of segments more or less produced or sublobate. Type *Oncocephalus desiccatus* (A. & S.), B. e. Z. 1866, p. 167.

Staccia, g. n., Stål, *l. c.* p. 150. Allied to *Stenopoda*; oblong; joint 1 of rostrum = 2+3; head with no apical spine, anteoctular part a little longer than postocular; anterior femora thickened, spinose beneath. Sp. *Oncocephalus dilutus* (Stål) and *S. plebeja*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 166, from Ceylon.

Agylla, g. n., Stål, *l. c.* p. 150. Allied to preceding; apex of head with a porrect spine, anteoctular and postocular parts equal; anterior femora not thickened or spinose. Sp. *A. nigricans*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 166, from Adelaide.

Thelocoris, g. n., Mayr, *l. c.* p. 144 (Verh. &c. *l. c.* p. 364). Allied to *Stenopoda*; head with an obtuse, porrected median lobe; antenniferous tubercles armed with a tooth externally; antennæ with joint 1 thick, 2 longest, slender, 3 shortest; pronotum narrowed in front, with two spines beneath; scutellum with an oblique, elevated spine. Sp. *T. asper*, sp. n., Mayr, *l. c.* p. 146, Taf. 4. fig. 37 (Verh. &c. *l. c.* p. 365), Sydney.

(*Emesida*, Stål.)

Barce, g. n., Stål, Hem. Afr. iii. p. 163. Anterior tibiæ and tarsi one-third or one-fourth shorter than femora; prothorax nearly twice as long as head, produced over mesothorax, slightly constricted in front of produced

* Too near *Bæbius* (Pasc.) in Cerambycides, 1864.

portion. *Sp. B. annulipes*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 168, from Wisconsin.

Carambis, g. n., Stål, l. c. p. 163. Allied to preceding; prothorax once and a half length of head, gradually narrowed behind, slightly constricted near base; apterous; joints 1 and 2 of rostrum equal in length. Type *Emesa caspica* (Dohrn). B. e. Z. 1866, p. 168.

Bargylia, g. n., Stål, l. c. p. 163. Allied to preceding; joint 1 of rostrum much longer than 2. Type *Emesa juncea* (Er.), B. e. Z. 1866, p. 168.

New species :—

Holoptilus vulpes and *nebulosus*, Stål, l. c. p. 46, Caffraria.

Laphyctes pudens, Stål, l. c. p. 57, Natal.

Nagusta punctaticollis, Stål, l. c. p. 59, Senegal.

Phonoctonus immitis, Stål, l. c. p. 62, and *P. subimpictus*, Stål, l. c. p. 63, Guinea.

Reduvius bellicosus, Stål, l. c. p. 76 = *Harpactor marginatus* (Fairm.), Gaboon; *R. cinerascens*, Stål, l. c. p. 83, Cape of Good Hope; *R. inops*, Stål, l. c. p. 84, Guinea; *R. sævus*, Stål, l. c. p. 85, Guinea; *R. cingulatus*, Stål, l. c. p. 90, Caffraria; *R. gulosus*, Stål = *Harp. subflaviceps* (Sign.), l. c. p. 91, Madagascar; *R. æthiopicus*, Stål = *Harp. pictus* (Sign.), l. c. p. 92, Calabar.

Coranus lugubris, Stål, l. c. p. 94, Guinea; *C. oblongiceps*, Stål, ibid., Caffraria; *C. varipes*, Stål, l. c. p. 96, Senegal.

Cleptria oculata, Stål, l. c. p. 109, South-western Africa.

Pirates dichrous, Stål, l. c. p. 116, Senegal.

Platymiris horrida, Stål, l. c. p. 123, Calabar.

Acanthaspis petax, Stål, l. c. p. 128, Guinea; *A. nugax*, Stål, l. c. p. 129, Zanzibar; *A. lugubris*, Stål, l. c. p. 131, Guinea; *A. rapida*, Stål, l. c. p. 131, Senegal; *A. sanguinosa*, Stål, l. c. p. 134, Cape of Good Hope.

Oncocephalus impictipennis, Stål, l. c. p. 156, Nubia.

SALDIDÆ.

Salda morio (Zett.) and *S. flori* (Dohrn) are described as British by Douglas & Scott, Ent. M. Mag. iii. p. 13.

HYDROMETRIDÆ.

The species belonging to this group are referred by Stål (Hem. Afr. iii.) to the 3 families *Hydrometrída*, *Veliída*, and *Hydrobatída*, the first two including each a single African species; the third 2 species belonging to Stål's genus *Tenagogonus*.

Mayr (Reise der Novara, Zool. ii. Hem. p. 169) tabulates the genera of *Hydrometrídæ* known to him; including the three new genera proposed by him in 1865. He also fully describes these new genera and the species of which he gave diagnoses at the same time, and figures the following:—*Hydrometra pectoralis*, Taf. 5. fig. 50; *H. nuda*, fig. 51; *Limnometra inermis*, fig. 53; *L. minuta*, fig. 54; *Brachymetra* (*Halob.*) *albinervus* (A. & S.), fig. 55; *Metrocoris brevis*, fig. 56; and *Rhagovelía* (*Veliá*) *nigricans* (Burm.), fig. 57.

Douglas (Ent. M. Mag. iii. p. 25) refers to the capture of various species

of *Hydrometra* in Britain, including the discovery of *H. odontogaster* (Zett.) and *H. costæ* (H.-Sch.).

Angilia, g. n., Stål, Hem. Afr. iii. p. 167. Allied to *Velia*; joint 1 of posterior tarsi somewhat elongate; head scarcely produced. Sp. *Velia albidotincta* (Stål).

Hydrometra insularis, sp. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 188, and *H. japonica*, Motsch. ibid., Japan.

Hydrometra diversa, sp. n., Mayr, l. c. p. 169, fig. 52 (Verh. &c. l. c. p. 365), Cape of Good Hope.

PELOGONIDÆ.

A single species of this family, *P. marginatus* (Lat.) = *P. caffer* (Stål), is described by Stål, Hem. Afr. iii. p. 171.

GALGULIDÆ.

Of his family *Mononychida* Stål (Hem. Afr. iii. pp. 171-172) tabulates 4 genera, namely, *Mononyx* (Lap.), *Phintius* and *Maitinus* (Stål), and *Peltopterus* (Guér.) = *Scylæcus* (Stål). Of the second and fourth of these genera he describes single species as belonging to the African fauna.

NEPIDÆ.

The insects of this group are referred by Stål (Hem. Afr. iii.) to 3 families, namely *Naucorida*, *Belostomatida*, and *Nepida*. Of the first he tabulates 8 genera, 4 of which have African representatives, namely *Ilyocoris*, *Macrocoris*, *Naucoris*, and *Laccocoris*; the second includes 11 genera, 4 African, *Limnogeton*, *Hydrocyrius*, *Belostoma*, and *Appasus*; *Serphus* (Stål) and *Abedus* (Stål) have uniunguiculate anterior tarsi; and of the third 7 genera are tabulated, 3 of which, namely *Ranatra* and two new ones, include African species. *Borboretrepes* (Stål) = *Limnogeton* (Mayr); and *Ilyotrepes* (Stål) = *Hydrocyrius* (Spin.).

Cryphocricus (Sign.). Mayr (Reise der Novara, Zool. ii. Hem. p. 182) discusses the characters of this genus, which he regards as uniting *Aphelocheirus* with *Naucoris*, so that, he thinks, the family distinction must be given up.

Ranatra. Mayr (l. c. pp. 189-190) enumerates the described species of this genus, and discusses their characters, arranging them in groups founded on the presence of one or two teeth on the anterior femora, or their total absence. He figures the metasternum of *R. elongata* (Fab.), tab. 5. fig. 58, and also *R. chinensis* (Mayr), fig. 59, and *R. (Cercotmetus) parmata* (Mayr), fig. 60.

Ranatra linearis. The pupa of this species was found in mud in the spring of 1866. Douglas, Ent. M. Mag. iii. p. 25.

Ranatra rapax, Stål, sp. n., l. c. p. 189, Senegal.

Laccocoris limigenus, sp. n., Stål, l. c. p. 178, Caffraria.

Hydrocyrius punctatus, sp. n., Stål, l. c. p. 182, Madagascar.

Amorgus, g. n., Stål, Hem. Afr. iii. p. 179. Allied to *Belostoma*; prothorax with the sides flattened, rounded; intraocular portion of head wider than eyes. Type *Belostoma colossicum* (Stål). B. e. Z. 1866, p. 168.

Laccotrepes, g. n., Stål, l. c. p. 186. Allied to *Nepa*; thorax as long as

broad, distinctly sinuate at base; appendages very long; anterior keel of femoral furrow continued to apex. Sp. *Nepa grossa* (Fab.), *vicina* (Sign.), *annulipes* (Lap.), *ater* (Linn.); *L. limosus*, sp. n., Stål, *l. c.* p. 188, Senegal.

Borborophylus, g. n., Stål, *l. c.* p. 188. Allied to preceding; appendages short; anterior keel of femoral furrow suddenly abbreviated towards apex. Sp. *Nepa afzelii* (Stål).

NOTONECTIDÆ.

STÅL (Hem. Afr. iii.) refers the insects of this group to 3 families—*Notonectida*, *Pleida*, and *Sigarida*. *Bothronotus* (Fieb.) = *Enithares* (Spin.).

Douglas enumerates several species of *Corixa* taken in the spring of 1866 (Ent. M. Mag. iii. pp. 26–27), and refers to their mode of life. *C. præusta* (Fieb.) is new to Britain. Douglas mentions 3 species taken by Scott at Dunoon, 2 apparently new, the third probably ♀ of *C. douglasi* (Fieb.).

Power records the occurrence of *Corixa præusta* and *C. limitata* in Britain. Entomologist, iii. p. 78.

On the nocturnal flight of *Corixa falleni* (Fieb.) see F. Löw, Verh. zool.-bot. Ges. in Wien, xvi. p. 946.

HOMOPTERA.

MARSHALL has continued his synoptical revision of the British *Homoptera* (Ent. M. Mag. vols. ii. and iii., see p. 534); but it is still incomplete. The portions published in 1866 include descriptions of *Cicadellina*.

STRIDULANTIA.

STÅL (Hem. Afr. iv.) admits a great number of genera of this family, which he tabulates on pp. 1–9. Many of them are indicated as new. Upon the known genera cited the following synonymic indications are given:—*Cephaloxys* (Sign.) = *Mogannia* (A. & S.); *Fidicina* and *Hemisciara* (A. & S.) are combined, as also *Platypleura* and *Oxypleura* (A. & S.), and *Melampsalta*, *Cicadetta*, and *Tettigetia* (Kolen.). The genus *Tibicen* (Lat.) is divided by Stål into the subgenera *Abrieta*, *Abroma*, *Quintilia*, and *Epora* (Stål).

Dundubia mannifera (Linn.), characterized by Stål, Berl. ent. Zeits. 1866, p. 170 = *Tettigonia vaginata* (Fab.) = *Cicada virescens* (Oliv.).

Gæana festiva (Fab.) = *Cicada thalassina* (Guér.) = *G. consobrina* (White) = *Cic. percheronii* (Guér.). Stål, *l. c.* p. 170.

According to Stål (*l. c.* p. 171), *Cicada viridis* and *bicolor* (Oliv) belong to *Fidicina*; *Cicada angularis* (Germ.), *bimaculata* (Oliv.) = *atrovirens* (Guér.), and *Dundubia fuscipes* (Stål) to *Cicada* (Linn., Stål); and *Cicada marginata* (Oliv.) = *T. viridis* (Fab.) to *Tympanoterpes* (Stål).

Selymbria (Stål). *Cephaloxys nutans* is referred to this genus by Stål, *l. c.* p. 171.

Platypleura cervina (Walk.) = *P. straminea* (Walk.). Stål, *l. c.* p. 172.

Cicada pulchella (Stål) described by Stål, Hem. Afr. iv. p. 255.

New genera :—

Pæcilopsaltria, g. n., Stål, Hem. Afr. iv. p. 2. Allied to *Tettigades*; thorax angulated on each side; anterior femora not spinose, metasternum elevated,

elevated part sulcate, produced and subsinuato-truncate in front. Sp. *Tettigonia 8-guttata* (Fab.) = *Oxypleura sanguiflua* (Walk.); *Cicada capitata* (Oliv.) = *O. subrufa* (Walk.); and *Platypleura hilpa* and *fulviger* (Walk.). B. e. Z. 1866, pp. 168-169.

Hyantia, g. n., Stål, l. c. p. 2. Allied to *Platypleura*; forehead convex, rather prominent at base, depressed above; sides of thorax slightly dilated. Type *Cyclochila honesta* (Walk.). B. e. Z. 1866, p. 169.

Rustia, g. n., Stål, l. c. p. 8. Allied to *Tibicen*; sides of head turning upwards, its anterior margin deeply incised on each side of forehead; apical cells of wings 5. Sp. *R. pedunculata*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 383, Cambodia.

Emathia, g. n., Stål, l. c. p. 8. Inner ulnar area of tegmina not widened towards apex; apical cells 1 and 2 extending equally far forward; thorax widened at base; tympana chiefly exposed; opercula short; anterior femora spinose. Sp. *E. agrotæ*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 172, from Bombay.

Bæturia, g. n., Stål, l. c. p. 9. Allied to *Tibicen*; limb of tegmina and wings very narrow, apical cell 7 longer than 8, inner ulnar cell of equable width. Type *Cicada conviva* (Stål), B. e. Z. 1866, p. 172.

Saticula, g. n., Stål, Berl. ent. Zeits. 1866, p. 172 = *Cicada* group 5 of Hagen. Sp. *S. coriaria*, Stål, l. c. = *Cicada violacea* (Hag. excl. syn.).

Graptosaltria, g. n., Stål, Hem. Afr. iv. p. 3. Allied to *Tacua*; head narrower than thorax, vertex twice as wide as eyes; ocelli distant; thorax narrowed in front; tegmina with 8 apical cells; anterior femora spinose beneath. Sp. *G. colorata*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 169, from Japan?

Scieroptera, g. n., Stål, l. c. p. 4. Allied to *Gæana*; ulnar veins contiguous at base, or united for a short distance; head scarcely narrower than base of thorax; anterior femora thick, spinose beneath. Sp. *Cicada splendidula* (Fab.), *C. crocea* (Guér.), and *Huechys fumigata* (Stål), B. e. Z. 1866, p. 169.

Graptotettix, g. n., Stål, l. c. p. 4. Allied to *Gæana*; tegmina with 10 apical cells; vertex twice as wide as eyes; anterior femora spinose beneath, tibiæ longer than femora. Sp. *G. guttatus*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 170, from the Himalayas.

Leptosaltria, g. n., Stål, l. c. p. 5. Allied to *Dundubia*; cheeks with a tubercle or callosity near the apex; rostrum passing posterior coxæ; opercula short. Sp. *Cicada tuberosa* and *quadrituberculata* (Sign.), *guttularis* (Walk.), B. e. Z. 1866, p. 170.

Cosmopsaltria, g. n., Stål, l. c. p. 5. Allied to *Dundubia*; cheeks without a tubercle; rostrum reaching or passing apex of posterior coxæ; opercula long, passing middle of ventral surface. Sp. *Cicada doryca*, *didyma*, *chlorogaster* (Boisd.), *spinosa*, *obtecta* (Fab.), *flavida* (Guér.) = *Dundubia saturata* (Walk.), *Dundubia lineifera*, *pæclochlora*, and *biguttata* (Walk.), B. e. Z. 1866, p. 170.

Pomponia, g. n., Stål, l. c. p. 6. Allied to preceding; opercula short, somewhat transverse. Sp. *Cicada fusca* (Oliv.), *imperatoria* (Westw.), *Dundubia urania*, *linearis*, and *thalia*, and *Carineta expansa* (Walk.), B. e. Z. 1866, p. 171.

Henicopsaltria, g. n., Stål, l. c. p. 7. Allied to *Thopha*; thorax narrower in front; head wider than front of thorax; ocelli nearly 3 times as far from

each other as from eyes; opercula moderate. Sp. *Cicada eydouxi* (Guér.), *Fidicina fullo* and *nubivena* (Walk.); probably *Cicada perulata* (Guér.) and *Thopha interclusa* (Walk.): B. e. Z. 1866, p. 171.

Nosola, g. n., Stål, l. c. p. 7. Allied to *Proarna*; forehead very prominent in front, obtusely conical; costal margin of tegmina greatly rounded before middle. Sp. *N. paradoxa*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 171, from Bolivia.

New species :—

Platypleura haghundi, Stål, l. c. p. 14, Caffraria; *P. hyaloptera*, Stål, l. c. p. 20, Senegal.

Tettigia barbara, Stål, l. c. p. 24, Tunis.

Tibicen (Abricta) ferruginosus, Stål, l. c. p. 27, Mauritius; *T. (Quintilia) vittiventris*, Stål, l. c. p. 30, Cape; *T. (Q.) maculinervis*, Stål, l. c. p. 33, Cape; *T. (Q.) pallidiventris*, Stål, *ibid.*, Cape; *T. (Q.) sanguinarius*, Stål, l. c. p. 35, Cape; *T. (Q.) umbrosus*, Stål, l. c. p. 40, Cape; *T. (Q.) hamatinus*, Stål, *ibid.*, Cape.

Melampsalta ventricosa, Stål, l. c. p. 45, Senegal.

Cicada stigmosa, Stål, l. c. p. 54, Madagascar = *C. maculigena* (Sign.).

Cicada clara, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 184, *C. nigricosta*, Motsch. *ibid.*, and *C. maculaticollis*, Motsch. l. c. p. 185, Japan.

Fidicina nigrofusca, Motsch. l. c. p. 185, Japan.

FULGORIDÆ.

STÅL (Hem. Afr. iv.) divides this group into numerous sub-families, as indicated in the following table (abridged and modified from pp. 129–131):—

I. Anal area of wings reticulated; keels separating forehead and cheeks continued on sides of clypeus **FULGORIDA.**

II. Anal area very rarely reticulated; clypeus in that case convex, without lateral keels.

A. Posterior tibiæ without a moveable spur.

1. Forehead angulated on each side **EURYBRACHYDIDA.**

2. Forehead not angulated.

a. Clavus rarely granulated, usually acuminate and closed.

* Claval vein not reaching apex; tegmina sometimes abbreviated, or with clavus and corium connate, when the lateral margins of clypeus are keeled.

a. Ocelli 2; margins of clypeus keeled or acute.

DICTYOPHARIDA.

β. Ocelli 3, or sides of clypeus convex, without keels.

CIXIIDA.

† Claval vein continued to its apex, or united to suture near apex; tegmina sometimes abbreviated, or without veins, or with clavus and corium connate, in which case clypeus not keeled at margins.

a. Head narrower than thorax; clypeus keeled at sides; last joint of rostrum elongate **ACHILIDA.**

- β. Head narrow; clypeus not keeled at sides; thorax tricarinata TROPIDUCHIDA.
 γ. Head usually narrow; clypeus sometimes keeled at sides; last joint of rostrum short; thorax angulato-emarginate behind, keelless or with 1 obsolete keel.

DERBIDA.

- δ. Head narrow; clypeus keeled at sides; last joint of rostrum very short; thorax truncate behind.

LOPHOPIDA.

- ε. Head little if at all narrower than thorax; clypeus usually keelless at sides; thorax truncate behind.

ISSIDA.

- ζ. Head broad; clypeus usually keelless at sides; thorax rotundato-sinuate behind, keelless or with 1 obsolete keel.

RICANIDA.

- η. Head little narrower than thorax; clypeus not keeled at sides; tegmina very decumbent ACANONIDA.

- b. Clavus granulated, sometimes subacute and closed, sometimes very obtuse and open FLATIDA.

B. Posterior tibiæ with a moveable spur at apex. . DELPHACIDA.

Of his *Fulgorida*, Stål characterizes a great number of genera, and gives the following synonymic indications:—He adopts the generic name *Laternaria* (ascribed to Linné) for *Fulgora* (auctt.), and applies *Fulgora* to *Hotinus* (A. & S.); *Metanira* (Stål) = *Desudaba* (Walk.); *Calyptoproctus* (Spin.) = *Paralystra* (Walk.). The *Dictyopharida* also include many genera, among which *Simotetix* (Stål) = *Nematophora* and *Rhaphiophora* (Schaum); *Dictyophara* (Germ.) = *Pseudophana* (Burm.), *Chaintus* (Kol.) and *Nersia* (Stål). Of the *Cixiida*, *Bothriocera* (Burm.) = *Adana* (Stål); *Brixia* (Stål) = *Triopsis* (Sign). Of the *Delphacida*, *Delphax* (Fab.) as restricted by Stål = *Aræopus* (Spin.); *Copicerus* (Swartz) = *Holotus* (Guér.) = *Jerula* (Walk.); *Hygiops* (A. & S.) = *Ugyops* (Guér.) = *Bidis* (Walk.); *Tropidocephala* (Stål) = *Nephropsia* (Costa). The *Achilida* include the genera *Achilus* (Kirby), *Helicoptera* (A. & S.), referred to the *Flatides* by Amyot & Serville, and several others proposed by Stål; Stål's genus *Diacira* receives the new name of *Sevia* (l. c. p. 181). Among the *Tropiduchida* all the tabulated genera are of Stål's own proposition; but he also refers to this group *Monopsis* (Spin.), *Leusaba*, *Hiracia*, *Epora*, and *Ficarasa* (Walk.), and *Eutropistes* (Schaum); *Ficarasa* (Walk.) is very nearly allied to *Tropiduchus* (Stål) = *Euria* (Walk.). Among the *Derbida*, *Herpis* (Stål) is changed to *Lamenia* (Stål). The *Lophopida* include *Lophops* and *Elasmocelis* (Spin.), *Lacusa* and *Pyrilla* (Stål); the latter = *Zamila* (Walk.), *Serida* (Walk.), and *Corethrura* (Hope); *Lophops* = *Cystingocephala* (Stål). The *Issida* include a great number of genera, several of which are new. Among the *Ricanida*, *Nogodina* (Stål) = *Mindura* (Stål) = *Miriza* (Stål); *Ricania* (Germ.) = *Scolypopa* (Stål), and includes *Pochazia* (A. & S.), *Tarundia* (Stål), *Mukvia* (Stål), *Deraulax* (Sign.), *Pocharica* (Sign.), *Pochazoides* (Sign.), and *Privesa* (Stål); *Pochazia oculata* (Sign.) changed to *Ricania lucifera* (Stål), l. c. p. 228. Of the *Flatida*, *Phrommia* (Stål) = *Flata* (A. & S.); *Flata* (Fab., Stål) = *Colobesthes* (A. & S.), and includes *Cromna* (Walk.) and probably *Phyllyphanta* (A. & S.); *Pseudoftata* (Guér.) = *Dalapax* (A. & S.); *Flatoides*

(Guér.) = *Phalzenomorpha* (A. & S.); *Flatoides hyalinipennis* (Sign.) change to *F. hyalinopterus*.

Of the European genera of *Fulgoridæ* FIEBER has published analytical tables (Verh. zool.-bot. Ges. in Wien, xvi. pp. 498-500, and 518-521), from which the following are abridged. Most of the genera are new:—

- I. Base of posterior tarsi (apex of tibiæ) with a moveable subulate or lanceolate spur (*Delphacini*, l. c. pp. 518-521).
- A. Basal joint of antennæ broadly lamellar, much longer than joint 2.
1. Spur of posterior tarsi subulate; forehead bicarinate; posterior tibiæ with 3 spines. *Asiraca* (Latr.).
 2. Spur three-cornered; forehead with a median keel; posterior tibiæ with 2 spines. *Arceopus* (Spin.).
- B. Basal joint of antennæ clubbed or cylindrical, shorter than joint 2.
1. Lateral keels of pronotum reaching its posterior margin.
 - a. Vertex long, triangular. *Nephropsia* (Costa).
 - b. Vertex elongate, quadrangular.
 - * Basal joint of antennæ more than two-thirds the length of joint 2. *Megamelus* (g. n.)¹.
 - † Basal joint of antennæ about one-third the length of joint 2.
 - a. Forehead narrow, long. *Stenocranus* (g. n.)².
 - β. Forehead elongate, almost hexagonal.
 - Kelisia* (g. n.)³.
 2. Lateral keels of pronotum not reaching its posterior margin.
 - a. Vertex quadrangular, elongate.
 - * Forehead elongate, nearly hexagonal. . . *Chloriona* (g. n.)⁴.
 - † Forehead elongate, rectangular. *Eueides* (g. n.)⁵.
 - b. Vertex quadrangular, equilateral.
 - * Forehead without a keel, or with a rudimentary median keel.
 - a. Antennæ slender, reaching the end of the clypeus, basal joint twice as long as thick. . . . *Kormus* (g. n.)⁶.
 - β. Antennæ short, basal joint rather longer than thick.
 - Euryisa* (g. n.)⁷.
 - † Forehead with a distinct median keel.
 - a. Joint 2 of antennæ conical; forehead elongate, almost hexagonal. *Conomelus* (g. n.)⁸.
 - β. Joint 2 of antennæ cylindrical; forehead elongate, almost rectangular. *Delphax* (Fab.)⁹.
 - † Forehead with 2 distinct or obtuse keels.
 - a. Frontal keels (P), springing from a furcate stem on the clypeus.
 - Dicranotropis* (g. n.)¹⁰.

¹ P. 519. *Delphax notulus* (Germ.). ² Ibid. *D. lineolus* (Germ.) and *fusco-vittatus* (Stål). ³ Ibid. *D. guttula* (Germ.). ⁴ Ibid. *D. unicolor* (H.-Sch.), *smaragdula* (Stål), *stenoptera* (Flor), and a new species (tabulated p. 522).
⁵ Ibid. *Delphax basilinea* (Germ.) and *E. speciosa* (Boh.). ⁶ P. 520. Sp. n. ⁷ Ibid. *Delphax lineata* (Sign.), *pyrenæa* (Mink), and 1 sp. n. (tabulated p. 523). ⁸ Ibid. *D. limbatus* (Fab.). ⁹ Of this genus (*Delphax*) Fieber tabulates 14 new species (l. c. pp. 524-529); he refers to it *D. striatella* (Fall.), *elegantula* (Boh.), *bohemanii* (Stål), *denticauda* (Boh.), &c.
¹⁰ P. 521. *D. hamata* (Boh.), *flavipes* (Sign.), and 1 sp. n.

- β. Frontal keels 2, nearly united on the clypeus.
 - a. Frontal keels trenchant, parallel to the vertex.
 - Achorotile* (g. n.)¹.
 - b. Frontal keels filiform or obtuse *Stiroma* (g. n.)².
 - c. Vertex pentagonal.
 - * Forehead elongate-pentagonal, with a sharp median keel.
 - Delphacinus* (g. n.)³.
 - † Forehead elongate-pentagonal, with 2 sharp keels.
 - Jassidæus* (g. n.)⁴.
 - ‡ Forehead broadly pentagonal, with slight traces of 2 keels.
 - Metropis* (g. n.)⁵.
- II. Base of posterior tarsi without spurs (*l. c.* pp. 498-500).
- A. Ocelli present.
 - 1. Vertex conically prominent. *Phantia* (g. n.)⁶.
 - 2. Vertex not conically prominent.
 - a. The 3 sectors simple, first bending strongly inwards forming a lanceolate cell with the costa *Meenoplus* (g. n.)⁷.
 - b. The 3 sectors weak, straight, 1 and 3 forked.
 - * Forehead and clypeus not separated by a transverse furrow.
 - Hemitropis* (g. n.)⁸.
 - † Forehead separated from clypeus by a distinct transverse furrow.
 - a. Posterior tibiæ unarmed *Entithena* (g. n.)⁹.
 - β. Posterior tibiæ with a spine behind the middle.
 - Cixidia* (g. n.)¹⁰.
 - B. Ocelli wanting.
 - 1. Anterior femora and tibia elongated and compressed.
 - Ranissus* (g. n.)¹¹.
 - 2. Anterior femora and tibiæ not elongated . . (*Issides*.)

(*Fulgorida*, Stål.)

Fulgora laternaria. Moufflet says that he observed the emission of a vivid light from the cephalic-process of this species, near Soleda in Mexico. His observations were made in June. Bull. Soc. Ent. Fr. 1865, p. lxii.

Poiocera semilimpata and *maculosa* (Walk.) = *Scaralis maculosa* (Stål). Stål, Berl. ent. Zeits. 1866, p. 389.

Metanira thibe (Stål) = *Desudaba psittacus* (Walk). Stål, *ibid*.

Cercopis rugosa (Thunb.) = *Polydictya limbata* (Oliv.). Stål, *l. c.* p. 390.

New genera and species :—

Cornelia, g. n., Stål, Hem. Afr. iv. p. 142. Allied to *Belbina* (Stål); vertex scarcely wider than eyes, very narrowly produced into cephalic process, which is slender, porrect, slightly recurved and acute. Sp. *C. nympa*, sp. n., Stål, *l. c.* p. 142, Madagascar.

Artacie, g. n., Stål, *l. c.* p. 132. Cheeks with a longitudinal percurrent keel

¹ P. 521. *D. albosignata* (Dahlb.). ² *Ibid.* *D. mæsta* (Boh.), *adelpa* (Flor), *mutabilis* (Boh.), and 1 sp. n. ³ P. 520. *D. mesomelas* (Boh.). ⁴ P. 521. Sp. n. ⁵ *Ibid.* 2 n. sp. ⁶ P. 498. *Pœcilopectera subquadrata* (H.-Sch.). ⁷ *Ibid.* 1 n. sp. ⁸ P. 499. 1 n. sp. ⁹ *Ibid.* *Cixius musivus* (Germ.). ¹⁰ *Ibid.* *Cixius confinis* (Zett.). ¹¹ *Ibid.* 4 n. sp. 1866. [VOL. III.]

in front of eyes, produced into a triangular horizontal plate. Sp. *Flata hæmoptera* (Perty), B. e. Z. 1866, p. 389.

Aracynthus, g. n., Stål, l. c. p. 136. Allied to *Polydictya*; tegmina long, gradually narrowed to apex; vertex transverse, more than twice as wide as eyes; legs simple, posterior tibiæ 5-spinose. Sp. *Fulgora stinguinea* (Oliv.), B. e. Z. 1866, p. 389.

Acraphia, g. n., Stål, l. c. p. 136. Allied to *Glagovia*; forehead transverse, flat, with a transverse keel near apex. Sp. *Poiocera perspicillata* and *turca* (Fab.), and probably *P. stoica*, *pavonina*, *germari*, and *fastuosa* (Gerst.), B. e. Z. 1866, p. 390.

Acomonia, g. n., Stål, l. c. p. 137. Allied to *Poiocera*; anterior legs simple; vertex more or less sinuate at base; head scarcely narrower than thorax; forehead gradually enlarged above the apical lobes. Sp. *Poiocera dichroa* and *maculata* (Germ.) and *P. sepulchralis* (Stål); probably also *P. amena*, *carbonaria*, *ægrotata*, *punicæ*, and *amabilis* (Gerst.): B. e. Z. 1866, p. 390.

Domitia, g. n., Stål, l. c. p. 138. Allied to *Poiocera*; anterior legs simple; thorax with no transverse keel behind; clypeus with a percurrent longitudinal keel, its disk somewhat convex. Sp. *Poiocera constellata* (Guér.) and *P. basistella* (Walk.), B. e. Z. 1866, p. 390.

Poblicia, g. n., Stål, l. c. p. 138. Allied to preceding; clypeus with no percurrent keel, slightly impressed longitudinally from base to middle, in the same plane with the forehead. Sp. *Poiocera misella* (Stål), B. e. Z. 1866, p. 390.

Aburia, g. n., Stål, l. c. p. 138. Allied to preceding; clypeus inflexed from base; anterior margin of thorax rotundate, touching the whole posterior margin of vertex. Sp. *Poiocera coleoptrata* (Gerst.) and *P. olivacea* (Blanch.), B. e. Z. 1866, p. 390.

Aliphera, g. n., Stål, l. c. p. 138. Allied to preceding genus; anterior margin of thorax truncated in the middle, and only at this part touching posterior margin of vertex. Sp. *Poiocera luctuosa* (Spin.) and probably *P. marginalis* (Gerst.), B. e. Z. 1866, p. 390.

Crepusia, g. n., Stål, l. c. p. 138. Allied to *Poiocera*; anterior legs simple; thorax behind with a transverse keel, its anterior margin truncate in middle. Sp. *Poiocera servillei* (Guér.) and *P. nuptialis* (Gerst.), B. e. Z. 1866, p. 391.

Menenia, g. n., Stål, l. c. p. 139. Allied to *Lystra*; anterior margin of thorax unarmed behind posterior angles of vertex; forehead somewhat projecting above anterior margin of vertex. Sp. *Lystra hypoleuca* (Sign.), B. e. Z. 1866, p. 391.

Scaralis puella, sp. n., Stål, Berl. ent. Zeits. 1866, p. 389.

(*Dictyopharida*, Stål.)

Cajeta, g. n., Stål, Hem. Afr. iv. p. 150. Allied to *Dichoptera*; costa simple, marginal; tegmina with few transverse veins; posterior tibiæ unarmed. Sp. *C. singularis*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 391, North Australia.

Mnemosyne, g. n., Stål, l. c. p. 150. Allied to preceding; posterior tibiæ bispinose. Sp. *M. cubana*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 391, Cuba.

Metaurus, g. n., Stål, l. c. p. 151. Allied to *Anagnia* (Stål); apical two-thirds of tegmina very densely reticulated; head with a short, slender pro-

cess; forehead tricarinate; clypeus unicarinate; posterior tibiæ 6-spinose. Sp. *M. reticulatus*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 391, Cambodia.

Sicoris, g. n., Stål, l. c. p. 151. Allied to *Dictyophora*; thorax unicarinate, gradually elevated in the middle; head produced; forehead and scutellum tricarinate; posterior tibiæ 5-spinose. Sp. *Dictyophora gayi* (Spin.). B. e. Z. 1866, p. 392.

Aluntia, g. n., Stål, l. c. p. 160. Allied to *Dictyophara* (= *Pseudophana*); joint 2 of antennæ oblong, cylindrical; tegmina throughout with transverse veins, emitting branchlets. Sp. *Fulgora schimperii* (Guér.).

Capena, g. n., Stål, l. c. p. 160. Allied to *Almana* (Stål), anterior legs simple. Sp. *C. fuscinervis*, sp. n., Stål, l. c. p. 161, Cape of Good Hope.

Lyncides, g. n., Stål, l. c. p. 162. Allied to *Risius* (Stål); tegmina slightly passing apex of abdomen; wings present. Sp. *Hiracia coquerelii* (Sign.).

Dictyophara validirostris, sp. n., Stål, l. c. p. 155, *D. africana*, Stål, l. c. p. 157, and *D. serena*, Stål, l. c. p. 158, Sierra Leone.

Anagnia afra, sp. n., Stål, l. c. p. 159, Senegal.

(*Cixiida*, Stål.)

Borysthenes, g. n., Stål, l. c. p. 165. Allied to *Bothriocera*; forehead widened to its apex, gradually narrowed above, sides dilated; eyes sinuated in front below middle. Sp. *Cixius finitus* (Walk.). B. e. Z. 1866, p. 392.

Bema, g. n., Stål, l. c. p. 166. Allied to *Brixia* (Stål); abdomen with a long, filiform, clavate process on each side at base; forehead with a longitudinal keel; tegmina gradually widened towards apex. Sp. *Cixius clarescens* (Walk.). B. e. Z. 1866, p. 392.

Achæmenes g. n., Stål, l. c. p. 170. Allied to *Pintalia* (Stål); tegmina rotundato-ampliate towards base, their lateral margins parallel. New sp. *A. costalis*, Stål, l. c. p. 170, *A. notatinervis* and *dilutus* Stål, l. c. p. 171, Caffraria; *A. ornatipennis*, Stål, l. c. p. 171, Natal.

Anigrus, g. n., Stål, l. c. p. 172. Allied to *Duilus* (Stål); veins of tegmina without granules; clavus distinctly and very densely granulated at the inner vein. Sp. *Delphax lugens* (Stål); *Anigrus sordidus*, sp. n., Stål, l. c. p. 173, Caffraria.

Meenophus (g. n.) *albosignatus*, Fieber, l. c. p. 510, Brussa, Greece.

Hemitropis (g. n.) *bipunctata*, Fieber, l. c. p. 510, Malaga.

(*Delphacida* Stål.)

Delphax. T. J. Bold records the capture of several of the rare British species of this genus near Newcastle. Ent. M. Mag. ii. p. 207. See also p. 235.

Liburnia, g. n., Stål, Hem. Afr. iv. p. 179 = *Delphax* (auct.) + *Embolophora* (Stål olim). Head narrower than thorax, cheeks oblique, not parallel; antennæ short, joint 1 shorter than 2; tegmina oblong, flat; posterior tibiæ bispinose. Sp. *Embolophora monoceros* (Stål), *Delphax vitticollis*, *maculigera*, and *lautipes* (Stål), and *Cixius centralis* (Sign.).

New species:—

Areopus (sic) *minki*, Fieber, l. c. p. 522, Crefeld.

Chloriona (g. n.) *glaucescens*, Fieber, l. c. p. 522, Bohemia.

Kormus (g. n.) *artemisie* (Becker, MS.), Fieber, l. c. p. 523, Sarepta.

Eurya (g. n.) *lurida*, Fieber, *l. c.* p. 523, South of France.

Delphax. Of this genus as restricted by him Fieber describes the following 14 new species:—*D. uncinata*, *l. c.* p. 524, Malaga; *D. albostrigata* (Mayer-Dür, MS.), p. 525, Spain; *D. propingua*, *ibid.*, South of Europe; *D. concinna*, *ibid.*, Bohemia; *D. mulsanti*, p. 526, South of France; *D. modesta*, *ibid.*, France; *D. reyi*, p. 527, South of France; *D. fumipennis*, *ibid.*, Biarritz; *D. cognata*, *ibid.*, Germany; *D. flaviceps*, *ibid.*, Switzerland; *D. spinosa* (Mink), p. 528, Germany; *D. limitata*, *ibid.*, Austria; *D. tapina*, *ibid.*, South of France; and *D. concolor*, p. 529, Biarritz.

Metropis (g. n.) *mayri*, Fieber, *l. c.* p. 529, Austria and Switzerland; *M. maurus* (Mink, MS.). Fieb. *l. c.* p. 530, Pyrenees.

Dicranotropis (g. n.) *beckeri*, Fieber, *l. c.* p. 530, Sarepta.

Stiroma (g. n.) *affinis*, Fieber, *l. c.* p. 531, Switzerland.

(*Achilida*, Stål.)

Faventia, g. n., Stål, Hem. Afr. iv. p. 181. Anterior tibiæ longer than femora and trochanters; forehead and clypeus with a distinct longitudinal keel; posterior tibiæ unispinose. Sp. *Cixius pustulatus* (Walk.).

Iva, g. n., Stål, *l. c.* p. 183. Allied to *Sevia* (Stål); forehead and clypeus slightly excavated, with an obtuse longitudinal keel. Sp. *I. nigro-signata*, sp. n., Stål, *l. c.* p. 183, Caffraria.

Cnidus, g. n., Stål, *l. c.* p. 185. Allied to *Helicoptera*; eyes oval, distinctly sinuated beneath. Sp. *Cixius*? *variegatus* (Stål).

(*Tropiduchida*, Stål.)

Gastrinia vaginata (Stål) = *Hiracia lacerda* (Sign.). Stål, Berl. ent. Zeits. 1866, p. 393.

Rudia, g. n., Stål, Hem. Afr. iv. p. 187. Allied to *Numicia*; head short, not prominent in front of eyes; vertex arcuate, very short; forehead not keeled; sides of clypeus carinate at base; posterior tibiæ trispinose. Sp. *Achilus dilutus* (Stål) and perhaps *A. bicinctus* (Spin.).

Numicia, g. n., Stål, *l. c.* p. 189. Allied to *Tropiduchus*; radial vein of tegmina furcate at or beyond middle; vertex produced; forehead distinctly, clypeus obsolete keeled. Sp. *N. herbida* and *N. fusco-picta*, sp. n., Stål, *l. c.* p. 190, Sierra Leone.

Clardea notatula, sp. n., Stål, *l. c.* p. 191, Bourbon.

(*Derbida*, Stål.)

Fescennia, g. n., Stål, Hem. Afr. iv. p. 198. Allied to *Phenice*; head and thorax of equal width. Sp. *Phenice bivittata* (Coq.) changed to *F. laticeps* (Stål), p. 199.

(*Lophopida*, Stål.)

Lophops angustipennis, sp. n., Stål, *l. c.* p. 202, Senegal.

(*Issida*, Stål.)

Herophile, g. n., Stål, Hem. Afr. iv. p. 203. Allied to *Hemisphærius*; anterior femora dilated beneath. Sp. *Hemisphærius latipes* (Stål), B. e. Z. 1866, p. 392.

Falcidius, g. n., Stål, *l. c.* p. 205. Allied to preceding; costa scarcely if at all dilated towards base; radial vein forked near base, outer ulnar vein rather

further from base; vertex wider than eyes. Sp. *Issus apterus* (Fab.), B. e. Z. 1866, p. 392.

Scantinius, g. n., Stål, *l. c.* p. 206. Wings developed, deeply incised at apex; last joint of rostrum rather long; clavus and suture distinct; legs, especially anterior, long, anterior femora and tibiæ dilated, posterior tibiæ bispinose. Sp. *Issus bruchoides* (Walk.), B. e. Z. 1866, p. 392.

Tempsa, g. n., Stål, *l. c.* p. 208. Allied to *Picumna* (Stål); posterior tibiæ bispinose; inner ulnar vein forked. Sp. *Eupilis malaya* (Stål) and *Issus arctatus* (Walk.), B. e. Z. 1866, p. 393.

Thabena, g. n., Stål, *l. c.* p. 208. Allied to *Tetrica* (Stål); head rather narrower than thorax, vertex narrow; forehead longer than broad; body subdepressed. Sp. *Issus retractus* (Walk.), B. e. Z. 1866, p. 393.

Eteocles, g. n., Stål, *l. c.* p. 211. Allied to *Mythimna* and *Telmessus* (Stål); forehead truncate at base; clavus and its suture distinct. Sp. *E. fecarius*, sp. n., Stål, *l. c.* p. 211, Cape of Good Hope.

Telmessus, g. n., Stål, *l. c.* p. 211. Allied to *Hysteropterum*; posterior tibiæ unispinose; forehead emarginate at base. Sp. *Centrotus fenestratus* (Thunb.).

Sarnus, g. n., Stål, *l. c.* p. 204. Allied to *Hysteropterum*; vertex lowered in middle; ulnar veins forked nearly at middle of tegmina; posterior tibiæ bispinose and joint 1 of posterior tarsi very short. Sp. *Issus decipiens* (Spin.), B. e. Z. 1866, p. 392.

Durium cafferum, Stål, *l. c.* p. 216, Caffraria.

Ravissus (g. n.) *leptopus*, Fieber, *l. c.* p. 510, Brussa; *R. acucephalus*, Fieb. *ibid.*, *R. platypus* and *discrepans*, Fieb. *l. c.* p. 511, Greece.

(*Tettigometrides* = *Issida*, Stål, ex parte.)

Tettigometra. Signoret publishes (Ann. Soc. Ent. Fr. 4^e sér. tome vi. pp. 139-160) a revision of the species of this genus, which he characterizes in detail, and divides into the following subgenera:—

1. Head produced more or less triangularly beyond the eyes.

a. Elytra not margined on the outside.

* Antennæ of 3 joints *Mitricephalus*.

† Antennæ of 2 joints *Tettigometra*.

b. Elytra margined. *Eurychila*.

2. Head only forming a narrow border, more or less rounded.

Brachycephalus.

The generic details are represented on plate 1. figs. *a-k*. The total number of species described by Signoret is only 25, whilst Fieber, in his paper on *Tettigometra*, with which Signoret could not have been acquainted, records 23 European species. Of described species the subgenus *Mitricephalus* includes *T. sulphurea* (Muls.); in *Tettigometra* we have *T. obliqua* (Panz.), *umbrosa* (Germ.), *funesta* (Stål) = *Isthmia undata* (Walk.), *patruelis* (Stål), *virescens* (Panz.), *impressopunctata* (L. Duf.), *lata* (H.-Sch.), *atra* (Hagenb.), *distincta* (Luc.), and *impressifrons* (Muls.). *Eurychila* and *Brachycephalus* consist of new species. *T. piccola* (Burm.) is unknown to the author. The following known species are figured by Signoret:—*T. funesta* (Stål), pl. 1. fig. 2; *T. patruelis* (Stål), fig. 3; *T. impressifrons* (Muls.), fig. 6; and *T. lata* (H.-Sch.), fig. 7.

Tettigometra impressopunctata (Duf.)? is characterized as British by Marshall, Ent. M. Mag. iii. p. 149.

Tettigometra. The following 13 new species of this genus are described by Signoret (Ann. Soc. Ent. Fr. 4^e sér. tome vi.):—*T. (Mitriocephalus) longiceps*, p. 141, pl. 1. fig. 1, from Switzerland; *T. bimaculata*, p. 145, *T. (Eurychila) bifoveolata*, p. 157, France; *T. scutellata*, p. 145, from Spain; *T. parviceps*, p. 147, pl. 1. fig. 4, from Algeria and Jerusalem; *T. callosa*, p. 148, pl. 1. fig. 5, from Greece and the Caspian; *T. ventralis*, p. 149, from Algeria; *T. pallicornis*, p. 153, from Sarepta; *T. (Eurychila) decorata*, p. 156, pl. 1. fig. 8, *T. (E.) brunnea*, p. 157, and *T. (Brachycephalus) lucida*, p. 158, from Algeria; *T. (B.) longicornis*, p. 159, pl. 1. fig. 9, from Dalmatia; and *T. (B.) baranii*, p. 159, from Nice.

(*Ricaniida*, Stål.)

Laberia, g. n., Stål, *l. c.* p. 234. Tegmina entirely, densely, and irregularly reticulated; veins of costal membrane anastomosing. Sp. *L. palliata*, sp. n., Stål, *l. c.* p. 234, Mauritius.

Salona, g. n., Stål, *l. c.* p. 220. Allied to *Bladina* (Stål); costa remote from margin, veins of clavus united at its middle; anal cell of wings without a vein. Sp. *Cixius panorpæpennis* (Guér.). B. e. Z. 1866, p. 393.

Pucina, g. n., Stål, *l. c.* p. 221. Allied to *Gætulia* (Stål); head not prominent in front of eyes; ulnar and radial veins furcate rather before middle of corium; posterior tibiæ bispinose. Sp. *Cixius pellucidus* (Guér.). B. e. Z. 1866, p. 393.

Ricania immarginata, sp. n., Stål, *l. c.* p. 224, of unknown origin; *R. quinquefasciata*, Stal, *l. c.* p. 225, Senegal; *R. venusta*, Stål, *l. c.* p. 228, Madagascar.

(*Flatida*, Stål.)

Nephesa rosea (Spin.) = *Pæciloptera completa* (Walk.). Stål, Berl. ent. Zeits. 1866, p. 393.

Ityræa, g. n., Stål, Hem. Afr. iv. p. 235. Allied to *Phromnia* (Stål) = *Flata* (A. & S.); joint 2 of antennæ about 4 times as long as 1, compressed, broadly sulcate on each side. Sp. *Flata nigrocineta* (Walk.). B. e. Z. 1866, p. 393.

Lechæa, g. n., Stål, *l. c.* p. 236. Allied to *Carthæa* (Stål); forehead and cheeks produced; tegmina ample, with a regular arcuate series of transverse venules towards apex; costal area transversely venose, with some anastomosing veins. Sp. *Pæciloptera dentifrons* (Guér.). B. e. Z. 1866, p. 393.

Byllis, g. n., Stål, *l. c.* p. 237. Allied to *Calauria*; head truncate; tegmina with a few irregularly scattered transverse veins, inner ulnar vein forked before middle of corium, radial vein united with costa at middle. Sp. *Pæciloptera subgranulata* (Stål). B. e. Z. 1866, p. 394.

Cyardu, g. n., Stål, *l. c.* p. 237. Allied to *Seliza* (Stål); tegmina narrow, narrowed towards apex, corium nearly twice as long as clavus, with very few transverse venules; costal area with some transverse veins. Sp. *Pæciloptera acuminipennis* (Spin.). B. e. Z. 1866, p. 394.

Atella, g. n., Stål, *l. c.* p. 238. Allied to *Nephesa*; antennæ very short, not reaching anterior margin of cheeks; tegmina with an oblique transverse vein between inner ulnar vein and inner branch of outer ulnar vein, with no subapical series of venules. Sp. *Nephesa gemmifera*, *guttulata*, and *cicatricosa* (Stål), *Cromna peracuta* (Walk.), *Ricania cyanescens* (Le Guil.), *Cicada pus-tulata* (Don.), &c. B. e. Z. 1866, p. 394.

Cæsonia, g. n., Stål, *l. c.* p. 244. Allied to *Ormenis* (Stål); head produced, narrower than thorax. Sp. *Colobesthes bellulus* (Stål).

Calauria, g. n., Stål, *l. c.* p. 245. Allied to preceding; corium hardly longer than clavus, the latter attaining, or nearly attaining, the apical commissural angle. Sp. *C. sulciceps*, sp. n., Stål, *l. c.* p. 245, Cape of Good Hope.

Latois, g. n., Stål, *l. c.* p. 247. Allied to *Gyaria* (Stål); vertex not concealed by thorax; scutellum tricarinate; clavus without transverse veins. Sp. *Nephesa antica* (Sign.).

Atracis, g. n., Stål, *l. c.* p. 250. Allied to *Flatoides*; posterior tibiæ unispinose. Sp. *Flata pyralis* (Guér.), *Phalenomorpha nietneri* and *mira* (Stål), *Elidiptera pruinosa* and *inæqualis* (Walk.); new sp. *A. feccaria* and *A. impura*, Stål, *l. c.* p. 251, Sierra Leone.

Phrommia seminigra, sp. n., Stål, *l. c.* p. 240, Madagascar.

Flata nigro-punctata, sp. n., Stål, *l. c.* p. 243, Madagascar (= var. *Phyllyphanta nivea*, Sign.).

Flatoides verruculatus, sp. n., Stål, *l. c.* p. 249, Madagascar.

MEMBRACIDÆ.

STÅL (Hem. Afr. iv.) includes the species of this family among his *Jassida*, with the exception of the doubtful genus *Machærota*, which constitutes a subfamily of his *Cercopida*. The wisdom of this arrangement seems doubtful. Of the 7 subfamilies admitted by Stål among his *Jassida*, 6 belong to the present group; they are tabulated as follows (*l. c.* pp. 82-83):—

I. Thorax usually very declivous in front, very convex or elevated; vertex declivous; face strongly inflexed, subhorizontal, lateral margins usually not dilated. [*Membracida*.]

A. Scutellum 0 or obsolete, not extended beyond metanotum.

1. Posterior tarsi small, shorter than anterior . . . HOPLOPHORIDA.

2. Tarsi of equal length, or posterior longer than anterior.

a. Tibiæ and sides of face dilated, foliaceous . . MEMBRACIDA.

b. Tibiæ simple.

* Tegmina entirely membranaceous, veins distinct.

a. Third apical cell elongate, never petiolate. DARNIDA.

β. Third apical cell subtriangular, petiolate, adjacent cells contiguous SMILIDA.

† Tegmina coriaceous and opaque, with scarcely distinguishable veins externally TRAGOPIDA.

B. Scutellum distinct, produced beyond metanotum. CENTROTIDA.

II. Thorax slightly convex; lateral margins of face usually dilated and partially concealing anterior coxæ JASSIDA.

Centrotus malleator and *malleolus* (Walk.) = *obesus* (Fairm.); *C. niveiplaga* (Walk.) = *hamifer* (Fairm.); *C. megaceros* (Walk.) = *urus* (Fairm.); and *C. terminalis* and *vicarius* (Walk.) = *taurus* (Fab.). Stål, Berl. ent. Zeits. 1866, p. 386.

Cicada crux (Linn.) = *Hemiptycha crux* is described from the type by Stål, Berl. Ent. Zeits. 1866, p. 389.

Centrochares, g. n., Stål, Hem. Afr. iv. p. 86; tibiæ foliaceous; thorax cor-

nute above lateral angles, posterior process bilobate. Sp. *Pterygia horrifica* (Walk.), B. e. Z. 1866, p. 386.

Leptobelus, g. n., Stål, l. c. p. 86. Allied to *Centrotus*; outer discoidal cell of tegmina petiolate; wings with 4 apical cells; disk of thorax elevated, with a slender horn on each side, and a slender posterior process distant from body. Sp. *Centrotus gazella* (Fairm.) and *C. dama* (Germ.), B. e. Z. l. c.

Monobelus, g. n., Stål, l. c. p. 87. Allied to preceding; thorax slightly convex above, lateral angles unarmed, posterior process straight, not distant from body. Sp. *Centrotus fasciatus* (Fab.) and *C. flavidus* (Fairm.), B. e. Z. 1866, p. 386.

Cymbomorpha, g. n., Stål. Berl. ent. Zeits. 1866, p. 388 (= *Smilia*, Fairm., nec Germ., nec Am. & Serv.). *C. amazona*, sp. n., Stål, l. c. p. 388, North Brazil.

Xiphistes, g. n., Stål, l. c. p. 85. Allied to *Oxyrhachis*; posterior thoracic process triquetrous, not compressed and widened posteriorly; wings with 4 apical cells. Sp. *Oxyrhachis furcicornis* (Germ.) and *Centrotus sulcicornis* (Thunb.).

Acanthophyes, g. n., Stål, l. c. p. 89. Allied to *Centrotus*; posterior process of thorax distant from scutellum, slender, unarmed, but bisinuate beneath. Sp. *Centrotus hamifer*, *curvidens*, and *chloroticus* (Fairm.); *A. albipennis*, sp. n., Stål, l. c. p. 89, Caffraria.

Leptocentrus, g. n., Stål, l. c. p. 90. Allied to *Centrotus*; posterior process of thorax distant from scutellum, slender; outer discoidal cell of tegmina not petiolate; wings with 4 apical cells; tibiae simple. Sp. *Centrotus taurus* (Fab.), *C. antilope* (Stål), *C. bos* and *C. lama* (Sign.).

Acanthuchus, g. n., Stål, l. c. p. 87. Allied to *Centrotus*; thorax much elevated, cornute above lateral angles, longitudinal keel dilated or raised into a tooth, horns triquetrous; intracostal area of tegmina punctate; wings with 4 apical cells. Sp. *Centrotus trispinifer* (Fairm.). B. e. Z. 1866, p. 386.

Daumus, g. n., Stål, l. c. p. 87. Allied to preceding; longitudinal keel of thorax not elevated between lateral horns, which are triquetrous at base, compressed above, broad and truncate at apex. Sp. *Centrotus tasmanica* (Fairm.), B. e. Z. 1866, p. 386.

Sextius, g. n., Stål, l. c. p. 88. Allied to *Centrotus*; apical cells of tegmina more or less divided; wings with 4 apical cells; lateral horns of thorax not compressed, triquetrous, thorax with a longitudinal keel. Sp. *Centrotus virescens* (Fairm.) and *Ceresa suffusa* (Walk.). B. e. Z. 1866, p. 387.

Centrotypus, g. n., Stål, l. c. p. 88. Allied to preceding; apical cells of tegmina 5, entire; keel scarcely or indistinctly continued along thorax. Sp. *Centrotus flexuosus* (Fab.), *assamensis*, *javanensis*, *neuter*, and *obesus* (Fairm.), B. e. Z. 1866, p. 387.

Sipylus, g. n., Stål, l. c. p. 89. Allied to *Centrotus*; wings with 3 apical cells; posterior process of thorax straight, short, touching scutellum, form broadly triangular; posterior trochanters armed with spinules within. Sp. *Centrotus crassulus* (Stål), B. e. Z. 1866, p. 387.

Tricentrus, g. n., Stål, l. c. p. 89. Allied to *Gargara*; thorax cornute above lateral angles; posterior trochanters spinulose within. Sp. *Centrotus fairmairei* and *sobrinus* (Stål), B. e. Z. 1866, p. 387.

Xiphopæus, g. n., Stål, l. c. p. 91. Allied to *Centrotus*; posterior process of thorax distant from scutellum, much curved, or geniculate near base, armed with spinules beneath, especially towards base; outer discoidal cell not

petiolate; wings with 4 apical cells; tibiæ simple. Sp. *Centrotus phantasma* (Sign.), *C. validicornis* (Stål); *X. geniculatus*, sp. n., Stål, l. c. p. 92, Sierra Leone.

Centruchus, g. n., Stål, l. c. p. 93. Allied to *Centrotus*; wings with 4 apical cells; tegmina with 5 apical and 2 discoidal cells, inner 2 veins of corium not joined before the middle by a transverse vein. Sp. *Centrotus fuscipennis* (Germ.).

Sertorius, g. n., Stål, l. c. p. 88. Allied to *Centruchus*; 2 interior longitudinal veins of corium united by a transverse venule before the middle. Sp. *Centrotus australis* (Fairm.), B. c. Z. 1866, p. 387.

Platybelus, g. n., Stål, l. c. p. 96. Allied to *Centrotus*; prothoracic lateral horns long, directed upwards, compressed and widened, and curved outwards towards apex, which is acuminate; posterior process distant from body. Sp. *Centrotus flavus*, *vicinus*, *proximus* (Sign.), *nodicornis* (Germ.), *sene-galensis* (Fairm.), *bilineatus* (Stål).

Enmya, g. n., Stål, Berl. ent. Zeits. 1866, p. 387. Allied to *Oxygonia*; prothorax produced to apex of tegmina, acuminate, convex and very declivous in front, suddenly compressed and elevated behind lateral angles; tegmina with no discoidal cell, 5 apical cells, the middle one petiolate. Sp. *O. pacifica* and *chrysuræ* (Fairm.), *O. sobrina* (Stål).

Publilia, g. n., Stål, l. c. p. 387. Allied to preceding; prothorax convex, produced as far as apex of tegmina, compressed, acuminate, declivous in front, keeled throughout, back slightly sinuated; tegmina with 1 discoidal and 5 apical cells, the middle one petiolate. Sp. *Entylia concava* (Say).

Potnia, g. n., Stål, l. c. p. 388. Allied to *Triquetra*; thorax with the back convex, furnished with a porrected horn in front, lateral angles not produced. Sp. *Umbonia venosa* (Germ.) and *U. indicator* (Fairm.).

CICADELLINA.

The species of this group are referred by Stål (Hem. Afr. iv.), with the *Membracidae*, to 2 great families, *Cercopida* and *Jassida*, the latter including the *Membracidae* (see p. 567). In the *Cercopida* Stål (l. c. p. 55) establishes 3 subfamilies, characterized as follows:—

I. Anterior margin of thorax straight; eyes of equal length and breadth.

CERCOPIDA.

II. Anterior margin of thorax rounded or angulated; eyes usually transverse.

A. Scutellum flat, triangular APHROPHORIDA.

B. Scutellum much elevated, compressed behind, armed with a long apical spine. MACHÆROTIDA.

Of the first and second subfamilies Stål tabulates numerous genera. *Triecphora*, *Monocphora*, and *Sphenorhina* (A. & S.) are combined with *Tomaspis* (A. & S.) and again divided into several genera; *Ptyelus natalensis*, Stål, is substituted for *rotundatus* (Sign.) = *costalis* and *nodosus* (Walk.), and *Carystus hyalinopterus* for *Ptyelus hyalinipennis* (Stål).

The table of subfamilies of *Jassida* (l. c. pp. 82–83) has been given under *Membracidae*. The subfamily *Jassida* is divided into numerous genera, many of which are characterized as new. *Epiclines* (A. & S.) = *Proranus* (Spin.);

Macropsis (Lew.) = *Oncopsis* (Burm.) = *Stragania* (Stål); and *M. subolivaceus* is substituted for *Bythoscopus olivascens* (Stål).

Fieber forms a family (*Paropidæ*) for the reception of the genus *Paropia* (Germ.) and a new genus. Verh. zool.-bot. Ges. in Wien, xvi. p. 500.

MARSHALL (Ent. M. Mag. ii. & iii.) has continued his descriptions of the British species of this family. In the parts published in 1866, he describes 5 more species of *Acocephalus* (l. c. ii. pp. 177-181 and 197-198), of which one is new, 2 of *Eupelix* (pp. 198-199), 34 of *Jassus* (5 new), and 2 of *Agallia* in the remaining portions. *Jassus* is divided into 3 subgenera, namely *Deltocephalus*, *Athysanus*, and *Jassus* proper.

Eurymelides.

Æthalion apicale (Walk.) = *Æ. semiannulatum* (Sign.); and *Æ. gratum* (Walk.) = *Æ. dilatatum* (Stål). Stål, Berl. ent. Zeits. 1866, p. 172.

Cercopides.

Fulgora parva (Don.) = *Chalepus teliferus* (Walk.); and *C. pugionatus* (Stål) belongs to *Philagra*. Stål, Berl. ent. Zeits. 1866, p. 386.

Aphrophora maura (Walk.) belongs to *Philænus* (Stål), according to Stål, Berl. ent. Zeits. 1866, p. 385.

Locris, g. n., Stål, Hem. Afr. iv. p. 57. Allied to *Tomaspis*; scutellum equilateral; forehead tumid, with a keel above the middle; thorax truncate at base; posterior tibiæ unispinose. Sp. *Cercopis rubra* (Fab.), *C. maculata* (Fab.), *Moncephora arithmetica* (Walk.), *M. erythromela* (Walk.), *M. areata* (Walk.), *M. vicina* (Sign.), *M. bipunctata* (Sign.), *C. transversa* (Thunb.), *M. rubida* (Stål), *M. fumebris* (Stål). New sp. *L. æthiopica*, Stål, l. c. p. 59, Abyssinia; *L. pullata*, Stål, l. c. p. 62, Sierra Leone.

Bandusia, g. n., Stål, l. c. p. 62. Allied to *Tomaspis*; forehead with 2 keels convergent above, united at base; ocelli very distant; anterior femora short; posterior tibiæ with 1 spine beyond middle. Sp. *Moncephora rubella* and *vidua* (Stål).

Literna, g. n., Stål, l. c. p. 63. Allied to *Rhinaulax*; antennæ very short, joint 3 shortest; ocelli distant from eyes. Sp. *Cic. nigra* (De G.); *Moncephora dimidiata* and *Rhin. callosipennis* (Sign.); *L. testacea*, Stål, l. c. p. 63, Sierra Leone = *Moncephora callosa* (Sign.); and *L. leviuscula*, sp. n., Stål, l. c. p. 64, Madagascar.

Poophilus, g. n., Stål, l. c. p. 72. Allied to *Ptyelus*; cell of wings situated behind second anastomosis extending to intramarginal vein; anterior margin of head acute. Sp. *Ptyelus actuosus*, *laticusculus*, *umbrosus*, and *natalensis* (Stål); *Poophilus conspersus*, sp. n., Stål, l. c. p. 73, Caffraria.

Clovina, g. n., Stål, l. c. p. 75. Allied to *Ptyelus*; wings with cell behind second anastomosis reaching intramarginal vein; commissural margin of tegmina subangulate or subrotundate behind apex of clavus; forehead convex. Sp. *Ptyelus frenulatus*, *multilineatus*, *bipunctipennis*, *lemniscatus*, *phalera-tus*, *eugeniæ* (= *patruelis*, Stål, Eug. Resa), *malayus*, *nitidus* (Stål), *guttifer* (Walk.), *Cicada flavipes* (Fab.), *Aphroph. caput ranæ* (Guill.), *Issus ocellus* (Thunb.); African sp. *Ptyelis bigoti* (Sign.), *Ptyelus prolixus*, *patruelis*, and *callifer* (Stål).

Hymettus, g. n., Stål, l. c. p. 67. Allied to *Ptyelus*; clypeus produced beyond apex of anterior coxæ; anterior margin of head rather obtuse; teg-

mina narrowed behind middle; posterior tibiæ bispinose. Sp. *Ptyelus reticulatus* (Walk.), B. e. Z. 1866, p. 385.

Balsa, g. n., Stål, l. c. p. 66. Allied to *Lepyronia*; ocelli distinct, nearer to each other than to eyes; tegmina convex; wings with intramarginal vein interrupted, anal cell narrow. Sp. *Lepyronia obscurata* (Am. & Serv.), *concinna*, *frontalis*, *glabrata*, and *fusco-notata* (Stål), B. e. Z. 1866, p. 384.

Plinia, g. n., Stål, l. c. p. 66. Allied to *Lepyronia*; ocelli nearer to the eyes than to each other; head and thorax of equal width; thorax with antero-lateral margins very short; scutellum much longer than broad. Sp. *Lepyronia ampla* (Stål), B. e. Z. 1866, p. 384.

Cephus, g. n., Stål, l. c. p. 67. Allied to *Ptyelus*; wings with cell behind second anastomosis extending to intramarginal vein; vertex and thorax without a keel; head narrower than thorax, forehead with an obtuse keel; ocelli and eyes equidistant; scutellum very long; posterior tibiæ bispinose. Sp. *Ptyelus siccifolius* (Stål), B. e. Z. 1866, p. 384.

Autonoë, g. n., Stål, l. c. p. 67. Allied to preceding; posterior tibiæ unispinose; ocelli much nearer to each other than to eyes. Sp. *A. albiger* and *A. albipes*, sp. n., Stål, Berl. ent. Zeits. 1866, p. 384, Mysol.

Avernus, g. n., Stål, l. c. p. 68. Allied to *Cephus*; intramarginal vein of wings not waved between apices of longitudinal veins; ocelli further from eyes than from each other; forehead smooth. Sp. *Monecphora alboatra* (Walk.) = *Ptyelus ocelliger* and *interruptus* (Walk.), B. e. Z. 1866, p. 384.

Cordia, g. n., Stål, l. c. p. 78. Allied to *Philæmus*; thorax quadrangular, lateral angles acute; anterior margin of lobes of vertex partly acute, sides of forehead transversely strigose. Sp. *Ptyelus peregrans* (Stål) and *P. albilatera* (Walk.).

Napotrephes, g. n., Stål, l. c. p. 79. Allied to *Aphrophora*; vertex and thorax with no central keel; rostrum short; tegmina oblong. Sp. *Aphrophora africana* (Stål).

Bathylus, g. n., Stål, l. c. p. 68. Allied to *Napotrephes*; tegmina oval; corium convex; thorax sexangular, transverse; forehead convex, transversely strigose; apical margin of lobes of vertex acute. Sp. *Lepyronia mærens* (Stål), B. e. Z. 1866, p. 385.

Sepullia, g. n., Stål, l. c. p. 79. Allied to *Carystus*; tegmina subcoriaceous, absoletely margined at apex; lobes of vertex convexo-deflexed. Sp. *Clasoptera murrayi* (Sign.), *Acocephalus blennus* and *viduus* (Stål), *Cicada rufa* (Thunb.); *Sepullia nigropunctata*, sp. n., Stål, l. c. p. 80, Calabar.

Tomaspis xanthospila, sp. n., Stål, l. c. p. 56, Sierra Leone.

JASSIDES.

IEBER tabulates the genera of *Jassides* (Verh. zool.-bot. Ges. Wien, xvi. pp. 500-510) as indicated in the following abridgment:—

I. Ocelli on the disk of the vertex.

A. Pronotum trapezoidally produced behind. . . . *Mesodicus* (g. n.)¹.

B. Pronotum not produced behind, transverse.

1. Margin of vertex linear, angular; apex of forehead with a pit.

a. Face rather long; clypeus two-thirds length of forehead.

Errhomenus (g. n.)².

¹ P. 501. 1 n. sp.

² Ibid. 1 n. sp.

- b. Face shorter, inferior angle very obtuse; clypeus one-third length of forehead *Atractotypus* (g. n.)¹.
- 2 Margin of vertex obtuse; apex of forehead not pitted.
- a. Pronotum triangular in front, straight behind.
Tylozygus (g. n.)².
- b. Pronotum nearly reniform, scarcely notched or sinuated behind.
Tettigonia (Lat., Germ.).
- c. Pronotum reniform *Euacanthus* (Germ.).
- II. Ocelli on the edge of the vertex or wanting.
- A. Margin of vertex trenchant.
1. Vertex tongue-shaped, foliaceous *Glossocratus* (g. n.)³.
2. Vertex parabolically triangular *Parabolocratus* (g. n.)⁴.
- B. Union of vertex and forehead rounded or convex.
1. Clypeus narrow, bent in below *Grypotes*, (g. n.)⁵.
2. Clypeus straight, not bent in below.
- a. Sectors of the elytra forming only 1 cell before the transverse veins, or 3 cells in a second series.
- * Ocelli somewhat visible from above. *Caryphæus* (g. n.)⁶.
- † Ocelli not visible from above.
- a. Veins in the clavus and sectors with transverse veins generally abbreviated, as if feathered. *Phlepsius* (g. n.)⁷.
- β. Veins and sectors with only a few transverse veins.
- a. Outer sector only forked towards the middle; branches free *Macrosteles* (g. n.)⁸.
- b. Outer sector forked at one-third of its length from the base; inner branch forked.
- ** Inner branch of first fork united by a transverse vein to inner simple sector.
- aa. Outer branch of first fork joining outer branch of second.
- Vertex very short, its margin parallel to that of pronotum *Gnathodus* (g. n.)⁹.
- = Vertex rectangularly triangular.
Thamnus (g. n.)¹⁰.
- ββ. Outer branch of first fork long, widely forked at apex.
- Posterior margin of pronotum sinuate.
Athysanus, *Thamnotettix*.
- = Posterior margin of pronotum straight.
- Face transverse, oval.
Opsius (g. n.)¹¹.
- Face transverse, rhombic.
Cicadula (Zett.).
- †† Inner branches of first and second forks united to inner sector by transverse veins, forming 3 cells on inner sector.

¹ P. 501. 1 n. sp. ² Ibid. *Tettigonia nigrolineata*, Fieb. ³ P. 502. 2 n. sp.
⁴ Ibid. 1 n. sp. ⁵ P. 503. *Jassus puncticollis* (H.-Sch.). ⁶ Ibid. *Jassus gyllenkali* (Fall).
⁷ Ibid. 1 n. sp. ⁸ P. 504. *Jassus sernotatus* and *septemnotatus* (Fall.). ⁹ P. 505. *Jassus punctatus* (Fall.). ¹⁰ Ibid. *J. confinis* and *dahlbomi* (Zett.).
¹¹ Ibid. *O. stactogalus* (Amyot).

Jassus ocellaris (Fall.) is recorded by Letzner as injurious to rye. Jahresber. schles. Gesellsch. für vaterl. Cult. 1866, pp. 131-132.

Paropulopa, g. n., Fieber, Verh. zool.-bot. Ges. in Wien, xvi. p. 500. Allied to *Paropia*; ocelli 0; vertex trapeziform; forehead without keel or ridges; pronotum almost crescentiform. Sp. *P. lineata*, sp. n., Fieber, l. c. p. 512, Pyrenees.

Titia, g. n., Stål, Hem. Afr. iv. p. 105. Allied to *Petaloccephala*; head not foliaceous, triangular; clypeus flat; vertex longitudinally elevated in middle. Sp. *Acocephalus punctiger* (Stål).

Sichæa, g. n., Stål, l. c. p. 106. Allied to preceding; tegmina coriaceous, not valvate, clavus and corium connate; ocelli 0. Sp. *Acocephalus misellus* (Stål); *S. coriaria*, sp. n., Stål, l. c. p. 106, Cape of Good Hope.

Citorus, g. n., Stål, l. c. p. 110. Allied to *Selenocephalus*; anterior margin of head acute; sulcate at eyes; ocelli 0; tegmina abbreviated; wings 0. Sp. *Selenocephalus decurtatus* (Stål).

Setabis, g. n., Stål, l. c. p. 111. Allied to *Selenocephalus*; anterior margin of head not sulcate, obtuse; vertex obliquely declivous. Sp. *Gypona javeti* (Sign.).

Dardania, g. n., Stål, l. c. p. 113. Allied to *Siva*; head rather wider than thorax; body not depressed. Sp. *D. granulosa*, sp. n., Stål, l. c. p. 113, Zanzibar.

Palius, g. n., Stål, l. c. p. 120. Allied to *Jassus* (*Cælidia*); thorax and scutellum equal in length, or thorax longer; clypeus distinctly produced. Sp. *Cælidia lineoligera* and *fusco-varia* (Stål); *P. conspersifrons*, sp. n., Stål, l. c. p. 120, Cape of Good Hope.

Stymphalus, g. n., Stål, l. c. p. 121. Allied to *Thamnotettix*; head triangular, much produced, anterior margin rather acute, somewhat flattened. Sp. *Platymetopus rubrolineatus* (Stål).

Pachynus, g. n., Stål, l. c. p. 127. Allied to *Pediopsis*; ocelli distant from eyes; vertex arched at base. Sp. *Bythoscopus bimaculicollis* (Stål).

New species :—

Mesodicus (g. n.) *foveolatus*, Fieber, l. c. p. 512, South of Europe.

Errhomenus (g. n.) *brachypterus* (Mink), Fieber, l. c. p. 512, Germany and Switzerland.

Atractotypus (g. n.) *bifasciatus* (Mink), Fieber, l. c. p. 513, South of France.

Glossocratus (g. n.) *foveolatus*, Fieber, l. c. p. 513, Sarepta; *G. sulcatus*, Fieb. ibid., East Indies.

Paraboloeratus (g. n.) *glaucescens*, Fieber, l. c. p. 513, Malaga.

Phlepsius (g. n.) *maculatus*, Fieber, l. c. p. 514, Germany.

Selenocephalus nitens, Stål, l. c. p. 110, Calabar.

Tettigonia nigrinervis, Stål, l. c. p. 116 (= *cosmopolita*, Sign., var.), Calabar.

Thamnotettix compater, Stål, l. c. p. 126, Cape.

Deltocephalus semifuscus, Motschulsky, Bull. Soc. Nat. Mosc. xxxix. 1. p. 186, Japan.

Acocephalus arenicola, Marshall, Ent. M. Mag. ii. p. 180, from Deal and Wales.

Jassus. The following new British species are described by Marshall (Ent. M. Mag. ii. & iii.) :—*J. (Deltocephalus) quadrivittatus*, ii. p. 222; *J. (D.)*

argus, p. 223 (= ? *Aphrodes puella*, Curt.); *J. (D.) coronifer*, p. 265; *J. rupicapra*, iii. p. 30; and *J. corniculatus*, p. 119.

PSYLLIDÆ.

FRAUENFELD (Verh. zool.-bot. Ges. in Wien, xvi. pp. 977-980) remarks upon the difficulties attending the determination of the species of *Psylla*, for which he considers the study of the early stages, and indeed of the natural history of the animals, will furnish the best data. He describes several *Psyllidæ*, which he has been unable to determine by means of Förster's paper, but does not name them. They live on the following plants:—*Sorbus aria*, *Knautia sylvatica*, *Leontodon hastile*, *Berberis vulgaris*, *Urtica dioica*, *Senecio nemorensis*, and *Cirsium erysithales*.

APHIDIDÆ.

LUBBOCK notices Balbiani's observations. Proc. Ent. Soc. 1866, p. xx.

WESTWOOD remarks on the occurrence of wingless *Aphides* on the young shoots of isolated rose-trees. Proc. Ent. Soc. 1866, pp. xx-xxi. E. Shepard had noticed a similar occurrence on the jasmine.

F. SMITH notices galls formed by *Aphides* on the shoots of the elm, and found by him at Deal. The galls are of considerable size, hollow, green, with the sunny side reddened. Proc. Ent. Soc. 1866, p. xxxii. MacLachlan and Lubbock had met with the same gall on elms at Kingston-on-Thames and at Naples, *ibid*.

MACLACHLAN refers to the production of large leaf-galls on the elm, which he ascribes to *Aphis gallarum-ulmi* (De Geer). Ent. M. Mag. iii. pp. 157-159. (According to Kaltenbach these galls are produced by *Schizoneura lanuginosa*, Hart.).

GRUBE reports (Jahresber. schles. Ges. vaterl. Cult. 1865, pp. 42-45) on swarms of *Aphides* observed in Breslau on the 12th & 13th October 1865, and regarded by many as precursors of the cholera. The species appears to approach most closely to *Aphis convolvuli* (Kalt.). When examined on the supposition that these swarms would consist of the perfectly sexual individuals destined to furnish a progeny of eggs, it was found that this was not the case, all the specimens dissected being viviparous forms, with from 4 to 8 more or less developed embryos. No males were found. The swarms continued to appear until the beginning of November; but about the 30th October winged males and wingless females occurred paired in the swarms, but still intermixed with viviparous individuals.

ALEURODIDÆ.

FRAUENFELD has received from Mexico specimens of an *Aleurodes* which attacks and injures the leaves of *Viburnum tinus*. Verh. zool.-bot. Ges. in Wien, xvi. p. 555.

COCCIDÆ.

Porphyrophora radicum graminum (Bärensp.) is noticed as injurious to wheat by F. Löw, Verh. zool.-bot. Ges. in Wien, xvi. p. 946.

Pascoe notices some patelliform female *Coccidæ* from South Australia, where they live on the leaves of *Eucalyptus*. Proc. Ent. Soc. 1866, p. xxxii.

On the production of insect wax in China, see Journal Soc. Arts, 1866, and Proc. Ent. Soc. 1866, p. xviii.

ANOPLURA.

NITZSCH's observations on the species of *Pediculus* have been published from his MSS. by Giebel (*Zeitsch. ges. Naturw.* xxiii. pp. 21-32). The species referred to bear the following names and indications of the animals on which they occur:—1. *Pediculus flavidus*, *Canis familiaris*; 2. *P. oxyrhynchus*, *Bovis tauri*; 3. *P. affinis*, *Muris agrarii*; 4. *P. urius*, *Suis scrofiæ*; 5. *P. macrocephalus*, *Equi caballi*; 6. *P. reclinatus*, *Soricis aranei*; 7. *P. spiniger*, *Lemmi amphibii*; 8. *P. denticulatus*, *Muris decumani*; 9. *P. lyriceps*, *Leporis timidi*; 10. *P. crassicornis*, *Cervi elaphi*; 11. *P. sphærocephalus*, *Sciuri vulgaris*; 12. *P. eurysternus*, *Bovis tauri*; 13, 14. *P. capitis*; 15. *P. stenopsis*, *Capræ hirci*; 16. *P. serratus*, *Muris musculi*; 17. *P. schistopyga*, *Antilopis rupicapræ*; 18. *P. tuberculatus*, *Bovis bubali*; 19. *P. microps*, *Cercopithecii sinici*; and 20. *P. clavicornis*, *Merionis*.

SCHWEINFURT remarks that the inhabitants of the neighbourhood of the Elba and Satura mountains on the Nubian coast, although they dress their hair in pads and grease, have no lice on their heads. (*Petermann's Geogr. Mittheil.* 1865, pp. 338-339; cited by *Keferstein, Stett. ent. Zeit.* 1866, p. 216.)

ROTIFERA

BY

E. PERCEVAL WRIGHT, M.A., M.D., F.L.S.

MECZNIKOW, E. Ueber einige wenig bekannte niedere Thierformen. Zeitschrift für wissenschaft. Zoologie, Bd. xv. pp. 450-463, pl. 35; translated in Quart. Journ. Micr. Sci. Oct. 1866, pp. 241-248, pl. 5.

— . *Apsilus lentiformis*, ein Räderthier. Zeitschr. f. wissenschaft. Zoologie, Bd. xvi. pp. 346-356, Taf. 19: Sept. 1866.

Chaetonotus and its allies. Meczniokow (Zeitschr. f. wiss. Zool. xv. 1865, p. 451) regards all the forms described by Ehrenberg as belonging to one species, *C. larus*; the one described by M. Schultze as *C. maximus* he calls *C. schultzei*, and another from the Marshes of Giessen *C. hystrix*. *C. larus* is figured pl. 35. fig. 5, *C. hystrix* fig. 7, and *C. tesselsatus* fig. 8. Of the genus *Ichthydium* he alludes to and figures a new species, *I. ocellatum*, from Charkow (l. c. p. 451, pl. 35. fig. 1).

Chaetonotus larus. Meczniokow (l. c. p. 454) records the existence of winter as well as summer eggs in this species, and mentions facts proving that there is no metamorphosis in the *Ichthydina*. He concludes that the nearest allies of this group are the Rotatoria forming a small section which he calls *Gastrotricha*, in contradistinction to the wheel-animalcula which he designates *Cephalotricha* (l. c. p. 458).

Here may be noticed the remarks of Meczniokow (l. c. pp. 458-461, pl. 35. figs. 9-11) on *Echinoderes dujardinii* and *E. monocerus*, the systematic position of which is so very uncertain. The author says the genus bears no remarkable relationship to the *Ichthydina*, as M. Schultze believes, and still less to the *Nematodes*, as Ehlers maintains. Appended to these remarks is an account of *Desmoscolex minutus*, Clap., which is regarded as probably a larval condition of a known or unknown Arthropod (l. c. p. 461, pl. 35. fig. 12).

Chaetura, g. n., Meczniokow (p. 452). Head somewhat broader than the rest of the body; back with a series of elevations placed one after the other; ventral surface covered with cilia; a row of strongly bent bristles on the back of the tail end; on the posterior extremity of the body are two very characteristic dichotomous furcal appendages. *C. capricornia*, sp. n. (p. 452, pl. 35. figs. 2, 3), from Charkow.

Cephalidium, g. n., Meczniokow (p. 452). Bottle-formed, with a broad, blunted head, provided with a distinct mouth, covered all over with long, vibratile hairs; neck thin where joined to body, having on its dorsal surface very long and strong bristles, and on its ventral small vibrating hairs; no

furcal appendages at the posterior end of body, but right and left of it there is a bristle growing from a little knot; these are, doubtless, sensory organs. *C. longisetum*, sp. n. (p. 452, pl. 35. fig. 4), Giessen.

Apsilus, g. n., Mecznirow, *l. c.* p. 346. This genus is distinguished by a complete absence of the rotary organs so characteristic of this class, and in being attached; the water-system is very conspicuous. The young differ from the adult forms in possessing rotary organs and eyes and in being free. *A. lentiformis*, sp. n., p. 346, Taf. 19, found attached to the under surface of the leaves of *Nymphæa lutea* at Giessen.

ANNELIDA

BY

E. PERCEVAL WRIGHT, M.A., M.D., F.L.S.

A. *Separate Work.*

QUATREFAGES, A. DE. Histoire naturelle des Annelés marins et d'eau douce. Annélides et Géphyriens. 2 vols. Paris, 1865. 8vo.

This work, which is accompanied with an atlas of coloured plates, was not published until the summer of 1866. In the 'Record' for 1865, pp. 715-723, we have given the classification of the genera of the Annelida and Gephyrea as adopted by the author; pp. 1-175 of vol. i. are devoted to an account of the exterior organization, of the anatomy and physiology, and development of the Annelids, and a brief history of their geographical distribution &c. The remaining portion of the first volume and the whole of the second is taken up with the details of the known genera and species. Very complete indices are added, as also an alphabetical list of the various authors referred to in the work. We think it right to mention that M. Claparède has already indicated some very serious shortcomings of this work: they consist chiefly in not paying due regard to important observations of his predecessors or fellow-labourers, in trusting to figures alone where he ought to have studied descriptions, in describing from examples preserved in spirits, thus introducing a great number of "variétés alcooliques" into the system, and, finally, in giving innumerable erroneous references to other works.

B. *Papers published in Journals.*

AGASSIZ, A. On the young stages of a few Annelids. *Ann. Lyc. New York*, vii. June 1866, pp. 303-343, pls. 6-11.

This paper is a very valuable contribution to our knowledge of the development of the Planaria and Annelida. The author concludes with some remarks on the types of development in Annelids.

BAIRD, W. Contributions to a Monograph of the Aphroditacea. *Journ. Linn. Soc.* vol. ix. no. 33. pp. 31-38.

BENEDEN, P. J. VAN, and HESSE, C. E. Recherches sur les Bdelloles (Hirudinées) et les Trématodes marins, 3^e et 4^e Appendiccs. *Mém. Acad. Roy. Belg.* tome xxxv. 1865, pp. 1-18, pls. 1 & 2.

A new genus and two new species are described.

CARRINGTON, B. On the Chætopod Annelids of the Southport Sands. *Proc. Lit. & Philos. Soc. Manchester*, iv. 1865, pp. 176-188.

The author enumerates about fifty species, appending notes with regard to their occurrence, &c.; several are described as new, which will be mentioned subsequently.

COSTA, A. Illustrazione Iconografica degli Annelidi rari o poco conosciuti del Golfo di Napoli. *Annuario del Museo Zoologico di Napoli*, anno ii. 1862 (Naples, 1864), pp. 159-171, tav. 3 & 4.

D'UDEKEM, M. Mémoire sur les Lombriciens. Première partie. *Mém. Acad. Roy. Belg.* tome xxxv.* 1865, pp. 1-44, pls. 1-4.

The author proposes to write a complete work on the Oligochæta, of which this is the first portion. In it he gives a description of the general characters and organization of these Annelids, of their proper position among the Worms, of their classification, and then of the genus *Lumbricus*, of which he gives the anatomy and a succinct account of its development. This portion was read before the Academy, January 1863. In a second part he proposes to treat of those genera most nearly related to *Lumbricus*, and in a third portion to give an account of the families Tubificina, Enchytræina, and Naidina.

GREEFF, R. Ueber die Anneliden-Gattung *Sphaerodorum*, Erst., und einen neuen Repräsentanten derselben: *Sphaerodorum claparedii*. *Wiegmann's Archiv für Naturg.* xxxii. 1866, pp. 338-351, Taf. 6.

———. Ueber *Autolytus prolifer*. *Ibid.* pp. 352-367, Taf. 7.

GRUBE, ED. Beschreibungen neuer von der Novara-Expedi-

* Misprinted tome xxxvi. in the text, but referred to as part of tome xxxv. in the index.

tion mitgebrachten Anneliden und einer neuen Landplanarie. Verhandl. zool.-bot. Gesellsch. in Wien, Band. xvi. pp. 173-184.

KEFERSTEIN, WILHELM. Untersuchungen über einige amerikanische Sipunculiden. Nachrichten der königl. Gesellsch. zu Göttingen, 1866, pp. 215-228 : June 13.

KINBERG, J. G. H. Annulata nova. Öfvers. af k. Vet.-Akad. Förhandl. 1865, pp. 167-179, & 239-258, & 1866, pp. 97-103, and 337-357.

Descriptions of new genera and species of most of the families.

LANKESTER, E. R. On some new British *Polynoina*. Trans. Linn. Soc. vol. xxv. pp. 373-378, pl. 51.

MAGGI, L. Intorno al genere *Æolosoma*. Mem. Soc. Ital. Sci. Natur. tom. i. no. 9, Milano, 1865, pp. 1-16, tav. 1 & 2.

Besides a description of two new species, this memoir contains an account of the minute anatomy of this genus.

MECZNIKOW, E. Zur Entwicklungsgeschichte von *Myzostomum*. Zeitschr. für wissenschaft. Zoologie, Bd. xvi. pp. 236-244, Taf. 13 A : May 1866.

MENGE, A. Ueber ein Rhipidopteron und einige andere im Bernstein eingeschlossene Thiere. Schriften der naturf. Gesellsch. in Danzig, neue Folge, Band i. (1866), pp. 8 (*cum figg.*). (*Enchytraeus*.)

SARS, M. Fortsatte Bidrag til Kundskaben om Norges Annelider. Forhand. Vidensk.-Selsk. 1864 (Christiania, 1865), pp. 5-20.

QUATREFAGES's paper on the "Classification of the Annelids" (*vide* 'Zool. Record' for 1865, p. 714) will be found translated in the Ann. & Mag. Nat. Hist. vol. xvii. 1866, pp. 1-24. We would also here allude to the very important remarks on M. de Quatrefages's "Notes on the Classification of the Annelids" by E. Claparède, translated by Mr. Dallas from the 'Bibliothèque Universelle de Genève,' of April 1865, in Ann. & Mag. Nat. Hist. vol. xvii. 1866, pp. 100-106, with Quatrefages's further remarks on Claparède's criticisms, *ibid.* pp. 107-118. Both the criticisms and remarks on them are already too much condensed to admit of being further abridged in this 'Record.' Quatrefages's work on the Annelids, of which the papers referred to were but portions, has since their appearance been published (see *antè*, p. 578).

MECZNIKOFF, in a short paper, entitled "Ueber die Sinnesorgane einiger Anneliden," calls attention to the existence in some species of Annelids of a eup-shaped organ; in *Polybos*

trichus it will be found on the parapodium of the fourth, and in *Sacconereis* on that of the third segment. The function ascribed to these organs is that of touch, the thin plate-like bodies acting as sensitive hairs, and the cell-apparatus as the peripheral ending of sensitive nerves (Bericht deutsch. Naturf. u. Aerzte, Giessen, 1864, p. 161, pl. v. figs. 10-13).

KÖLLIKER'S 'Kurzer Bericht' (see CŒLENTERATA), contains some important details concerning the organs of sense among the Annelids, and should be consulted.

LANKESTER gives a list of the Turbellaria and Annelida met with by him in a dredging expedition off Guernsey and the neighbouring islands. Ann. & Mag. Nat. Hist. vol. xvii. 1866, p. 389.

GRÄFFE (Verh. zool.-bot. Ges. in Wien, xvi. p. 887) remarks upon some of the Annelida observed by him in the Fiji Islands.

Myzostomum cirriferrum. Mecznirow (*l. c.*) gives an account of the development of this species, and, after alluding to the many opinions that have been expressed as to its proper position, assigns it to the Chaetopods among the Annelida, looking on it as the type of a peculiar group, which he would call Chaetopoda ectoparasita.

ANNELIDA POLYCHÆTA.

APHRODITEA.

BAIRD (*l. c.*) continues his contributions towards a monograph of this family. He retains the genus *Sigalion* (Aud. & Ed.) for the species included by Kinberg in his genus *Sthenelais*, mentioning that Milne-Edwards had rectified his mistake as to the absence of a tentacle in *Sigalion mathildæ*, and that therefore his genus as amended for this the typical species must stand. For the species which Kinberg had referred to his restricted genus *Sigalion* Baird institutes a new genus, *Thalenessa*.

Thalenessa, gen. nov., Baird, *l. c.* p. 34. Cephalic lobe broad anteriorly; no tentacle; antennæ 2, very short, placed on the anterior margin of the cephalic lobe; eyes 2, distant; compound setæ bidentate; simple setæ serrate; elytra covering the back, with ramose fimbriæ on the margin. *T. edwardsi* = *Sigalion* (Kinb. non Aud. & Edw.) *edwardsi* (Kinb.).

Polynoë asterinæ, sp. n., and *Polynoë maculosa*, sp. n., Carrington, Proc. Lit. & Philos. Soc. Manchester, iv. 1865, pp. 177 and 178, from Southport.

Sigalion mathildæ (M.-Edwards) is described as a new species, *Sigalion carringtonii* (Brown), by Carrington, Proc. Lit. & Philos. Soc. Manchester, iv. 1865, p. 179.

QUATREFAGES describes (*l. c.*) the following new species:—

Aphrodita centenes, vol. i. p. 194, pl. 6. fig. 8, *A. modesta*, p. 195, *A. talpæ*, p. 196, pl. 6. figs. 2-4, New Zealand; *A. echidna*, p. 197, *A. chinus*, p. 199, pl. 6. figs. 5-7, Mediterranean; *A. squamosa*, p. 201, New Zealand.

Hermione erinaccus, p. 208, Red Sea; *H. kinbergi*, p. 209, coasts of Syria; *H. mathei*, p. 210, Isle of France.

Milnesia nuda, p. 211, Sicily.

Polynoë heudeloti, p. 231, Senegal; *P. tentaculata*, p. 231, Palermo; *P. chilensis*, p. 238, St. Carlo; *P. urvillii*, p. 240, Port Famine; *P. fuscescens*,

p. 242, St. Malo; *P. modesta*, p. 243, West Coast of France; *P. dorsalis*, p. 245, Marseilles; *P. brasiliensis*, p. 246, Bahia; *P. argus*, p. 247, Port Western; *P. pissisi*, p. 251, Brazil.

Lepidonotus leachii, p. 258, Granville; *L. dunetosus*, p. 259, St Vaast; *L. brevicornis*, p. 260, Bay of Biscay; *L. ornatus*, p. 262, St. Vaast.

Iphione glabra, p. 268, Isle of France; *I. cimex*, p. 270, Straits of Malacca; *I. jimbricata*, p. 271, Torres Straits; *I. hirta*, p. 272, New Guinea.

Sthenelais edwardsii, p. 273, pl. 8. figs. 1-8, Boulogne.

Psammoelyce albicans, p. 282, Bissayos.

LANKESTER (*l. c.*) describes the following new species:—

Harmothoe sarniensis, p. 374, under stones near low-water mark, Guernsey and Herm; *H. malmgreni*, p. 375, in the tubes of *Chaetopterus insignis*, Herm.

Antinoë nobilis, p. 375, found either close to or in the tubes of *Terebella nebulosa*, on which it apparently feeds (?).

A. zetlandica, p. 377, dredged in Shetland.

Halosydna (Aentia) jeffreysii, p. 377, Herm. This is apparently the same as *Lepidonotus imbricatus* of the British Museum Catalogue. The *Aphrodita imbricata*, Linn., is by Malmgren regarded as identical with *L. cirratus*, Johns. and Aud. & Milne-Ed.; therefore Lankester changes the name to *jeffreysii*. This species is probably *A. gelatinosa*, Sars.

EUNICEA.

Eunice gracilis, sp. n., Grube, *l. c.* p. 174, Tahiti; *E. frauenfeldi*, sp. n., Grube, *l. c.* p. 175, island of St. Paul.

QUATREFAGES describes (*l. c.*) the following new species:—

Eunice torquata, vol. i. p. 312, St. Jean de Luz; *E. heterochaeta*, p. 314, Guettary; *E. lawillardii*, p. 314, Nice, Palermo; *E. rissoi*, p. 315, Marseilles; *E. ebranchiata*, p. 316, Palermo; *E. tentaculata*, p. 317, Port Western; *E. quoya*, p. 318, New Holland; *E. scombrinis*, p. 319, Guayaquil; *E. botte*, p. 320, Red Sea; *E. gainardi*, p. 321, New Zealand; *E. australis*, p. 321, New Zealand; *E. pelamidis*, p. 322, Payta.

Morphysa hamasoma, p. 334, Table Bay; *M. gayi*, p. 335, Chili; *M. peruviana*, p. 336, Lima.

Diopatra gallica, p. 338, pl. 6 bis. figs. 1-3, Arcachon; *D. uncinifera*, p. 342, *D. chiliensis*, p. 342, Chili; *D. malabarensis*, p. 346, Malabar; *D. paradoxa*, p. 347, Gulf of Mastatan.

Onuphis sicula, p. 353, Palermo &c.

QUATREFAGES also describes (*l. c.*) the following new species of his *Lumbrinereis*:—

Lumbrinereis contorta, p. 359, pl. 10. figs. 6-11, Guettary; *L. gigantea*, p. 360, Brehat; *L. humilis*, p. 361, *L. obscura*, p. 362, *L. fallax*, p. 362, west coast of France; *L. dubia*, p. 363, Brehat; *L. vasco*, p. 364, Guettary.

Notocirrus margaritaceus, p. 368, Lima.

Blainvillea filum, p. 370, Guettary (?); *B. elongata*, p. 371, Brehat.

Plioceras euniciformis, p. 380.

Lumbriconereis cavifrons, sp. n., Grube, *l. c.* p. 175, Cape of Good Hope.

AMPHINOMEA.

QUATREFAGES describes (*l. c.*) the following new species:—

Chloëia fucata, vol. i. p. 390, Mascata; *C. nuda*, *ibid.*, Amboina; *C. venusta*, p. 391, Palermo.

Amphinome abhortoni, vol. i. p. 397, Isle of France; *A. bruguieresi*, p. 398, Seychelles; *A. formosa*, p. 399, Sandwich Isles; *A. demidata*, p. 400, New Caledonia; *A. gaudichaudi*, p. 400, Paëta; *A. pallida*, p. 401.

NEPHTHYDEA.

Aglaophamus, g. n., Kinberg, *l. c.* p. 239. Maxillæ binæ laterales, transversæ, fusiformes, nec unguulatæ, margine rectæ; setæ simplices: aliæ læves, aliæ bifurcatæ, lyratæ. Sp. *A. lyratus*, sp. n., Kinb. *l. c.* p. 240, Banka Strait.

Aglaophome, g. n., Kinberg, *l. c.* p. 240. Antennæ 2; palpi 2; maxillæ 2, laterales, depressæ, subconiformes, radicibus tribus dilatatis, brevibus; papillæ pharyngis laterales et marginales; setæ simplices; aliæ læves, aliæ annulatæ, aliæque bifurcatæ, lyratæ. Sp. *A. juvenalis*, sp. n., Kinb. *ibid.*, Rio de Janeiro.

Nephtys dussumieri, sp. n., Quatrefages, *l. c.* vol. i. p. 426, Malabar.

Nephtys præiosa, sp. n., Kinberg, *l. c.* p. 239, La Plata; *N. virginis*, Kinb. *ibid.*, Atlantic and Magellan's Strait.

Portelia ? *quatrefagesi*, sp. n., Kinberg, *l. c.* p. 240, St. Thomas.

Portelia rosea, sp. n., Quatrefages, *l. c.* p. 431, pl. 7. figs. 12-15, Boulogne.

NERINEA.

Nerine. A. Agassiz (*l. c.* p. 330) describes and figures some young forms belonging to this genus. The general mode of development is very similar to that of *Polydora*.

Mandac, g. n., Kinberg, *l. c.* p. 253. Lobus cephalicus inter et ante pedes paris 1 & 2; oculi 2 (-4 ?); tentaculum singulum; nec antennæ nec cirri tentaculares; branchiæ binæ, foliosæ; pedes duplices, separatæ; setæ simplices, subulatæ, sublimbatæ et spinosæ. Sp. *M. brevicornis*, sp. n., Kinb. *l. c.* p. 253, Rio de Janeiro.

CIRRATULEA.

KINBERG proposes 4 new genera in this family, as indicated in the following table (*l. c.* p. 253):—

I. Branchiæ tentaculares obviæ.

A. Seriem transversam fingentes, oriuntur a segmento

- 1. Corporis anteriore *Cirratulus*.
- 2. Corporis 4-7 *Timareto* * (K.).
- 3. Buccali tertio *Promenia* (K.).

B. Laterales *Archidice* (K.).

II. Branchiæ tentac. nullæ.

- A. Branchiæ dorsuales ubique *Labranda* (K.).
- B. Branchiæ dorsuales anteriores *Dodecacæra*.

New species :—

Cirratulus obscurus, Quatrefages, *l. c.* vol. i. p. 457, Gloria; *C. australis*, Quatref. *ibid.*, New Holland.

Audouinia crassa, Quatrefages, *l. c.* p. 461, St. Vaast.

Heterocirrus ater, Quatrefages, *l. c.* p. 465, pl. 10. figs. 13-17, Brehat.

* Known sp. ? *Cirratulus polytrichus* (Schm.).

- Timarete fecunda*, Kinberg, *l. c.* p. 254, Port Jackson.
Promenia jucunda, Kinberg, *l. c.* p. 254, Straits of Magellan; *P. spectabilis*,
 Kinb. *ibid.*, Vancouver's Island.
Archidice patagonica, Kinberg, *l. c.* p. 255, Straits of Magellan.
Labranda crassicolis, Kinberg, *l. c.* p. 255, Honolulu.

CHLORÆMEA.

Kinberg (*l. c.* p. 337) refers *Pherusa* (Oken) and *Siphonostomum* (Otto) to *Chloræma*, indicating also that both names had been previously employed.

Piromis, g. n., Kinberg, *l. c.* p. 338. Corpus latiusculum, segmentis subquadrangularibus; lobus cephalicus obsoletus; bases branchiarum 2, conicæ, branchiis terminalibus cirrosis; segm. buccale minutum a segmento primo corporis fere tectum et cinctum; pedes dorsuales et ventrales distantes, anteriores validi antrorsum inclinati; setæ dorsuales annulatæ, ventrales articulatæ, articulo terminali unguolato. Sp. *P. arenosus*, sp. n., Kinberg, *l. c.* p. 338, Port Natal.

Chloræma hawaica, sp. n., Kinberg, *l. c.* p. 337, Honolulu.

QUATREFAGES describes the following new species:—

Pherusa incrustata, *l. c.* vol. i. p. 480, Mediterranean; *P. minuta*, *l. c.* p. 480, Chili.

Lophiocephalus grandis, *l. c.* p. 485, Coquimbo.

NEREIDEA.

KINBERG (*l. c.* p. 167) proposes the following division of this group into families [=subfamilies]:—

I. Papillæ pharyngis adsunt.

A. Pap. phar. membranacæ et cornæ. 1. LEONNATIDEA (K.).

B. Pap. phar. cornæ.

1. Pap. phar. separatæ, conicæ 2. NEREIDEA (restr.).

2. Pap. phar. separatæ, conicæ et transversæ 3. ARETIDEA (K.).

3. Pap. phar. coadnatæ. 4. PISENOIDEA (K.).

II. Papillæ pharyngis desunt. 5. NICONIDEA (K.).

In characterizing the genera, he adopts the following terminology:—His

Annulus maxillaris = Annulus anterior pharyngis porrectæ.

Annulus basalis = Annulus posterior pharyngis porrectæ.

Acervus ordinis 1 = Acervus papillarum pharyngis medius superior annuli maxillaris.

Acervi ordinis 2 = Acervi laterales superiores annuli maxillaris.

Acervus ordinis 3 = Acervus medius inferior annuli maxillaris.

Acervi ordinis 4 = Acervi laterales inferiores annuli maxillaris.

Acervus ordinis 5 = Acervus medius superior annuli basalis.

Acervi ordinis 6 = Acervi laterales superiores annuli basalis.

Acervus ordinis 7 = Papillæ mediæ inferiores annuli basalis.

Acervi ordinis 8 = Papillæ reliquæ inferiores et laterales annuli basalis.

The first of the above groups includes only one genus, namely:—

Leonnates, g. n., Kinb. *l. c.* p. 168. Papillæ incompletæ, acervi ordinum 1 et 5 desunt, ordinum 6, 7 et 8 membranacæ; pedes dorsuales et ventrales separatæ, anteriores et posteriores æquales; branchiæ foliaceæ nullæ; setæ compositæ verutæ, et aliæ dentatæ dentibus externis extrorsum vergentibus et crescentibus. Sp. *L. indicus*, sp. n., Kinb. *ibid.*, Singapore.

Of the genera of *Nereidea* Kinberg gives the following table (*l. c. p. 168*):—

I. Pedes æquales.

A. Papillæ pharyngis incompletæ,

1. Ord. 6 cruciatæ l. acervos fingentes *Nereis*.
2. Ord. 1, 2, 5 desunt *Cirronereis* (K.).
3. Ord. 5–8 desunt *Ceratonereis*¹ (K.).
4. Ord. 5 desunt *Nereilepas* (Bl.).

B. Papillæ completæ *Neanthes*² (K.).

II. Pedes mutantés.

A. Sensim.

1. Papillæ completæ, setæ verutæ *Alitta*³ (K.).
2. Papillæ ord. 6, 6-cruciatæ, l. stellatæ, l. paucæ.
* Setæ verutæ acutæ et obtusæ et falcigeræ. *Thoosa*⁴ (K.).
† Setæ verutæ et falcigeræ *Mastigonereis* (Schm.).
3. Papillæ incognitæ, setæ posteriores cultriferæ.
*Nossis*⁵ (K.).

B. Distincte.

1. Branchiæ dendriticæ nullæ *Heteronereis* (Erst.).
2. Papillæ incognitæ; branchiæ nonnullæ dendriticæ.
Dendronereis (Pet.).

The *Aretidea* include 5 genera, thus tabulated (*l. c. p. 174*):—

I. Pedes æquales *Arete* (K.).

II. Pedes mutantés.

A. Sensim.

1. Papillæ pectiniformes et conicæ *Pseudonereis* (K.).
2. Papillæ pectiniformes et compressæ *Paranereis* (K.).
3. Papillæ pectiniformes nullæ *Perinereis* (K.).

B. Distincto *Naumachius*⁶ (K.).

Of the *Pisenoidea* Kinberg forms 2 genera (*l. c. p. 176*):—

I. Papillæ ordinis 1 desunt *Pisenoë*⁷ (K.).

II. Papillæ ordinis 1, 2, 5 desunt *Platynereis*⁸ (K.).

The *Niconidea* constitute 3 genera (*l. c. p. 178*):—

I. Pedes æquales *Nicon* (K.).

II. Pedes mutantés.

A. Sensim *Leptonereis* (K.).

B. Distincte, mutatione ped. triplici *Nicomedes* (K.).

Tylorrhynchus, g. n., Grube, *l. c. p. 177*. Corpus *Nereidis* speciem præbens; lobus capitalis, segmentum buccale, oculi, tentacula, cirri tentacu-

¹ Known sp. ? *Nereis costæ* (Grube).

² Known sp. ? *Nereis latipalpa* (Schm.), *Nereilepas variegata* (Grube), *Nereis vallata* (Gr.), and *N. rigida* (Gr.).

³ *Nereis virens* (Sars) = *Nereilepas virens* (Gr.).

⁴ ? *Nereis gayi* (Blanch.).

⁵ *Nereis ochotica* (Gr.).

⁶ *Nereis pannosa* (Gr.).

⁷ *Nereis maculata* (Schm.).

⁸ Known sp. *N. striata* (Schm.).

lares cum *Nereide* congruentia; pharynx exsertilis similis, maxillis uncinatis 2 sed pro granis maxillaribus callis variæ formæ instructa. Pinnæ cirro dorsuali et ventrali pharetrisque setarum 2, sed lingula 1 tantum munitæ. Setæ compositæ (spinigeræ, falcigeræ, cultrigeræ). *T. chinensis*, sp. n., Grube, *l. c.* p. 177, from Shanghai.

Dorvillea, g. n., Parfitt, *Zoologist*, 1866, p. 113. Head round, convex; antennæ forming 2 small and 2 large lobes; eyes 4, hinder ones far back; body tapering, of about 50 segments, sutures very strongly constricted; feet obovate, with short, stiff setæ. Sp. *D. lobata*, sp. n., Parf. *l. c.* p. 113, South Devon (from a drawing and description of Montagu's, sub nom. *Nereis pennata*).

GRÄFFE (Verh. zool-bot. Ges. in Wien, xvi. p. 587) remarks on the habits of the Balolo worm (*Palolo viridis*, Gray) as observed by him in the Fiji Islands.

Under the name of *Lycoris fucata* De Haan describes a species of Annelid constantly found associated with *Teredo navalis*. The description is not sufficient to enable the species to be positively determined. It is stated to feed on the shipworm; and M. Kater has seen one lay hold of the mollusk, enter into its burrow, and never stop eating it until only the valves were left. *Archiv. Neerland.* tome i. liv. 1, 1866, p. 21, pl. 1. fig. 3.

New species :—

Nereis (Nereilepas) stimpsonis, Grube, *l. c.* p. 176, Cape of Good Hope.

Nereis (Heteronereis) brevicirris, Grube, *l. c.* p. 176, St. Paul's.

QUATREFAGES (*l. c.*) describes the following new species :—

Nereis microcera, vol. i. p. 513, Guettary; *N. megadon*, p. 514, pl. 7 bis. figs. 9–17, Brehat; *N. translucens*, p. 515, pl. 7 bis. figs. 9–13, Brehat; *N. reynaudi*, p. 519, Greenland; *N. ignota*, p. 520, *N. quoyii*, p. 521, Moluccas; *N. fusifera*, p. 521, Table Bay; *N. castelnaui*, p. 522, Lima; *N. pacifica*, p. 523, Lima; *N. rupta*, p. 524, Lima; *N. cornuta*, p. 524, Gloria; *N. fallax*, p. 534, coasts of France; *N. edenticulata*, p. 538, pl. 7. figs. 1, 2, St. Vaast; *N. bowerbankii*, p. 541, Yorkshire; *N. robusta**, p. 544, New Zealand; *N. crassipes*, p. 550, St. Vaast; *N. heterochaeta*, p. 552, Java; and *N. yankiana*, p. 553, pl. 6 bis. figs. 7, 8, New York.

Heteronereis venusta, p. 565, West Coast of France; *H. migratoria*, p. 568, St. Vaast; *H. schmardaei*, p. 569, pl. 7. fig. 11, St Vaast; *H. arstedii*, p. 571, pl. 2. figs. 14, 15, pl. 7. figs. 1–7, Sicily; and *H. parvula*, p. 573, Teneriffe.

KINBERG (*l. c.*) describes the following new species :—

Nereis robusta, p. 168 (also Eug. Resa, tab. 20, 1 B–F), Valparaiso; *N. angusticollis*, p. 169, Tahiti; *N. indica*, *ibid.*, Banka Strait; *N. corallina*, *ibid.*, Oahu; *N. jacksoni* and *N. languida*, *ibid.*, Port Jackson; *N. tredecimdentata*, *ibid.*, Galapagos; *N. cagliari*, *ibid.*, Cagliari.

Cirronereis gracilis, p. 170 (also Eug. Resa, tab. 20. 4), Galapagos.

Ceratonereis tentaculata, p. 170 (also Eug. Resa, tab. 20. 5), Oahu; *C. mirabilis* and *C. vulgata*, *ibid.*, Brazilian coast (9° S. lat.).

Nereilepas angusta, p. 171 (also Eug. Resa, tab. 20. 2), Society Islands.

Neanthes vaalii, p. 171, Port Jackson; *N. helene*, p. 172, Saint Helena.

Mustigonereis spinosa, p. 173 (also Eug. Resa, tab. 20. 10), California.

* Kinberg also has a *N. robusta* (vide infra), which must take precedence of this.

Heteronereis grubei, p. 173, Valparaiso.

Arete capensis, p. 174, Cape of Good Hope.

Pseudonereis gallepagensis, p. 174 (also Eug. Resa, tab. 20. 3), Galapagos;
P. formosa, *ibid.*, Honolulu.

Paranereis elegans, p. 175 (also Eug. Resa, tab. 20. 8), Valparaiso.

Perinereis nova hollandiae, p. 175 (also Eug. Resa, tab. 20. 9), Port Jackson;
P. andersonii, *ibid.*, Rio de Janeiro; *P. hedenborgi*, *ibid.*, Alexandria; *P. exsul*, *ibid.*, and *P. aberrans*, p. 176, origin unknown; *P. ponteni*, p. 176, Rio de Janeiro.

Platynereis calodonta, p. 177, Cape of Good Hope; *P. magalhaensis*, *ibid.* (also Eug. Resa, tab. 20. 6), *P. antarctica*, *ibid.*, and *P. palagonica*, *ibid.*, Straits of Magellan; *P. jucunda*, *ibid.*, Honolulu.

Nicon pictus, p. 178, Rio de Janeiro; *N. tahitensis*, *ibid.*, Tahiti; *N. maculata*, *ibid.*, Rio de la Plata; *N. eugeniae*, *ibid.*, *N. lozechini*, *ibid.*, and *N. virginii*, p. 179, Straits of Magellan.

Leptonereis laevis, p. 179 (also Eug. Resa, tab. 20. 7), Guayaquil.

Nicomedes difficilis, p. 179, Rio de Janeiro.

SYLLIDEA.

Autolytus prolifer. Greeff (*l. c.*) gives a résumé of what is known as to the development of this species, and describes and figures the various stages he has met with.

Peribæa, g. n., Kinberg, *l. c.* p. 249. Oculi minuti, arcum fingentes; palpi transversi; tentaculum; antennæ 2; segmentum buccale superne obsoletum; cirri tentaculares 2; maxilla semilunaris, postice truncata, acie edentata; papillæ pharyngis 11-12; setæ falcigeræ articulis brevibus, acie valde excavata, pectinata, apice singulo, curvato; cirri ventrales. Sp. *P. disingi* (*sic*), sp. n., Kinb. *l. c.* p. 249, Rio de Janeiro.

Thoë, g. n., Kinberg, *l. c.* p. 249. Oculi minuti; tentaculum; antennæ 2; maxilla unica leviter arcuata, compressa, radice rotundata; pap. phar. 10-11; setæ falcigeræ, infra spinam articulem inflatæ, transversim serrulatæ, articulis brevibus et mediocribus, apice spina transversa armato; cirri ventrales. Sp. *T. fusiformis*, sp. n., Kinb. *l. c.* p. 249, Port Jackson.

Eurymedusa, g. n., Kinberg, *l. c.* p. 249. Oculi mediocres; tentaculum; antennæ 2; segmentum buccale cum cirris tentac. utrinque 2; maxilla unica, margine pyriformi, lateribus dilatatis, medio carinata et striis-mediis longitudinalibus posticis transversis, semicircularibus; setæ anteriores falcigeræ, articulis brevibus, spina articulari elongata, posteriores simplices, robustæ, bifidæ; cirri ventrales. Sp. *E. picta*, sp. n., Kinb. *l. c.* p. 249, Port Jackson.

Laomedora, g. n., Kinberg, *l. c.* p. 250. Oculi minuti; tentaculum; antennæ 2; segmentum buccale cum cirris tentac. utrinque 2; maxilla nulla; cirri dorsuales fusiformes, setæ falcigeræ articulis brevibus et mediocribus, aliæ paucae simplices, bifidæ, apicibus brevibus; cirri ventrales. Sp. *L. fusifera*, sp. n., Kinb. *l. c.* p. 250, Chinha.

Lapùlhas, g. n., Kinberg, *l. c.* p. 250. Oculi permagni; tentaculum et antennæ 2 terminales; segmentum buccale cirris tentac. utrinque 2; maxilla 0; pap. phar. elongatæ c. 23; setæ falcigeræ articulis bidentatis aut elongatis, latis, acie convexa, aut brevibus acie recta; cirri ventrales. Sp. *L. steenstrupi*, sp. n., Kinb. *l. c.* p. 250, Singapore.

Heterosyllis havaica, sp. n., Kinberg, *l. c.* p. 248, Honolulu.

Syllis californica, sp. n., Kinberg, *l. c.* p. 249, San Francisco.
 QUATREFAGES (*l. c.*) describes the following new species :—
Syllidia armata, vol. ii. p. 13, pl. 8. figs. 10–15, La Rochelle.
Grubea fusifera, p. 35, pl. 7. figs. 16–21, coasts of Brittany.
Claparedia filigera, p. 50, pl. 6 bis. figs. 14–18, Chausey.
Thylaciphorus hesii, p. 55, Brest.
Euryssyllis lenta, p. 59, pl. 8. figs. 18–23, St. Vaast.
Schmardea chauseyana, p. 65, pl. 8. figs. 16, 17, Chausey.
Dujardinia rotifera, p. 67, pl. 8. fig. 9, Chausey.

HESIONEÆ.

Leocrates, g. n., Kinberg, *l. c.* p. 244. Tentaculum; oculi sessiles, sursum vergentes nec laterales; pharynx exsertilis maxilla singula media, supera, elongata, cylindrica, edentata armata; cirri tentaculares 16; pedes dorsuales et ventrales non discreti, fasciculo vero setarum dorsuali superiore, et ventrali terminali præditi; setæ fasciculi dorsualis lineares, serrulatæ, ventralis compositæ, articulis mediis et longis, apicibus bidentatis. *Hesione protochona* (Schm.); *L. chinensis*, sp. n., Kinb. *l. c.* p. 244, Hong Kong.

Hesione eugeniæ, sp. n., Kinberg, *l. c.* p. 244, Banka Strait.
Hesione steenstrupii, sp. n., Quatrefages, *l. c.* vol. ii. p. 96, pl. 9. fig. 17, Guettary.

PHYLLODOCEÆ.

Phyllodoce maculata (Ærst.). Agassiz (*l. c.* p. 333) describes the larval form of this species. Here we may refer to two very strange larval Annelids of quite uncertain position, figs. 56 & 58.

Liocapa vertebralis, Costa. This species, described in the first part of the *Annuario*, p. 87, is here described at greater length, a second specimen having been discovered (*l. c.* p. 164, tav. 4. figs. 1–8). The structure of the eyes in this genus is most remarkable, resembling in many respects that met with among very much higher animals. The cornea is divisible into two portions, a transparent and opaque. The anterior chamber contains an aqueous humour; towards the inner edge of the lens ciliary processes make their appearance. The pigment layer is of a brown rosy hue. One muscle is attached to the posterior middle surface of the globe; and there is a well-marked optic nerve.

Rhynchonereella, g. n., Costa, *l. c.* p. 168, tav. 9. figs. 13–15. The anterior segment has two very large eyes. The edges of this segment are garnished with cilia; and from it spring four fleshy, nearly equal tentacles in front of and between the eyes. There is an odd tentacle. The head has two superior and two inferior tentacles, the latter acting as palpi. The structure of the eyes is the same as that in *Liocapa*, and so is also the structure of the feet and their appendages. *R. gracilis*, sp. n., only one individual found at Naples.

Nicotia, g. n., Costa, *l. c.* p. 160, tav. 3. Head consisting of one segment, body of thirteen, and two forming a kind of tail. The cephalic segment is small, quadrangular, a little broader than long; those of the body are very much broader than long, gradually increasing in width from the first to the tenth or eleventh; the next three nearly the same width; those of the tail very small, the first broader than long, the second quadrate. Head has the margins garnished with vibratile cilia, and has seven cirri, one rising from the forehead, two in front and two on either side; in addition there are two

ciliated tentacles, inserted laterally. Eyes 4. The fleshy foot is provided with a bundle of setæ; the posterior cirrus is a little larger than the anterior; below the foot arises a very long cirrus, similar to those met with on the head; the setæ are articulated. *N. lineolata*, sp. n., Costa, l. c. p. 160, tav. 3, found in the Bay of Naples.

New species :—

- Liocapa vitrea*, Costa, l. c. p. 167, tav. iv. figs. 9–12, Naples.
- Phyllodoce gracilis*, Kinberg, l. c. p. 240, Society Islands; *P. novæ-hollandiæ*, Kinb. l. c. p. 241, Port Jackson; *P. longipes*, Kinb. ibid., Valparaiso.
- Phyllodoce attenuata*, sp. n. ♀, and *Phyllodoce clava*, sp. n. ♀, Carrington, Proc. Lit. & Philos. Soc. Manchester, iv. 1865, pp. 181 & 182, from Southport.
- Eulalia magalaensis* and *E. picta*, Kinberg, l. c. p. 241, Straits of Magellan; *E. hawaica*, Kinb. ibid., Honolulu.
- Carobia* ? *patagonica*, Kinberg, l. c. p. 242, Patagonia.
- Kronia* (sic) *angelini*, Kinberg, l. c. p. 242, Chinese seas; *K. auroræ*, Kinb. l. c. p. 243, Saint Helena.
- Alciopa atlantica* and *A.* ? *splendida*, Kinberg, l. c. p. 243, Atlantic; *A. candida* (Delle Chiaje), Kinb. ibid., Messina; *A. pacifica*, Kinb. ibid., Sandwich Islands.

QUATREFAGES (l. c.) describes the following new species :—

- Eulalia cæca*, vol. ii. p. 123, New Zealand; *E. incompleta*, p. 124, Torres Straits; *E. mucosa*, p. 125, Friendly Isles.
- Phyllodoce kinbergii*, p. 128, pl. 9. figs. 8–11, Guettary; *P. rathkei*, p. 131, pl. 9. figs. 12–14, Guettary; *P. breviremis*, p. 132, Guettary; *P. modesta*, p. 134, coasts of France.
- Eteone foliosa*, p. 146, St. Vaast; *E. picta*, p. 147, pl. 7 bis. figs. 18–23, Brehat.
- Torrea vitrea*, p. 150, pl. 9. figs. 15, 16, Isola Straits, near Palermo.

GLYCEREA.

The species of the genus *Goniada* (Aud. & Edw.) are raised to the rank of a family by KINBERG (l. c. p. 246), who distributes them under 4 genera, characterized as follows :—

- I. Maxillæ angulatæ (*dents en chevrons*) adsunt.
 - A. Maxillæ transversæ (*petites denticules*) 3 *Gomada*.
 - B. Maxillæ transversæ 5 *Lacharis* (K.).
- II. Maxillæ angulatæ desunt.
 - A. Maxillæ terminales 22 *Fypicaste* (K.).
 - B. Maxillæ terminales 40–44 *Leomatus** (K.).

Goniada maculata (Erst.) is described as a new species, *Goniada alcockiana*, by Carrington, Proc. Lit. & Philos. Soc. Manchester, iv. 1865, p. 182.

New species :—

- Glycera nicobarica*, Grube, l. c. p. 178, Nicobar.
- Glycera lævis*, Kinberg, l. c. p. 245, Atlantic; *G. jucunda*, Kinb. ibid., Rio de Janeiro; *G. pacifica*, Kinb. ibid., Foua.
- Hemipodia patagonica*, Kinberg, l. c. p. 245, Magellan's Straits.

* This name cannot be adopted, being absolutely identical with *Leomatus* (Kinb.) under *Nereidea*.

Goniada virgini, Kinberg, *l. c.* p. 247, Rio de Janeiro; *G. felicissima*, Kinb. *ibid.*, Saint Helena.

Lacharis crudelis, Kinberg, *l. c.* p. 247, Rio de Janeiro.

Epicaste armata, Kinberg, *l. c.* p. 247, Patagonia.

Leonnatus vorax, Kinberg, *l. c.* p. 247, South Atlantic.

QUATREFAGES (*l. c.*) describes the following new species:—

Glyceria mulleri, vol. ii. p. 172, Greenland; *G. decorata*, p. 181, Brehat; *G. branchialis*, p. 182, Brehat; *G. gigantea*, p. 183, Brehat; *G. fallax*, p. 184, pl. 9. fig. 18, and pl. 2. fig. 2, St. Vaast; *G. albicans*, p. 186, Boulogne.

Hemipodus roseus, vol. ii. p. 194, Chili.

CHETOPTERA.

Chetopterus valencinii, sp. n., Quatrefages, *l. c.* vol. ii. p. 210, pl. 12. fig. 1, coasts of Normandy; *C. sarsii*, Quatref. *l. c.* p. 213, Bay of Biscay; *C. afer* and *C. australis*, Quatref. *l. c.* p. 215. The tubes only of these two species are described; the first is from Mayotte, the second from St. Peter's Island.

Chetopterus antarcticus, sp. n., Kinberg, *l. c.* p. 338, Straits of Magellan.

Spiochetopterus patagonicus, sp. n., Kinberg, *l. c.* p. 338, Atlantic, off Cape Virgin.

TOMOPTERIDEA.

Tomopteris carpenterii, sp. n., Quatrefages, *l. c.* vol. ii. p. 227, pl. 16 bis. figs. 1 & 2, from the Australian Seas.

Tomopteris huxleyi, Quatref. *l. c.* p. 227, for *T. onisciformis*, Carpent. Trans. Linn. Soc. xxii. p. 358, pl. 62. fig. 8, from Torres Straits.

Tomopteris pagenstecheri, Quatref. *l. c.* p. 227, for *T. onisciformis*, Carpent. *ibid.* p. 353, pl. 62. figs. 6 & 7, Isle of Arran, Scotland.

CLYMENEA.

KINBERG (*l. c.* p. 339) rejects *Notomastus* (Sars), *Capitella* (Blainv.), *An-cistria* (Quatr.), and *Ammochares* (Grube) from this family. For *Ammochares* and (apparently) *Capitella*, with which *Notomastus* goes, he establishes a distinct family, *Ammocharidea* (*l. c.* p. 343), characterized as follows:—

Branchiæ tentaculares, a segmento buccali orientes, digitatæ; mutatio segmentorum; pedes dorsuales setis capillaribus et ventrales uncinis minutis numerosissimis.

Ammochares ottonis (Grube) is described as a new genus, *Ops digitata*, by Carrington, Proc. Lit. & Philos. Soc. Manchester, iv. 1865, p. 187.

Mandrocles, g. n., Kinberg, *l. c.* p. 339. Lobus cephalicus cum annulo anteriore segmenti buccalis coadnatus, fronte compressa, limbo nullo; segmenta biannulata; setæ dorsuales capillares: aliæ angustæ et inæqualiter bilimbatae, aliæ biserrulatae; ventrales uncini rostrati, in segmento quarto incipientes, numerosi, arcuati, collo elongato, radice abbreviata. Sp. *M. architectus*, sp. n., Kinberg, *l. c.* p. 339, Atlantic, off Brazil.

Chrysothemis, g. n., Kinberg, *l. c.* p. 340. Lobus cephalicus distinctus, terminalis, truncatus, obliquus, sulco transverso bipartitus, limbo humili tripartito; segm. buccale nudum, superne singulum, inferne biannulatum; setæ dorsuales capillares: aliæ limbatae, aliæ bilimbatae, aliæ biserrulatae; uncini segmentorum 2-4 robusti, pauciores, posteriorum tenuiores numerosi, usque ad segm. anale obvii; hoc nudum, biannulatum, sulcis lateralibus bipartitum, subts truncatum, supra elongatum retractum; segm. setigera 19; anus dor-

sualis; infundibulum nullum. Sp. *C. amœna*, sp. n., Kinberg, *l. c.* p. 340, Atlantic, off Brazil.

Iphianissa, g. n., Kinberg, *l. c.* p. 340. Lobus cephalicus truncatus, obliquus, limbatus, cum segm. bucc. nudo connatus; pharynx exsertilis; setæ dorsuales capillares, ventrales uncini, series simplices fingentes, in segm. 1-3 corporis pauci, rostrati, apice transverso, reliqui minuti, collo elongato, apice inclinato. Pars posterior incognita. Sp. *I. armata*, sp. n., Kinberg, *l. c.* p. 341, Rio de Janeiro.

Asychis, g. n., Kinberg, *l. c.* p. 341. Lobus ceph. distinctus, terminalis, truncatus, obliquus; segm. bucc. biannulatum, nudum; setæ dorsuales capillares: aliæ aciculiformes, aliæ elongatæ serrulatæ, aliæ breviores limbatae; uncini in segm. 2 corporis incipientes, transversi, uniseriales; anus dorsualis; infundibulum incompletum; segm. setigera 19. Sp. *A. atlanticus*, sp. n., Kinberg, *l. c.* p. 341, Atlantic, off Brazil.

Sabaco, g. n., Kinberg, *l. c.* p. 341. Lobus ceph. distinctus, truncatus, obliquus, sulcis 2 brevibus, transversis; segm. bucc. nudum, biannulatum; setæ dorsuales capillares, læves, attenuatæ: aliæ angustè limbatae longiores et breviores, aliæ bilimbatae, aliæ apicibus biserrulatæ; uncini uniseriales, rostrati, truncati, in segm. 2-4 pauciores, robusti, in reliquis usque ad segm. anale plurimi, graciliores, collo elongato, vertice retracto; segm. anale simplex, illud generis *Chrysothemidis* æquans. Sp. *S. maculatus*, sp. n., Kinberg, *l. c.* p. 341, Banca Strait.

Neco, g. n., Kinberg, *l. c.* p. 342. Lobus ceph. limbatus; pedes ventrales segmentorum 1-3[-4?] setigerorum stylis 1-3 validis, ceterorum uncinis uniserialibus; infundibulum. Sp. *N. echeneis*, sp. n., Kinberg, *l. c.* p. 242, Atlantic, off La Plata.

Mylitta, g. n., Kinberg, *l. c.* p. 342. Lobus ceph. cum segm. bucc. elongatus, convexus, integer, nudus, limbis carens; setæ dorsuales capillares, ventrales segmentorum corporis anteriorum 5 styliformes, utrinque singulæ; uncini segm. reliquorum elongati, series simplices fingentes. Sp. *M. quinquemaculata*, sp. n., Kinberg, *l. c.* p. 342, Atlantic, off La Plata.

Sandanis, g. n., Kinberg, *l. c.* p. 343 (*Ammocharidea*?). Lobus cephalicus productus; oculi; branchiæ tentaculares 2, retractiles, a segm. bucc. orientes, digitatæ. Sp. *Capitella rubicunda* (Keferst.).

Psammoceollus, g. n., Grube, *l. c.* p. 178. Genus familiæ Maldaniarum, *Ammochari* simillimum, sed membrana annuliformi laciniata anteriore nulla. Corpus tenue verniforme, segmentis laud numerosis minus distinctis, plus minus elongatis, utrinque fasciculos setarum capillarum et vittas ventrales uncinorum brevissimorum confertorum ferentibus. Lobus capitalis cum segmento buccali coalitus, pæne tubiformis, subtus fissus. *P. australis*, sp. n. (p. 179), Island of St. Paul. This genus would appear to be closely related to *Chlymenia* (Erst.).

Maldane brasiliensis, sp. n., Kinberg, *l. c.* p. 340, Atlantic, off Rio de Janeiro.

Praxilla kefersteini, sp. n., Kinberg, *l. c.* p. 342, Rio de Janeiro.

Johnstonia? *gracilis*, sp. n., Kinberg, *l. c.* p. 342, Cherbourg.

Ammochares tegula and *A. sundevalli*, sp. n., Kinberg, *l. c.* p. 343, Atlantic, off Brazil.

QUATREFAGES (*l. c.*) describes the following new species:—

Chlymene zostericola, vol. ii. p. 237, St. Vaast; *C. modesta*, p. 239, St. Sebastian.

- Leiocephalus coronatus*, p. 242, pl. 11. figs. 1-9, St. Malo; *L. parvus*, p. 243.
Johnstonia clymenoide, p. 245, pl. 11. figs. 10-15, St. Sebastian.
Petaloproctus terricola, p. 247, St. Sebastian.
Arenia cruenta, p. 250, pl. 11. figs. 16-23, Brehat; *A. fragilis*, p. 251, pl. 11. figs. 24-27, Brehat.
Ancistrina minima, p. 252, pl. 11. figs. 28-34, La Rochelle.

ARENICOLEA.

- Arenicola loveni*, sp. n., Kinberg, *l. c.* p. 355 (Eug. Resa, Ann. tab. 28. 1), Port Natal.

OPHELIEA.

Dindymene, g. n., Kinberg, *l. c.* p. 256. Corpus fusiforme, segmenta 3-, 2-annulata; lobus cephalicus minutus, terminalis, nudus; segmenta buccalia 3, primum nudum; os inferum, transversum; pharynx sine papillis et maxillis; pedes duplices, distantes, setis capillaribus; aliis lævibus, aliis serrulato-ciliatis; branchiæ cirrosæ, usque a segmento buccali 2; segmenta posteriora tuberculis binis utrinque prædita. Sp. *D. concinna*, sp. n., Kinb. *l. c.* p. 256, Algoa Bay.

Cassandare, g. n., Kinberg, *l. c.* p. 256. Corpus elongato-ovale; lobus cephalicus terminalis, cum segmento buccali confluens; pharynx sine maxillis et papillis; pedes duplices, distantes, setæ capillares tenuissime serrulatæ; branchiæ cirrosæ, compressæ, subannulatæ, attenuatæ, in segm. anterioribus nullæ; segmenta post. tuberculis carentia; cirri anales 2; papillæ numerosæ. Sp. *C. formosa*, sp. n., Kinb. *l. c.* p. 257, La Plata.

Niteticus, g. n., Kinberg, *l. c.* p. 257. Corpus elongato-ovale, teres; lobus cephalicus terminalis, conicus, cum segmento buccali confluens; nec maxillæ nec papillæ pharyngis; pedes duplices, anteriores conjuncti, breves; branchiæ cirrosæ, antice et postice nullæ; setæ aliæ capillares arcuatæ, aliæ serrulato-spinosæ; cirri anales 2, papillæ numerosæ. Sp. *N. pretiosa*, sp. n., Kinb. *ibid.*, Patagonia.

Ladice, g. n., Kinberg, *l. c.* p. 257. Corpus breviter fusiforme, subtus planum, sulcatum; lobus cephal. terminalis, brevis, cum segm. buccali confluens; maxillæ 0; papillæ pharyngis elongatæ, fasciculos 2 infra orificium oris fingunt; branchiæ cirrosæ; pedes singuli, fasciculis setarum binis, setæ capillares læves; anus prolapsus brevis, cirris analibus et [papillis] hæmorrhoidalibus elongatis. Sp. *L. adamantea*, sp. n., Kinb. *ibid.*, Rio de Janeiro.

Terpsichore, g. n., Kinberg, *l. c.* p. 257. Corpus fusiforme, subtus planum, sulcatum; lobus cephal. terminalis, conicus, cum segm. buccali confluens; maxillæ 0; papillæ pharyngis elongatæ, fasciculos 2 infra orificium oris fingunt; branchiæ cirrosæ; pedes singuli, fasciculis setarum binis, setæ capillares limbatae; segm. anale elongatum, cylindricum, cirris analibus 2; anus prolapsus elongatus, superus, papillis numerosis. Sp. *T. delapidans*, sp. n., Kinb. *l. c.* p. 258, Valparaiso.

Travisia lithophila, sp. n., Kinberg, *l. c.* p. 256, Port Jackson.

Euzonus arcticus, sp. n., Grube, Jahresbericht schles. Gesell. 1866, p. 64.

Ophelia polychæles, sp. n., Grube, *l. c.* p. 65, Red Sea; *O. aulopygos*, sp. n., Grube, *l. c.* p. 65, Desterro, Brazil.

ARICIEA.

KINBERG establishes 5 new genera in this family, which he tabulates as follows (*l. c.* p. 251):—

- I. Appendices lobi cephalici 4. *Aricia*.
 II. Append. lobi cephal. 0.
 A. Cirri tentac. 2; aciculæ arcuatæ serrulatæ *Alcandra* (K.).
 B. Cirri tentac. 0.
 1. Branchiis dorsualibus desunt segmenta 1-4; aciculæ glochideæ.
 Phylo (K.).
 2. Branch. dors. desunt segmenta 1-5.
 * Aciculæ obtusæ et acutæ, annulatæ *Lacydes* (K.).
 † Aciculæ obtusæ; setæ bifidæ, &c. *Leodamas* (K.).
 3. Branch. dors. desunt segmenta 1-7; aciculæ obtusæ *Labotas* (K.).

Kinberg (*l. c.* p. 337) forms a distinct family, *Anthostomea*, for the genus *Anthostoma* of Schmarda.

New species :—

Sphærodorum clapediæ, Greeff, *sp. n.*, *l. c.* p. 351, Taf. 6. Greeff amends the characters of the genus *Sphærodorum*, which includes *S. flavum* (Eerst.), *S. peripatus* (Grube) = *Pollicita peripatus* (Johnston), as well as the new species from Dieppe. The new species is described in detail; and the curious gland-like bodies, mistaken by Johnston for branchiæ, are determined to be glandular capsules.

Scoloplos elongatus, Quatrefages, *l. c.* vol. ii. p. 286, St. Vaast.

Alcandra robusta, Kinberg, *l. c.* p. 251, Rio de Janeiro.

Phylo felix, Kinberg, *l. c.* p. 251, Rio de Janeiro.

Lacydes havaicus, Kinberg, *l. c.* p. 252, Honolulu.

Leodamas verax, Kinberg, *l. c.* p. 252, Patagonia.

Labotas novæ hollandiæ, Kinberg, *l. c.* p. 252, Port Jackson.

Anthostoma dendriticum, Kinberg, *l. c.* p. 337, Vancouver's Island.

LEUCODOREA.

Polydora, Bosc (*Leucodora*, Johnst.). Agassiz (*l. c.* p. 323) shows that while *Leucodora*, Johnst., is the same as *Polydora*, Bosc, yet *Leucodora*, Clap., is quite different from *Polydora*, Bosc, and explains how this error arose, describing also the young of *Polydora* and figuring many of its stages.

Perialla, *g. n.*, Kinberg, *l. c.* p. 253. Lobus cephalicus deplanatus, ad segmentum buccale et segm. 1 et 2 adhærens; oculi 4; tentaculum singulum; antennæ 2, papilliformes; cirri tentac. 2, longissimi; branchiæ cirrosæ basi compressa; setæ pedum paris 5 orbiculatæ, apice brevi, inclinato, pedum reliquorum simplices, limbatæ, acutæ et uncinatæ, robustæ. *Sp. P. clapedei*, *sp. n.*, Kinb. *l. c.* p. 253, Rio de Janeiro.

Leucodore nasutus, *sp. n.*, Quatrefages, *l. c.* vol. ii. p. 296, pl. 12. figs. 8-17, Brehat; *L. audax*, Quatref. *l. c.* p. 298, pl. 12 bis. figs. 3-6, Boulogne and *L. fabricii*, Quatref. *l. c.* p. 300, pl. 8 bis. figs. 8, 9, La Rochelle.

HERMELLEA.

Idanthyrusus, *g. n.*, Kinberg, *l. c.* p. 349. Segm. bucc. et cirri tentac. ad basin branchiarum conformati, operculo 0 sed setis porrectis, spinosis, aliis arcuatis, aliis aciculæformibus, subannulatis præditum; branchiæ numerosæ, cirrosæ; pedes utrinque duplices, distantes; cirri segm. utrinque singuli; mutatio segm. 4/5; palæ clavatæ; uncini serrulati, series transversas fingentes;

setæ simplices, ciliato-serrulatæ; tubus analis elongatus, nudus, ad superficiem cirros ferentem incumbens. Sp. *I. armatus*, sp. n., Kinb. l. c. p. 350, Valparaiso.

Ariapithes, g. n., Kinberg, l. c. p. 350. Basis operculi sicut illa generis *Idanthyrsi* conformata, margine terminali non clauso, operculum inferius fingens; operc. superius pedunculatum, margine semicirculari, membranaceum. nec paleis ornatum; branchiæ 0; paleæ segm. primi series simplices fingentes et parti inferiori basis operculi oppositæ; pedes segm. 2-4 æquales, utrinque singuli, laterales, transversim compressi, setis longis, simplicibus: aliis aciculæformibus, lævibus, aliis tenuissime serrulatis; uncini, series transversas fingentes, dentati, radice dentibus opposita, transversa, elongata. Sp. *A. palidus*, sp. n., Kinb. l. c. p. 350, Algoa Bay.

Laggamis, g. n., Kinberg, l. c. p. 350. Segm. bucc. et cirri tentac. ad basin branchiarum et operculorum conformati; opercula 2 terminalia, lateralia, aciculis porrectis, sulcatis, aliisque unguulatis armata; branchiæ numerosæ, cirrosæ; pedes duplices, distantes; mutatio segm. 5/6; paleæ spatulatæ, apice ciliato; uncini serrulati; setæ simplices, ciliato-serrulatæ; cirri segmentorum bini: alii simplices, alii pectiniformes. Sp. *L. indicus*, sp. n., Kinb. l. c. p. 350, Banca Strait.

Phragmatopoma lapidosa, sp. n., Kinberg, l. c. p. 349, near Praya Grande and Rio de Janeiro; *P. virgini*, sp. n., Kinb. ibid., Magellan's Strait; *P. moerchi*, sp. n., Kinb. ibid., Honolulu.

Uncinochæta incompleta, sp. n., Quatrefages, l. c. vol. ii. p. 326. This genus is referred doubtfully to this family. The unique specimen in the Paris Museum is in a very bad state for description.

AMPHARETEA.

Amphicteis gunneri, Sars. Sars (l. c.) redescibes this species, and institutes a comparison between it and *A. finmarchica*.

Amphicteis finmarchica, sp. n., Sars, l. c. p. 10, Ramfjord at Tromsø.

Ampharete patagonica, sp. n., Kinberg, l. c. p. 343, Atlantic, off Cape Virgin.

TEREBELLACEA.

Kinberg (l. c. pp. 344-347) recharacterizes the genera *Neottis* (Malmgr.), *Thelepus* (Leuck.) = ?*Hétérophénacie* (Quatr.), and *Artacama* (Malmgr.).

Venusia punctata (Johnst.) is described as *Phenacia pulchella* (sp. n.) by Parfitt, Ann. & Mag. Nat. Hist. 1806, xviii. pp. 1-2, pl. 1*.

Æorpata, g. n., Kinberg, l. c. p. 347. Cirri ceph. 8; branchiæ dorsuales 4, cirrosæ, radiis bipinnatæ; spinæ segm. primi unguiculatæ; setæ anguste limbatæ; uncini breves. Sp. *Æ. armata*, sp. n., Kinb. l. c. p. 347, near Guayaquil.

Otanes, g. n., Kinberg, l. c. p. 347. Cirri ceph. numerosi; branchiæ dorsuales 4, foliaceæ, transversæ; setæ elongatæ usque ad finem corporis; uncini breves, uniseriales. Sp. *O. americanus*, sp. n., Kinb. l. c. p. 347, Atlantic, off Brazil.

Aryandes, g. n., Kinberg, l. c. p. 347. Cirri ceph. minuti; branchiæ dorsuales 6, cirrosæ; paleæ paris primi pedum in segmento primo corporis obviæ, aciculæformes, sublimbatæ, laterales, prominentes; setæ pedum dorsualium limbatæ, acutæ; uncini breves, uniseriales. Sp. *A. gracilis* and *A. forficata*, sp. n., Kinb. l. c. p. 348, near Guayaquil.

* We are indebted to Dr. McIntosh for this identification.—ED.

Odysseus, g. n., Kinberg, *l. c.* p. 348. Cirri ceph. nulli; branchiæ dorsuales 8, cirrosæ; setæ elongatæ usque ad finem corporis; uncini breves, uniseriales. Sp. *O. virginii*, sp. n., Kinb. *l. c.* p. 348, Atlantic, off Brazil.

Cyaxares, g. n., Kinberg, *l. c.* p. 348. Branchiæ dorsuales nullæ; pedes dorsuales 14, setis paucis, subrectis; uncini breves, in segm. anter. desiderati. Sp. *C. clavatus*, sp. n., Kinb. *l. c.* p. 348, Brazil.

Dejoces, g. n., Kinberg, *l. c.* p. 348. Branchiæ dorsuales 0; pedes dorsuales 34, setis ciliatis: aliis obliquis, aliis arcuatis; uncini breves, in segm. 7 incipientes. Sp. *Polycærrus chilensis* (Schm.)?

Terebella dasycomus, sp. n., Grube, *l. c.* p. 180, Island of St. Paul.

Terebella ebranchiata, sp. n., Sars, *l. c.* p. 16, Finmark.

Terebella jucunda, sp. n., Kinberg, *l. c.* p. 344, Atlantic; *T. gracilicauda*, Kinb. *ibid.*, Tahiti.

Neottis gracilis, sp. n., Kinberg, *l. c.* p. 344, Singapore.

Physelia agassizi, sp. n., Kinberg, *l. c.* p. 345, York Bay, Magellan's Strait.

Thelepus antarcticus, sp. n., Kinberg, *l. c.* p. 345, York Bay, Magellan's Strait; *T. natans*, Kinb. *ibid.*, Atlantic, off La Plata.

Artacama benedicti, sp. n., Kinberg, *l. c.* p. 346, Rio de Janeiro.

Terebellides sieboldi, sp. n., Kinberg, *l. c.* p. 346, Banca Strait; *T. pacifica*, Kinb. *ibid.*, Society Islands; *T. klemami*, Kinb. *ibid.*, Atlantic.

Polycærrus arcticus, sp. n., Sars, *l. c.* p. 14, Tromsø.

QUATREFAGES (*l. c.*) describes the following new species:—

Terebella emmalina, vol. ii. p. 351, pl. 14. figs. 1-8, Bay of Biscay; *T. edwardsii*, p. 354, pl. 12 bis. fig. 1, St. Vaast; *T. abbreviata*, p. 363, La Rochelle; and *T. modesta*, p. 365, Jervis Bay.

Idalia vermieulus, p. 372, St. Sebastian.

Phenacia terebelloides, p. 375, St. Vaast; *P. setosa*, p. 376, St. Vaast.

Apneunea leoncina, p. 382, pl. 14. figs. 10-11.

Heterophyselia bosci, p. 386, St. Vaast.

Heterophenacia gigantea, p. 389.

Rytocephalus ebranchiatus, p. 392, Jervis Bay, referred doubtfully to this family.

SABELLACEA.

Kinberg (*l. c.* pp. 352-354) recharacterizes the genera *Spirographis* (Vivian), *Piratesa* (Templ.), *Sabella* (Linn.), and *Laonome* (Malmgr.).

Demonax, g. n., Kinberg, *l. c.* p. 354. Cirri tentac. 0; operculum 0; branchiæ liberæ; setæ limbatæ; uncini breves et subrostrati, series transversas dorsuales fingentes; mutatio segm. 8/9. Sp. *D. krusensterni*, sp. n., Kinb. *l. c.* p. 354, and *D. cooki*, Kinb. *l. c.* p. 355, Honolulu; *D. leucaspis*, Kinb. *l. c.* p. 354, near Callao; *D. incertus*, Kinb. *ibid.*, Valparaiso.

Parachonia, g. n., Kinberg, *l. c.* p. 355. Cirri tentac. 2, dorsuales, attenuati; branchiæ elongatæ, basibus contortis, radiis utrinque membrana conjunctis, ciliatis; mutatio segmentorum; setæ limbatæ, aciculæformes, clavatæ, truncato-ciliatæ; palæ; uncini. Sp. *P. letterstedti*, sp. n., Kinb. *l. c.* p. 355, Cape of Good Hope.

Sabella. Kinberg (*l. c.*) describes the following new species of this genus:—*S. havaica*, p. 352, Honolulu; *S. longa*, *ibid.*, *S. foliifera* and *S. natalensis*, p. 353, Port Natal; *S. magalhaensis*, p. 353, Magellan's Strait; *S. splendida*, *ibid.*, Guadeloupe; *S. vancouveri*, *ibid.*, Vancouver's Island; *S. gracillima*,

ibid., Rio de Janeiro; *S. columbi*, ibid., Atlantic, off La Plata; *S. cornuta*, ibid., Barthelemy.

Laonome antarctica, sp. n., Kinberg, *l. c.* p. 354, York Bay, Magellan's Strait.

QUATREFAGES describes (*l. c.*) the following new species:—

Distylia punctata, vol. ii. p. 426, Brehat.

Spirographis longispira, p. 429, Sicily; *S. brevispira*, p. 430, St. Malo.

Sabella pectoralis, p. 435, Isle of France; *S. pottai*, p. 436, New Caledonia; *S. saricava*, p. 437, pl. 15. figs. 1-7, Guettary; *S. terebelloïdes*, p. 438, Brehat; *S. kroeyeri*, p. 438, St. Vaast; *S. arenilega*, p. 439, Coasts of France; *S. verticillata*, p. 440, pl. 16 bis. figs. 3-4, Teneriffe and Coasts of France; *S. longibranchiata*, p. 445, St. Malo; *S. intermedia*, p. 446, Marsoilles (?); *S. cucullus*, p. 451, Mediterranean; *S. modesta*, p. 451, Lima; *S. palmata*, p. 453, Carteret; *S. armata*, p. 453, New Zealand.

Psymobranchus simplex, p. 472, pl. 15. fig. 13, St. Vaast.

Amphicorina cursoria, p. 475, pl. 16. figs. 1-4; *A. desiderata*, p. 477, St. Malo; *A. argus*, p. 478, pl. 16. figs. 5-10.

Myxicola parasites, p. 480, pl. 16. fig. 11.

Gymnosoma inermis, p. 482.

SERPULEA.

Spirorbis spirillum (Gould). In an account of the development of this species, Agassiz (*l. c.* p. 318) shows some differences between his researches and those of Pagenstecher, important as bearing upon the mode of development of the tentacles. The nomadic life of *Spirorbis* would appear to last only from eight to ten hours.

Kinberg (*l. c.* p. 351) proposes some alterations in the terminology of this group (including *Sabella*). His "cirri tentaculares"—the "appendices styliformes" of Milne-Edwards, the "opercula" of authors and the "cirri buccales" of Kröyer; his "lobus cephalicus" is the upper middle part between the roots of the branchiæ; and his "segmentum buccale" is the upper superior part of the body within the collar. The first segment of the body is that bearing the collar.

Zopyrus, g. n., Kinberg, *l. c.* p. 351. Cirri tentaculares 2, distantes: alter infundibuliformis, alter clavatus; plicæ laterales; setæ aciculæformes, capillares et pectinatæ; aciculæ; uncini. Sp. *Z. loveni*, sp. n., Kinb. *l. c.* p. 351, Strait of Magellan; *Z. kaempferi*, sp. n., Kinb. ibid., Banca Strait.

Eupomatus plateni, sp. n., Kinberg, *l. c.* p. 351, Atlantic, near La Plata.

QUATREFAGES (*l. c.*) describes the following new species:—

Filograna berkeleyi, vol. ii. p. 485, pl. 15. figs. 9-12, St. Vaast.

Spirorbis laevis, p. 490, pl. 15. fig. 26, Guettary.

Serpula octocostata, p. 496, pl. 14. figs. 17-23, Guettary; *S. compressa*, p. 500, Naples; *S. gervaisii*, p. 501, Cette; *S. interrupta*, p. 502, Palermo; and *S. antarctica*, p. 503, New Zealand.

Vermilia greyi, p. 510, New Zealand; *V. pennanti*, p. 514 (for *Serpula intricata*, Pennant), St. Vaast; *V. humilis*, p. 515, pl. 12. fig. 18, St. Vaast; *V. socialis*, p. 516, pl. 15. figs. 15-17, St. Sebastian; *V. pusilla*, p. 517, pl. 15. figs. 21-23, Guettary; *V. proditric*, p. 518, pl. 15. figs. 18-20, Guettary; *V. mahoria*, p. 520, New Zealand; *V. trifida*, p. 528, pl. 15. fig. 24 a-d, and fig. 25 (for *Serpula vermicularis*, Cuvier), St. Vaast.

Cymospira crescentigera, p. 538, New Ireland; *C. quoyi*, p. 539, Vanikoro;

C. gaymardi, p. 539, pl. 16 bis. fig. 13; *C. morehii*, p. 540, pl. 16 bis. figs. 14-17, New Holland; *C. megasoma*, p. 541, Brazil; *C. rubus*, p. 542, Bahia; *C. incompleta*, p. 543, New Zealand.

ANNELIDA OLIGOCHÆTA.

D'UDEKEM (*l. c.* p. 11), rejecting the classification which he proposed in 1858 for this group of Annelids, adopts in its integrity that proposed by himself in 1855. The order is first divided into two suborders, the gemmiparous and the non-gemmiparous. The latter live either in the earth or mud, are unable to swim or to follow after their prey, taking in for their nourishment damp earth filled with animal and vegetable matters; they are unwieldy in shape, of fair size, and their skin is more or less firm. The former, on the contrary, are charming little worms, slender and elegant, of small size, often microscopic, living in running or stagnant water, seldom marine, able to swim, and capable of darting after their prey and leading a vagabond life. The Gemmipari have their organs of generation developed only at certain periods; the non-Gemmipari have them always. The latter group, as will be known to readers of M. D'Udekem's writings, is divided into three families, according to the differences in their eggs. The Gemmipari have but a single family.

LUMBRICINA.

Lumbricus. The following known species are described by D'Udekem:—*L. agricola*, Hoffm. (*l. c.* p. 35, pl. 1. fig. 1); *L. communis*, Hoffm. (p. 36—bristles, pl. 4. fig. 6); *L. rubellus*, Hoffm. (p. 39); *L. riparius*, Hoffm. (p. 39, pl. 4. figs. 4, 5); *L. olidus*, Hoffm. (p. 40, pl. 4. figs. 1-3); *L. stagnalis*, Hoffm. (p. 41); *L. pieter*, Hoffm. (p. 41); *L. agilis*, Hoffm. (p. 42). The anatomy of the genus is also described and illustrated in this paper. All the above species are found in the neighbourhood of Brussels.

KINBERG (*l. c.* p. 97) gives the following table of genera belonging to this family:—

- I. Setæ, junioribus exceptis, segmenti cujusque 6 *Tritogenia*, g. n.
- II. Setæ, junioribus exceptis, segm. cujusque 8,
 - A. Ubique binæ, approximatae.
 - 1. Tubercula ventralia utrinque singula *Lumbricus* (Linn.).
 - 2. Tuberc. ventr. utrinque bina *Mandane**, g. n.
 - B. In annulis anterioribus alternantes *Geogenia*, g. n.
 - C. Anteriores binæ approximatae, posteriores distantes.
 - 1. Segmentum buccale non elongatum *Alyattes*, g. n.
 - 2. Segm. buccale elongatum *Eurydame*, g. n.
 - D. Ubique geminæ et distantes *Hypogeon* (Sav.).
 - E. Anteriores dorsuales distantes, ventrales approximatae; posteriores distantes *Hegesipyle*, g. n.
- III. Setæ, junioribus exceptis, segmenti cujusque plures quam 8.
 - A. Posteriores anterioribus plures.

* This name was previously used by the author himself for a genus of *Aonidea*! (see p. 583).

1. Plicæ papillæformes oris nullæ.

* Lobus cephalicus terminalis et superus,

a. Margine postico obsoleto *Amyntas*¹, g. n.b. Margine postico arcuato *Nitocris*, g. n.† Lobus cephalicus terminalis *Pheretima*, g. n.2. Plicæ papillæformes oris adsunt *Rhodopis*, g. n.B. Posteriores et anteriores numero æquales *Perichæta* (Schm.).C. Anteriores posterioribus plures *Lampito*, g. n.KINBERG (*l. c.*) describes the following new species:—*Tritogenia sulcata*, p. 98, Natal.

Lumbricus helene, *josephina*, *hortensia*, *eugenia*, p. 98, Saint Helena; *L. infelix*, p. 98, Natal; *L. armatus*, *alyattes*, and *tellus*, p. 99, Buenos Ayres; *L. novæ-hollandiæ*, *ibid.*, Sidney; *L. vineti*, *ibid.*, Madeira; *L. pampicola*, *ibid.*, Montevideo; *L. tahitana*, *ibid.*, Tahiti; *L. capensis*, p. 100, Cape of Good Hope; and *L. apii*, *ibid.*, California.

Mandane patagonica, p. 100, Port Famine; *M. litoralis*, *ibid.*, on an island in Magellan's Straits; *M. stagnalis*, *ibid.*, Montevideo.

Geogenia natalensis, p. 100, Natal.*Eurydame insignis*, p. 101, Island of St. Joseph (Panama).*Hypogeon havaicus*, p. 101, Oahu; *H. atys*, *ibid.*, Buenos Ayres.*Hegesipyle hanno*, p. 101, Natal.*Amyntas æruginosus*, p. 101, Guam.*Nitocris gracilis*, p. 102, Rio de Janeiro.*Pheretima montana*, p. 102, Tahiti; *P. californica*, *ibid.*, California.*Rhodopis javanica*, p. 102, Java.*Perichæta corticis*, p. 102, Oahu.*Lampito mauritii*, p. 103, Mauritius.

Perichæta taitensis, sp. n., Grube, *l. c.* p. 180, Tahiti (near to *P. viridis*, Schm., from Ceylon).

ENCHYTRÆINA.

Enchytræus sepultus, sp. n., Menge, *l. c.* p. 8, figs. 19–23, found in three different fragments of amber.

NAIDINA.

Chatogaster vermicularis, Müll. Lankester gives a very brief epitome of an interesting paper on the asexual reproduction and anatomy of this minute worm, the chief points of interest being the exceedingly small number of segments composing an individual (4 or 5), the remarkable degree of cephalization, the total absence of cilia, the presence of stiff sensory (?) hairs on the cuticula, the absence of marked segmentation, and the non-occurrence of any individuals bearing sexual organs. *Quart. Journ. Micr. Sci.* 1866, p. 262.

Æolosoma italicum, sp. n., Maggi, *l. c.* p. 8, tav. 1. fig. 1 a, found in spring in stagnant water, in Valcuvia; *Æ. balsamo*, sp. n., Maggi, *l. c.* p. 9, tav. 1. fig. 2 a, found with the preceding. The species of this genus recognized by Maggi are but five in number, which he divides into two groups. In the first there is but a single set of setæ on the side; here are *Æ. henprichii* (Ehr.), *Æ. decorum* (Ehr.), and *Æ. italicum* (Mag.). In the second there are two sets of setæ: *Æ. quaternarium* (Ehr.) and *Æ. balsamo* (Mag.).

¹ *Amyntas*, p. 101.

ANNELIDA ONYCHOPHORA.

GRUBE (*l. c.* p. 173) describes a new species of *Peripatus*, Guild. (the generic characters being slightly altered), from the Cape of Good Hope—*P. capensis*, under stones at the hill near Constantia.

ANNELIDA DISCOPHORA.

AGASSIZ refers to some parasitic worms, resembling a Leech more than anything else, attaining a length of an inch or an inch and a half, and living parasitically "upon the inner wall, in the upper part of the long furrow, near the eye-speck" of *Mnemiopsis leidyi* (Agass.); hardly a specimen was found which had not one or two of these parasites. Catalogue North American Acalephæ, p. 23.

HIRUDINEA.

Democedes, g. n., Kinberg, *l. c.* p. 356. Maxillæ 3, musculosæ, compressæ, edentatæ; habitus *Hirudinis*. Sp. *D. decemstriatus* and *D. natalensis*, Kinb. *l. c.* p. 356, Port Natal; *D. maculatus*, Kinb. *ibid.*, Wisconsin.

Semiscoler, g. n., Kinberg, *l. c.* p. 357. Maxillæ 0; pharynx infra marginem posteriorem segmenti buccalis sulco transverso, et pone illum sulcis longitudinalibus prædita; habitus *Hirudinis*. Sp. *S. juvenilis*, sp. n., Kinb. *l. c.* p. 357, Montevideo; *S. novæ hollandiæ*, sp. n., Kinb. *ibid.*, Sydney.

Hirudo luzonia, sp. n., Kinberg, *l. c.* p. 356, Manilla; *H. chinensis*, Kinb. *ibid.*, China; *H. billberghi*, Kinb. *ibid.*, Montevideo.

Hirudo maculosa, sp. n., Grube, *l. c.* p. 181, Singapore; *H. septemstriata*, Grube, *l. c.* p. 182, Cape; *H. limbata*, Grube, *l. c.* p. 182, Sydney.

Nepheleis quadrilineata, sp. n., Grube, *l. c.* p. 183, Karnicobar.

MALACOBDELLEA.

Malacobdella cardii, sp. n. Beneden and Hesse (*l. c.* p. 4) describe and figure this new species found under the mantle of a very gigantic specimen of *Cardium aculeatum*, from the coast of Brittany.

ANNELIDA GEPHYREA.

KEFERSTEIN (Götting. Nachr. 1866, pp. 215–228) refers to a collection of *Sipunculidæ*, chiefly from North America, received by him from Agassiz, and indicates some peculiar structural characters presented by the following species:—*Sipunculus nudus* (Linn.), *Phascolosoma varians* (Kef.), *P. læve* (Kef.), *P. gouldii* (Pourt.), and *P. antillarum* (Grube). He also describes five new species of *Phascolosoma* (*vide infra*).

New species :—

Dendrostomum huxleyii, sp. n., is described by McIntosh (Proc. Roy. Soc. Edin. vol. v. p. 613) as occurring under a stone lying on muddy sand at North Uist, Outer Hebrides, along with *Priapulius caudatus*, *Sipunculus bernhardus*, and *S. johnstonii*.

Phascolosoma. Of this genus Keferstein describes the following new species:—*P. agassizii*, *l. c.* p. 218, California and Panama; *P. pectinatum*, *l. c.*

p. 219, Panama; *P. pacificum*, l. c. p. 221, Kingsmills Group; *P. (Aspidosiphon) truncatum*, l. c. p. 223, Panama; and *P. cumanense*, l. c. p. 225, Cumana.

QUATREFAGES (l. c.) describes the following as new species:—

Thalassema brevivalpis, vol. ii. p. 595, *T. peronii*, p. 595, Indian Ocean?

Lacazia longirostris, p. 603, pl. 16 bis. figs. 18–19.

Loxosiphon aspergillum, p. 605, pl. 16 bis. fig. 20, Isle of France.

Diesingia chamosoi, p. 606, pl. 16 bis. fig. 22; *D. cupulifera*, p. 607, pl. 16 bis. fig. 21, Indian Ocean.

Aspidosiphon coyi, p. 609, Indian Ocean?; *A. læve*, p. 609, pl. 16 bis. figs. 23–24, Indian Ocean?

Sipunculus gigas, p. 614, Coasts of Brittany; *S. obscurus*, p. 616, pl. 16. figs. 16–17, *S. violaceus*, p. 619, Indian Ocean; *S. vermiculus*, p. 619, Indian Ocean; *S. multitorquatus*, p. 621, Guettary; *S. spinicauda*, p. 621, Barcelona; *S. guttatus*, p. 621, Red Sea; *S. orbiniensis*, p. 622, America; *S. plicatus*, p. 622, *S. javanensis*, p. 622, Java; *S. constellatus*, p. 622, Isle of France; *S. glans*, p. 626, Indian Ocean?; *S. immodestus*, p. 627, Indian Ocean; *S. pygmaeus*, p. 627, *S. rapa*, p. 627, *S. cæmentarius*, p. 628, North America.

Dendrostomum ramosum, p. 629, Brazil.

SCOLECIDA

BY

E. PERCEVAL WRIGHT, M.A., M.D., F.L.S.

I. *Separate Publications.*

KRABBE, H. Recherches Helminthologiques en Danemark et en Islande. 4to, pp. 66, with 7 plates. Paris, London, and Copenhagen, 1866.

In this work, which is a French edition of a memoir published by the Royal Academy of Sciences of Copenhagen, the author details his observations on the Entozoa causing such serious diseases in Iceland, and also gives the results of the preliminary rescarches made by him on the parasites of the dog and cat in Copenhagen. It is especially valuable on account of its statistical details.

PAGENSTECHE, H. A. Die Trichinen, nach Versuchen im Auftrage des grossherzoglich-badischen Handelsministeriums ausgeführt am zoologischen Institute in Heidelberg. Leipzig, 1866, pp. 112, with two plates.

This is the second edition of a work originally published in 1864, but which seems to have escaped the notice of the Recorder of that year. It contains the results of numerous experiments made by the author in conjunction with C. J. Fuchs at the Zoological Institute in Heidelberg, preceded by an historical account of our knowledge of the *Trichinae*, and followed by a natural history of those worms and a notice of the means (prophylactic) to be adopted for getting rid of, or at all events diminishing, this plague.

SCHNEIDER, A. Monographie der Nematoden. Berlin, 1866, pp. 357, 28 plates and 130 woodcuts.

This important monograph consists of two parts. The first contains a general introduction to the study of the Nematoid worms, and treats of the characters which the author has found of most importance in determining the genera and species. It further gives a detailed catalogue of all the species, of which many are described as new, in the collection of the Berlin Museum. The second part treats of the anatomy of the Nematoids and of their development, and concludes with a chapter on the systematic position of the worms in general.

II. *Papers published in Journals &c.*

- BAIRD, W. Description of a new species of Monœcious Worm, belonging to the Class Turbellaria and genus *Serpentaria*. Proc. Zool. Soc. 1866, pp. 101-102.
- ERB, Dr. Ueber das Vorkommen der Trichinen bei Ratten. Verhandl. natur.-med. Ver. zu Heidelberg, Band iv. p. 85.
- GIEBEL, C. Die im zoologischen Museum der Universität Halle aufgestellten Eingeweidewürmer nebst Beobachtungen über dieselben. Zeitschr. gesammt. Ntrwiss. 1866, xxviii. pp. 253-352.
- In this paper we have an account of the present condition of the collection of parasitic worms made by Nitzsch, with a detailed catalogue of the species in the collection.
- HENSEN, V. Die Trichinen in Bezug auf die Mikroskopie. Archiv für mikrosk. Anat. ii. 1866, pp. 132-137.
- KNOCH, J. Die Entwicklungsgeschichte des *Bothriocephalus proboscideus* (*B. salmonis*, Köll.) als Beitrag zur Embryologie des *Bothriocephalus latus*. Bull. Acad. Imp. St. Pétersbourg, t. ix. pp. 290-314 (with a plate).
- KOWALEWSKY, A. Anatomie des *Balanoglossus*, Delle Chiaje. Mém. Acad. Imp. St. Pétersbourg, tom. x. no. 3, 1866, pp. 1-18, with three plates.
- Gives an account of the anatomy of two species (one new) of this genus, the systematic position of which would appear to be very doubtful. We have referred to it among the Nematodea.
- LEUCKART, R. Zur Entwicklungsgeschichte der Nematoden. Archiv d. Vereins für wissensch. Heilkunde, Band ii. pp. 195-235. Translated in Ann. & Mag. Nat. Hist. vol. xvii. 1866, pp. 331-347, and pp. 447-464.
- Sur le développement des Nématodes. Bull. Acad. Roy. Belg. 1866, pp. 208-215, with a plate.
- MACALISTER, A. On the Anatomy of *Ascaris (Atractis) dactyluris*. Quart. Journ. Micr. Scien. 1866, pp. 79-86, plate 2. Proc. Dubl. Nat. Hist. Soc. vol. iv. pp. 294-301, pl. 3. Dubl. Quart. Journ. Scien. July 1866, pp. 178-185.
- Describes the anatomy of both sexes of this worm, which was found in the alimentary canal of *Testudo græca*.
- MECZNIKOW, E. Zur Naturgeschichte der Rhabdocelen. Arch. für Naturgesch. 1865, pp. 174-181, pl. 4 (Ann. & Mag. Nat. Hist. vol. xviii. 1866, pp. 57-65, pl. 8).
- Ueber *Geodesmus bilineatus*, nob. (*Fasciola terrestris*, O. F. Müll.?), eine europäische Landplanarie. Bull. Acad. Imp. St. Pétersbourg, tome ix. pp. 434-447, with a plate.

- MECZNIKOW, E. Ueber eine Larve von *Balanoglossus*. Reichert u. Du Bois-Reymond's Archiv, 1866, pp. 592-595, Taf. 17 B.
- MENGE, A. Ueber ein Rhipidopteron und einige andere im Bernstein eingeschlossene Thiere. Schrift. naturf. Gesellsch. Danzig, neue Folge, Band i. (1866), pp. 8 (*cum figg.*).
Species of *Mermis* and *Anguillula* observed in amber.
- NETTLESHIP, E. Notes on the rearing of *Tenia echinococcus* in the Dog from Hydatids, with some observations on the anatomy of the adult worm. Proc. Roy. Soc. vol. xv. no. 86, pp. 224-226, pl. 8.
- PAGENSTECHE, H. A. Ueber Versuche mit Trichinen. Verhandl. natur.-med. Ver. zu Heidelberg, Band iv. p. 83.
- PEREZ, M. Recherches anatomiques et physiologiques sur l'Anguillule terrestre (*Rhabditis terricola*, Duj.). Ann. Sc. Natur. Zool. vi. 1866, pp. 152-307, pls. 5-10.
- SEIDEL, M. Zur Casuistik der Entozoen. 1. Trichinen. Jena'sche Zeitschr. für Med. und Naturwiss. Band i. pp. 27-34: 1864.
Notes on a series of cases of Trichinosis.
- . 2. *Cysticercus cerebri*. Ibid., pp. 223-229.
An account of a case of the occurrence of *Cysticercus* in the brain, with a discussion of the origin of *Cysticercus*, from which the author seems inclined to admit the possibility "that *Cysticercus* from the pig may carry out their further development as *Cysticercus* in man."
- . 3. Echinococcen. Ibid., pp. 289-299, and Band ii. pp. 356-364.
On the occurrence of *Echinococcus* in the human subject, which the author says is rather frequent about Jena.
- WAGENER, G. R. Ueber Redien und Sporocysten, Filippi. Reichert u. Du Bois-Reymond's Archiv, 1866, pp. 145-149, Taf. 6.

KRABBE (Recherches Helminthologiques, &c.) gives an account of the results of an extended series of observations made by him upon the Entozoa of the dog and cat in Copenhagen. He examined the intestines of 500 dogs and 100 cats, and obtained from them the following parasites in the proportions indicated:—

Of the dogs examined	14 per cent.	contained	<i>Tenia marginata</i> ,
	1	" "	<i>T. cœnurus</i> ,
	0.2	" "	<i>T. serrata</i> ,
	0.4	" "	<i>T. echinococcus</i> ,
	48	" "	<i>T. cucumerina</i> ,
	0.2	" "	<i>Bothriocephalus</i> , sp.

Of the dogs examined	24	per cent.	contained	<i>Ascaris marginata</i> , and
	2	"	"	<i>Dochmius trigenocephalus</i> .
Of 100 cats	5	contained	<i>Tenia crassicolis</i> ,	
	57	"	<i>T. elliptica</i> ,	
	2	"	<i>Bothriocephalus felix</i> , and	
	55	"	<i>Ascaris mystax</i> .	

Thus the 3 principal parasites of the dog are *Tenia marginata* and *cucumerina* and *Ascaris marginata*; and the mode of occurrence of these species, as shown by the author in a tabular form (p. 16), leads him to the following conclusions:—The age and size of the dog has a marked influence on the occurrence of *T. marginata*, which is most frequent in large old dogs from the suburbs of the city, where the slaughterhouses are situated. *Ascaris marginata* (like *Oxyuris vermicularis* in the human subject) is most abundant in young individuals; but *Tenia cucumerina* seems to be developed without reference to the age of its host, or to its size and the locality which it inhabits, except that all the species are rather more abundant in dogs living out of the town than in those from within its limits. The number of all, but especially of *T. marginata*, is more or less reduced in dogs affected with distemper.

In Iceland the number of dogs attacked by Entozoa is considerably greater; for whilst of the Danish dogs examined by the author 67 per cent. furnished these parasites, the proportion in Iceland rises to 93 per cent. In 100 dogs the following species occurred:—

<i>Tenia marginata</i>	75	times.
<i>T. cœnurus</i>	18	"
<i>T. echinococcus</i>	28	"
<i>T. cucumerina</i>	57	"
<i>T. canis lagopodis</i>	21	"
<i>Bothriocephalus fuscus</i> (see p. 607) . .	5	"
<i>Ascaris marginata</i>	2	"

Of 31 cats, 25 (or 81 per cent.) had intestinal worms, namely:—

<i>Tenia crassicolis</i> in 7, or 23 per cent.
<i>T. canis lagopodis</i> in 11, or 35 per cent.
<i>Ascaris mystax</i> in 16, or 52 per cent.

With regard to the characters and mode of occurrence of these species the author enters into more or less detail (*vide infra*).

In a section on the disease caused by *Echinococci* in Iceland, Krabbe gives an historical account of our knowledge of this malady, from the time when it was regarded as a severe hepatitis to the detection of its parasitic cause by the researches of recent helminthologists, especially Eschricht. According to the author the proportion of the people of Iceland affected by

this disease has been greatly exaggerated; for whilst various authors represent the number suffering from hydatid disease at from one-seventh to one-fifth of the population, he estimates the number of those so affected as to render the disease easily recognizable at one-fortieth or one-fiftieth of the inhabitants, giving at least 1800 patients in a total population of about 70,000. Many others attacked by the parasites in a less marked degree cannot, of course, be brought into the estimate. The *Echinococci* attack their victims at all ages, and remain in the body for many years.

After explaining the well-known history of the *Taniada*, the author proceeds to account for the enormous prevalence of these parasites in Iceland, by statistical details as to the number of dogs, sheep, and cattle kept in that island. The number of dogs, the hosts of the fully developed *Tania*, is so great in Iceland that we may estimate on an average that there is one of those animals to every four inhabitants, whilst the sheep and cattle together are more than five times as numerous as the human population, the sheep alone being in the proportion of 4·88 to 1. In conclusion, the author recommends certain prophylactic measures for the diminution of the entozootic plague, especially the cessation of the practice of giving the viscera of the animals killed to the dogs, the avoidance of constant contact with the dogs, by keeping them out of doors, and the adoption of some means, such as a tax, for restraining the number of dogs within moderate bounds.

SCHEIDER (*l. c.* p. 336) proposes the following general arrangement of the worms:—

NEMATHELMINTHA, in which the tegumentary and muscular tissue of the body are separable into two layers:—

I. The muscles of the body form either a layer of long fibres or two layers, an outer, of transverse, and an inner, of longitudinal fibres. In the latter case there are always lateral bundles.

a. Without joints. 1. *Nematoidea*. 2. *Chatognatha*.

b. With joints.

** Only longitudinal bundles. 3. *Gymnotoma*¹.

†† With longitudinal and transverse bundles. 4. *Chatopoda*.

II. The muscles of the body forming an outer (longitudinal) and an inner (transverse) layer. No lateral bundles. 5. *Acanthocephala*. 6. *Gephyrea*.

PLATYELMINTHA, in which the muscular bundles are imbedded in the tegumentary tissue. Longitudinal and transverse muscular fibres forming a muscular framework.

¹ Schneider (*l. c.* p. 326) proposes this order for the reception of the genus *Rhampogordius* (Rathke), which he states has no affinities with the Nematidæ.

- I. Having obliquely crossing muscular fibres. 1. *Trematoda*. 2. *Dendrocoela*. 3. *Hirudinea*. 4. *Onychophora*.
 II. Wanting obliquely crossing muscular fibres. 5. *Cestoidea*. 6. *Rhabdocœla*.

CESTOIDEA.

KRABBE (*Recherches Helminthologiques en Danemark et en Islande*) gives important statistical details upon the prevalence of several species of this order in the intestines of dogs and cats in Copenhagen and in Iceland, and also communicates his observations on the hydatid disease in the latter country (see p. 604). He likewise discusses the characters and natural history of the various species of Cestoid worms observed by him, namely:—*Tænia marginata* (Batsch), pp. 3 & 21, pl. 2. figs. 4–6 (cephalic hooks), & pl. 4. fig. 60 (segments); *T. cœnurus* (Küch.), pp. 5 & 21, pl. 2. figs. 7–9 (hooks), & pl. 4. fig. 61 (segments); *T. serrata* (Goeze), p. 6, pl. 2. figs. 10–12 (hooks), & pl. 4. fig. 62 (segments); *T. echinococcus* (Sieb.), pp. 8–11 & 21, pl. 3. figs. 13–55 (hooks), and pl. 7. fig. 106 (ovum); *T. cucumerina* (Rud.), pp. 11–12 & 22; *T. crassicolis* (Rud.), pp. 18 & 39, pl. 1. figs. 1–3 (hooks), & pl. 4. fig. 63 (segments); *T. elliptica* (Rud.), p. 18; and *T. canis lagopodis* (Rud.), pp. 22–27, pl. 4. figs. 64–71, and pl. 5. figs. 72–74 (structure) & pl. 7. fig. 107 (ovum); *Bothriocephalus*, *sp. indet.* in the dog, p. 13, pl. 6. figs. 95–100 (structure); *B. felis* (Creplin), p. 19, pl. 5. figs. 75–79 (structure), and pl. 7. fig. 109 (ovum); and a new species (*vide infra*). In connexion with the undetermined species of *Bothriocephalus* Krabbe discusses the characters of *B. latus* (Rud.), ova figured pl. 7. figs. 110–111, and *B. cordatus*, and further notices *B. cordatus* (Leuck.), p. 33, pl. 7. figs. 114–116 (ova), and *B. phocarum* (Fab.), p. 36, pl. 7. figs. 101–105 (structure), and fig. 117 (ovum). He also figures hooks of *Tænia murina*, referred to on pp. 39–40, pl. 3. figs. 56–59, and its ovum, pl. 7. fig. 108.

KNOCH (*l.c.*) gives an account of his researches into the development of *Bothriocephalus proboscideus*, and arrives at the following conclusions (p. 309):—that if the embryos from ova of the broad tapeworm be directly introduced into the intestines of any mammal, they never wander about from it into the different organs of the body, as the embryos of *Tænia* do, but they undergo in the intestines all their stages of development up to the *Scolex* stage, and then, without any stop, to maturity. The author's experiments in this respect would appear to be in wonderful accord with those undertaken by very many of the earlier investigators of this subject; and from them the suspicion of Küchenmeister and others, that the larva lives in fresh-water snails or fish, or is devoured by people in various sorts of fruits and vegetables, would appear to be, *à priori*, improbable.

FLEMING mentions the great prevalence of tapeworm in Birmingham, and appears to attribute its frequency to the great quantity of measily pork eaten in that town (Rep. Brit. Assoc. 1865, p. 106). Cobbold combats the opinion so frequently held that pork was the chief source of human tapeworms, and shows that the *Tænia mediocanellata* is more frequent in this country than the *T. solium*. Ibid. p. 102.

The occurrence of 12 large examples of *Echinococcus* containing Scoleces in the liver of a woman is described by Sommerbrodt. Jahresber. schles. Gesellsch. für vaterl. Cultur, 1866, p. 159.

SEIDEL (*l. c.*) notices cases of the occurrence of *Cysticercus* and *Echinococcus* in the human subject.

NETTLESHIP (*l. c.*) mentions having fed a dog on *Echinococci* from a sheep, and in forty-seven days finding several thousand specimens of the young *Tænia* in the intestines. Some remarks are also added on the anatomy of the sexual organs of this tapeworm.

FOOT records, under the title of "Entozoa from some animals in the Royal Zoological Gardens, Dublin," the occurrence of a species of *Bothriocephalus* in the polar bear, and mentions many well-known facts about the *Tæniad* worms (Proc. Dubl. Nat. Hist. Soc. vol. iv. pp. 201-207). Under the head of further observations on Entozoa (*l. c.* p. 212-216) the author mentions the occurrence of *Cysticerci* in a *Callithrix* and in a Russian rabbit. The species are not given. *Vide* also Dubl. Quart. Journ. Scien. January 1866, pp. 42-48, & 52-57.

Bothriocephalus. Krabbe describes the following new species:—*B. fuscus*, *l. c.* pp. 27 & 28, pl. 5. figs. 80-88 (structure), and pl. 7. fig. 112 (ovum) from the dog in Iceland, with 2 varieties or doubtful species, namely, *B. reticulatus*, *l. c.* p. 29, pl. 6. figs. 89-94 (structure) and pl. 7. fig. 113 (ovum), and *B. dubius*, *l. c.* p. 30, pl. 6. figs. 95-100 (structure); *B. lanceolatus*, *l. c.* p. 34, from *Phoca barbata*; *B. elegans*, *ibid.*, from *Phoca cristata*; *B. variabilis*, *ibid.*, from *P. cristata*; *B. fasciatus*, *l. c.* p. 35, from *Phoca hispida*; and *B. similis*, *ibid.*, from *Canis lagopus*.

TREMATODA.

WAGENER (*l. c.*) describes the sporocyst and redia of a new trematode larva, provisionally named *Cercaria cystophora* (p. 146), from the liver of a species of *Planorbis*, accompanied with excellent figures.

Pseudocotyle squatinæ, nov. gen. et spec., Beneden et Hesse (Mém. Acad. Sc. Lett. &c. Belg. xxxv. 1865, p. 11, pl. 2). This trematode worm was found living as a parasite upon *Squatina angelus* at Ostend in August 1864. The genus may be characterized as having no suckers on the side of the mouth, and the posterior sucker of the body very variable both in form and size—this sucker having neither rays nor hooks. The intestine branching, the contractile vesicle of the excretory system opening on the side, whereas the orifices of the sexual glands open in the median line. The ova are large and without filaments. This genus has affinities with *Tristoma*, being in fact a *Tristoma* without buccal suckers, and minus a rayed posterior sucker. The new species is fully illustrated in plate 2.

ACANTHOCEPHALA.

Echinorhynchus porrigens, from the duodenum of *Balaenoptera rostrata*, is described by Barker. Proc. Dubl. Nat. Hist. Soc. iv. pp. 293-294.

NEMATOIDEA.

Development of the Nematode Worms.—Leuckart (*l. c.*) gives a very detailed account of what is known, chiefly through his own researches, on the development of the round worms, not, however, specially referring to *Trichina*. There are numerous Nematoda in which the emigration of the embryos from the original host not only occurs regularly (not the case with *Trichinæ*),

but even constitutes a necessary preliminary to further development. Thus in the *Ollulanus tricuspis* (Leuck.) of the cat, which is not 1 millim. in length, and produces young of comparatively quite colossal size (0.3 millim.), the embryos very soon quit the cat's stomach, some migrating (as in *Trichina*) into the body of their host, and becoming encapsuled. No further development of them is seen in the cat; so that here encapsulation is an accidental phenomenon, and not the prelude to a further metamorphosis. On the embryos being administered to mice, they, however, further developed themselves. Nor is *Ollulanus* by any means the only Strongylide worm with a change of hosts. It probably occurs in several species of *Strongylus*.

Cucullanus elegans.—The entire developmental history of this worm is given. It is essentially the same (and more completely than either in *Trichina* or *Ollulanus*) as is met with in other groups of Entozoa.

There are, however, also Nematoda which are developed without intermediate bearers: an instance is given in *Dochmius trigonocephalus* of the dog; the little worms, having broken through the outer capsule of the egg, move briskly about in the mud; and without a knowledge of their parentage, they would certainly be referred to the Rhabditidæ. In about a week they have grown to twice their first length, and then their free life is at an end. All experiments for the purpose of causing them to enter an intermediate host have failed; but they have been reared to sexually mature *Dochmii* in the intestine of a dog. Again, there are Nematoda the embryos of which even attain sexual maturity in their *Rhabditis* form, and only become parasitic again in their progeny, as *Ascaris nigrovenosa* (vide Z. Record, 1865, p. 743, and especially Meeznikow's paper). The investigations upon the Nematoda of man present many wide gaps. Most of them belong to species with hard and firm eggshells, especially the commoner species, as *Trichocephalus dispar*, *Ascaris lumbricoides*, and *Oxyuris vermicularis*. All experiments of administering ripe ova of *Ascaris* to dogs, children, and adults failed; and in the face of these, often and carefully conducted, the assumption of an infection by means of mature ova must acquire more and more improbability. The question remains, where are we to find the intermediate host? It would appear clear that it is not by any of the larger animals that the embryos of Ascarides are conveyed into the intestine of their definitive bearer. We now need for the completion of the life-history of the Ascarides a single element. May the gap be soon filled up, and the commonest of the human Entozoa brought within the domain of science!

Ascaris nigrovenosa. For the controversy between Leuckart & Meeznikow on the subject of the discovery of the development of this worm the reader is referred to Meeznikow's article in Archiv für Anat. 1865, p. 409 (translated in

Quart. Journ. Micr. Science, January 1866, p. 25), which refers to the brief notice of this discovery by Leuckart in Nachr. Gesellsch. Wiss. Gött. 1865, p. 219; then to Leuckart's letter in Archiv für Anat. 1865, p. 641 (*vide* Zool. Record for 1865). Prof. Leuckart's indignant repudiation of the charge implied against him of having appropriated to himself some of the results of his pupil's work is met by a pamphlet published by Mecznirow, entitled "Entgegnung auf die Erwiderung des Herrn Prof. Leuckart in Giessen in Betreff der Frage über die Nematodenentwicklung," Göttingen, 1866.

We have given above a brief account of the very interesting researches of Leuckart & Mecznirow on the development of the Nematoids. In recording the fact of a controversy existing between the Professor and his very intelligent and painstaking pupil as to a question of priority of discovery, we are of course not called upon to pronounce any opinion on the subject.

SCHNEIDER (*l. c.* p. 28) divides the Nematoida into, 1. POLYMYARI, 2. MEROMYARI, and, 3. HOLOMYARI, and gives the following list of genera:—

I. Muscles of the body, consisting of very numerous cells, arranged closely and one behind the other.

1. *Ascaris* (R.). 2 symmetrical spicula; 20 and more preanal papillæ.
2. *Eustrongylus* (Dies.). A spiculum (?); bursa cup-shaped.
3. *Enophus* (Duj.). 2 symmetrical spicula; bodies of both ♂ and ♀ with many papillæ; the papillæ of the tail of the male passing into the body-papillæ.
4. *Physaloptera* (R.). 2 unsymmetrical spicula; bursa closed, heart-shaped, surrounding the apex of the tail; a single papilla for the anus; 10 papillæ all constant.
5. *Heterakis* (Duj.). 2 unsymmetrical spicula; ♂ with a sucking-disk at the anus; 3 large preanal papillæ.
6. *Filaria* (M.). 2 unsymmetrical spicula; 4 preanal papillæ.
7. *Ancyracanthus* (Dies.). 2 unsymmetrical spicula; 15, 16, or 20 preanal papillæ, singly or in pairs, arranged in rows.
8. *Hedruris* (Nitzsch). 2 symmetrical spicula; 2 preanal papillæ.
9. *Ceratospira* (Schn.). 2 unsymmetrical spicula; 11 (?) preanal papillæ.
10. *Cucullanus* (M.). 2 symmetrical spicula; 7 preanal papillæ.

II. Muscles of the body, consisting of eight rows of cells, placed one behind the other.

11. *Nematoxys* (Schn.). 2 symmetrical spicula; ♂ and ♀ with many papillæ over the whole body; the tail-papillæ of the ♂ passing into the body-papillæ; vagina with sphincter muscle.
12. *Oxysoma* (Schn.). 2 symmetrical spicula; 3 large constant preanal papillæ; vagina with sphincter.
13. *Oxyuris* (R.). 1 spiculum; bursa present or absent; vagina with sphincter.
14. *Labiduris* (Schn.). 2 symmetrical spicula; tail-papillæ of the ♂ lengthened out into a kind of forceps.
15. *Dermatoxys* (Schn.). No spiculum; bursa broad.
16. *Atractis* (Duj.). 2 unsymmetrical spicula; 3 preanal papillæ.
17. *Spiroxis* (Schn.)?
18. *Strongylus* (R.). 2 symmetrical spicula; bursa closed all round, forming a funnel; all the papillæ with costæ; the 6 anterior papillæ constant, 1866. [VOL. III.]

the 1st single, the 2nd and 3rd forming a knot, 2-7 single; vagina alone with long muscles.

19. *Pelodera* (Schn.). 2 symmetrical spicula; bursa always present, surrounding the extremity of the tail; 4 or 5 preanal papillæ.

20. *Leptodera* (Duj.). 2 symmetrical spicula; bursa wanting or not surrounding the extremity of the tail; 3 preanal papillæ.

III. Either no muscles, or when present running in a longitudinal direction.

21. *Anguillula*. Lateral bundles (Seitenfelder); a main median line; 2 symmetrical spicula; bursa broadened anteriorly, with a rounded edge, posteriorly obtuse.

22. *Trichina* (Ow.). Lateral bundles; main median line; no spiculum; bursa with a double knot.

23. *Trichosoma* (R.). Lateral bundles and main median line (secondary ?); a spiculum; sheath of the spiculum closed with a lid; bursa.

24. *Trichocephalus* (Göze). No lateral bundles; main median line; a spiculum; sheath of the spiculum closed with a lid; no bursa.

25. *Pseudalius* (Duj.). Lateral bundles; all main and partially also secondary median lines; 2 symmetrical spicula; bursa twice forked, spoon-shaped, or wanting; several papillæ.

26. *Ichthyonema* (Dies.). Lateral bundles; main median line; no anus; 2 unsymmetrical spicula; tail-end of ♂ truncate.

27. *Mermis* (Duj.). Lateral bundles; main median line, secondary back-lines; no anus; 2 symmetrical spicula; bursa widened; 3 or 4 rows of papillæ before and behind the anus.

28. *Gordius* (M.). No lateral bundles; no ventral line; no anus; no mouth (?); no spicula; bursa twice forked.

Balanoglossus. Kowalewsky (*l. c.*) gives an account of the anatomy of this strange worm. The genus would appear to have been founded by Delle Chiaje, and has been latterly quite overlooked. Chiaje's species *B. clavigerus* is, according to the author, not very common in the Bay of Naples; but a new and smaller species enabled him to work out its anatomy in great detail. The vascular system was made out by placing the animal for a short time in a strong solution of carmine.—Mecznikow (*l. c.*) describes a larval form taken near Naples in 1865, and regarded by him as belonging to this genus. A figure of the form found is given, and the author thinks the genus had perhaps better be placed by itself as representative of a small section of the Annelids.

The following species are noticed by KRABBE (Rech. Helminth. &c.) as occurring in the intestines of the dog and cat at Copenhagen and Iceland:—*Ascaris marginata* (Rud.), pp. 14 & 39; *A. mystax* (Rud.), pp. 20 & 40; and *Dochmius trigonocephalus* (Duj.), p. 14.

GREFF mentions finding at Bonn in salt springs *Anguillulidæ* having eyes, but in other respects having close affinities to common freshwater species, and promises further details. Sitzungsber. d. nat. Ver. Preuss. Rheinl. und Westph. June 1865, p. 87.

Spiroptera sanguinolenta (Rud.). Czernay gives an account of both sexes of this worm, which is met with very commonly in dogs' stomachs in Char-kow. Bull. Soc. Imp. Moscou, tome xxxviii. no. 3, 1865, p. 62, pl. 3.

COLLAS notes the occurrence of a number of Entozoa (*Pseudalius filum*,

Duj.) in the right ventricle, right auricle, and commencement of the pulmonary artery of a pug dog which dropped down dead after a hearty meal at Saint Denis, Réunion. Robin's Journ. de l'Anat. et de la Physiol. 1866, no. 5, p. 557.

Ascaris (Atractis) dactyluris, from *Testudo græca*, is described by Macalister (*l. c.*).

Rhabditis terricola, Duj. Perez gives a very lengthened account of the anatomy, development, and life-history of this worm, which is found abundantly in crushed ova of *Limax agrestis* and *L. hortensis*. The *Ascaroides limacis* (Barthélémy) is without doubt this same species; so that this genus must be suppressed.

Samuelson notices the first occurrence of *Trichinæ* near Königsberg. Schrift. phys.-ökon. Gesellsch. zu Königsberg. Jahrg. vi. Sitzungsber. p. 5.

PAGENSTECHEK (Die Trichinen &c.) has published an elaborate historical account of our knowledge of *Trichina spiralis*, followed by a description of a great number of experiments made at Heidelberg by administering trichinized flesh to various animals, especially rabbits, and by a zoological description of the animal in its various states, and of its natural history. Pagenstecher regards this parasite as forming a distinct family of Nematode worms, which he characterizes as follows:—

Familia TRICHINIDÆ.

Collum capillare corpore angustius, caput inerme, os simplex; anus terminalis, extremitas caudalis rotundato-obtusa; maris apertura genitalis terminalis, femine ad collum; spicula nulla.

He seems to regard this family as forming the group by which the *Nematoidea strongyloidea* most nearly approach the Gordiacea. The characters of the *Trichinæ* in their various stages of growth are represented in the two plates accompanying the work.

Other notices on *Trichinæ* have been published by Erb (their occurrence in rats, which is also mentioned by Pagenstecher, Hensen, Pagenstecher (experiments with remedies), and Seidel. These are referred to in the list of memoirs (pp. 602 & 603) and need not be further noticed here.

New genera:—

Schneider (*l. c.*) describes the following new genera, the diagnoses of which are sufficiently given for the purpose of this Record in the analytical list of all the genera of the Nematoida given above:—*Ceratospira* (p. 108), *Nematozys* (p. 111) for *Oxyuris ornata* (Duj.) and *Ascaris commutata* (R.) from *Rana temporaria*, *Oxysona* (p. 114), *Labiduris* (p. 122) for *Ascaris gulosa* (R.), *Spirozys* (p. 125), *Pelodera* (p. 148) = *Rhabditis* (Duj. ex parte).

New species:—

Anquillula pristina and *A. capillacea*, Menge, *l. c.* p. 7, figs. 11-15 and 16-18, found in numbers in amber.

Balanoglossus minutus, Kowalewsky, *l. c.* p. 15, fig. 1*f*, Naples, not far from the Strada Nuova di Posillippo, among the roots of plants growing on the borders of the sea.

SCHNEIDER (*l. c.*) describes the following new species:—

Ascaris rubicunda (p. 42, Taf. 1. fig. 8) from *Python molurus*; *A. radiosa* (p. 42, Taf. 1. fig. 9) from *Echidna rhinocerotis*; *A. quadrangularis* (p. 43,

Taf. 1. fig. 10) from *Crotalus* — ?; *A. lobulata* (p. 44) from *Delphinus gangeticus*; *A. nasuta* (p. 45, Taf. 1. fig. 15) from *Pelecanus onocrotalus*; *A. granulosa* (p. 46, Taf. 1. fig. 16) from *Tachypetes aquilus*.

Enophus cochleatus (p. 57, Taf. 4. figs. 9–13), Heligoland, in Algæ; *E. globicaudatus* (p. 58, Taf. 4. fig. 14), Heligoland, in Algæ; *E. denticaudatus* (p. 58), Heligoland; *E. liratus* (p. 59, Taf. 4. figs. 15 & 16), Berlin, muddy ground.

Physaloptera digitata (p. 61, Taf. 3. fig. 1) from *Felis concolor*; *P. subalata* (p. 63, Taf. 3. fig. 7) from *Falco* — ?; *P. truncata* (p. 64, Taf. 3. fig. 3) from *Phasianus gallus*; *P. spiralis* (p. 64, Taf. 3. fig. 5) from *Amphibæna* — ?.

Heterakis lineata (p. 70, Taf. 3. fig. 15) from *Gallus* — ?; *H. compressa* (p. 71, Taf. 3. fig. 14) from *Gallus domesticus*; *H. serrata* (p. 72, Taf. 3. fig. 16) from *Penelope humeralis*; *H. flexuosa* (p. 72, Taf. 3. fig. 17) from *Crotalus* — ?; *H. valvata* (p. 76) from *Crypturus cupreus*; *H. alata* (p. 76), from *Tinamus* — ?; *H. arquata* (p. 77) from *Crypturus cupreus*; *H. spumosa* (p. 77) from *Mus decumanus*; *H. turgida* (p. 77) from *Ameiva tequezin*; *H. fasciata* (p. 78, Taf. 3. figs. 18–20) from *Dasyppus novemcinctus*.

Filaria foveata (p. 90) from *Strix brachyotus*; *F. calamiformis* (p. 90) from *Psittacus cestivus*, under the skin of the foot; *F. dehisens* (p. 91) from *Strix striata*; *F. insignis* (p. 91) from *Picus* — ?; *F. guttata* (p. 92) from *Falco borigera*; *F. pungens* (p. 92) from *Turdus cyaneus*; *F. depressa* (p. 95) from *Corvus cornix*; *F. capitellata* (p. 96, Taf. 5. fig. 2) from *Coracias garrula*; *F. nitidulans* (p. 97, Taf. 5. figs. 10, 11) from *Tapirus americanus*; *F. microstoma* (p. 98, Taf. 5. fig. 3) from *Equus caballus*; *F. radula* (p. 98, Taf. 6. fig. 9) from *Paradoxurus philippinensis*; *F. obtusocaudata* (p. 101) from *Falco subbuteo*.

Ancyracanthus impar (p. 106) from *Osmerus eperlanus*.

Ceratospira vesiculosa (p. 109) from *Psittacus sinensis*.

Oxyuris minuta (p. 118) from *Ateles paniscus*; *O. longicollis* (p. 120, Taf. 7. fig. 8) from *Testudo græca* (this species = *Ascaris dactylhura* (R.) ex parte); *O. corollatus* (p. 122, Taf. 7. fig. 7) from *Galeopithecus philippinensis*.

Strongylus cohærens (p. 135) from *Dasyprocta aguti*; *S. inflatus* (p. 141) from *Bos taurus*; *S. subventricosus* (p. 145) from *Rana cornuta*; *S. invaginatus* (p. 147, Taf. 7. fig. 17) from *Coluber* — ?

Pelodera teres (p. 153, Taf. 10. fig. 8), in moist earth; *P. papillosa* (p. 153, Taf. 11. fig. 3), moist earth; *P. pellio* (p. 154, Taf. 11. fig. 11).

Leptodera membranosa (p. 157, Taf. 11. fig. 10) from *Rana* — ?; *L. curvicaudata* (p. 158, Taf. 10. fig. 4), *L. producta* (p. 158, Taf. 10. fig. 5), *L. inermis* (p. 158, Taf. 10. fig. 6), *L. macrolaima* (p. 159, Taf. 11. fig. 5), *L. elongata* (p. 159, Taf. 10. fig. 3), *L. rigida* (p. 161, Taf. 11. fig. 9), *L. livata* (p. 161, Taf. 10. fig. 12 and 11. fig. 8); all these species were met with in moist earth or decaying substances.

Pseudalius tumidus (p. 174, Taf. 12. fig. 9) from *Delphinus phocæna*.

GORDIACEA.

Franz Löw notices the occurrence of worms of the genus *Mermis* in various species of insects. Verh. zool.-bot. Ges. in Wien, xvi. p. 944.

Mermis matutina, sp. n., Menge, l. c. p. 5, figs. 7, 8, three specimens found in amber with a *Chironomus*, into the body of which one of them had inserted its head.

Mermis lacinulata, sp. n., Schneider, *l. c.* p. 178, Taf. 14. figs. 5-7, locality unknown.

Gordius setiger, sp. n., Schneider, *l. c.* p. 181, Taf. 13. fig. 9, Berlin, and *G. impressus*, Schn. *l. c.* p. 181, Taf. 14. fig. 3.

TURBELLARIA.

Rhabdocæla. Claparède has suggested that the *Rhabdocæla* should be divided into two groups—the one with two, the other with a single genital opening. Mecznikow (*l. c.* p. 174) states that this peculiarity, from the uncertainty of its occurrence, cannot furnish any classificatory character for the chief divisions or even for the genera; and he brings forward some remarkable facts in connexion with the reproductive organs of a common freshwater form, *Prostomum lineare*, to serve as a proof of this. The peculiarities referred to, however, are by no means common to the whole genus, but do not even extend to closely allied species, such as a new marine species described as *P. helgolandicum* (p. 176).

LANKESTER gives a list of the Turbellaria met with off Guernsey and the neighbouring islands. *Ann. & Mag. Nat. Hist.* vol. xvii. 1866, p. 388.

AGASSIZ describes certain stages of the larval form first observed by Lovén. In this larva, which may belong to *Nareda* (Gir.), it would appear that there was a retrograde metamorphosis; and from the carefully conducted observations there could be little doubt that it would eventually become a Nermertean. *Ann. Lyc. N. York*, vol. viii. June 1866, pp. 309-318, figs. 3, 17.

Agassiz, *ibid.* p. 308, describes the young of *Planaria granulata*, figs. 1-3.

Alaurina prolifera (Busch). Mecznikow shows that this is probably not a larval form, for the specimens met with at Heligoland were furnished with hermaphrodite sexual organs; they are referred to a new species, *A. composita* (p. 181), and made a distinct family, *Alaurinæ*, in the neighbourhood of the *Microstomeæ*.

Geodesmus bilineatus, sp. n. Mecznikow (*l. c.* p. 434) describes this very interesting species of land planarian found in the Botanical Gardens at Giessen; it differs in size and in coloration from the *Fusciola terrestris* of O. F. Müller; full anatomical details are given.

Bipalium univittatum, sp. n., Grube, *l. c.* p. 183, from Madras.

Acmostomum dioicum, sp. n., Mecznikow, *l. c.* p. 178, from Heligoland.

Serpentaria berryi, sp. n., Baird, *l. c.* p. 101, taken in a drift-net off Singapore.

Rhamphogordius purpureus, sp. n., Schneider (*l. c.* p. 326), Hamburg. *R. lacteus*, Rathke, is dioecious; *R. purpureus*, Schn., is hermaphrodite. (See p. 605 for Schneider's opinion as to the systematic position of this genus.)

ECHINODERMATA

BY

E. PERCEVAL WRIGHT, M.A., M.D., F.L.S.

AGASSIZ, A. Notes on the Embryology of Starfishes (*Tornaria*). Ann. Lyc. New York, vol. viii. April 1866, pp. , pl. 2.

DÖNITZ, W. Ueber den typischen Bau der Echinodermen. Reichert u. Du Bois-Reymond's Archiv, 1866, pp. 406-413, Taf. 11 B.

Taking the opportunity of describing a monstrous specimen of the corona of *Echinus sphaera* (O. F. M.), the author proceeds to examine whether a radial or a bilateral symmetry is characteristic of the Echinoderms, concluding with an expression of his belief that, both from an anatomical and embryological point of view, the Echinoderms belong to the radial type.

GRUBE, A. E. Einige neue Seesterne des hiesigen zoologischen Museums. Jahresbericht der schles. Gesellschaft, 1865, pp. 35-37.

LOVÉN, S. Phanogenia, ett hittills okänt släkte af fria Crinoideer. Öfvers. af. k. Vet.-Akad. Förh. Arg. xxiii. no. 9, pp. 223-233 : 1866.

MARTENS, E. VON. Ueber Ostasiatische Echinodermen. Archiv für Naturgesch. 1866, pp. 57-88, 133-189.

These papers are chiefly on the Starfishes (*Asteridæ*) of the Indian Archipelago and Japan. Some interesting remarks on the geographical distribution of this order are prefixed to the list of species.

STEWART, C. On the Spicula of the regular *Echinoidea*. Trans. Linn. Soc. vol. xxv. pp. 365-371, pls. 46-50.

The author gives an account of certain calcareous bodies that are to be met with imbedded in certain parts of the perisoma of the *Echinoidea*, and also in the membrane and its reflections that line the interior of their shells.

VERRILL, A. E. On the Polyps and Echinoderms of New England, with descriptions of New Species. Proc. Bost. Soc. Nat. Hist. vol. x. pp. 333-375 : July 1866.

A list of the species found on the coasts of New England, with remarks on their geographical distribution.

VERRILL (Proc. Bost. Soc. N. II. x. p. 334) remarks upon the geographical distribution of the Radiata (true Polyps and Echinoderms) of the New England coasts, which he says belong to 3 distinct faunas, namely:—the Virginian and Acadian, occupying the shores on the south and north; and the Syrtensian, a more arctic fauna characteristic of the shores of Labrador and Newfoundland, and extending southward along the coast of the United States in deep water. The species belonging to each of these faunas are enumerated by the author. The known species of Echinodermata are as follows:—VIRGINIAN FAUNA: *Antedon dentata* (Say), *Ophiura olivacea* (Lyman), *Astropecten vestita* (Say), *Asterias arenicola* (Stimps.), *A. compta* (Stimps.), *Echinaraehmus parma* (Gray), *Echinoedaris davisii* (A. Ag.), *Euryechinus granulatus* (Lüttk.), *Synapta tenuis* (Ayres), *Selerodaetyla briareus* (Ayres). ACADIAN FAUNA: *Antedon eschrichtii* (Müll.), *Ophioglypha sarsii* (Lyman), *O. robusta* (Lyman), *Amphiura squamata* (Sars), *Ophiopholis aculeata* (Gould), *Astrophyton agassizii* (Stimps.), *Ctenodiscus crispatus* (D. & K.), *Cribrella sanguinolenta* (Müll.), *Solaster endeca* (Linn.), *Crossaster papposus* (Fab.), *Asterias forbesii* (Desor), *A. vulgaris* (Stimps.), *A. littoralis* (Stimps.), *A. tenera* (Stimps.), *Stichaster albulus* (Stimps.), *Echinaraehmus parma* (Gray), *Euryechinus granulatus* (Lüttk.), *E. dröbaehiensis* (Müll.), *Thyonidium productum* (Ayres), *T. musculosum* (Ayres), *Pentacta frondosa* (Gunner), *P. caleigera* (Stimps.), *P. minuta* (Fab.), *Psolus phantapus* (Oken), *Synapta tenuis* (Ayres), *Chirodota laevis* (Fab.), and *Caudina arenata* (Gould). SYRTENSIAN FAUNA: *Ophiacantha spinulosa* (M. & T.), *Pteraster militaris* (M. & T.), *Goniaster phrygianus* (M. & T.), *Ctenodiscus crispatus* (D. & K.); *Crossaster papposus* (Fab.), *Solaster endeca* (Linn.), *Asterias polaris* (M. & T.), *Thyonidium elongatum* (Ayres), *T. glabrum* (Ayres), *Pentacta frondosa* (?), and *Psolus regulus* (Verr.).

A few other species are cited as types of new genera, and will be noticed with the new species, under their proper heads. The author's synonymic notes will also be indicated further on.

GRÄFFE (Verh. zool.-bot. Ges. in Wien, xvi. p. 586) notices the predominant Echinodermata of the Fiji Islands. The sea is rich in these animals, especially in *Ophiuridæ*, *Comatulidæ*, and *Ilolothuridæ*.

CRINOIDEA.

Under the title of *Astrophyton elizabethæ*, sp. n., McIntosh describes what is without doubt a mutilated young form of *Antedon rosaceus* from North Uist, Outer Hebrides. Proc. Roy. Soc. Edinb. vol. v. p. 609, fig. 4.

Actinometra bennetti, Müll., is redescribed by Bölsche (Archiv für Naturgesch. 1866, p. 90), and compared with the type specimen.

Antedon dübenii, sp. n., Bölsche, ibid. p. 92, from Rio Janeiro.

Phanogenia, gen. nov., Lovén, l. c. p. 231. Genus inter *Crinoidea libera* novum. Articulus verticillaris centro-dorsalis simplex stelliformis; basalina occulta, interna, radialis prima e maxima parte inoperta. *P. typica*, sp. n., p. 231, figs. a-h, Straits of Malacca, Singapore.

ASTEROIDEA.

AGASSIZ (*l. c.*), in his account of the development through several stages of a *Tornaria*, throws a good deal of light on the struc-

ture of a type of Echinoderm-larva very imperfectly known. While there are many important differences between *Brachiolaria* on the one hand, and *Tornaria* on the other, still the resemblance of the oldest observed stages of the latter to the younger stages of the former is very striking, and leaves no doubt that *Tornaria* is the larva of a starfish.

Linekia multiformis (Lam.) and *Oreaster muricatus* (Linck). Martens (*l. c.*) gives an account of some of the varieties of these two species met with in the Indian Archipelago.

Asterias. Verrill (*l. c.* p. 339) objects to the adoption of *Asteracanthion* as the name of this genus, and remarks that both *Uraster* and *Stellonia* have precedence if the Linnean name is to be changed.

Leptasterias, g. n., Verrill, *l. c.* p. 350. Allied to *Asterias*; papulæ comparatively large, placed singly or in groups of 2 or 3 on the sides and back of the rays; plates usually stout and imbricated; madreporic plate generally surrounded by a circle of spines. Sp. *A. mülleri* (Sars), *A. compta* (Stimps.); *A. (L.) stimpsoni*, sp. n., Verr. *l. c.* p. 349 (= *A. mülleri*, Stimps. nec Sars), New England (Acadian Fauna).

MARTENS (*l. c.*) gives a list of twenty-one species met with by himself in the Indian Archipelago. The following are described as new:—

Linekia pustulata, p. 62, Larentuka, Flores, and Amboyna, related to *Ophidiaster cylindricus* (Müll.); *L. rosenbergi*, p. 63, Amboyna; *L. pauciformis*, p. 69, Adenare, an island near Flores; and *L. speciosus*, p. 70, Larentuka, Flores.

Asterina coronata, p. 73, Batjan, Amboyna, and Larentuka.

Gymnasterias biserrata, p. 74, Larentuka.

Goniaster clavatus, p. 82, Larentuka.

GRUBE (*l. c.*) describes the following new species:—

Luidia debilis and *L. foliolata*, p. 35.

Astropecten olfersii, p. 36; *A. diplacanthus*, *ibid.*; *A. ensifer*, *ibid.*, Fiji Islands; *A. chinensis*, *ibid.*, Hongkong; *A. unbrinus*, *ibid.*, Hongkong; and *A. paleatus*, p. 37.

OPHIUROIDEA.

MARTENS (*l. c.* p. 87) gives a list of six species of this order met with by himself at Amboyna and Timor.

Trichaster flagellifer, sp. n., Martens, *l. c.* p. 87, from Singapore and Banka. Perhaps = *T. palmiferus* (Lamk.).

ECHINOIDEA.

Here we would refer to Stewart's paper (*l. c.*) on the spicula of the Echinoidea. These spicula vary greatly in the amount of their development in different genera and species, and in all probability will be found to afford most valuable assistance in determining the limits of both species and genera.

Spatangoidea.

MARTENS records (*l. c.*) the following as East Indian:—*Spatangus planulatus* (Lam.), *Brissus carinatus* (Lam.), *B. maculosus* (Leske), *B. sternalis* (Lam.?), *B. compressus* (Lam.).

Spatangus (Marctia) variegatus, sp. n., Gray, Proc. Zool. Soc. 1866, p. 170, from Pulo Taya, in the China Seas, with a figure.

Platybrissus ræmeri, sp. n., Grube, *l. c.* p. 37, native country unknown.

Cassiduloidea.

Martens (*l. c.*) mentions *Echinolampas oviformis* and *Nucleolus* (? for *Nucleolites*) *epigonus* (Mart.) as East-Indian.

Clypeastroidea.

Clypeaster testudinarius (Gray), *C. reticulatus* (Gmel.), *C. placunarius* (Lam.), *Laganum bonami* (Agas.), *L. depressum* (Less.), *L. decagonum* (Less.), *Arachnoides placenta* (L.), *Lobophora bifissa* (Lam.), and *L. biforis* (Gmel.) are mentioned by Martens (*l. c.*) as found in the East Indies, and are generally redescribed.

Galeritoidea.

Echinoneus minor (Leske) is mentioned by Martens (*l. c.*) as found at Larentuka, and *E. cyclostomus* and *E. serialis* are indicated as East-Indian forms.

Echinometridæ.

Echinometra lucunter (L.), *E. (Acrocladia) mammillata* (L.), *E. trigonaria* (Lam.), and *E. (Colobocentrotus, Brandt = Podophora, Ag.) atrata* (L.) are recorded as East-Indian, and redescribed by Martens (*l. c.*).

Echinometra (Acrocladia) planispina, Martens, sp. n., Verh. zool.-bot. Ges. in Wien, 1866, p. 381, from the Red Sea. The spines of this species are not triangular as in *A. trigonaria*, nor club-shaped as in *A. mammillata*, nor cylindrical as in another Red Sea species, *A. blainvillei*, but are small and pointed, and the corona is covered with true spines.

Echinidæ.

Diadema calamare (Pallas), *D. spinosissimum* (Lam.), *D. savignyi* (Mich.), and *D. radiatum* (Leske) are recorded as East-Indian by Martens (*l. c.*), and described at length.

Echinus sardicus (Leske) and *E. (Boletia) polygonalis* (Lam.) are also recorded as East-Indian and redescribed by Martens (*l. c.*).

BÖLSCHÉ, having had an opportunity of examining original specimens of *Garelia cineta* (A. Ag.), is of opinion that although *Echinothrix petersii* (Böls.) is, from the structure of its spines, very close to the first-named species, yet it can be at once distinguished from it by its four rows of large tubercles, almost alike, on the ambulacral space. He does not understand a statement of A. Agassiz to the effect, not only that *G. cineta* (A. Agass.) is the same as *E. petersii* (Böls.), but that *E. turcarum* is only a young form of this latter. Archiv für Naturgesch. 1866, p. 89.

Diadema setosa (Rumph.). The only difference that Bölsché could discover, after a careful search, between this species and *D. antillarum*, Philippi, is that in the former the whorls on the spines are closer than in the latter. Ibid. p. 89.

Toxopneustes and *Boletia*. Verrill (*l. c.* p. 341) discusses the synonymy of these genera, both originally established on the same type. He holds that, notwithstanding the change made by Agassiz and Desor, *Toxopneustes* must be applied to *Boletia* (Desor), and proposes the new name of *Euryechinus* for the group of which the true *Echinus dröbachiensis* (Müll.) is the type.

MARTENS (*l. c.*) describes the following new species from Japan:—

Temnopleurus japonicus, p. 133, Yokohama.

Echinus disjunctus, p. 135, Nagasaki.

Boletia radiata, p. 136, Nagasaki.

Toxocidaris purpurea, p. 137, Nagasaki.

Salmacis pyramidata, p. 159, Timor; *S. conica*, p. 159.

Cidaridae.

Cidaris verticillata (Lam.), *C. metularia* (Lam.), *C. tribuloides* (Lam.), *C. baculosa* (Lam.), and *C. fustigera* (Al. Ag.) are recorded by Martens (*l. c.*) as found in the East-Indian Archipelago; each species and several varieties are described.

HOLOTHURIOIDEA.

Synapta digitata. Dr. Baur exhibited specimens of this Echinoderm and of its auricularian larval form. Prof. Leuckart referred to the contemporary investigations of Prof. Thomson on the development of *S. inhaerens*, which did not appear to have any auricularian stage. Bericht Deutsch. Naturfor. und Aerzte in Giessen, 1864, p. 153. Dr. Baur also refers to a curious slug-like parasite of *Synapta*. *Ibid.* p. 168.

Lophothuria, g. n., Verrill, *l. c.* p. 353. Allied to *Psolus*; tentacles 10, much subdivided, with a narrow web at base; no median row of suckers beneath; naked part of body retractile, with 10 vermicular appendages. Sp. *L. fabricii* (Lützk.) = *H. squamosa* (Fab. nec Müll.).

Synapta buskii, sp. n., is described by Dr. McIntosh from North Uist, Outer Hebrides (Proc. Roy. Soc. Edinb. vol. v. p. 611, fig. 6); and *S. gallienii* (Herapath) is also noted as occurring in the same locality.

CŒLENTERATA

BY

E. PERCEVAL WRIGHT, M.A., M.D., F.L.S.

I. *Separate Works.*

AGASSIZ, A. Illustrated Catalogue of the Museum of Comparative Anatomy at Harvard College.—No. 2. North American Acalephæ. Cambridge, 1865, pp. i-xiv, 1-234, and 360 woodcuts.

This catalogue contains a bibliography from 1860 to 1865. The Acalephæ are arranged in three orders—Ctenophoræ, Discophoræ, and Hydroidæ. The author asserts (p. 12) that the embryological development of Ctenophoræ leaves no doubt as to the Acalephian character of the order. The order Discophoræ is made to include the following families:—*Rhizostomidæ* (Esch.), *Polyclonidæ* (Ag.), *Aureliadæ* (Ag.), *Sthenoninæ* (Ag.), *Cyaneidæ* (Ag.), *Pelagidæ* (Gcg.), *Thalassantheæ* (Lcsc.), *Trachynemidæ* (Gcg.), *Leuckartidæ* (Ag.), and *Lucernaridæ*. The order Hydroidæ includes all other Hydrozoa and the family *Milleporidæ*. A chapter is appended on the geographical distribution of these Cœlenterata, and a carefully prepared index of genera and species is added. The new species will be found referred to in the special part of this Record.

BENEDEN, P. J. VAN. Recherches sur la Faune littorale de Belgique. Polypes. Brussels, 1866, pp. 1-207, plates 1-18, and woodcuts.

The author gives an account of the Cœlenterate animals of the Belgian coast. Several new species are described, and in many cases an account is given of their development. The plates of this work are very beautifully executed. The author has paid more attention to the Hydrozoa than to the Actinozoa.

KÖLLIKER, A. Icones Histiologicæ oder Atlas der vergleichenden Gewebelehre. Zweite Abtheilung. Der feinere Bau der höheren Thiere. Erstes Heft. Die Bindesubstanz der Cœlenteraten. pp. 87-181, mit x. Tafeln und 13 Holzschnitten. Leipzig, 1866, 4to.

This part of Prof. Kölliker's work contains some introductory remarks on the minute structure of the animals more highly

organized than *Protozoa*. The first book treats of the texture of the connective tissue in general. The first portion of the first chapter gives a detailed account of the soft connective tissue in the Cœlenterata, dividing it into the simple connective substance and the fibrous connective tissue. The second portion gives an account of the hardened connective substance or the structure of the skeleton of the Cœlenterata, one portion discussing the calcareous corpuscles of the polyps, another the more solid framework of the polyps; and the last is on the development and significance of the axis of the Gorgonidæ and Pennatulidæ. The plates illustrative of this work are of the greatest beauty, and apparently of great accuracy of detail. The author having had the opportunity of examining the type specimens of Esper, Duchassaing, and others, has thus been enabled to give diagnoses of many hitherto very doubtful or at least little-known species.

VERRILL, A. E. List of the Polyps and Corals sent by the Museum of Comparative Zoology, Harvard College, to other Institutions in exchange, with annotations. No. 3, pp. 29-60: published January 1864.

This list contains detailed descriptions of many new species and some new genera.

II. Papers published in Journals &c.

[BOCAGE, J. V. BARBOZA DU. Notícia ácerca da descoberta nas costas de Portugal d'um zoophyto da familia *Hyalochætides*, Brandt. Mem. Acad. Real d. Scienc. di Lisboa, tomo iii. pp. 8: 1865.

This paper is for the most part identical with that previously published in Proc. Zool. Soc. 1864.]

DUTHIERS, H. LACAZE-. Sur les Antipathaires (*Antipathes vrais*). Ann. des Sci. Nat. Zool. 5^e série, tome iv. pp. 5-61, pls. 1 to 4.

GRAY, J. E. Notice on *Rhodophyton*, a new genus of *Alcyoniada* found on the coast of Cornwall. Proc. Zool. Soc. 1865, pp. 705-708.

——. Description of two new Forms of Gorgonioid Corals. Ibid. 1866, pp. 24-27.

[HAECKEL, ERNST. Die Familie der Rüsselquallen (*Medusa Geryonidae*). Jenaische Zeitschrift für Medicin und Naturwissenschaft, Band i. pp. 435-469, Taf. 11 & 12 (1864), and Band ii. pp. 93-120, 129-202, and 263-322, Taf. 4 & 9.

This work is noticed as a separate publication in the 'Record' for 1865, pp. 769-780.]

——. Beschreibung neuer Craspedoten aus dem Golfe von Nizza. Jenaische Zeitschr. &c. Band i. pp. 324-342: 1864.

HINCKS, T. On new British Hydroida. Ann. & Mag. Nat. Hist. vol. xviii. 1866, pp. 296-299.

KÖLLIKER, A. Kurzer Bericht über einige im Herbst 1864 an der West-Küste von Schottland angestellte vergleichend-anatomische Untersuchungen. Würzburger naturwiss. Zeitschrift, Band v. 1864, pp. 232-250, Taf. 6.

In a letter to Prof. Allen Thomson of Glasgow, Prof. Kölliker gives an account of certain invertebrate forms found by him on the west coast of Scotland, chiefly Hydrozoa and Ctenophora and some Annelids. He also refers to some peculiarities in structure met with in the connective tissue of the Ctenophora.

KOWALEWSKY, A. Entwicklungsgeschichte der Rippenquallen. Mém. Acad. Imp. St. Pétersbourg, tom. x. no. 4, pp. i-viii, 1-28, with 5 plates.

In the introduction to this paper the author alludes to the opportunity he has had for prosecuting researches into the anatomy and development of the marine animals of the Bay of Naples, and promises to publish a series of papers in the Mémoires of the St. Petersburg Academy, "On the development of some Holothuridæ," "On several genera of Annelida" (*Chaetopterus*, *Sternaspis*, &c.), "On several Mollusca and Crustacea," and also announces his intention of publishing a translation into German of his inaugural thesis for the St. Petersburg University, published in December 1865 in Russian, "On the development of *Amphioxus lanceolatus*." The present paper treats of the development of some of the Ctenophora.

MÖBIUS, K. Ueber den Bau, den Mechanismus und die Entwicklung der Nesselkapseln einiger Polypen und Quallen. Abhandl. naturwiss. Ver. Hamb. 1866, and separate reprint. Hamburg, 1866, pp. 1-24, with 2 plates. Abstract in Ann. & Mag. Nat. Hist. vol. xvii. 1866, p. 387.

MÜLLER, FRITZ. Ein Wort über die Gattung *Herklotsia*, J. E. Gray. Archiv für Naturg. xxx. pp. 352-358.

NOSKIN, N. Ueber einen Generationswechsel bei *Geryonia proboscidalis* und die Larve von *Rhizostoma aldrovandi*. Bull. Acad. Imp. d. Scien. de St. Pétersbourg, tom. viii. no. 3, 1865, pp. 214-218, with a plate.

PHILIPPI, R. A. Kurze Beschreibung einiger Chilenischen Zoophyten. Archiv für Naturgesch. 1866, pp. 118-120.

REICHERT, C. B. Ueber die contractile Substanz und den feineren Bau der Campanularien, Sertularien und Hydriden. Reichert u. Du Bois-Reymond's Archiv, 1866, pp. 638-643. Only a *résumé* of this paper is here given.

VERRILL, A. E. Synopsis of the Polyps and Corals of the North Pacific Exploring Expedition, under Commodore C. Ringgold and Captain John Rogers, U.S.N., from 1853 to

1856. Collected by Dr. Wm. Stimpson, naturalist to the Expedition. With Descriptions of some additional Species from the West Coast of North America. Parts 2 & 3. Proc. Essex Institute, vol. iv. pp. 181-196, plates 5 & 6 (1865), and vol. v. pp. 17-50, plates 1 & 2 (1866).

Part 2 includes descriptions of *Alcyonaria*, and Part 3 of *Madreporaria*. For the author's views on the classification of Polyyps (see 'Record,' 1865, p. 781).

VERRILL, A. E. On the Polyyps and Corals of Panama, with descriptions of New Species. Proc. Bost. Soc. Nat. Hist. vol. x. pp. 323-333: July 1866.

— On the Polyyps and Echinoderms of New England, with descriptions of new species. Ibid. pp. 333-357.

Contains a list of the species, with remarks on the geographical distribution of the Actinozoa and Echinodermata of the east coast of North America.

WAGENER, G. R. Ueber *Beroë (ovatus?)* und *Cydidippe pileus* von Helgoland. Reichert u. Du Bois-Reymond's Archiv, 1866, pp. 116-133, Taf. 3-5.

MÖBIUS (*l. c.*) gives an account of the urticating capsules of some Polyyps and Acalephs, comparing them to simple glands. They consist of elastic vesicles, having a long efferent duct, beset with spiral rows of hairs. Each capsule can only act once; but the capsules are replaced by new ones, being developed from cells provided with nuclei. Most of the capsules made use of pass with the captured food into the stomachs of their possessors, perhaps assisting in digestion. Some Polyyps (*Hydra*, *Actinia*, and *Lucernaria*) employ their capsules to enable their tentacles to adhere while using them for progression.

VAN BENEDEN does not believe that there is any affinity between the Polyyps and the Echinoderms, or that they appertain at all to the same type (*l. c.* p. 61).

KÖLLIKER (*l. c.* p. 98) discusses the different forms of simple connective tissue met with among the Cœlenterata; he describes (1) the homogeneous simple connective tissue, (2) the cellular connective tissue, and (3) the simple connective tissue with cells, or the gelatinous connective tissue. Of these, the first is met with either perfectly free from fibres, as in the swimming-bells of many Siphonophora and the disks (nectocalyces) of many Medusæ, or with fibres but destitute of cells, as in some at least of the *Æginidæ* and *Geryonidæ*; the second is met with among many of the hydroid polyyps. In referring to the cartilaginous tissue discovered by Haeckel in *Carmarina*, Kölliker says that there can be little doubt that the cartilaginous bodies of the *Geryonidæ* have a very close histological connexion with

the simple cellular connective tissue of the Hydrozoa, and that between the two only the same trifling difference exists that will be found in other places between old and young cartilage. The different forms of gelatinous connective tissue are described as met with in part of the Medusæ phanero carpæ, in the Ctenophora, in part of the Alcyonaria, and in part of the Zoantharia.

Fibrous connective tissue is described as found among the Pennatulidæ, in some of the Alcyonaria (*Spogcodes* and *Ammonothea*) and among some of the Actinidæ (*Actinia* and *Edwardsia*).

W. C. McINTOSH (Proc. Roy. Soc. Edinb. vol. v. p. 602) gives a list of thirteen species of Actinozoa and Hydrozoa met with at North Uist, Outer Hebrides.

ACTINOZOA.

In treating of the hardened connective tissue of the Cœlenterata, Kölliker (*l. c.* p. 117) remarks that by several writers the skeleton of the Actinozoa is treated of as if one portion was excreted by the outer layer of the body (foot secretion, Dana), and another was a hardening of the deeper layers (tissue secretion, Dana). To the former were referred the horny and calcareous axes of *Gorgonia*, *Isis*, *Corallium*, and *Pennatulidæ*, and to the latter the spicula of the Alcyonaria, the tubes of *Tubipora*, and the skeleton of the Zoantharia. This, however, is simply an hypothesis, the fallacy of which has been shown by recent researches. The following are the forms of hardened connective tissue met with in this group :—

- I. Hard structures, which are substantially made up of isolated small portions of a determined form (such as the isolated calcareous bodies of Alcyonidæ, &c.).
- II. Hard structures, which form coherent deposits (die zusammenhängende Ablagerungen darstellen). Of these one finds :—
 1. Hard bodies which exist as isolated or amalgamated calcareous bodies in combination with a horny or chalky interstitial substance, or alone as a confluent calcareous substance. (Axis of Melithæaceæ, Sclerogorgiaceæ, and Corallinæ.)
 2. Lamellated structures, which, for aught it seems, are formed as secretions, and which, when calcified, leave, after the removal of the salts, an organic remainder of the same form. To this section belong :—
 - a. The horny axis of Gorgonidæ and Antipathidæ and the horny interstitial joints of *Isis*.
 - b. The more or less calcified lamellose axes of the Gorgonidæ (*Prinnoa*, *Plexaurella*, *Isis*, &c.) and Pennatulidæ.
 3. Crystalline structure, which seems to increase through a deposit of chalk in a preexisting tissue, but after the removal of all the salts leaves an almost inappreciable organic residue. Here are included :—
 - a. The greater number of those with merely superficial skeletons (*Tubipora*).

b. Structures in which the outer and inner body-layers are united together (as in the chalky skeletons of the Madreporae). •

All these different forms of skeletons are described in detail.

VERRILL has published (Proc. Bost. Soc. N. H. vol. x.) a list of the Polyps and Corals of Panama, which he prefaces with some remarks on the general character of the Actinozoarian fauna of that region. He says that Coral-reefs occur at Aspinwall, containing the same species as those of Florida and the West Indies; but at Panama, on the other side of the isthmus, none of these corals are found, and the only genus common to the two shores is *Porites*. *Millepora* is represented by *Pocillopora*. On the western coast of America generally no true Coral-reefs occur. The other true Corals and the *Gorgonidae* exhibit a corresponding difference; and Verrill observes that these facts do not favour the theory entertained by some geologists, of the existence, in comparatively recent geological times, of a communication between the two oceans at this point, through which the Gulf-stream flowed. He adduces further evidence in support of the view that no great change has taken place in these regions since the commencement of the Tertiary period, from the correspondence in type of the living forms with those of the Eocene and Miocene deposits, and refers especially to the proof of uniform action derived from the long-continued growth of the West-Indian Coral-reefs.

VERRILL (Proc. Bost. Soc. N. H. x.) discusses the geographical distribution of the Actinozoa of the coast of New England, and gives the following list of the species, arranged under the three faunas to which he considers them to belong (see p. 615):—

Virginian Fauna:—*Astrangia danca* (Ag.), *Zoanthus americanus* (Verr.), *Sagartia*, 2 n. sp., *Metridium marginatum* (Edw. & H.), *Actinia*? *rapiformis* (Les.), *Halocampa albida* (Ag.), *Ilyanthus*? *neglectus* (Leidy), *Peachia parasitica* (Verr.), *Gorgonia* (*Leptog.*) *tenuis* (Verr.).

Acadian Fauna:—*Bunodes stella* (Verr.), *Rhodactinia davisii* (Ag.), *Metridium marginatum* (Edw. & H.), *Ilyanthus laevis* (Verr.), *Edwardsia sipunculoides* (Stimps.), *E. sulcata* (Verr.), *Arachnactis brachiolata* (Ag.), *Peachia parasitica* (Verr.), and *Acyonium carneum* (Ag.).

Syrtensian Fauna:—*Rhodactinia davisii* (Ag.), *Metridium marginatum* (Edw. & H.), *Paragorgia arborea* (Edw. & H.), *Primnoa reseda* (Verr.) = *lepadifera* (Lamx.), and *Acyonium rubiforme* (Dana).

ALCYONARIA.

KÖLLIKER gives the following classification of the Alcyonaria (*l. c.* p. 131):—

Family I. ALCYONIDÆ (M.-E.).

Subfam. 1. CORNULARIADÆ (M.-E.).

Genera:—1. *Clavularia* (Q. & G.). 2. *Anthelia* (Sav.). 3. *Rhizoxenia* (Ehr.).

Subfam. 2. ALCYONINÆ.

Genera:—1. *Acyonium* (L.). 2. *Ammothea* (Sav.). 3. *Xenia* (Sav.). 4. *Nephtya* (Sav.). 5. *Spogcodes* (Less.).

Family II. PENNATULIDÆ (M.-E.).

Genera:—1. *Funiculina* (Lam.). 2. *Pennatula* (L.). 3. *Pteroeides* (Herkl.). 4. *Veretillum* (Cuv.). 5. *Cavernularia* (Val.). 6. *Revilla* (Lam.).

Family III. GORGONIDÆ (M.-E.).

Subfam. 1. GORGONINÆ (M.-E.).

A. *Primnoaceæ* (Val.).

Genera :—1. *Primou* (Lamx.). 2. *Muricea* (Lamx. pro parte). 3. *Echinogorgia* (n. g.). 4. *Paramuricea* (Köll.). 5. *Acis* (Duch. & Mich.). 6. *Thesca* (Duch. & Mich.). 7. *Bebryce* (Phil.).

B. *Eunicidaæ* (Köll.).

Genera :—1. *Eunica* (Lamx.). 2. *Plexaura* (Lam. pro parte). 3. *Plexaurella* (n. g.).

C. *Gorgonaceæ* (M.-E. pro parte).

Genus *Gorgonia*.

D. *Gorgonellaceæ* (Val.).

Genera :—1. *Gorgonella* (Val. ex parte). 2. *Juncella* (Val. ex parte). 3. *Verrucella* (M.-E. ex parte). 4. *Rusca* (Duch. & Mich.).

Subfam. 2. ISIDINÆ.

Genus *Isis*.

Subfam. 3. BRIAREACEÆ (M.-E.).

Genera :—1. *Paragorgia* (M.-E.). 2. *Symposium* (Ehr.). 3. *Erythropodium* (Köll.). 4. *Briareum* (Bl.). 5. *Solanderia* (Duch. & Mich.).

Subfam. 4. SCLEROGORGIACEÆ (Köll.).

Genus *Sclerogorgia* (Köll.) = *Suberogorgia* (Gray).

Subfam. 5. MELITHEACEÆ.

Genera :—1. *Melithæa*. 2. *Mopsca*.

Subfam. 6. CORALLINÆ (M.-E.).

Genus *Corallium* (Lam.).

GRÄFFE (*l. c.* p. 586) notices the chief forms of this group found by him among the Fiji Islands. *Melithæa ochracea*, which attains a length of 6–10 feet, has two parasitic inhabitants—a crab (allied to *Menesthius* according to Schmelz), which adheres firmly to the polype-stock, and an *Ovulum*, allied to *O. coarctatum* (Ad. & R.). Both these species present the same colours as the polype, namely red and yellow. A distinct rose-coloured species of *Melithæa* is indicated by Gräffe.

VERRILL (Proc. Bost. Soc. N. H. x.) gives a list of the species of this group inhabiting the sea of Panama, with notes on the characters of many of them. The known species are :—*Renilla amethystina* (Verr.), *Gorgonia ramulus* (Val.), *G. aurantiaca* (Verr.), *G. rigida* (Verr.), *G. agassizii* (Verr.), *G. media* (Verr.), *G. stenobranchis* (Val.), *Muricea chinata* (Val.), *M. hebes* (Verr.), *M. robusta* (Verr.), *M. appressa* (Verr.), and *Zoanthus danca* (Leconte).

ALCYONIDÆ.

VERRILL (Proc. Bost. Soc. N. H. x.) describes the following known species belonging to his suborder *Alcyonacea* :—*Sarcophyton (Alcyonium) agaricum* (Stimps.), *Nephthya thyrsoides* (Verr.), pl. 6. fig. 8, *Spongodes gigantea* (Verr.), *S. capitata* (Verr.), and *Anthelia lineata* (Stimps.), pl. 6. fig. 9. He also indicates several other species contained in the collection of the Pacific exploring expedition, including two undetermined *Alcyonia* and a *Sarcodictyon*.

Rhodophyton, g. n., Gray, *l. c.* p. 706. Coral-flesh cellular, covered with a hard continuous calcareous coat, contracted at the base, expanded above, and divided into several oblong lobes or branches, covered with short cylindrical

tubes with a circular mouth. Polypes half retractile, forming when retracted a white tubular termination to the cells. The more developed cells of the polypes, especially those at the end of the lobes, are longitudinally grooved. *R. couchii*, sp. n., Gray, *l. c.* p. 706, with a woodcut illustration, Cornwall, near Polperro.

Nephtlya aurantiaca, Verrill, Proc. Essex Inst. iv. p. 191, Chinese Sea.

Spongodes gracilis, Verrill, *l. c.* p. 193, Loo Choo Islands.

Ammothea nitida, Verrill, List &c. p. 39, Zanzibar.

Spongodes capitata, Verrill, List &c. p. 40, Hong Kong.

Symphodium pacificum, Verrill, Proc. Bost. Soc. N. H. x. p. 329, Panama.

Telesto ramiculosa, Verrill, *l. c.* p. 194, pl. 6. fig. 10 (= *Cornularia aurantiaca*, Verr. olim), Hong Kong; *T. ? nodosa*, Verr. ibid., Loo Choo Islands.

PENNATULIDÆ.

F. MÜLLER (*l. c.*) criticises Dr. Gray for instituting a new genus for the *Renilla edwardsii* (Herkl.). A careful comparison is instituted between *Renilla* and *Herklotsia*, showing that there is no occasion for the latter genus.

Ptilosarcus. Verrill (Proc. Essex Inst. iv. p. 183) raises this section of the genus *Sarcoptilus* (Gray) to generic rank, and describes its characters and those of *P. gurneyi* (Gray).

Veretillum stimpsoni (Verrill) and *Kophobelemmon clavatum* (Verr.) are described and figured by Verrill, *l. c.* p. 184, pl. 5. fig. 3, & p. 185, pl. 5. fig. 4; *V. baculatum* (Verr.) is also described (*l. c.* p. 185).

New genus and species :—

Stylatula, g. n., Verrill, List of Polyps &c. p. 30. Elongated, slender, nearly cylindrical; near the base naked, bulbous at the end. Pinnæ short, supported by numerous strong radiating spines, the polypes clustered on their upper surface. Axis subcylindrical, extending through nearly the whole length. Sp. *S. gracilis*, sp. n., Verr. ibid., California.

Pteromorpha expansa, Verrill, Proc. Essex Inst. iv. p. 181, pl. 5. fig. 1, Hong Kong.

Leioptilum undulatum, Verrill, *l. c.* p. 182, California.

Virgularia pusilla, Verrill, *l. c.* p. 183, pl. 5. fig. 2, near Hong Kong.

Virgularia gracilis, Gabb, Proc. Califor. Acad. Nat. Scien. vol. iii. part 2, San Francisco, 1864, p. 120. Polypidom 19 inches long; Bay of Monterey, California. Near *V. elongata*, Gabb. (Is this *Stylatula gracilis*, Verrill?)

VERRILL (List of Polyps and Corals &c.) describes the following new species :—

Renilla danae, p. 29, Rio de Janeiro (= *R. americana*, pars, Dana); *R. peltata*, ibid., Breton Island, mouth of Mississippi; *R. patula*, ibid., Cumana, Venezuela, South America; and *R. amethystina*, ibid., Panama.

Fraculina forbesii, p. 30 (= *Pavonaria quadrangularis*, pars, Johnst.), Oban.

Pteroides putnami, p. 30, Hong Kong.

GORGONIDÆ.

VERRILL establishes a new genus, *Lissogorgia*, for the *Antipathes flabellum* (Esper), and remarks on the differences which exist between the Alcyonaria

and the Zoantharia, especially in reference to the peculiar combination of the structural elements or spheromeres. Proc. Bost. Soc. Nat. Hist. vol. x. Oct. 1865, p. 22.

VERRILL, in a critical notice of Kölliker's 'Icones Histologicæ,' pt. 2, states that his new genus *Lissozorgia* will yield the priority to *Echinogorgia* (Kölliker). [Verrill's genus was not published until October 1865. Kölliker's 'Icones,' though dated on the titlepage as 1865, was, as indicated on the cover, not published until 1866.] Verrill believes Kölliker to be certainly at fault in uniting *Gorgonia suberosa* (Ellis), *Acyonium plexaureum* (Lamx.) and *A. asbestinum* (Pallas) into one species, *Briareum suberosum* (Dana); for, as he has previously shown (Bull. Mus. Comp. Anat. no. 3, p. 39), they represent three very distinct species and two genera. Verrill, Am. Journ. Sci. 2nd series, vol. xlii. Sept. 1866, p. 283.

VERRILL (Proc. Bost. Soc. N. H. x.) describes the following known species of his suborder *Gorgonacea*:—*Plexaura friabilis* (Lamx.), *Acanthogorgia cocinea* (Verr.), pl. 6. fig. 7, and *Parisis laxa* (Verr.).

New genera :—

Calyptrophora, Gray, l. c. p. 25. Coral cylindrical, furcately branched; the branches elongate, subsimple; the axis horny; the bark thin, smooth, calcareous, with regular equidistant whorls of cells; cells with a circular mouth having a raised edge, placed close together and forming a raised ring round the coral. Each cell is furnished with two obconic pellucid cells placed one on the other; the lower cell is pellucid, apparently articulated to the axis of the coral, very narrow near the mouth of the cell and wide at the other end; the lower surface of the outer aperture is furnished with two elongated horn-like processes. To the centre of this basal cone is articulated or affixed a similar pellucid horn-coloured cone or, rather, conical vase, which is furnished with a slightly keeled edge at its widest part, and then contracts as if it had a shorter conical lid, with an aperture in the middle of this lid-like contracted part for the emission of the polype. The two cones are as if were articulated to the stem; and the lower one stands at right angles with regard to it, and the upper at right angles with regard to the lower one, so that the aperture of the upper one is vertical. Sp. *C. japonica*, sp. n., Gray, l. c. p. 26. fig. 1, Japan.

Homophyton, Gray, l. c. p. 27. Coral arborescent, rather flabellate, furcately branched; branches subcylindrical, elongate; axis wood-like, soft, formed of numerous spicula intermixed with a cellular substance; bark thin, with a smooth external surface; the cells of the polypes forming five longitudinal series of compressed tubercles, those of the neighbouring series alternating on the ends of the younger branches, becoming further apart, more irregularly distributed, and scarcely elevated in the older part of the branches. This genus is nearly allied to *Paragorgia* (Milne-Edwards), but differs from it in the axis being of a uniform cork-like texture, without any tube or spongy cavities. Sp. *H. gattyia*, sp. n., Gray, l. c. p. 27. fig. 2, Cape of Good Hope.

Parisis, g. n., Verrill, List &c. p. 37. Corallum irregularly branching, nearly on a plane. The axis consists alternately of calcareous and suberosus segments, of uniform thickness, traversed by numerous narrow sulcations. The branches originate from the calcareous segments. Cœnenchyma persis-

tent, rather thin, somewhat membranous, with a rough surface. Cells prominent, arranged irregularly on all sides of the branchlets, but often absent on the median surfaces of the larger branches. Sp. *P. laxa*, Verr. *P. fruticosa*, sp. n., Verr. *ibid.*, Sooloo Sea.

Titanideum, g. n. (Agassiz, MS.), Verrill, *l. c.* p. 39. Closely allied to *Briareum*, but has a more distinct axis, which is spongy and very spiculate, but firm and less porous than that of the latter. The cells are scattered on all sides and not prominent. Type *T. suberosum* (Ellis & Sol. sp.).

Paramuricea, g. n., Kölliker, *l. c.* p. 136. Type *Muricea placomus* (Ehr.). New sp. *P. intermedia*, Köll. *l. c.* p. 136, distinguishable from *P. placomus*, var. *a*, only by the shape of the spicula; *P. spinosa*, Köll. *ibid.*

Echinogorgia, g. n., Kölliker, *l. c.* p. 136. Type *Gorgonia sasappo* (Esper).

Plexaurcella, g. n., Kölliker, *l. c.* p. 138. Type *Gorgonia dichotoma* (Esper).

Erythropodium, g. n., Kölliker, *l. c.* p. 141. Type *Xenia carybæorum* (Duch. & Mich.).

Sclerogorgia, g. n., Kölliker, *l. c.* p. 142 = *Suberogorgia* (Gray). No reason is assigned for the change of name.

New species :—

Muricea. Verrill (List of Polyps &c.) describes the following species :—*M. laxa*, p. 36, Florida; *M. elegans* (Ag. MS.), *ibid.*, Charleston; *M. robusta*, *ibid.*, Acapulco; *M. hebes*, *ibid.*, Acapulco; *M. appressa*, p. 37, Panama.

Muricea sinensis, Verrill, Proc. Essex Inst. v. p. 187, pl. 5. fig. 5, and *M. ? divaricata*, Verr. *l. c.* p. 188, pl. 5. fig. 6, Hong Kong.

Muricea acervata, Verrill, Proc. Bost. Soc. N. H. x. p. 327, and *M. hispida*, Verr. *l. c.* p. 328, Panama.

Prinnoa compressa, Verrill, Proc. Essex Inst. p. 189, Aleutian Islands.

Echinogorgia arbuscula, Verrill, Proc. Bost. Soc. N. H. x. p. 329, Panama.

Plexaura arbuscula, Philippi, *l. c.* p. 118, *P. rosea*, Philippi, *l. c.* p. 118, and *P. platyclados*, Philippi, *l. c.* p. 119, from Chili.

Leptogorgia cuspidata, Verrill, Proc. Essex Inst. iv. p. 186, California.

Lissoogorgia flexuosa, Verrill, *l. c.* p. 187, from Hong Kong.

Pterogorgia bipinnata, Verrill, List &c. p. 31, Cumana, Venezuela, South America.

Leptogorgia rigida, Verrill, List &c. p. 32, Mexico, California; *L. ampla*, Verr. *ibid.*, California?

Rhipidogorgia agassizii, Verrill, List &c. p. 32, and *R. media*, Verr. *l. c.* p. 33, Acapulco.

Melitodes virgata, Verrill, List &c. p. 38 = *Melitæa ochracea* (Dana, pars).

Verrucella granifera, Kölliker, *l. c.* p. 140, Coast of Africa; *V. ramosa*, Köll. *ibid.*, Niné Island.

Solanderia frauenfeldi, Kölliker, *l. c.* p. 141.

Mopsea bicolor, Kölliker, *l. c.* p. 142.

Mopsella japonica, Verrill, Proc. Essex Inst. v. p. 190, Japan.

Juncella levis, Verrill, Proc. Essex Inst. v. p. 189, Hong Kong; *J. extans*, Verr. List of Polyps &c. p. 37, Azores.

ZOANTHARIA.

GRÄFFE (Verh. zool.-bot. Ges. in Wien, xvi. p. 585) notices the principal

forms of this group met with about the Fiji Islands. The reef-building Corals are very numerous. The genera chiefly represented are *Madrepora*, *Pocillopora*, *Seriatopora*, *Mussa*, *Mæandrina*, and *Fungia*. *Distichopora* occurs on the outer margin of the reef of Ovalau; and Schmelz (*l. c.* p. 592) indicates a probable new species of this genus, which Gräffe believes to belong to the Polyzoa. Schmelz also notices a monstrous specimen of *Herpetolitha*.

VAN BENEDËN (*l. c.*) records the following Zoantharia as occurring on the coast of Belgium:—

Actinia coccinea, O. F. M. (pl. 19. figs. 1–4); *A. candida*, O. F. M.; *A. crassicornis*; *A. troglodytes*, Johnst.; *A. plumosa*, O. F. M.; *A. equina*, Linn.; *A. effæta*, Linn.; and *A. gemmacea*, Ell. & Sol. (pl. 19. figs. 5, 6). *Balanophyllia regia* and *Caryophyllia smithii*, though not recorded as occurring in Belgium, are figured from English specimens kept in an aquarium.

[It will be seen from the nomenclature adopted that the author is not familiar with Gosso's 'Actinologia Britannica;' neither is this work referred to in the bibliography of the Zoantharia. A discussion is alluded to as having taken place between Messrs. Wright, Barrett, and Hincks, which appears to have astonished the author, on the subject of the reproduction of *Actinia*. Although we recognize the names of the disputants, yet we have been quite unable to find any published account of the discussion.]

VERRILL (Proc. Essex Inst. v.) refers to the relative position of the two orders of this group, the *Madreporaria* and *Actinaria*, and describes and sometimes figures the following known species:—*Montipora foliosa* ? (Edw. & H.); *Balanophyllia capensis* (Verr.), pl. 1. fig. 1, and pl. 2. fig. 1; *Eupsammia simpsoniana* (Verr.), pl. 2. fig. 3; *Dendrophyllia gracilis* (Edw. & H.), pl. 1. fig. 2, and pl. 2. fig. 2; *Astræa (Favia) hombronii* (Edw. & H.) ?; *Plesiastrea urvillei* (Edw. & H.); *Galaxea fascicularis* (Oken) ?; *Icterothyathus alternata* (Verr.), pl. 2. fig. 6. Verrill also notices several specimens collected by the Pacific Exploring Expedition, which could not be determined owing to their being young or mutilated; among these are species of *Porites* (p. 25), *Turbinaria* (p. 28), *Flabellum* (p. 42, pl. 2. fig. 5), *Fungia* (p. 43), and *Ctenactis* (p. 44).

Astrangia danae (Edw. & H.) is called *A. edwardsii* by Verrill, *A. danae* (Agass.) having been described one year before it. Proc. Bost. Soc. N. H. x. p. 335, note.

Caryophyllia smithii is recorded by McIntosh (Proc. Roy. Soc. Edinb. vol. v. p. 601) as found in vast numbers at the verge of low water on the eastern side of the Island of North Uist, attached to muddy stones.

Anthea cereus. E. H. Bennett mentions a mode of fissiparous reproduction observed in this Actinozoan. Proc. Dubl. Nat. Hist. Soc. vol. iv. pp. 208–211; Dub. Quart. Jour. Scien. January 1866, pp. 48–52.

Antipathes subpinnata and *A. larix*. Lacaze-Duthiers (*l. c.*) gives a very detailed account of the histology of these two species, especially of the former. This paper is a continuation of the same author's memoir on the histology of the Gorgonidæ.

New genera:—

VERRILL (List of Polyps and Corals sent in exchange, &c.) describes the following new genera:—

Synaræa, *l. c.* p. 42, for *Porites erosa*, *P. informis*, and *P. monticulosa* (of Dana). New sp.: *S. irregularis*, Verr. *l. c.* p. 43, Sandwich Islands; *S. convera*, Verr. *ibid.*, and *S. solida*, Verr. *ibid.*, Society Islands.

Ctenactis (Agass. MS.), *l. c.* p. 51, for *Fungia echinata* (Pallas).

Trachypora, *l. c.* p. 53. Corallum explanate, thin; below echinate and coarsely costate; above with scattered polyp-centres destitute of walls, with one or two cycles of septa, radiating at the centres, but becoming subparallel between them as in *Halomitra*, strongly dentate or lacerately lobed, the strongest lobes surrounding the polyp-centres; columella loose, trabecular. *T. lacera*, sp. n., Verr. *ibid.*, Singapore.

Acanthopora, *l. c.* p. 54, for *Echinopora horrida* (Dana).

Clavarina, *l. c.* p. 56. Corallum compact, branching, cells imperfectly circumscribed, but not confounded, in series; septa and walls thickened, the former lacerate, toothed, with paliform teeth at the bases. Columella rudimentary.

Aulactinia, *l. c.* p. 57. Column elongated, upper portion capable of involution; walls with prominent verrucæ in longitudinal rows on the upper portion, the marginal ones larger, trilobed, the lobes again subdivided on the lower side; tentacles short, subequal. Sp. *A. capitata* (Agass. MS.), sp. n., Verr. *ibid.*

Stephanocora, g. n., Verrill, Proc. Bost. Soc. N. H. x. p. 330. Allied to *Synaræa* (Verr.) and *Psammocora*; cells rather large, with one or two cycles of septa, which are deeply toothed at edge, and generally confluent with those of adjacent cells; walls indistinct or wanting; columella papillose; pali papilliform. Sp. *S. stellata*, sp. n., Verr. *ibid.*, Panama and Pearl Islands.

Pachysammia, g. n., Verrill, Proc. Essex Inst. v. p. 30. Corallum massive and incrusting, consisting of several corallites united together near their summits by a massive cœnenchyma; budding lateral, irregular; surface of the cœnenchyma with waving ribs as in *Dendrophyllia*; four complete cycles of septa; columella not salient, rudimentary or trabecular. Sp. *P. valida*, sp. n., *ibid.*, Hong Kong.

Cœlastræa, g. n., Verrill, *l. c.* p. 32. Corallum massive, cellular, fasciculate, formed by prismatic corallites, intimately united by their walls, which are thin and simple; the exterior of the corallum is destitute of an epitheca, lobed and distinctly costate like that of *Metastrea*; the cells are polygonal, often closed below by the dissepiments, which, occurring at the same level, unite from all sides, thus forming transverse septa; in a transverse section traces of a very rudimentary and loose columella are seen in some cells; septa in three or four cycles, unequal, the inner edges prolonged into strong paliform teeth. *C. tenuis*, sp. n., *l. c.* p. 33, Sandwich Islands?

Cycloporea, g. n., Verrill, *l. c.* p. 38. Corallum branching in a plane; cells open and deep, arranged in series on the sides of the branches, with two cycles of septa more or less complete, without an apparent columella; septa united by their inner edges, so as to form a ring surrounding the central space, and cutting off the interseptal chambers. Type *Allopora bella* (Dana).

New species :—

Sagartia leucolena, Verrill, Proc. Bost. Soc. N. H. x. p. 336, and *S. modesta*, Verr. *l. c.* p. 337, New England (Virg. fauna).

Cereus elisa, Lessona, Atti Soc. Ital. di Scien. Natur. vol. viii. 1866, p. , tav. v. fig. 1, from Spezzia.

Cerianthus americanus (Ag. MS.), Verrill, List &c. p. 56.

Madrepora. Verrill (Proc. Essex Inst. v.) describes the following new

species of this genus:—*Mudrepora turgida*, p. 19, Loo Choo Islands; *M. teres*, p. 20, Ousima; *M. tumida*, p. 21, Hong Kong; *M. proluxa*, p. 22, Ousima; *M. pumila*, p. 23, Bonin Islands; *M. striata*, p. 24, Ousima?

Mudrepora acuminata, Verrill, List &c. p. 40, and *M. diffusa*, Verr. l. c. p. 41, Kingsmill Islands; *M. parvistella*, Verr. ibid., Singapore.

Alveopora excelsa and *A. retusa*, Verrill, List &c. p. 43, Singapore.

Balanophyllia elegans, Verrill, List &c. p. 44, California.

Cænopsammia radiata, Verrill, List &c. p. 44, Society Islands.

Porites tenuis, Verrill, Proc. Essex Inst. v. p. 25, Loo Choo Islands?, and a species unnamed.

Porites panamensis, Verrill, Proc. Bost. Soc. N. H. x. p. 329, Panama.

Montipora poritifformis, Verrill, l. c. p. 26, Loo Choo Islands; *M. rigida*, Verr. ibid., Bonin Islands.

Psammocora parvistella, Verrill, l. c. p. 27, Loo Choo Islands.

Turbinaria sinensis, Verrill, l. c. p. 27, habitat not stated, and a *Turbinaria* unnamed, from the Coral Sea.

Cænopsammia manni, Verr. l. c. p. 30, Sandwich Islands.

Pachyseris monticulosa, Verrill, Proc. Essex Inst. v. p. 45 (= *Agaricia rugosa*, Dana nec Lam.), Fiji Islands.

Stephanoseris lamellosa, Verrill, l. c. p. 46, pl. 2. fig. 4, Loo Choo Islands; *S. japonica*, Verr. l. c. p. 47, Kagosima; *S. sulcata*, Verr. l. c. p. 48, Ceylon.

Diaseris pulchella, Verrill, l. c. p. 48, pl. 1. fig. 3, Ousima.

Pachyseris fluctuosa, Verrill, List &c. p. 55, Kingsmill Islands.

Astrangia. The following new species from Panama are described by Verrill (Proc. Bost. Soc. N. H. x.):—*A. haimi*, p. 330; *A. pulchella* and *concinna*, p. 331; *A. dentata* and *costata*, p. 332.

Ulangia bradleyi, Verrill, l. c. p. 333, Panama.

Goniastrea aspera, Verrill, Proc. Essex Inst. v. p. 32, Hong Kong.

Astrea (*Pavia*) *rudis*, Verrill, l. c. p. 34, Sandwich Islands?; *A. (F.) ordinata*, Verr. ibid., Hong Kong.

Prionastrea chinensis, Verrill, l. c. p. 35, Hong Kong.

Plesiastrea indurata, Verrill, l. c. p. 35, pl. 2. fig. 7, Loo Choo Islands.

Leptastrea stellulata, Verrill, l. c. p. 36, Sandwich Islands.

Allopora californica, Verrill, l. c. p. 37.

Euphyllia undulata, Verrill, l. c. p. 38, Bonin Islands.

Paracyathus porcellana, Verrill, l. c. p. 40, Hong Kong; *P. bonensis*, Verr. ibid., Ebon Island.

Fungia papillosa, Verrill, l. c. p. 42, Loo Choo Islands; *F. lacera*, Verr. l. c. p. 43 (= *echinata*, Dana, ex parte), Fiji Islands.

Pavonia foliosa, Verrill, l. c. p. 44, Ousima or Loo Choo Islands; *P. complanata*, Verr. l. c. p. 45, Loo Choo Islands.

Stylophora stellata, Verrill, List &c. p. 45, Kingsmill Islands.

Stylaster elegans, Verrill, List &c. p. 45, Ebon Island; *S. tenuis*, Verr. ibid., Upolu.

Distichopora nitida, Verrill, List &c. p. 46, Ebon Island.

Oculina arbuscula, Verrill, List &c. p. 46, Charleston; *O. implicata*, (Ag. MS.), Verr. l. c. p. 47, off Cape Hatteras.

Phyllangia dispersa, Verrill, List &c. p. 47, Panama.

Fungia concinna, Verrill, List &c. p. 50; *F. haimi* and *F. valida*, Verr. l. c. p. 51, Zanzibar; *F. serrulata*, Verr. ibid., Kingsmill Islands.

- Lobactis conferta* (Ag. MS.), Verrill, List &c. p. 52, Kingsmill Islands.
Herpetolitha ampla (Ag. MS.), Verrill, List &c. p. 52, Zanzibar.
Halomitra tiara (Ag. MS.), Verrill, List &c. p. 53, Kingsmill Islands.
Phyllastrea explanata (Ag. MS.), Verrill, List &c. p. 53, Tahiti.
Echinopora flexuosa, Verrill, List &c. p. 54, Singapore.
Pavonia varians, Verrill, List &c. p. 55, Sandwich Islands.

CTENOPHORA.

The remarks of AGASSIZ on the affinities of this group (*l. c.* pp. 7-13) should be carefully considered. The author follows Milne-Edwards and L. Agassiz in placing them as an order of *Acalephæ*.

KOWALEWSKY (*l. c.*) describes the development of the following Ctenophora in more or less detail:—*Eschscholtzia cordata*, Köll. (p. 1); *Cestum veneris*, Les. (p. 11); *Eucharis* * *multicornis*, Will (p. 16); *Pleurobrachia* —? (p. 19); *Cydippe horniphora*, Ggbr. (p. 20); *Beroë forskali*, M.-Edw. (p. 20). The development of the *Pleurobrachia* and *Cydippe* resembled in almost all respects that of the *Eschscholtzia*. From the observations of the author it would appear that no well-marked metamorphosis takes place in any of the forms observed. The Ctenophora deposit their ova all the year through, and are found in greatest numbers during the early hours of the morning. This very valuable paper will not admit of being epitomized, but it is worthy of study by those investigating these Actinozoa. The author omits all reference to the papers on this subject by M'Crady, Agassiz, Strothill Wright, and others, but refers to those of Prince, Semper, Gegenbaur, and to one by Allman, which we have been unable to discover.

Pleurobrachia rhododactyla (Agass.) = *Beroë pileus*, Fab. The development of this species is described and figured by Agassiz, *l. c.* p. 30-33, figs. 38-51.

Beroë (ovatus?) and *Cydippe pileus*. Wagener (*l. c.*) gives a detailed account of the anatomy, accompanied by excellent figures, of these two species; he especially describes the structure of the "ctenocysts" (otoliths) and "ctenophores" (Wimperrippen), but does not appear to have met with any well-marked nervous system.

Cydippe pileus is described in detail by Van Beneden (*l. c.* pp. 69-76).

Bolina alata, Agass. The development of this species is described and figured by Agassiz, *l. c.* pp. 15-18, figs. 1-14.

Mnemiopsis leidyi, sp. n., A. Agass. *l. c.* p. 20, figs. 22-24, Naushon, Buzzard's Bay.

Lesueuria hyboptera, sp. n., A. Agass. *l. c.* p. 23, figs. 25-28, Massachusetts Bay.

HYDROZOA.

REICHERT asserts (*l. c.*), in the *résumé* of his paper, that the ectoderm (Allman) of the Hydrozoa is no epithelial layer as is commonly believed, but is the real, true contractile substance of the polyps, comparable to that of the Polythalamia, and that Huxley and Kölliker's comparison of the Hydrozoa with the primary developmental stage of the higher animals has, as a matter of fact, no foundation. This *résumé* is rather too long to give in its

* This name of Eschscholtz's ought to be changed, being preoccupied for a genus of Hymenoptera by Latreille in 1804.

entirety, and yet it is too condensed to give a fair abstract of it.

VAN BENEDEN, in treating of the development of the Hydrozoa, applies the name "téléon" to the sexual Medusoid form (gonophore, Allman) and "atrophion" to the form where it does not become detached from the gonosome, and makes the following four divisions (*l. c.* p. 50):—

- | | | | | | | | |
|---|--|------------------------|--------------------------------------|---------------------------|--|-----------------------------|--|
| I. Atrophion complete (<i>Hydractinia echinata</i> , auct., <i>Cordylophora</i> , Allm., &c.). | | | | | | | |
| II. Semiatrophion.. | <table border="0"> <tr> <td>{ both sexes</td> <td><i>Tubularia indivisa</i>, &c.</td> </tr> <tr> <td>{ male sex only</td> <td><i>Eudendrium ramosum</i>, V. B., &c.</td> </tr> <tr> <td>{ female sex only</td> <td><i>Podocoryne carnea</i>, Sars, &c.</td> </tr> </table> | { both sexes | <i>Tubularia indivisa</i> , &c. | { male sex only | <i>Eudendrium ramosum</i> , V. B., &c. | { female sex only | <i>Podocoryne carnea</i> , Sars, &c. |
| { both sexes | <i>Tubularia indivisa</i> , &c. | | | | | | |
| { male sex only | <i>Eudendrium ramosum</i> , V. B., &c. | | | | | | |
| { female sex only | <i>Podocoryne carnea</i> , Sars, &c. | | | | | | |
| III. Téléon | <table border="0"> <tr> <td>{ both sexes</td> <td><i>Campanularia gelatinosa</i>, &c.</td> </tr> <tr> <td>{ male sex</td> <td><i>Coryne mirabilis</i>, Agassiz, &c.</td> </tr> <tr> <td>{ female sex</td> <td><i>Eudendrium ramosum</i>, V. B., &c.</td> </tr> </table> | { both sexes | <i>Campanularia gelatinosa</i> , &c. | { male sex | <i>Coryne mirabilis</i> , Agassiz, &c. | { female sex | <i>Eudendrium ramosum</i> , V. B., &c. |
| { both sexes | <i>Campanularia gelatinosa</i> , &c. | | | | | | |
| { male sex | <i>Coryne mirabilis</i> , Agassiz, &c. | | | | | | |
| { female sex | <i>Eudendrium ramosum</i> , V. B., &c. | | | | | | |
| IV. Téléon complete. Digenesis. | { <i>Sarsia prolifera</i> , Busch, <i>Thaumantias</i> , <i>Geryonia</i> , &c. | | | | | | |

CORYNIDÆ.

A. AGASSIZ (*l. c.* p. 183) proposes the formation of a new family, *Orthocorynidae*, for the genera *Zancla*, *Corynitis*, *Gemmaria*, and *Candelabrum*.

Hincks (*l. c.* p. 299) records the occurrence of *Clava leptostyla* (Ag.) on the British coast (Morecambe Bay).

Cordylophora lacustris (Allm.). Van Beneden (*l. c.* p. 124) mentions that if the basal portion of one of the branches of this hydrozoon be cut off, in a short time a polyp-head will be developed from the cut extremity (*vide* woodcut, p. 125).

Eudendrium pudicum (S. Wright) is described and figured by Van Beneden (*l. c.* p. 116, pl. 8. figs. 1, 2). He believes that the tentacles are arranged exactly as in the Campanularians, and that this species cannot be referred to *Trichydra* as is done by Wright.

Dinema slabberi is described and figured by Van Beneden (*l. c.* p. 130, pls. 9 & 10).

Van Beneden (*l. c.* p. 106, pl. 4) also describes *Tubularia coronata* as occurring on the Belgian coast.

Cladonema radiatum (Duj.) is described and figured by Van Beneden, *l. c.* p. 139, pl. 12.

Hybocodon (Agass. 1862). This name will probably have to give place to *Diplonema* (Greene, 1857).

New species:—

Coryne vermicularis, Hincks, *l. c.* p. 296, Shetland, in deep water.

Syncoryna pusilla, Van Beneden, *l. c.* p. 119, pl. 5. fig. 4, *S. johnstonii*, Van B. *l. c.* p. 120, pl. 5. figs. 1–3, and *S. loveni*, Van B. *l. c.* p. 121.

Hydractinia solitaria, Van B. *l. c.* p. 136, pl. 11. figs. 9–11, *H. tenuissima*, Van B. *l. c.* p. 137, and *H. incerta*, Van B. *l. c.* p. 138.

Tubularia dimortierii, Van Beneden, *l. c.* p. 111.

Eudendrium ramosum, Van Beneden, *l. c.* p. 112, pls. 6 & 7.

Eudendrium tenue, A. Agassiz, *l. c.* p. 160, fig. 250, Nahant.

Dysmorphosa fulgurans, A. Agassiz, *l. c.* p. 163, figs. 259–260, Nahant.

Euphysa virgulata, A. Agassiz, *l. c.* p. 189, figs. 316–319, Nahant.

Euphysa mediterranea, Haeck. *l. c.* p. 338. Medusoid.

- Steenstrupia cravioides*, Haeck. *l. e.* p. 339. Medusoid.
Bougainvillia maniculata, Haeck. *l. e.* p. 340. Medusoid.
Parypha microcephala, A. Agassiz, *l. c.* p. 195, San Francisco.
Thamnocnidia tubularoides, A. Agassiz, *l. c.* p. 196, San Francisco.
Gemmaria cladophora, A. Agassiz, *l. e.* p. 184, figs. 307-310, Nahant.
Zygodaetyla crassa, A. Agassiz, *l. e.* p. 106, figs. 157-158, Nahant.

SERTULARIDÆ.

VAN BENEDEEN (*l. e.*) describes and figures the following known species:—*Campanularia gelatinosa* (prob. the *Sert. longissima* of Pallas), p. 153, pl. 14, figs. 11-14; *C. dichotoma* (S. Wright) = *Gonothyræa lovèni* (Allm.), p. 156, pl. 15, figs. 1-4; *C. lacerata* (Johnst.), p. 159, pl. 15, figs. 5-13; *Clythia* (*Campanularia*) *volvibilis* = *Camp. johnstoni* (Ald.), p. 166, pl. 14, figs. 1-10; *Campanulina tenuis* (Van B.) = *Laomedæa acuminata* (Ald.), p. 174, pl. 13; *Sertularia epressina* (Linn.), p. 178, pl. 16; *S. rugosa* (Linn.), p. 183, pl. 17, figs. 1-8; *Thoa halccina* (Linn.), p. 184, pl. 18; and *Dynamenu pumila* (Linn.), p. 186, pl. 17, figs. 9, 10.

Eucopæ (*Obelia*) *diaphana* (Agass.). The development of this species is described and figured by A. Agassiz, *l. c.* pp. 83-85, figs. 115-125.

Lafea calcarata (A. Agass.). The development of this species is described and illustrated by Agassiz, *l. c.* pp. 122-126, figs. 184-194; as also that of *Melicertum campanule* (Esch.), *l. c.* p. 131, figs. 202-214.

Hincks (*l. c.* p. 299) records the occurrence of *Gonothyræa gracilis* (Sars) on the Irish coast (Birterbuy Bay).

Cuspidella, g. n., Hincks, *l. e.* p. 298. (*Campanularidæ*.) Hydrothecæ cylindrical or subcylindrical, sessile on a delicate creeping stolon, with a conical operculum, composed of many pieces. Polypites cylindrical, with a single verticil of filiform tentacles. Reproduction unknown. *C. humilis*, sp. n., Hincks, *l. e.* p. 298, on the stems of zoophytes, North Wales, Yorkshire, Northumberland, Shetland, and Connemara.

Ophiodes, g. n., Hincks, *l. e.* p. 421, pl. 14. (*Halecoidæ*.) Hydrocaulus simple or branched, rooted by a creeping stolon. Hydrothecæ vase-shaped, terminal; polypites not retractile within the calycle; the body slightly constricted a little below the base of the tentacles; tentacles in a single verticil, muricate, webbed for about a quarter of their length, and surrounding a conical proboscis; tentaculoid organs borne singly on the hydrocaulus (near the calycles) and on the stolon, highly extensile, protected at the base by a small chitinous cup, and terminated at the upper extremity by an enlarged capitulum, armed with thread-cells. Reproduction unknown. *O. mirabilis*, sp. n., Hincks, *l. e.* p. 422, on weed in Swanage Bay, Dorset.

New species :—

Laomedæa rigida, A. Agassiz, *l. e.* p. 93, San Francisco; *L. gigantea*, A. Agass. *l. e.* p. 94, brackish water, Boston Harbour, growing to 15-20 inches in height; *L. pacifica*, A. Agass. *ibid.*, San Francisco, another gigantic species.

Campanularia elongata, Van Beneden (prob. = *Laomedæa fragilis*, Hincks), *l. c.* p. 164, scarcely visible to the naked eye.

Campanularia flabellata, Hincks, *l. e.* p. 297, Tenby; *C. gigantea*, Hincks, *ibid.*, Lamlash Bay.

- Gonothyræa hyalina*, Hincks, *l. c.* p. 297, Shetland.
Sertularia attenuata, Hincks, *l. c.* p. 298, North Devon, Brighton, &c.
Sertularia actoni, Philippi, *l. c.* p. 120, Straits of Magellan.
Dynamena bidentata, Philippi, *l. c.* p. 120, with the preceding species.
Eucope polygena, A. Agassiz, *l. c.* p. 86, Nahant, on *Laminaria*; *E. parasitica*, A. Agass. *l. c.* p. 87, on a species of *Penella*, parasitic on *Orthogoriscus mola* at Nahant; *E. articulata*, A. Agass. *l. c.* p. 89, Nahant.

PHYSOPHORIDÆ.

Nanomia cara (A. Agass.). A very detailed account of this species is given by Agassiz, *l. c.* pp. 200–213, figs. 331–350.

LUCERNARIDÆ.

VAN BENEDEEN (*l. c.*) describes the following as found on the Belgian coasts:—*Cyanea capillata* (pp. 77, 84), *Rhizostoma cuvierii*, Lamk. (p. 84), *Chrysaora hyoscella*, Esch. (p. 85), *Aurelia aurita*, and *A. cruciata*.

Agassiz (*l. c.* p. 49) mentions that *Dactylometra (Pelagia) quinquecirra* was always found accompanied by a species of Clupeoid, twenty to thirty having been found swimming in the fringes of the actinostome. Every now and then one is swallowed by the *Pelagia* without disturbing the others.

Rhizostoma aldrovandi, D. Ch. Noskin (*l. c.*) describes briefly and figures the larva of this form.

MEDUSIDÆ.

A. Agassiz (*l. c.* p. 55) proposes to remove the *Trachynemidæ* from the vicinity of the *Eucopeidæ*, and to place them with the *Geryonidæ* in a sub-order closely allied to *Æginidæ*.

VAN BENEDEEN (*l. c.*) describes the following as found on the Belgian coasts:—*Thaumantias cymbaloides* (auct.), *T. hemispherica* (O. F. Müll.), *Mesonema henleana*, *Oceania sanguinolenta*, and *Lizzia octopunctata* (Sars).

Geryonia proboscidalis (Geg.) = *Carmarina hastata* (Häck.). Noskin (*l. c.*) gives an account of the early stages of this Medusoid, which differs in some respects from that given by Hæckel.

Ptychogena, g. n., A. Agassiz, *l. c.* p. 137. The Medusa for which this genus has been established shows the intimate structural connexion between *Stauropora*, *Melicertum*, and *Polyorchis*—the structure of the genital organs in an intermediate state of development between organs where the folds of the actinostome are lost in the genital folds, as in *Stauropora*, and the other extreme, where we have pendent genital organs attached to one extremity of diverticulate chymiferous tubes, as in *Polyorchis*. *P. lactea*, sp. n., A. Agass. p. 137, figs. 220, 224, Nahant.

HÆCKEL (Jenaische Zeitschr. i. pp. 326–327) gives a classified list of the Craspedote Medusæ, 28 in number, observed by him at Nice in March and April 1864, and describes the following new genera and species (see also under *Corynidæ*):—

Octorchis, g. n., Hæckel, *l. c.* p. 331. Type of a new family, *Octorchidæ*. Stomachal peduncle solid, quadrangular, with a radial canal in each angle; genitalia in eight masses,—four in stomachal peduncle, four in subumbrella. Sp. *O. gegenbauri*, sp. n., Hæckel, *l. c.* p. 331.

Mitrocoma, g. n., Hæckel, *l. c.* p. 332. (*Æquoridæ*.) Allied to *Tiaropsis*; margin of disk with 500–600 delicate tentacles, of which about 80 are stronger

than the rest and hollow, 200-400 fine and solid, usually rolled up in a spiral form, and 150-250 short, solid, clavate tentacles; marginal vesicles 80; stomachal cavity shallow, in the middle of the lower surface. Sp. *M. annæ*, sp. n., Haeck. *ibid.*

Cybogaster, g. n., Haeckel, *l. c.* p. 341. Allied to *Cytæis*; body nearly globular; stomachal peduncle solid, hyaline, reversed bell-shaped, stomach forming a 4-sided prism, with a short cylindrical tentacle from each of its lower angles; radial canals four; margin with eight short, thick, conical tentacles, each of which springs from a bulb with an ocellus. Sp. *C. gemmascens*, sp. n., Haeck. *l. c.* p. 341.

Geryonia hastata, Haeck. *l. c.* p. 327.

Liriope eurybia, Haeck. *l. c.* p. 329.

Tima cari, Haeck. *l. c.* p. 332.

Phialidium ferrugineum, Haeck. *l. c.* p. 333.

Cosmetira punctata, Haeck. *l. c.* p. 334.

Cunina rhododactyla, Haeck. *l. c.* p. 335.

Tiara smaragdina, Haeck. *l. c.* p. 336.

Dipurena dolichogaster, Haeck. *l. c.* p. 337.

Campanella pachyderma, sp. n., A. Agassiz, *l. c.* p. 52, figs. 70-75, Nahant.

Halopsis cruciata, sp. n., A. Agassiz, *l. c.* p. 102, figs. 151, 152, Nahant.

Geryonopsis forbesii, sp. n., Van Beneden, *l. c.* p. 87, pl. 3, figs. 1-7.

Oceania gædii, sp. n., Van Beneden, *l. c.* p. 93.

Circe (Trachynema) hyalina, sp. n., Van Beneden, *l. c.* p. 95.

TABULATA.

Milleporidæ. The absence of radiating partitions in the Tabulata seems to show, without much doubt, that their true place is among the Hydroids; but Medusa-buds have not yet been discovered.

Notes by Verrill on the Corals of this order occurring at Panama, and by Gräffe on some of those of the Fiji Islands, are referred to at pp. 624 & 629.

Verrill (List of Polyps and Corals sent in exchange, &c.) describes the following new species:—

Millepora insignis, p. 59, Kingsmill Islands; *Heliopora compressa*, p. 59, same locality; *Pocillopora suffruticosa*, p. 60, Tahiti; *P. ramiculosa*, p. 60, Kingsmill Islands; *P. stellata*, p. 60, Zanzibar; *P. capitata*, p. 60, Acapulco.

PROTOZOA

BY

E. PERCEVAL WRIGHT, M.A., M.D., F.L.S.

A. *Separate Publications.*

BOWERBANK, J. S. A Monograph of the British Spongiadae. Vol. ii. London, Ray Society, 1866, pp. xx & 388.

In this volume we have a synopsis of the British genera of Sponges, and descriptions of 193 species. One new genus, *Ophlitaspongia*, is described. In the synopsis of the genera, pp. 1-16, references to the illustrations in vol. i. are given, but in such a manner as to make it a matter of some difficulty to find out what species are figured.

SCHMIDT, O. Zweites Supplement der Spongien des adriatischen Meeres, enthaltend die Vergleichung der Adriatischen und Britischen Spongien-Gattungen. Leipzig, 1866, pp. 1-24, and one plate.

The author brings the literature of the Sponges to the end of 1865, criticises the genera proposed by Bowerbank in vol. i. of his work on British Sponges, and institutes a comparison between the genera found in the Adriatic and on the British coasts.

B. *Papers published in Journals &c.*

[BOCAGE. See p. 620.]

BOWERBANK, J. S. On *Hyalonema mirabilis*, in reply to Dr. Gray. Ann. & Mag. Nat. Hist. vol. xviii. 1866, pp. 397-401.

CLARK, H. J. On the structure and habits of *Anthophysa mülleri*, Bory, one of the Sedentary Monadiform Protozoa. Am. Journ. Sci. & Arts, Sept. 1866, pp. 223-230, and Ann. & Mag. Nat. Hist. vol. xviii. 1866, pp. 429-436.

———. Conclusive proofs of the animality of the Ciliate Sponges and of their affinities with the Infusoria flagellata. Amer. Jour. Sci. 2nd series, Nov. 1866, pp. 320-324.

———. On the affinities of *Peridinium cypripedium*, J.-Clk., and *Urocentrum turbo*, Ehr. Ann. & Mag. Nat. Hist. vol. xviii. 1866, pp. 2-6.

———. On the anatomy and physiology of the Vorticellidan

- parasite (*Trichodina pediculus*, Ehr.) of Hydra. Mem. Bost. Soc. Nat. Hist. vol. i. pt. 1. pp. —, pl. —, and Ann. & Mag. Nat. Hist. vol. xvii. June 1866, pp. 401–425, pls. 8 & 9, also short abstract in Proc. Bost. Soc. Nat. Hist. vol. x. April 1866, p. 233.
- COHN, F. Neue Infusorien im Seeaquarium. Zeitschr. f. wissensch. Zoologie, Bd. xvi. pp. 253–302, Taf. 14 & 15 : September 1866.
- DIESING, K. M. Revision der Prothelminthen. Abtheilung: Mastigophoren. Sitzungsber. Akad. Wiss. Wien, Band lii. pp. 287–401. Abtheilung: Amastigen. Ibid. pp. 505–579, and Bd. liii. pp. 49–144.
- In these papers Diesing brings to a close his revision of all the orders of the worms without bristles (die borstenlose Würmer), which he commenced in the pages of the Journal of the Vienna Academy in 1853. The present papers treat of the Prothelmintha, which order contains two suborders, (1) *Mastigophora* and (2) *Amastiga*; and these are divided into twenty families and 161 genera. The Prothelmintha of Diesing will be the same as the Infusoria of Stein, excluding the *Vorticellina*, *Ophrydina*, *Acinetina*, and *Opalina*, but including the *Volvocinea*.
- DONNÉ, AL. De la génération spontanée des moisissures végétales et des animalcules infusoires. Compt. Rend. tome lxiii. Août 1866, pp. 301–305.
- . Sur la génération spontanée des animalcules infusoires. Ibid. pp. 1072–1073.
- GRAY, J. E. Notes on the "Glass Rope," *Hyalonema*. Ann. & Mag. Nat. Hist. vol. xviii. 1866, pp. 287–296.
- . Notes on Dr. Bowerbank's paper on *Hyalonema*. Ibid. pp. 485–486.
- . On Venus's Flower-basket (*Euplectella speciosa*). Ibid. pp. 487–490.
- GREEFF, R. Ueber einige in der Erde lebende Amöben und andere Rhizopoden. Archiv f. mikroskop. Anat. Bd. ii. Heft 2 & 3, 1866 (Oct. 18), pp. 299–331, Taf. 17, 18.
- A very interesting paper describing some *Amœba* living in earth and dry sand.
- LANKESTER, E. R. Notes on the *Gregarinida*. Quart. Journ. Micr. Sci. Jan. 1866, pp. 23–28, pl. 4.
- LINDEMANN, KARL. Weiteres über Gregarinen. Bull. Soc. Nat. Moscou, 1865, no. 4, pp. 381–387.
- MEUNIER, V. De la résistance vitale des *Kolpodes encystées*. Compt. Rend. tome lxi. p. 991, and Ann. & Mag. Nat. Hist. 1866, vol. xvii. p. 79.

- SCHMIDT, O. Vorläufiger Bericht über die Untersuchung der Bowerbank'schen Spongien. Sitzungsber. Akad. Wiss. Wien, Band liii. pp. 147-151.
- SCHWALBE, G. Ueber die contractilen Behälter der Infusorien. Archiv f. mikroskop. Anat. Band ii. Heft 2 & 3, 1866 (Oct. 18), pp. 351-371.
- STUART, A. Ueber *Coscinosphæra ciliosa*, eine neue Radiolarie. Zeitschr. f. wissensch. Zoologie, Bd. xvi. pp. 328-345, Taf. 18: Sept. 1866.
- ZENKER, W. Beiträge zur Naturgeschichte der Infusorien. Archiv f. mikroskop. Anat. Band ii. Heft 2 & 3, 1866 (Oct. 18), pp. 332-348, Taf. 19.

I. INFUSORIA.

Spontaneous generation. DONNÉ (*l. c.*) gives an account of some experiments conducted for the purpose of determining the possibility of spontaneous generation. Hens' eggs were wrapped up in cotton, which had been exposed to a high temperature, the summit of the egg was pierced by a red-hot stylet, and the contents placed in communication with air which had been filtered free from germs; in a short time, three or four weeks, the appearance of organized vegetable filaments was noticed. When a small portion of distilled water was added, then, in the space of twenty-four hours, Monads and Vibrios were developed in myriads.

PASTEUR replies to these observations of Donné (Compt. Rend. *l. c.* p. 305) that the experiments referred to are not free from many sources of error, which he very briefly alludes to.

DONNÉ, in a second paper (*l. c.* p. 1072), gives an account of further experiments in which he had taken great care to exclude all sources of error, and yet, after all, animalcula were found to abound.

PASTEUR (*l. c.* p. 1073) once more points out the probable source of error in these latter experiments, and pronounces as his fixed opinion that, in the actual state of science, heterogeny is a chimæra.

Here also may be mentioned CANTONI, "Di alcune esperienze sulla generazione spontanea, eseguite in unione col prof. Oehl," Real. Istitut. Lomb. vol. ii. pp. 309-311, and CAVALLERI, "Di alcuni esperimenti intorno alla questione della generazione spontanea degli infusorj," Ibid. pp. 331-348.

Pulsatile vesicle. Zenker gives a detailed account of this vesicle (*l. c.* p. 332), and believes that the pulsation must be regarded as a process of respiration.

Here we would also refer to SCHWALBE's paper (*l. c.*), which does not admit of being abstracted.

Vorticella. Zenker (*l. c.* p. 344) believes that the stem of *Vorticella* is much less complicated in its structure than the arms of *Acineta*; but he asserts the presence of muscular tissue.

Acineta ferrum equinum. Zenker (*l. c.* p. 340) describes the contractile arms of this species. Taf. 19, fig. 1 A-J.

Anthophysa mülleri (Bory). Clark (*l. c.*) gives a detailed account of this

species, considering it under the heads of habitat and general appearance, form, and reproduction. The existence of a contractile vesicle was satisfactorily determined, and the ingestion of food was several times witnessed. Fission gemmation was the only form of reproduction observed. The author observes that he feels quite certain that the stem grows out from the posterior end of the body. Cohn's figures are condemned, but his paper is not otherwise alluded to.

ARCHER, W. (Quart. Jour. Micr. Scien. July 1866, p. 182), seems rather inclined to believe that the filaments (*Stereonema*) themselves grow and branch, and that the *Uvella*-like bodies are a subsequent development. Mr. Archer also alludes (*l. c.* p. 183) to a Protozoon having a certain amount of resemblance to *Anthophysa*, but having two long flagella, and the summit-monads solitary, not grouped into *Uvella*-heads. Dr. J. Barker records (same Journal, p. 184) the occurrence of this species in great quantity on the banks of the Tolka, co. Dublin. This little river had overflowed its banks, and the submerged plants presented a reddish-brown colour from the quantity of the *Anthophysa*.

Peridinium cypripedium. Clark (*l. c.* p. 2), after a careful perusal of Mr. Carter's remarks (*vide* 'Record,' 1865, p. 791) on his original paper, still feels certain that this species is not the same, even generically, as the *Urocentrum turbo* (Ehr.), and refers to the great difficulty of identifying many of the descriptions and figures in Ehrenberg's 'Infusionsthierchen.'

Trichodina pediculus (Ehr.). CLARK, in a very interesting memoir (*l. c.*) on this parasite, gives a detailed account of its habitat, specific relationship, form (all the figures in European works are more or less stiff and formal, and give a very inadequate idea of the species), its prehensile and locomotive organs, digestive, circulatory, and reproductive systems. This paper is accompanied by eighteen figures on two plates; the species would appear to be very common about Cambridge, Mass., on the bodies of *Hydra fusca* and *H. viridis*.

REINSCHE, P., in his "Morphologische, anatomische und physiologische Fragmente," No. 9, gives an account of an Infusorian met with in the cells of *Sphagnum*. This Infusorian (which would appear to belong to the family of the *Kolpoda*) apparently entered the *Sphagnum*-cell, through the hole in the membrane, while in a very young condition. Bull. Soc. Imp. Moscou, tome xxxviii. no. 3, 1865, pp. 44-47, pl. 2. fig. 8.

Kolpoda. As the result of some forty experiments, Meunier (*l. c.*) states that encysted *Kolpoda* are destroyed by boiling. Whether the temperature was allowed to remain at 212° F. for ten seconds or ten minutes did not appear to make any differences in the result.

Noctiluca miliaris. Max Schultze makes some observations on the phosphorescence of this Protozoon, and recognizes the analogy between the granular bodies met with in *Noctiluca* and those occurring among the Infusoria and Rhizopods. Archiv f. mikroskop. Anat. Bd. ii. Heft 1, 1866, pp. 163-164.

COHN (*l. c.*) describes the following new genera and species of Infusoria found by him in his marine aquarium at Breslau, the salt water in which was taken from the sea at Heligoland. The species are described at great length; but diagnoses of these and of the new genera are appended to the paper, and it is these diagnoses that we translate:—

I. HALOTRICHIA.

Lembus, g. n., p. 296. Body milk-white or yellowish, very elastic and flexible, not retractile, with fine wavy rings, surrounded with transverse rows of long cilia, much crowded together on the sides, linear, lance-shaped, attenuated in front, neck-like, with a row of long recurved cilia extending from the oral opening to the middle of the body; from the mouth extends a long membranous velum, which, although not moveable at will, is densely furnished with cilia, which can be protruded; contractile vesicles one or more in the posterior portion of the body; nucleus (? several small ones). *L. velifer*, sp. n., p. 270, figs. 12-18.

Anophrys, g. n. p. 296. Body rigid, with fine transverse and longitudinal lines, clad with cilia; a central nucleus and terminal contractile vesicle; oral opening on the side, with a series of rotating preoral cilia; the portion in advance of the mouth presents the form of a pointed flexible proboscis. *A. sarcophaga*, sp. n. (p. 273), fig. 51 a-c. *Leucophrys carneum*, Ehrb., is referred to this genus.

Helicostoma, g. n., p. 296. Body pale grey or quite colourless, elastic, finely striated both transversely and longitudinally, surrounded with cilia set in long rows, placed closely together on the back; oblong, pointed towards the apex, obtusely rounded off posteriorly; an irregular oral opening, conducting into a membranous oesophagus, extending into the middle of the body, the first portion of which is straight, and the latter portion bends like a bishop's crozier; contractile vesicle towards the posterior portion of the body; nucleus central. *H. oblongum*, sp. n., p. 277, figs. 19-23.

Metacystis, g. n., p. 297. Body rigid, colourless, with fine wavy lines, easily obliterated, filled with small dark bodies; round or cylindrical in shape; with fine short cilia; the narrow anterior extremity furnished with a thick border of cilia; the posterior end contains a more or less conspicuous, transparent vesicle, which shines like a fat-globule (sarcode?). *M. truncata*, sp. n., p. 265, figs. 39, 40.

Placus, g. n., p. 297. Body rigid, loricated; lorica yellowish, indentated with wavy furrows crossing each other and running in parallel bundles, thickly beset with cilia on the back; oblong, with a short, circular oral opening near the anterior extremity placed sideways; a contractile vesicle near the posterior extremity; nucleus one, central. *P. striatus*, sp. n., p. 268, figs. 6, 7.

Trachlocerca phœnicopterus, sp. n., p. 262, figs. 1-3.

Nassula microstoma, sp. n., p. 267, figs. 4-5.

Lovophyllum rostratum, sp. n., p. 280, figs. 8-11.

Colpoda pigerrima, sp. n., p. 274, fig. 52.

Pleuronema (Alyscum) citrullus, sp. n., p. 276, fig. 54.

Uronema marinum, Duj., emend., p. 275, fig. 53.

Amphileptus gutta, sp. n., p. 269, fig. 50.

II. HYPOTRICHIA.

Actinotricha, g. n., p. 299. Body colourless, oblong, somewhat flexible and retractile, rounded at both ends, flat, with a beak-like lip situated ventrally on the front anterior edge, bearing five long, broad spines, in old specimens usually divergent and immoveable; peristome short, and set on its inner side with long, hooked cilia; two rows of ventral bristles, which at the posterior portion protrude over the edge; tail-bristles long, broad, often bifid. *A. saltans*, sp. n., p. 283, figs. 24-26.

Stichochæta pediculiformis, sp. n., p. 285, fig. 38 a, b.

Oxytricha flava, sp. n., p. 288, figs. 27-29, and *O. flava*, var. *carnea*.

O. rubra (Ehrb.), char. emend. p. 291; *O. scutellum*, sp. n., p. 287.

III. PERITRICHA.

Trichodina auerbachii, sp. n., p. 292, figs. 30, 31.

Acarella, g. n., p. 301. Body colourless, rigid, very minute; anterior portion obtusely rounded off; posterior portion short, cylindrical, fixed in a transparent globular envelope, rather broader than the anterior portion. On the ring-like border intervening between the two parts a circle of thick-set cilia is found, sometimes used for running, and sometimes for leaping. Only differs from *Halteria* in the presence of the envelope.

Codosiga, g. n., Clark, Am. Journ. Sci. 2nd series, Sept. 1866, p. 228, footnote. Body obliquely obovate, and tapering at its posterior end into a slender pedicel; truncate and abruptly constricted in front where the base of the bell meets the body. Sigmoid-arcuate flagellum as long as the body and bell. The two contractile vesicles in the posterior third of the body, superficial, large, and quite conspicuous, each contracting, alternately with the other, once in about half a minute. Bodies attached, in groups of from two to eight, by their pedicels to the tip of a slender stem; erect or divergent, but not pendent. Mouth at the base of the flagellum, *i. e.* terminal. Anus near the mouth. No eye-spot. Bell slightly flaring; half as deep again as broad; fully as deep as the length of the body; highly contractile. Colour of the body (excepting the hyaline bell), pedicels, and stem, deep yellow. *C. pulcherrima*, sp. n., *l. c.* p. 228, common on freshwater weeds about Cambridge, U. S. A.

DIESING (*l. c.*) proposes the following new genera:—*Glenouella* (p. 318) for *Uvella stigmatica* (Perty); *Isomita* (p. 321) for *Monas dunalii* (Joly); *Dimastix* (p. 322) for *D. glaucoma* (Diesing); *Plagiomastix* (p. 326) for *Chilomonas granulosa* (Dujard.); *Glenopolytoma* (p. 331) for *Polytoma ocellatum* (Perty); *Dicercomonas* (p. 339) for *Monas succisa* (Perty); *Carteria* (p. 356) for *Cryptoglena cordiformis* (Carter); *Calceolus* (p. 379) for *Peridinium cypripedium* (Clark), *vide* Z. Record, 1865, p. 791; *Heteroaulax* (p. 381) for *Heteroaulacus* (Diesing *pridem*); *Gonyaulax* (p. 382) for *Peridinium spiniferum* (Clap.); *Glenoaulax* (p. 382) for *Glenodinium inaequale* (Schm.); *Proaulax* (p. 383) for *Peridinium corpusculum* (Perty); *Dimastigoaulax* (p. 392) for *Peridinium cornutum* (Ehr.); *Gymnopharynx* (p. 529) for *Prorodon edentatus* (Clap.); *Dicetyocoleps* (p. 534) for *Coleps hirtus* (Nitzsch); *Pinacocoleps* (p. 536) for *Coleps incurvus* (Ehrb.); *Cricocoleps* (p. 536) for *Coleps amphacanthus* (Ehrb.); *Cephalorhynchus* (p. 545) for *Trachelius laticeps* (Ehrb.); *Hysterozineta* (p. 555) for *Ptychostomum paludinarum* (Stein); *Glenotrochila* (p. 563) for *Aegyria oliva* (Clap.); *Glenopanophrys* (p. 84) for *Ophryoglena flavicans* (Ehrb.); *Aglenophrya* (p. 86) for *Ophryoglena cæca* (Stein); *Claparedia* (p. 98) for *Oxytricha longicaudata* (Strethill Wright); *Steinia* (p. 113) for *Oxytricha platystoma* (Ehrb.); *Nothopleurotricha* (p. 117) for *Pleurotricha setifera* (Engelmann).

CLARK (*l. c.*), in treating of the animality of the genus *Monas*, incidentally alludes to, without properly defining, two new genera. *Bicosæca*, p. 323, may be described in general terms as a stemless *Monas*, which is attached to the bottom of a calyx by a highly muscular retractile cord. There are two singularly diverse species of this genus, one marine and the other lacustrine;

neither are further characterized. *Salpingoeca*, p. 324, is, as it were, a single individual of *Codosiga*, Clark, which does not possess a stem, but is seated in a calyx, from which it protrudes, or into which it retracts at will; there are three well-marked species, one marine.

Epiderites is a new genus founded by Stein for *Oxytricha auricularis*, Cl. & Lachm.), Zeitsch. f. Naturwissen. Halle, 1866, Heft 2, p. 178.

Rhyncheta cyclopus, Zenker, sp. n. (*l. c.*), p. 345, tab. 19. fig. 2 A-D, found living epizoically on *Cyclops coronatus* (Claus.). It consists essentially of a body and proboscis. The pulsatile body lies between the proboscis and the nucleus. The proboscis is compared to an *Acincta*-arm; and the species would then be a one-armed, stalkless *Acincta*.

II. SPONGIIDA.

SCHMIDT, in his preliminary notice of Bowerbank's work on British Sponges (*l. c.*), confirms the discovery of the "intermarginal cavities," and criticises some of the genera proposed; but this subject is treated of more fully in Schmidt's 'Second Supplement.' It would appear that the unnamed East-Indian Sponge (Bowerbank, vol. i. fig. 307), "having numerous depressed porous areas, furnished with stomata-like protective organs," is nothing but a parasitic *Palythoa*, imbedded in a mass of *Reniera dura*. The presence of contractile tissue in the "intermarginal cavities" of *Geodia*, as indicated by Bowerbank, is alluded to as removing the Sponges to a section of the Protozoa higher than the Radiolaria and Infusoria; and the question is asked, is an homologous organ to these "intermarginal cavities" met with in any other Sponges than in *Geodia*?

(*Calcarea*.)

SCHMIDT (*l. c.* p. 7 *et seq.*) states that *Grantia*, Bk. (Fleming) = *Sycon* (Lbrkhn.) = *Dunstervilleia* (Bk.) and *Ute* (Sch.); *Leucosolenia* (Bk.) = *Nardoia* (Sch.) and *Grantia* (Lbrkhn. ex parte); *L. botryoides* (Bk.) = *G. lieberkuhnii* (Sch.); *Leuconia* (Bk.) = *Grantia* (Lbrkhn. ex parte). Perhaps *L. nivea* (Bk.) = *G. solida* (Sch.). *Leucogypsia* (Bk.) is not sufficiently distinct from *Leuconia* (Bk.).

(*Keratosa*, Bk.)

This order Schmidt (*l. c.* p. 9) remarks is nothing more than an arbitrary grouping together of genera, and is by no means a natural one. *Spongionella* (Bk.) and *Halispongia* (Blain.) = *Cacospongia* (Sch.); *Verongia* (Bk.) = *Aplysina* (Sch., Ndo.); *Auliskia* (Bk.), this genus is to be expunged, being, without any doubt, a parasitic Alga living upon a *Cacospongia*; *Stematumenia* (Bk.) = *Hircinia* (Ndo.) = *Filifera* (Lbrkhn.) = *Sarcotragus* (Sch.); *Dysidea* (Jhnst.) = *Spongelia* (Ndo.).

(*Silicea*, Bk.)

Taking from this order the corticeaceous sponges (Rindenspongien and the genus *Halisarca*), this order is not bulkier than the Halichondria as defined by Schmidt (*l. c.* p. 11). *Geodia* (Bk.) (Fleming) = *Caminus* (Sch. ?); *Ecionemia* (Bk.) = *Stelletta* (Sch.); *Polymastia* (Bk.) = *Suberites* (Bals.); *Tethya* (Bk.) = *Tethya* (Sch.); *Ancorina* (Sch.) and *Stelletta* (Sch.) = *Dictyocylindrus* (Bk.) = *Raspailia* (Ndo.) and *Axinella* (Sch. spec.); *Phakellia* (Bk.) has very

close affinities to *Axinella*; *Microciona* (Bk.) would appear to consist of several different genera; *M. ambigua* (Bk.) and *M. atrosanguinea* (Bk.) would be referable to *Scopalina* (Sch.), whereas *M. carnosa* (Bk.) is identical with *Halichondria incrustans* (Bk.); *Hymeraphia* (Bk.) is evidently identical with *Hymedesmia* (Bk.) (by a misprint it is said to be identical with *Microciona* (Bk.), which = *Myxella* (Sch. ex parte). *Hymeniacion* (Bk.) contains a great variety of forms, some referable to *Reniera* (Ndo.), some to *Suberites* (Ndo.), and some to *Esperia* (Ndo.). *Halichondria* (Bk., Fleming), the typical species, *H. panicea* (Jhnst.), is indubitably a *Reniera* (Ndo.); *Isodictya* (Bk.) also = *Reniera* (Ndo.); *Desmacion* (Bk.) = *Esperia* (Ndo.); *Raphyrus* (Bk.) = *Papillina* (Sch.).

Hyalonema sieboldii (Gray, 1835). GRAY (*l. c.* p. 287) gives a *résumé* of the different descriptions of this remarkable organism, correcting an error he fell into (misled by imperfect specimens) in 1859, of placing it along with the barked Alcyonaria, and especially noticing Dr. Bowerbank's description of this genus in his 'British Sponges,' vol. ii. p. 9, in which Dr. Bowerbank would appear to regard the actinozoan polyps of the "bark" portion as "oscula projecting from the surface of the sponge." On a consideration of the whole question Dr. Gray would feel inclined to believe "that the bark and axis are part of the same coral, and made by the same animal," and that neither has any direct connexion with the basal portion, which is a true sponge.

BOWERBANK, in replying to Gray's note (*l. c.* p. 397), states that he hopes soon to publish a paper, with the object of showing that the basal mass of sponge-tissue, the spiculous axis or rope, and its coriaceous envelope have an organic unity, and are portions of one and the same animal, alluding to the fact that only among the Protozoa do we meet with animals secreting silex in their skeletons. Bowerbank apparently argues that *Palythoa fatua* (Max Sch.) cannot belong to the Actinozoa because siliceous spicula are to be found on its inner coat.

GRAY, in his reply (*l. c.* p. 485), says, whatever theory may be entertained about the rope-like bundle of spicula (which he considers the axis of the coral), there can be no doubt that the bark on the axis is an Actinozoon allied to *Zoanthus*. Dr. Bowerbank alone among naturalists denies this fact.

Euplectella speciosa. Gray (*l. c.* p. 487) describes some fresh specimens of this siliceous sponge which have been lately received by the British Museum; he shows the mistake into which Dr. Bowerbank has fallen by superseding Owen's generic name *Euplectella* with *Alcyoncellum*, and quotes two species—(1) *E. cucumer* (Owen), Seychelles, and (2) *E. speciosa* (Q. & G.), Philippines.

CLARK, *l. c.* p. 324, describes *Leucosolenia* (*Grantia*) *botryoides*, Bk. The inner layer is entirely made up of the individual members of the sponge-colony. To describe the shape and organization of one of these individuals would be to describe a monad of *Codosiga*. Hence, the author argues, it is scarcely fair to refer one to the class of the Infusoria and the other to the class of Spongiada; and hence he concludes that all the monociliate flagellate Infusoria should be grouped with the Sponges.

Hymeniacion suberea (Bk.). Hughes gives a brief account of the development of this sponge in an aquarium. Rep. Brit. Assoc. 1865, p. 86.

Cellulophana plicata, according to Schmidt (*l. c.* p. 22), is a sponge and not a plant.

Geographical distribution of Sponges. Schmidt (*l. c.* p. 19) gives a list of those genera found occurring equally in the Adriatic and British seas, of those found in the British seas and not in the Adriatic, and of those found in the Adriatic and not on the British coast.

New genus and species:—

BOWERBANK, in his monograph of the British Sponges, vol. ii., describes the following new species:—

CALCAREA, Bk.

Grantia compressa (p. 17), *G. ensata* (p. 25), *G. tessellata* (p. 26).

Leucosolenia contorta (p. 29).

Leuconia pumila (p. 41).

Leucogypsia gossei (p. 42).

SILICEA, Bk.

Ecionemia compressa (p. 55), *E. ponderosa* (p. 56).

Polymastia ornata (p. 58), *P. bulbosa* (p. 61), *P. robusta* (p. 62), *P. brevis* (p. 64), *P. spinula* (p. 66), *P. radiosa* (p. 68).

Halyphysema tumanowiczii (p. 76), *H. ramulosa* (p. 79).

Ciocalyptra penicillus (p. 81).

Tethea collinsii (p. 87), *T. schmidtii* (p. 89), *T. spinularia* (p. 94).

Haliccnemia patera (p. 96).

Dictyoecylindrus ventilabrum (p. 100), *D. radiosus* (p. 105), *D. howsei* (p. 106), *D. fascicularis* (p. 110), *D. virgulosus* (p. 113), *D. pumilus* (p. 114), *D. rugosus* (p. 119).

Phakellia robusta (p. 120).

Microcionia fictitia (p. 124), *M. laevis* (p. 127), *M. fallax* (128), *M. armata* (p. 129), *M. spinulenta* (p. 132), *M. carnosus* (p. 133), *M. ambigua* (p. 136), *M. atrasanginea* (p. 138).

Hymenaphia vermiculata (p. 141), *H. clavata* (p. 143), *H. verticillata* (p. 145), *H. stellifera* (p. 146).

Hymedesmia radiata (p. 149), *H. stellata* (p. 150), *H. zetlandica* (p. 152).

Hymeniadon thomasi (p. 155), *H. coccinea* (p. 156), *H. brottii* (p. 158), *H. fragilis* (p. 159), *H. reticulatus* (p. 159), *H. fallaciosus* (p. 160), *H. lactea* (p. 163), *H. perarmatus* (p. 164), *H. membrana* (p. 165), *H. caruncula* (p. 166), *H. mammeata* (p. 170), *H. consimilis* (p. 172), *H. variantia* (p. 174), *H. macilentia* (p. 176), *H. fallax* (p. 177), *H. viridans* (p. 178), *H. armatura* (p. 183), *H. pachyderma* (p. 184), *H. crustula* (p. 185), *H. lingua* (p. 187), *H. florecum* (p. 190), *H. jccusculum* (p. 198), *H. sulphurea* (p. 208), *H. subclavata* (p. 209), *H. clavigera* (p. 211), *H. gelatinosa* (p. 222), *H. paupertas* (p. 223), *H. bucklandii* (p. 226).

Halichondria glabra (p. 232), *H. angulata* (p. 233), *H. caduca* (p. 234), *H. inconspicua* (p. 236), *H. incerta* (p. 237), *H. distorta* (p. 240), *H. corrugata* (p. 242), *H. thompsoni* (p. 243), *H. forcipis* (p. 244), *H. simplex* (p. 246), *H. subdola* (p. 247), *H. candida* (p. 251), *H. irregularis* (p. 252), *H. dickiei* (p. 253), *H. pattersoni* (p. 255), *H. pulchella* (p. 256), *H. ingalli* (p. 258), *H. scandens* (p. 259), *H. batei* (p. 261), *H. granulata* (p. 262), *H. hyndmani* (p. 264), *H. nigricans* (p. 266), *H. albula* (p. 268), *H. farinaria* (p. 269), *H. inornatus* (p. 271).

Isodictya peachii (p. 276), *I. permollis* (p. 278), *I. simulo* (p. 279), *I. varians* (p. 281), *I. rosea* (p. 282), *I. elegans* (p. 283), *I. macandrewii* (p. 284), *I. indefinita* (p. 286), *I. indistincta* (p. 290), *I. densa* (p. 292), *I. anomala* (p. 293), *I. simplex* (p. 294), *I. jugosa* (p. 296), *I. pallida* (p. 297), *I. fistulosa* (p. 299), *I. gregorii* (p. 301), *I. fallax* (p. 302), *I. robusta* (p. 304), *I. pocillum* (p. 305), *I. mammeata* (p. 306), *I. dichotoma* (p. 309), *I. pygmaea* (p. 313), *I. ranusculus* (p. 314), *I. clava* (p. 316), *I. dissimilis* (p. 318), *I. normani* (p. 320), *I. alderi* (p. 323), *I. edwardii* (p. 325), *I. paupera* (p. 328), *I. uniformis* (p. 329), *I. clarkei* (p. 330), *I. gracilis* (p. 331), *I. barleei* (p. 333), *I. beanii* (p. 334), *I. lurida* (p. 336), *I. fimbriata* (p. 337).

Desmacidon jeffreysii (p. 347), *D. peachii* (p. 349), *D. constrictus* (p. 350).

Raphyrus griffithsii (p. 354).

Diplodena vesicula (p. 357).

KERATOSA.

Chalina flemingii (p. 370), *C. gracilentia* (p. 372), *C. grantii* (p. 375).

Verongia zetlandica (p. 380).

Ophlitaspongia, Bowerbank, g. n. (*l. c.* p. 378). Sponge sessile, massive; surface papillated, hispid. Oscula simple, on the apices of the papillae. Pores inconspicuous. Dermal membrane pellucid, spiculous; spicula fusiformi-attenuato-acuate, rather slender, and tricurvate acerate, variable in size, numerous. Skeleton: Fibres stout and strong; rete compact, somewhat irregular; spicula fusiformi-attenuato-acuate, short and stout, numerous, projected from the surfaces of the fibres at various angles to their axes. Interstitial membranes spiculous; spicula same as those of the dermal membrane. *O. papilla*, sp. n., Bowerbank, *l. c.* p. 378, from Vazon Bay, Guernsey.

Dactylocalyx bowerbankii, Johnson, Ann. & Mag. Nat. Hist. 1864, xiii. pp. 257-258, off the coast of Madeira.

Nardoia spongiosa, Kölliker, Icones Histiol. part 1. p. 63, pl. 9. figs. 6-8, Villa Franca.

III. RHIZOPODA.

REICHERT'S remarks on the morphological structure and the motory phenomena of the contractile substance of the Polythalamia (*Gromia ovi-formis*) will be found translated in Ann. & Mag. of Nat. Hist. vol. xvii. 1866, pp. 351-359 (*vide Z. Record*, 1865, p. 798).

Under the heading of "Kleinere Mittheilungen, No. 1. Reichert und die Gromien," Max Schultze criticises the statements of Reichert (Archiv f. mikrosk. Anat. Band ii. Heft 1, 1866, pp. 140-160).

REICHERT alludes to Max Schultze's article in his own Archiv (Archiv für Anatomie &c., 1866, pp. 286, 287), and maintains, as before, (1) that what is called "granular movement" (Körnchen-Bewegung) in the pseudopodia of the Polythalamia is nothing but the result of a wave-like contractile motion (nichts Anderes als eine Contractions-Wellenbewegung ist), and that the so-called "Körnchen" are not really microscopical granules, but waves of contraction (Contractionswellen); (2) that in his article on the subject of these "granular movements," even where the word "apparent" is not affixed, he has had in view the wave-like contractile movement, and not the motion of true granules; (3) and, lastly, that, while he asserts the presence of true granules (Körnchen) in the contractile substance of other invertebrate animals, it is to be distinctly borne in mind that true granules are not known to him as

existing in the pseudopodia of the Polythalamia, and that should such eventually prove to have an existence in these Protozoa, independently of those seen in the "granular movement," they will be found to have nothing to do with it.

Radiolaria. Stuart (*l. c.* p. 328) proposes to arrange as follows the *Ethmosphærida*, Hæckel.

Subfamily 1. *Coscinosphærida*, Stuart. Skeleton consisting of a single calcareous sieve-like shell, with numerous radial cilia.

Genus *Coscinosphæra*, Stuart.

Subfamily 2. *Heliosphærida*, Hæck. Skeleton consisting of a single extracapsular trellis-like bowl, with or without radial spicula.

Genera: *Cyrtidosphæra*, *Ethmosphæra*, *Heliosphæra*.

Subfamily 3. *Arachnosphærida*, Hæck. Skeleton consisting of two or more concentrically arranged extracapsular trellis-like bowls, fastened together by radial bars.

Genera: *Diplosphæra*, *Arachnosphæra*.

W. ARCHER takes the opportunity of exhibiting ten species of Rhizopods from the same pond of fresh water, to state his conviction of the stability of specific forms among the freshwater Rhizopods, dwelling especially on the important fact that like form is always found in contact (conjugated) with like form. Many interesting facts will be found recorded in this paper. Quart. Journ. Micr. Scien. 1866, pp. 185-189.

Amæba villosa, Wall. Archer describes the presence of a large and numerous tuft of very long prolongations, commonly issuing from just behind the villous patch described by Wallich; these prolongations were not of parasitic origin, but veritable portions of the sarcode, and would seem to indicate a yet higher differentiation of parts than has yet been observed in this group. Quart. Journ. Micr. Scien. 1866, p. 190.

ARCHER calls attention to a Rhizopod, referred somewhat doubtfully to *Difflugia corona*, in which a tuft of very slender linear appendages of greater or less density were found issuing from the apex of the horns; these tufts were often as long as or longer than the whole creature, test and all; their considerable resemblance to the slender linear prolongations from the body of *Amæba villosa* was referred to. Quart. Journ. Micr. Scien. 1866, p. 266.

ALCOCK gives an account of some 58 species and varieties of Foraminifera from Roundstone Bay, co. Galway, and describes two new forms of *Ectosolenia*, *E. williamsoni* and *E. montagu*. Quart. Journ. Micr. Scien. January 1866, pp. 73-77.

H. B. BRADY mentions that among the Foraminifera dredged by Mr. Jeffreys in the Hebrides he had been able to determine 76 out of the 121 British species or permanent varieties; in addition to these he refers to a new *Lagena* (*L. jeffreysii*). The result of Mr. Brady's researches will be published in detail. Quart. Journ. Micr. Scien. 1866, p. 261.

Coscinosphæra, g. n. Stuart (*l. c.* p. 329) describes this new genus, consisting of a single species of *Radiolaria*; the following would appear to be among the chief generic characteristics of this remarkable form:—Skeleton, consisting of a chalky envelope, shaped like a thin hollow ball, perforated by rows of concentric ovaloid openings, between which, in most cases, will be found a series of smaller round openings. Out of these latter proceed thin flexible

spines or cilia, surpassing in length the diameter of the envelope, and fixed in the openings by their broad extremities. No central capsule. The central soft mass, enclosed by the envelope, sends out bands of protoplasm, which are in part fastened to the walls of the envelope, and in part protrude from the openings, spreading out from the flexible spines without appearing exactly to be pseudopodia. *C. ciliosa* is the only species known, found at Messina and Naples.

Amæba. The following new forms are described by Greeff (*l. c.*):—

A. terricola, sp. n., p. 302, pl. 17, found in earth or sand. The body is of a much tougher or more tenacious consistency than in the aquatic *Amæbæ*; the movements are much more vigorous. It can be best examined under water and covered with thin glass. The nucleus is very well seen in this species, and it has the same strange appendage that is met with in *Amæba villosa*. The description of this species and of its development opens up quite a new field to the worker among the Rhizopods. *A. brevipes*, sp. n., p. 321, Taf. 18. fig. 17, found in company with the previous species.—*A. granifera*, sp. n., p. 322, Taf. 18. fig. 20, found on one occasion in damp sand, about the roots of grasses.—*A. gracilis*, sp. n., p. 322, Taf. 18. fig. 21, a little worm-like *Amæba*.

Amphizonella, g. n., Greeff, *l. c.* p. 323. Allied to *Amæba*; about 0.15 millim. in diameter; outer wall hyaline, enclosing a fine violet-coloured inner body. Nucleus round, soft, consisting of a hyaline shell surrounding a space filled with round solid bodies, which are probably developed into young *Amphizonelle*. Pseudopodia thick, finger-like. *A. violacea*, sp. n., p. 323, Taf. 18. figs. 12–15.—*A. digitata*, sp. n., p. 328, fig. 18.—*A. flava*, sp. n., p. 329, fig. 19. *Arcella arenaria*, sp. n., p. 330, fig. 16, found in sand, under moss, &c.

IV. GREGARINIDA.

LANKESTER suggests that it is to the life-history of the pseudonaviculæ of the Gregarinida that we must look for the discovery of a true sexual reproduction in these animals; he mentions having met with a specimen of *Monocystis lumbrici* one-fifth of an inch in length. The investing membrane of the Gregarinida cannot be regarded as double, but simply as a dense layer of the same sarcodic material which forms the whole creature.

ADOLPH HÜBNER, of Moscow, has discovered certain forms of *Gregarina* living in decaying timber; jointly with Lindemann he has watched the development of some of these forms, and in this preliminary notice the author arrives at the following conclusions:—(1) All *Gregarina* are not parasitic; (2) one and the same species may sometimes undergo its complete development while in the body of a living animal, and sometimes while in a piece of decaying timber; (3) they are sometimes met with in the human body, and sometimes living on the human hair. Lindemann inclines to believe that the Monocystidæ are much more nearly related to the vegetable than to the animal kingdom. Further details of the new species described in this paper, to be accompanied with figures, are promised.

NEUMANN records the existence of *Psorospermia* in the epithelium of the alimentary tract of dogs. Archiv f. mikrosk. Anatomie, Bd. ii. 4 Heft, 1866, pp. 512, 513.

Proteus tenax (Müll.) = *Distigma tenax* (Ehrb. sp.) belongs to the Gregari-

nida, and will stand as *Monocystis tenax*. Stein, Zeitsch. f. Naturwissen. Halle, 1866, Heft 2, p. 178.

New species :—

Lindemann (*l. c.*) describes the following :—*Monocystis capitata* (p. 384), on human hair; *M. hominis* (p. 385), seen on the valves of the heart in a human subject; *M. spherica* (p. 385), in the human kidney, and in the suprarenal capsules of dogs; *M. stiedæ* (p. 385), found by Dr. Stiedæ in rabbit-livers, and by Lindemann in the muscles of the human heart; *M. hübneri* (p. 386), in decaying timber of *Pinus sylvestris*, also in the thoracic muscles of *Geotrupes vernalis* and *stercorarius*.

Lankester (*l. c.*) describes the following new species :—*Monocystis cirratuli*, p. 27, figs. 8, 9, from the perivisceral cavity of *Cirratulus borealis* from Guernsey; *M. euniceæ*, p. 28, fig. 10, intestines of *Eunice harassii* from Guernsey. The following species were also met with inhabiting the alimentary canal of Annelids taken at Guernsey :—*Monocystis nemertis* (Köll.), *M. pellucida* (Köll.), and *M. phyllocoæ* (Clap.).

THE END.