BOOK NO.
1193

THE

RECORD

OF

ZOOLOGICAL LITERATURE.

1865.

VOLUME SECOND.

EDITED BY

ALBERT C. L. G. GÜNTHER,

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

567
483

LONDON:

JOHN VAN VOORST, PATERNOSTER ROW.

MDCCCLXVI.

ZOOLOGY Acc no. 223 dt. 20/11/06

Acc. No. 223 20/11/06

PRINTED BY TAYLOR AND FRANCIS,
RED LION COURT, FLEET STREET.

591.05 GUN

PREFACE.

The object of the 'Record' is to give, in an annual volume, reports on, abstracts of, and an index to, the various zoological publications which have appeared in the preceding year; to acquaint zoologists with the progress of every branch of their science in all parts of the globe; and to form a repertory which will retain its value for the student of future years.

No fact is better calculated to show the usefulness and necessity of this undertaking than the results of the present volume, forming as it does a systematic guide-book to not less than 35000 pages of zoological literature * published (with the exception of a comparatively small part) within the year 1865.

We have not attempted to count the animals described as new forms, but in estimating them at 7000 we give their number rather under than over the real limit.

It has been suggested by several zoologists and reviewers that an index of genera should be appended to each volume. The great usefulness of such an index having been acknowledged at once, it was attempted, but being found to comprise about as many names as Agassiz's 'Index universalis,' and to add immensely to the labour, bulk, and cost of the book, it was of necessity abandoned. However, it is the Editor's intention to give

* This number is divided between the various classes thus:—Mammals 2400, Birds 3500, Reptiles 1300, Fishes 3100, Mollusks 4400, Molluscoids 300, Crustaceans 1500, Arachnids and Myriapods 480, Insects 14300 (viz. Coleoptera 5400, Hymenoptera 1400, Lepidoptera 4200, Diptera 800, Neuroptera 400, Orthoptera 200, Rhynchota 1300), Annelids 800, Scolecides 450, Echinoderms 600, Cœlenterates 750, Protozoa 1030 (the last two numbers contain also the literature of 1864).

this index periodically every third or fifth year, with the references to the three or five preceding volumes. Considering the great divergence in the views of zoologists respecting families, an alphabetical index of family names (suggested by others) might have more frequently proved a source of disappointment than a help. The Editor has therefore been satisfied with adding to the list of contents such details as appeared to be really calculated to facilitate reference to the volume.

The Editor has succeeded in obtaining the cooperation of Professor E. Perceval Wright, of Dublin, who has undertaken the Records on the lower animals, and has added those on *Cœlenterata* and *Protozoa*, omitted in the volume for 1864.

He expresses his thanks to the authors who have kindly sent early copies of their publications. As regards separate reprints of papers from Journals, Proceedings, or Transactions of learned societies, he would, on this occasion, suggest that a most excellent plan, adopted for many years by the K. K. Zoolog.-botanische Gesellschaft of Vienna, and lately by the Zoological Society of London, should be more generally followed, viz. that of indicating the *original* pagination either at the bottom of the pages or at the top within brackets. The value of separate copies is much increased thereby, as the time wasted in searching for the original pages is saved.

The fact that this year the contributors have had to report on about 10,000 pages more than last year will sufficiently account for the excess of the number of pages of this volume beyond the original estimate; and if some authors should think the notices of their publications too short, the responsibility rests less with the Recorder than with the Editor, who has spared no efforts to keep the volume within reasonable limits, frequently inducing a Recorder to shorten his abstracts of descriptive or systematic matter. The Editor does not think that the 'Record' will lose in value if, in future, such general works or memoirs as are indispensable to the student should be treated with less completeness of detail, by omitting diagnoses of genera, and by indicating the systematic attempts without adding the characters of each division. The expenses of so large a volume as this can only be refunded by a larger sale than is to be anticipated at present; and liberally as Mr. Van Voorst has supported this undertaking, the Editor cannot abstain from reminding all interested in our science of the words of the President of the Linnean Society in his Anniversary Address, 1866:—"I would particularly call your attention to the 'Record of Zoological Literature.' Not only is it earnestly to be desired that it may receive sufficient support to ensure its continuance, but it is to be hoped that a similar compilation may be undertaken for botanical literature. It is one of those works which, for the sake of the real working man of science, every amateur who has the means ought to encourage."

ALBERT GÜNTHER.

London, August 1866.

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

CONTENTS AND INDEX.

MAMMALIA. By Albert Günther, M.A., &c.

	Page
Review of Publications	1
Special Part	
Quadrumana	19
Feræ	
Chiroptera	24
Insectivora	32
Felidæ	34
Viverridæ	34
Canidæ	35
Mustelidæ	35
Ursidæ	38
Phocidæ	38
Rosores	39
Edentata	42
Pachydermata	43
Ruminantia	44
Cetacea	46
Marsupialia	50
Monotremata	52

AVES. By Alfred Newton, M.A., &c.

	Page
Review of Publications	
Bibliography	54
The General Subject	55
Palæarctic Region	61
Æthiopian Region	69
Indian Region	72
Australian Region	73
Nearctic Region	78
Neotropical Region	80
Anatomy and Physiology	82
Pterylology	87
Neossology	88
Oology	89
Special Part	
Accipitres	91
Psittaci	94
Picariæ	96
Passeres	101
Pittidæ	101
Formicariidæ	101
Mænuridæ	102
Pteroptochidæ	102
Dendrocolaptidæ	102
Meliphagidæ	103
Nectariniidæ	104
Cotingidæ	105
Ampelidæ	105
Hirundinidæ	105
Oriolidæ	106
Vireonidæ	106
Tyrannidæ	106
Dicruridæ	107
Laniidæ	108
Campephagidæ	108
Muscicapidæ	109
Mniotiltidæ	110
Turdidæ	112
Sylviidæ	113
Motacillidæ	115
Troglodytidæ	116
Certhiidæ	116
Sittidæ	116
Paridæ	116
Maluridæ	117
Tanagridæ	117
Ploceidæ	118
Fringillidæ	118
Emberizidæ	119
Alaudidæ	120
Sturnidæ	120
Paradiseidæ	121
Corvidæ	121

	Page
Columbæ	121
Gallinæ	125
Grallæ	128
Anseres	134
Struthiones	137

REPTILIA. By Albert Günther, M.A., &c.

Review of Publications	139
Special Part	
Chelonia	145
Sauria	148
Ophidia	150
Batrachia	
Salientia	156
Gradientia	161

PISCES. By Albert Günther, M.A., &c.

Review of Publications	163
Special Part	179
Dipnoi	179
Acanthopterygii	179
Percidæ	179
Pristipomatidæ	182
Squamipinnes	183
Nandidæ	183
Mullidæ	183
Sparidæ	184
Hoplognathidæ	184
Cirrhitidæ	184
Scorpænidæ	185
Teuthididæ	186
Berycidæ	186
Kurtidæ	186
Polynemidæ	186
Sciænidæ	186
Trichiuridæ	186
Acronuridæ	187
Carangidæ	187
Cyttidæ	188
Coryphænidæ	188
Scombridæ	188
Trachinidæ	189
Batrachidæ	189
Pediculati	189
Cottidæ	190
Discoboli	190
Gobiidæ	190
Blenniidæ	191
Acanthoclinidæ	192
Mastacembelidæ	192
Sphyrænidæ	192
Atherinidæ	192
Mugilidæ	192
Gasterosteidæ	193
Fistularidæ	193
Ophiocephalidæ	193
Labyrinthici	194
Acanthopterygii Pharyngognathi	194
Anacanthini	196
Physostomi	199
Plectognathi	206
Lophobranchii	208
Ganoidei	208
Elasmobranchii	208
Cyclostomata	210

MOLLUSCA. By Eduard von Martens, M.D., &c.

Review of Publications	
The General Subject	211
Contributions to Faunas	
a. Land and Freshwater	
Europe	218
N. Africa and W. Asia	222
British India and Burmah	224
Japan, Indo-China, and Malayan Archipelago	225
Polynesia	226
Australia	227
Tropical Africa	227
Tropical America	227
North America	229
b. Marine Mollusca	232

Page

Special Part

Cephalopoda 239
Pteropoda 240
Heteropoda 240
Gastropoda 241
Pectinibranchiata
Proboscidifera 242
Toxifera 249
Rostrifera 251
Scutibranchiata 260
Opisthobranchiata 264
Pulmonata
Geophila 266
Onchididæ 268
Vaginulidæ 269
Janellidæ 269
Limacidæ 269
Agnatha 270
Oxygnatha 271
Helicacea 272
Orthalicea 276
Pupacea 276
Succineæ 278
Limnophila
Auriculacea 279
Limnæacea 279
Thalassophila 281
Pulmonata Operculata 281
Solenoconchæ 285
Conchifera 285
Inclusa 286
Cardiacea 287
Mytilacea 292
Ostracea 296
Brachiopoda 297

MOLLUSCOIDEA. By E. Perceval Wright, M.A., &c.
(Page 298.)

CRUSTACEA. By C. Spence Bate, F.R.S., &c.

Review of Publications .. 306
Special Part 311
Brachyura 312
Anomura 319
Macrura 321
Cumacea 325
Amphipoda 329
Isopoda 336
Phyllopoda 338
Cladocera 340
Ostracoda 344
Copepoda 350
Pœcilopoda 354
Argulidæ 355
Caligidæ 355
Notodelphidæ 359
Dichelestidæ 360
Chondracanthidæ 360
Lernæopodidæ 363
Lernæidæ 364
Cirripedia 366
Suctoria 366
(Pycnogonidæ ..... 366)

ARACHNIDA. By W. S. Dallas, F.L.S., &c.
(Page 367.)

MYRIOPODA. By W. S. Dallas, F.L.S., &c.
(Page 376.)

INSECTA. By W. S. Dallas, F.L.S., &c.

The General Subject 381
Coleoptera
Review of Publications 389
General notes 407

Page

Special part

Cicindelidæ 410
Carabidæ 413
Dytiscidæ 428
Gyrinidæ 429
Palpicornia 429
Staphylinidæ 430
Anisotomidæ 438
Corylophidæ 438
Trichopterygidæ 438
Scaphidiidæ 438
Histeridæ 438
Nitidulidæ 441
Trogositidæ 441
Colydiidæ 441
Cucujidæ 441
Cryptophagidæ 441
Dermestidæ 442
Byrrhidæ 443
Parnidæ 443
Lucanidæ 444
Scarabæidæ 444
Buprestidæ 446
Elateridæ 462
Eucnemidæ 463
Dacillidæ 463
Malacodermata 463
Cleridæ 467
Lymexylonidæ 468
Ptinidæ 469
Cissidæ 469
Melasomata 469
Cistelidæ 477
Melandryidæ 477
Anthicidæ 477
Mordellidæ 477
Rhipiphoridæ 477
Cantharidæ 477
Curculionidæ 477
Bruchidæ 489
Bostrichidæ 489
Longicornia 494
Phytophaga 510
Erotylidæ 529
Endomychidæ 530
Coccinellidæ 530

Hymenoptera
Review of Publications 530
General notes 534

Page

Special part

Anthophila 535
Vespidæ 538
Pompilidæ 539
Crabronidæ 540
Sapygidæ 543
Scoliidæ 543
Mutillidæ 543
Formicidæ 546
Chrysididæ 551
Ichneumonidæ 552
Chalcididæ 559
Proctotrupidæ 561
Cynipidæ 561
Uroceridæ 563
Tenthredinidæ 563

Lepidoptera
Review of Publications 563
General notes 577
Special part
Rhopalocera 580
Sphingidæ 600
Castniidæ 603
Zygænidæ 603
Sesiidæ 604
Hepialidæ 604
Bombycidæ 605
Arctiidæ 612
Lithosiidæ 613
Noctuidæ 614
Geometridæ 620
Pyralidæ 623
Tortricidæ 629
Tineida 631
Pterophoridæ 634

Diptera (with *Aphaniptera*)
Review of Publications . 635
General notes 638
Special part
Cecidomyidæ 639
Mycetophilidæ 640
Bibionidæ 640
Chironomidæ 641
Psychodidæ 642
Culicidæ 642
Tipulidæ 642
Stratiomyidæ 644

	Page
Xylophagidæ	646
Tabanidæ	646
Bombyliidæ	648
Acroceridæ	651
Scenopinidæ	652
Asilidæ	652
Therevidæ	654
Leptidæ	655
Empidæ	655
Dolichopodidæ	657
Muscidæ	657
Platypezidæ	664
Pipunculidæ	664
Syrphidæ	664
Conopidæ	667
Hippoboscidæ	667
Aphaniptera	667
Neuroptera	668
Orthoptera	676
Rhynchota	
Review of Publications	685
Special part	
Heteroptera	688
Homoptera	704
Anoplura	710

ROTIFERA. (No publication in 1865.)

ANNELIDA. By E. Perceval Wright, M.A., &c.

Review of Publications	711
Special part	
Polychæta	714
Oligochæta	735
Discophora	737
Gephyrea	737

SCOLECIDA. By E. Perceval Wright, M.A., &c.
(Page 739.)

ECHINODERMATA. By E. Perceval Wright, M.A., &c.

Review of Publications	751
Special part	
Crinoidea	753
Ophiuridea & Asteroidea	761
Echinoidea	764
Holothurioidea	767

CŒLENTERATA. By E. Perceval Wright, M.A., &c.

Review of Publications	768
Special part	
Hydroida	770
Actinozoa	781
Zoantharia	781
Alcyonaria	783

PROTOZOA. By E. Perceval Wright, M.A., &c.

Review of Publications	785
Special part	
Infusoria	789
Spongiida	791
Rhizopoda	795

Acc no. 223
Dt. 20. 11.06

RECORD

OF

ZOOLOGICAL LITERATURE.

MAMMALIA

BY

Albert Günther, M.A., M.D., Ph.D.

A. *Separate Publications.*

Zoological Sketches by J. Wolf, made for the Zoological Society of London from Animals in their Vivarium in the Regent's Park. Edited, with Notes, by P. L. Sclater. London, 1861–1866. Fol.

In the year 1852 the Council of the Zoological Society resolved to commence the formation of a series of original water-colour drawings to illustrate the most interesting animals of their menagerie. For this purpose the services of Mr. J. Wolf, who may be fairly said to stand alone in intimate knowledge of the habits and forms of Mammals and of Birds, were secured, and a publication of a selection of these drawings was commenced by Mr. D. W. Mitchell, the late Secretary of the Society, and after his death continued by his successor, Dr. P. L. Sclater. The work is issued in double parts, each of which contains eight plates and a sheet of temporary letterpress. Six double parts form one volume; and the thirteenth contains the permanent letterpress, titlepage, and index.

The first volume was concluded in 1861, and contains 32 plates of Mammals, 17 of Birds, and 1 of Ophidians, all unsurpassed in beauty of execution. Each plate is accompanied by a separate leaf of permanent letterpress.

Of the second volume four double parts have been issued in 1865, and this volume will be completed in 1866. We regret to

hear that it is not intended to continue this magnificent work beyond the second volume. The species figured will be separately mentioned below.

Krefft, G. On the Vertebrata of the Lower Murray and Darling. Read before the Philos. Soc. of New South Wales, 10th Sept. 1862. Sydney, 1865. 8vo. pp. 33.

This paper contains observations on the habits and propagation of Mammals and Reptiles collected by Mr. Krefft during a nine months' sojourn on the Lower Murray and Darling. He enumerates 4 Bats, the Dingo, 5 Rodents (one of which appears to be new*), 21 Marsupials, and 2 Monotremes. He observes (p. 3) that, if the Dingo was introduced in Australia by man, it must have been at a very remote age, as the first molar tooth of a Dog was found with other fossil remains in the breccia of the Wellington caves. In those days of Diprotodontes, not only did the Dingo exist, but also some of the animals now restricted to Tasmania, as *Thylacinus* and *Sarcophilus*, teeth of which were discovered in the same breccia.

Finsch, O. Neu Guinea und seine Bewohner. Bremen, 1865. 8vo. pp. 185, with a map. [New Guinea and its Inhabitants.]

The author has diligently collected what is known at present of the Mammal-fauna of New Guinea (p. 18); and in an appendix he gives a list of all the species inhabiting not only this island but also the Moluccas, northern coast of Australia, and Timor. From New Guinea 15 species only are known, viz. 2 Bats, 1 Carnivore (*Paradoxurus*), 10 Marsupials, 1 Pachyderm (*Sus*), and 1 Cetacean (*Halicore australis*). Of these, two species only are peculiar to the island, viz. *Phascogale melas* (Müll.) and *Sus papuensis* (Less.). Monkeys, Rosores, and Ruminants are entirely absent. The Monkeys are represented in the Moluccas by four species, the Ruminants by two (*Cervus*). The Rosores are absent in the Moluccas, as in New Guinea; but three species are known from North Australia. The author enumerates all species separately for each island: 23 species are known from Timor, 19 from Celebes, 22 from Amboyna, 7 from Batjan, 7 from Halmaheira, 8 from Ternate, 3 from Waigiou, 2 from Mysol, 1 from Ceram (!), 1 from the Ké Islands, and 11 from the Aru Islands. The Mammals of the whole of this zoological province belong to 66 species.

Unger und Kotschy. Die Insel Cypern. Wien, 1865. 8vo.

The authors mention 18 Mammals (p. 570), among which *Pteropus ægyptiacus* may be noticed.

* No characteristics of this supposed new species of *Mus* are given.

Filippi, F. de. Note di un viaggio in Persia nel 1862. Milano, 1865. 8vo. pp. 396.

A diplomatic mission sent by the Italian government to the Schah of Persia was accompanied by a scientific staff, in which zoology was represented by Prof. Lessona, Prof. de Filippi, and the Marquis G. Doria. The expedition started in April 1862, and, crossing the Black Sea to Trebizond, proceeded to Persia *vid* Tiflis and Eriwan. After having effected its object, it was dissolved in August of the same year. Prof. de Filippi, however, spent another month in travelling along the southern and western shores of the Caspian Sea. His account of the events of the journey is mixed with observations on the physical characters of the countries visited, and is especially instructive to the zoologist. Besides the zoological notes dispersed throughout the journal, a systematic account of the fauna of western Persia (chiefly Vertebrates and Mollusca) is given towards the end of the work, containing descriptions of numerous new species.

A portion of the general remarks on the characters of this fauna is reprinted, under the title "Riassunto di alcune osservazioni sulla Persia occidentale," in Att. Soc. Ital. Sc. Nat. vii. Riun. straord. a Biella, 1864, pp. 279–284. The author regards this district as a well-defined geographical province. European types are prevalent, but there is a mixture of representatives of other regions. Eastern Asia has furnished it with mammals and birds, Africa with reptiles, the Euphrates with fishes. This proves that western Persia is a country of comparatively recent origin, colonized by immigrations from the neighbouring regions, and is quite in accordance with its geological character. With regard to the absence of any peculiar character in its flora and fauna, it forms a perfect contrast to New Holland, in which, on account of its great antiquity, the organic creation has preserved its primitive character.

As regards the *Mammalia*, thirty species are enumerated (pp. 342–344), four of which are considered to be undescribed species, and will be noticed below. Prof. de Filippi mentions what would certainly be a most singular fact, viz. that *Mus musculus* as well as *Mus decumanus* are absent in western Persia; he mentions having met with one species only of this genus, *M. silvaticus*.

Müller, J. W. Reisen in den Vereinigten Staaten, Canada und Mexico. 3 vols. Leipzig, 1864–65. 8vo.

The third part contains a list of Mexican Vertebrates (Systematisches Verzeichniss der Wirbelthiere Mexico's, pp. 109), which has been published also separately. The names of 106 Mammals are enumerated on pp. 9–15. It is a compilation from other works, without original researches, as far as the Mammals are concerned.

Owen, R. Memoir on the Gorilla (*Troglodytes gorilla*, Sav.). London, 1865. 4to. pp. 58, with 13 plates.

This work includes the substance, or portions, of the author's publications on the Anthropoid Apes (nos. vi., vii., and viii.) printed in the fourth and fifth volumes of the Transactions of the Zoological Society, from which also the plates have been selected.

Bianconi, C. G. G. La Teoria dell' Uomo-Scimmia esaminata sotto il rapporto della organizzazione. Bologna, 1864. 8vo. pp. 58, with a plate.

[The theory of the Man-Ape examined with regard to structure.]

The author examines the question of affinity between man and anthropoid apes. He denies that any such affinity exists, and maintains the distinction between *Bimana* and *Quadrumana*. Man is a creation by himself, entirely independent of that of the other animals.

Nathusius, H. von. Vorstudien für Geschichte und Zucht der Hausthiere, zunächst am Schweineschädel. Berlin, 1864. 8vo. pp. 186. Atlas, with six plates, fol.

[Preliminary Studies for the History and Breeding of Domestic animals; first, the Skull of Pigs.]

The object of the work is to fix the zoological characters of the various races of domestic animals. The author has commenced with an examination of the skulls of varieties and species belonging to the genus *Sus*. He describes the skull of the Wild Boar in the various stages of development, and compares it with those of the domesticated breed and of the Indian Pig. The parents of the latter cannot have been identical with those of the European Pig, the two living races differing widely in the form of the os lacrymale. He shows that the form of the skull of the Wild Boar is much influenced by the general nutrition of the animal. After having described and compared various races and cross-breeds, he concludes with a critical synopsis of the wild species known.

Walton, E. The Camel: its Anatomy, Proportions, and Paces. London, 1865. Fol. pp. 39, with numerous plates.

The object of this magnificent work is to supply artists with representations of the entire animal in various positions and with the necessary anatomical detail. But it is of no less value to the zoologist. All the drawings and the dissections were executed by the author in the East. 19 plates are devoted to the osteology, 26 to myology, 3 to foot-prints, 22 to various positions of the entire animal, &c. The text consists of explanations of the plates.

B. *Zoological Papers published in Journals.*

Allen, H. On a New Genus of *Vespertilionidæ*. Proc. Acad. Nat. Sc. Philad. 1865, August (pp. 173–175). [*Corynorhinus*].

Alston, E. R. Notes on the Wild Cattle at Cadzow [Lanarkshire]. Zoologist, 1865, pp. 9514–9517.

Aucapitaine, H. Notice sur les Dromadaires ou Chameaux de course des Touâregs (*Camelus dromedarius*, L.). Rev. et Mag. Zool. xvi. pp. 369–375.

——. Note sur quelques variétés de Renards observés en Corse, et particulièrement le *Vulpes melanogaster* (Ch. Bonap.). Ibid. xvii. Jan. (pp. 3–8).

Austen, N. L. On the habits of the Water-Shrew (*Crossopus fodiens*). Proc. Zool. Soc. 1865, June 27 (pp. 519–521).

Bartlett, A. D. Remarks upon the affinities of the Prongbuck (*Antilocapra americana*). Proc. Zool. Soc. 1865, Nov. 28 (pp. 718–725, with woodcuts).

Beneden, P. J. van. Le Rorqual du cap de Bonne-Espérance et le Képorkak des Groenlandais. Bull. Acad. Sc. Lettr. etc. Belg. 1864, xviii. December 3 (pp. 389–400, with woodcuts).

Blyth, E. On Indian Rats and Mice. Journ. As. Soc. Beng. 1865, pp. 192–194.

Bocage, J. V. Barboza du. Sur quelques Mammifères rares et peu connus, d'Afrique occidentale, qui se trouvent au Muséum de Lisbonne. Proc. Zool. Soc. 1865, April 25 (pp. 401–404, with woodcuts).

Five species are enumerated, among which *Potamogale velox*.

——. Noticia acerca dos caractéres e affinidades naturaes de um novo genero de Mammiferos insectivoros da Africa occidental, *Bayonia velox* (*Potamogale velox*, Duchaillu), apresentada em sessão da 1ª Classe da Academia de 27 d'abril de 1865. Lisbôa. 4to (pp. 19, with two plates).

——. Noticia acerca dos Arvicolas de Portugal. 4to. pp. 11, with a plate.

This memoir was presented to the Royal Academy of Sciences of Lisbon in 1864, and will be published in the 'Mémoires' of this Academy. Meanwhile it has been separately printed as a part of 'Memorias zoologicas,' apparently for private circulation.

Burmeister, H. Description of a new species of Porpoise in the Museum of Buenos Ayres [*Phocæna spinipinnis*]. Proc. Zool. Soc. 1865, Febr. 28 (pp. 228–231, with woodcuts).

Burmeister, H. On a supposed new species of Fin-Whale from the coast of South America. Ibid. Nov. 28 (pp. 713–715, with a woodcut). [*Sibbaldius antarcticus.*]

Chabrillac, F. Sur le Tapir. Bull. Soc. d'Acclim. 1865 (pp. 25–28).

The author relates several instances of the tameness of the Tapir, and recommends it strongly for acclimatization.

Claraz, G. Sur l'*Equus bisculus* de Molina. Lettre à M. H. de Saussure. Rev. et Mag. Zool. xvi. pp. 241–248.

See special part of this Record, under *Cervus*.

Collingwood, C. The historical Fauna of Lancashire and Cheshire. Proc. Lit. & Philos. Soc. Liverpool, 1864, pp. 151–180.

The author has collected ancient records of species of Mammals formerly inhabiting, or supposed to have inhabited, those counties, and enumerates more recent instances of the occurrence of rare or interesting animals of all classes.

Cope, E. D. Note on a species of Whale caught in the river Delaware. Proc. Acad. Nat. Sc. Philad. 1865, August (pp. 168, 169).

——. Note on a species of Hunchback Whale. Ibid. Sept. (pp. 178–181).

——. Contribution to a knowledge of *Delphinidæ*. Ibid. October (pp. 198–204), and December (pp. 278–281).

The author has examined some thirty specimens in American collections, belonging to about 27 species; the species to which the author has appended notes will be mentioned below.

Cornalia, E. Descrizione di una nuova specie del genere *Felis*, *F. jacobita*. Mem. Soc. Ital. Sc. Nat. 1865 (pp. 7 and a plate).

Crisp, E. On some points relating to the anatomy and habits of the Bactrian Camel, and on the presence of intestinal glands not before noticed. Proc. Zool. Soc. 1865, March 14 (pp. 257–265, with a woodcut).

De l'Isle, A. De l'existence d'une race nègre chez le Rat, ou de l'identité spécifique du *Mus rattus* et du *Mus alexandrinus*. Ann. Sc. Nat. 1865, iv. pp. 173–222.

An extremely well-written article, and of great interest, not only on account of the result at which the author arrived as regards the species mentioned, but on account of the experiments made to prove the specific identity of two forms by the fertility of the hybrids between them. We shall give an abstract of this treatise in the special part of this Record.

Flower, W. H. On *Physalus sibbaldii* (Gray). Proc. Zool. Soc. 1865, June 13 (pp. 472–474).

——. Observations upon a Fin-Whale (*Physalus antiquorum*) recently stranded in Pevensey Bay. Ibid. Nov. 28 (pp. 699–705).

Giebel, C. Zur Charakteristik des libyschen Igels, *Erinaceus libycus*, Ehb. Zeitschr. gesammt. Ntrwiss. xxvi. 1865, July (pp. 1–7).

——. Zur Charakteristik der Hamsterratte, *Cricetomys gambianus*, Waterh. Ibid. August (pp. 136–139).

——. Zur Charakteristik der Seidenäffchen. Ibid. Sept. (pp. 257–261). [Contribution to our knowledge of the distinctive characters of *Hapale*.]

Gill, Th. On two species of *Delphinidæ*, from California, in the Smithsonian Institution. Proc. Acad. Nat. Sc. Philad. 1865, Sept. (pp. 177–178).

Gilpin, J. B. On the Mammalia of Nova Scotia. Proc. & Trans. Nov. Scot. Instit. Nat. Sc. Halifax, vol. ii. part 3, 1865 (pp. 8–15).

This paper is full of valuable information as regards habits, geographical distribution, and variation of the species found in Nova Scotia. The volume mentioned contains a part of the Insectivores and Carnivores only, viz. *Condylura cristata, Lasiurus* and *V. evotus, Lynx canadensis* and *L. rufus, Canis occidentalis, Vulpes fulvus.* We trust to see soon a continuation of these notes.

Glitsch, C. Beiträge zur Naturgeschichte der *Antilope saiga* (Pallas). Bull. Soc. Natur. Moscou, 1865, i. pp. 207–245.

Gray, J. E. Notice of some new species of Spider Monkeys (*Ateles*) in the collection of the British Museum. Proc. Zool. Soc. 1865, Dec. 12 (pp. 732–733).

——. Notice of some new species of Marmoset Monkeys (*Hapale* and *Midas*). Ibid. (pp. 733–735).

——. Notices of some apparently undescribed species of Sapajous (*Cebus*) in the collection of the British Museum. Ibid. Dec. 12 (pp. 824–828, with woodcuts and a plate).

——. A revision of the species of Golden Moles (*Chrysochloris*). Ibid. Nov. 28 (pp. 678–680).

——. On the names of the genus *Mystomys*. (In a letter to Prof. Allman.) Ann. & Mag. Nat. Hist. 1865, xvi. pp. 425–428.

Gray, J. E. Revision of the genera and species of *Mustelidæ* contained in the British Museum. Proc. Zool. Soc. 1865, Jan. 24 (pp. 100–154, with a plate and woodcuts).

——. Supplementary notes on the *Mustelidæ*. Ibid. Nov. 28 (pp. 680–681).

——. Notice of the skull of a new species of Bush-Goat (*Cephalophus longiceps*), sent from the Gaboon by M. Du Chaillu. Ibid. Feb. 14 (pp. 204–206, with a woodcut).

——. Revision of the genera and species of Entomophagous Edentata, founded on the examination of the specimens in the British Museum. Ibid. April 11 (pp. 359–386, with woodcuts and three plates).

——*. Notice of a new Whalebone Whale from the coast of Devonshire, proposed to be called *Eschrichtius robustus*. Ibid. Jan. 10 (pp. 40–43).

——. Notice of a new species of Porpoise (*Phocæna tuberculifera*) inhabiting the mouth of the Thames. Ibid. March 28 (pp. 318–321).

——. Notes on the Whales of the Cape; by E. L. Layard. With descriptions of two new species. Ibid. April 11 (pp. 357–359, with woodcuts). These notes are preliminary to the following paper.

——. Notices of a new genus of Delphinoid Whales from the Cape of Good Hope, and of other Cetaceans from the same seas. Ibid. June 27 (pp. 522–530, with woodcuts). [*Petrorhynchus.*]

——. Notice of a new species of Australian Sperm-Whale (*Catodon krefftii*) in the Sydney Museum. Ibid. May 23 (pp. 439–442, with woodcuts).

——. Short account of part of a skeleton of a Finner Whale, sent by Mr. Swinhoe from the coast of Formosa. Ibid. Nov. 28 (pp. 725–728, with woodcuts).

——. Description of three species of Dolphins in the Free Museum at Liverpool. Ibid. Dec. 12 (pp. 735–739, with woodcuts).

——. On the species of Manatees (*Manatus*), and on the difficulty of distinguishing such species by osteological characters. Ann. & Mag. Nat. Hist. 1865, xv. February (pp. 130–139).

* We may remark here that the numerous recent labours of Dr. Gray on Cetaceans have been embodied in a separate work, 'Catalogue of Seals and Whales;' but we are obliged to defer an account of it, as its publication has been delayed to the commencement of the year 1866.

Krefft, G. Description of a new species of Rock-Kangaroo from New South Wales. Proc. Zool. Soc. 1865, March 28 (p. 324). [*Pterogale longicauda.*]

——. Notice of a new species of Sperm-Whale belonging to the genus *Euphysetes* (MacLeay). Ibid. Nov. 28 (pp. 708–713, with woodcuts). [*Euphysetes macleayii*].

Leybold, F. Bemerkungen über *Dolichotis patagonica*, *Lagostomus tridactylites* und *Dasypus minutus*. Corresp.-Blatt. zool.-mineral. Verein. Regensb. xix. 1865 (pp. 114–115).

The author makes some observations on specimens kept in captivity.

Martin, L. Die Hornbildung bei der Mazama-Antilope. Zool. Gart. 1864, pp. 254–256.

[The formation of the horns of *Antilope furcifera*.]

Murie, J. On the identity of the Hairy-nosed Wombat (*Phascolomys lasiorhinus*, Gould) with the Broad-fronted Wombat (*P. latifrons*, Owen), with further observations on the several species of this genus. Proc. Zool. Soc. 1865, Dec. 12 (pp. 838–854).

Osburn, W. Notes on the Cheiroptera of Jamaica. By the late Mr. W. Osburn. Communicated by P. L. Sclater. Proc. Zool. Soc. 1865 (pp. 61–85).

During a two years' sojourn in Jamaica, the late Mr. W. Osburn made a collection of Bats, which were described by Mr. Tomes in Proc. Zool. Soc. 1861, p. 63. Mr. Osburn had kept a journal, in which he carefully collected all his observations regarding the habits of these animals and the circumstances under which he obtained them. These notes are now edited by Dr. Sclater, who has added the names under which the species were described by Mr. Tomes. They are thirteen in number, and will be mentioned below.

Owen, R. Contributions to the Natural History of the Anthropoid Apes. No. VIII. On the external characters of the Gorilla (*Troglodytes gorilla*, Sav.). Trans. Zool. Soc. vol. v. 1865 (pp. 243–284, plates 43–49).

The greater portion of this paper was read before the Zoological Society as far back as 1859, January 11th, and printed in the Proceedings of that year. It appears now with important additions, in which the brain- and limb-characters of the Gorilla, and their zoological value, the classification of the Quadrumana, and the steps necessary to transmute a Gorilla into a Man are discussed (see p. 20).

Owen, R. On the marsupial pouches, mammary glands, and mammary fœtus of the *Echidna hystrix*. Philos. Trans. 1865 (pp. 671–686, with three plates).—An abstract of this memoir appeared in Proc. Roy. Soc. 1865, p. 106, and in Ann. & Mag. Nat. Hist. 1865, xv. May, pp. 419–423.

Peters, W. Note on the Mammalia observed by Dr. Welwitsch in Angola. Proc. Zool. Soc. 1865, April 25 (pp. 400–401).

Eleven species are enumerated.

——. Note on the systematic position of *Platacanthomys lasiurus*. Ibid. April 25 (pp. 397–399, with a plate).

——. Ueber die zu den *Vampyri* gehörigen Flederthiere, und über die natürliche Stellung der Gattung *Antrozous*. Monatsber. Akad. Wiss. Berl. 1865, Oct. 16 (pp. 503–525).

[On the Chiropteres belonging to the *Vampyri*, and on the natural position of the genus *Antrozous*.]

——. Uber die brasilianischen von Spix beschriebenen Flederthiere. Ibid. Nov. 13 (pp. 568–588, with a plate).

[On the Brazilian species of Chiropteres described by Spix.]

Pucheran —. Sur les indications que peut fournir la Géologie, pour l'explication [de ce] que présentent les Faunes actuelles. Rev. et Mag. Zool. 1865.

This paper is spread over nearly all the numbers of the Journal mentioned, and is not finished in the volume for 1865. The author, who has adopted the doctrine of the variability of species, attempts to show where and in what manner geology can furnish evidence as regards an original relation between faunas which, in our period, present more or less degrees of difference. It would appear from M. Pucheran's treatise that the assistance actually furnished by geology to the zoologist is, at present, insignificant, compared with what may be expected. The author's observations refer to the general characters of the Mammalian and Ornithic faunas of the Sahara, Central Asia, and South America. He starts from the general fact that a perfect harmony exists between the physical conditions of a certain part of the globe and its fauna, and avows the impossibility of an explanation in cases where we find two countries, like New Guinea and Madagascar, offering the same physical characters, yet inhabited by most distinct faunas.

To show that the harmony between the fauna and the physical condition of a country has been gradually established (l'harmonie post-établie), he chooses (§ 1) as an example the fauna of the plains of Africa and Northern Asia. Geology teaches us that the Sahara was once submerged below the sea; consequently the animals inhabiting it are not aborigines, but

must have immigrated either from Senegambia or Abyssinia, their affinities being decidedly African (not European). The plains of Central Asia likewise were once covered by the sea, and consequently their fauna also must be descended from that of neighbouring regions. But we find the animals of the desert strikingly characterized by, and differing from the original types in a peculiarly modified coloration, which, in the case of the animals of the Sahara, must have been caused by the rays of the sun, and in the case of those of the deserts of Asia, by contact with the soil (contact du sol). The latter animals have acquired, in the course of time, other differentiating characters—for instance, a denser and longer fur (Siberian Tiger, *Felis irbis*), those of the Sahara much developed aural conchæ; and, in accordance with this, the savage tribes (of man) inhabiting the plains of Central Asia are distinguished by a great acuteness of the senses of hearing, seeing, and smelling. We care not to follow the author into the details by which he attempts to show that these physiological peculiarities of the Kalmucks, &c., are accompanied by corresponding external and anatomical modifications of the organs of sense.

In § 2* M. Pucheran states that the number of "centres of creation" has been unduly increased by zoologists, that there must be an assemblage of genera and families (not of species only) to justify us in establishing a separate centre of creation, that Africa, having representatives of almost all its types in Asia or Europe, cannot be regarded as inhabited by a special fauna, but that New Holland and South America ought to be held in this respect distinct from the rest of the globe.

He then enters into the details of the well-known characteristics of the South-American mammalian and ornithic faunas. As regards Mexico, he maintains that those mammals which it has in common with North America have a shorter and thinner pelage than their representatives in the more northern provinces, but, on the other hand, that the pelage is longer in such of the Mexican species as have their "homologues" in South America.

Reinhardt, J. Om Klapmydsens ufödte Unge og dens Melketandsæt. Vid. Meddel. naturh. Foren. Kjöbnh. for 1864. 1865, pp. 248–264, with a woodcut.

[On the Fœtus of *Cystophora*, and its milk-teeth.]

Saussure, H. de. Note supplémentaire sur les Mammifères

* M. Pucheran does not appear to have been well acquainted with the literature connected with the subject of the geographical distribution of animals; at all events he does not mention previous authors who have worked in the same field and arrived at *some* of the conclusions which he himself has.

du Mexique. Rev. et Mag. Zool. 1865, Sept. (pp. 257–262).

These notes are chiefly corrections or additions to the author's paper on Mexican Mammals, which appeared in the twelfth volume (1860) of the same journal. The more important will be mentioned below.

Schlegel, H. Contributions à la faune du Madagascar et des îles avoisinantes, d'après les découvertes et observations de Messrs. F. Pollen et M. D.-C. van Dam. Nederl. Tydschr. Dierk. iii. 1865, pp. 73–89.

The mammals which are treated of in this paper are the Lemurs and *Viverra schlegelii*.

Schmidt, M. Der Nörz (*Vison lutreola*). Zoolog. Garten, 1865, pp. 168–175, with a woodcut.

Sclater, P. L. Description of a new species of Indian Porcupine. Proc. Zool. Soc. 1865, April 11 (pp. 352–356, with a plate). [*Hystrix malabarica.*]

Sclater, P. L. The Mammals of Madagascar. Quart. Journ. Science, 1864, April (pp. 213–219, with a lithogr. sketch).

The author enumerates in systematic order the Mammals inhabiting this island, viz. 28 species of Lemurides belonging to 9 genera (against 11 African and 4 Asiatic species), 5 Bats, 9 Insectivores, 5 Carnivores (Viverrines), 1 Rodent, and 1 Pachyderm (*Potamochærus africanus*). Cats, Dogs, and Ruminants are entirely absent. The wide difference between this fauna and that of the nearest continent (that of East Africa), the fact that in several instances we are reminded of the Indian and South-American faunas, together with the presence of types quite peculiar to Madagascar, induce the author to regard it, with the Mascarene Islands, as a distinct zoological region, for which he proposes the name *Lemuria*. Being an advocate of the hypotheses of the continuity and of the derivative origin of species, he draws the following conclusions as regards the origin of the Mammals of Madagascar:—

1. Madagascar has never been connected with Africa, as it at present exists. This would seem probable from the absence of certain all-pervading Æthiopian types in Madagascar, such as *Antilope*, *Hippopotamus*, *Felis*, &c. But, on the other hand, the presence of Lemurs in Africa renders it certain that Africa, as it at present exists, contains land that once formed part of Madagascar.

2. Madagascar and the Mascarene Islands must have remained for a long epoch separated from every other part of the globe, in order to have acquired the many peculiarities now exhibited in their Mammal fauna, e. g. *Lemur*, *Chiromys*, *Eupleres*, *Centetes*, &c., to be elaborated by the gradual modification of preexisting forms.

3. Some land-connexion must have existed in former ages between Madagascar and India, whereon the original stock, whence the present Lemuridæ of Africa, Madagascar, and India are descended, flourished.

4. It must be likewise allowed that some sort of connexion must also have existed between Madagascar and land which now forms part of the New World—in order to permit the derivation of the *Centetinæ* from a common stock with the *Solenodon*[*], and to account for the fact that the Lemuridæ, as a body, are certainly more nearly allied to the weaker forms of American monkeys than to any of the Simiidæ of the Old World.

Sclater, P. L. The Mammals of Australia. Quart. Journ. Science, 1865, Jan. (pp. 13–19, with a lithogr. sketch).

According to our present knowledge, Australia is inhabited by 107 Implacental, and 53 Placental Mammals, viz. 29 Rodents, 23 Bats, and 1 Carnivore (the Dingo). It is, however, worthy of remark that the 53 Placentals belong to 11 genera, whilst the 107 Implacentals are referred to 16 only. The predominance of Implacentals over Placentals distinguishes at once the Australian Mammal-fauna from that of every other part of the world. The author concludes from this, that Australia must have been separated from the great mass of land which forms the Old World at a time when Marsupialism was the prevalent, if not the only, form of Mammalian life in existence upon our planet. The Implacental Mammals are the old indigenous denizens of the country; the Placental to be regarded as probably nothing more than intruders of comparatively recent introduction †.

Sclater, P. L. The Mammals of South America. Quart. Journ. Science, 1865, Oct. (pp. 605–621, with a lithogr. sketch).

The author discusses in systematic order the various forms of Terrestrial Mammals of the Neotropical region, which, from the number of peculiar types, he regards, after Australia, as the most distinct of any of the great zoological divisions of the world's surface. He sums up its principal characteristics as follows:—

1. The possession of two families of Quadrumana (*Cebidæ* and *Hapalidæ*), constituting a special section of this order (*Platyrhina*), peculiar to this region.

2. The absence of the true frugivorous Bats (*Pteropodidæ*), and the pre-

---

[* This alleged affinity is in some measure counterbalanced by the recent discovery that the *West African Potamogale* is similarly allied to *Solenodon*. The entire absence of *Felis* and *Canis* in Madagascar appears very much to contradict the bold hypothesis of a connexion between Madagascar and the New World.]

† See Mr. Krefft's observation on fossil remains of the Dingo, as reported above, p. 2.

sence of a peculiar family of Chiroptera (*Phyllostomatidæ*), some forms of which are frugivorous, and others feed solely on the blood of living animals.

3. The absence of Insectivora, except the singular genus *Solenodon* of the Antilles.

4. The absence of *Viverridæ*, and the presence of several peculiar genera of Carnivores (*Icticyon, Galictis, Nasua*, and *Cercoleptes*).

5. The absence of true *Mus*, which is replaced by *Hesperomys* and allied forms, and the presence of numerous forms of *Hystricidæ*, constituting nearly the whole of this extensive and varied family.

6. The absence of Proboscideans and Perissodactyles, except *Tapirus*.

7. The great poverty of Ruminants, the family *Bovidæ* being entirely unrepresented, and only *Cervus* and *Auchenia* occurring out of the whole suborder.

8. The presence of three families, containing by far the majority of genera and species of Edentates.

9. The possession of a peculiar family of Marsupials (*Didelphys*), which has intruded itself into the Nearctic Region, but is unknown elsewhere.

Steenstrup, J. Yderligere Bemärkninger om Mälketandsättet hos Remmesälen. Vid. Meddel. naturh. Foren. Kjöbnh. for 1864. 1865, pp. 269–274.

[Last remarks on the milk-teeth of *Phoca barbata*.]

Stoliczka, F. Note on *Lagomys curzoniæ* (Hodgs.). Journ. As. Soc. Beng. 1865, pp. 108–111.

C. *Anatomical Publications.*

Bischoff, Th. Ueber das Vorkommen eines eigenthümlichen, Blut und Hämatoidin enthaltenden Beutels an der Placenta der Fischotter (*Lutra vulgaris*). Sitzgsber. Bayr. Akad. Wiss. Münch. 1865, i. March (pp. 213–224, with two plates).

[On a peculiar sac-like appendage of the placenta of *Lutra vulgaris*, containing blood and hæmatoidin.]

——. Ueber die Ei- und Placenta-Bildung des Stein- und Edelmarders, *Mustela foina* und *martes*, und des Wiesels, *Mustela vulgaris*. Ibid. (pp. 339–350).

[On the structure of the ovum and placenta of *Mustela foina, martes*, and *vulgaris*.]

Burt —, and Turner, W. Exhibition of three skulls of the Gorilla, received from M. du Chaillu, with observations relative to their anatomical features. Proc. Roy. Soc. Edinb. v. 1865, Jan. (pp. 341–350).

Crisp, E. On the Os Penis of the Chimpanzee and of the Orang. Proc. Zool. Soc. 1865, Jan. 10 (pp. 48–49, with two woodcuts).

Dean, J. The Gray Substance of the *Medulla oblongata* and *Trapezium*. Smithson. Contrib. (173) 1864. 4to (pp. 75, with sixteen plates).

Filippi, F. de. Ueber das *Foramen orbito-temporale* der amerikanischen Affen. Moleschott, Untersuch. Naturlehre, ix. 1864, pp. 360–362.

[On the *foramen orbito-temporale* of the Monkeys of the New World.]

Flower, W. H. On the Commissures of the Cerebral Hemispheres of the Marsupialia and Monotremata, as compared with those of the Placental Mammalia. Philos. Trans. 1865, pp. 633–651, with three plates. (Abstract in Proc. Roy. Soc. 1865, pp. 71–74.)

——. Reply to Prof. Owen's paper "On Zoological Names," &c., read before the Royal Society March 23, 1865. Proc. Roy. Soc. 1865, March 30 (pp. 134–139).

Gegenbaur, C. Untersuchungen zur Vergleichenden Anatomie der Wirbelthiere. Heft. 1. *Carpus* et *Tarsus*. Leipzig, 1864, 4to (pp. 127, with six plates). Heft 2. *Schultergürtel der Wirbelthiere*. [The humeral arch of Vertebrates.] Leipzig, 1865, 4to (pp. 176, with nine plates).

——. Upon the episternal portions of the Skeleton, as they appear in Mammalia and in Man. (Jen. Zeitschr. Med. 1864; translated in Nat. Hist. Review, 1865, pp. 545–567.)

Giebel, C. Zur Characteristik einiger carnivoren Säugethiere. Zeitschr. gesammt. Ntrwiss. xxiv. 1864, Dec. (pp. 465–476).

This paper contains notes on the skulls of several Carnivores, which will be mentioned below.

——. Zur Osteologie des labradorischen Springers, *Jaculus labradorius*. Ibid. 1865, xxv. pp. 272–274.

——. Die Oeffnung im Jochfortsatz des Nagethier-Schädels. Ibid. pp. 427–432.

[The foramen in the zygomatic process of Rodentia.]

Gratiolet P. Comparaison du bras et de la main de l'homme avec l'avant-bras et la main des grands Singes à sternum plat désignés à tort par les naturalistes sous le nom d'*anthropomorphes*. Compt. Rend. lix. August 17, p. 321; and Rev. et Mag. Zool. xvi. pp. 266–269.

Haughton, S. Notes on Animal Mechanics. No. IV. On the

Muscular Anatomy of the Lion; and No. V. On the Muscular Anatomy of the Seal. Proc. Roy. Irish Academy, 1865, pp. 85–101, with woodcuts.

Huxley, T. H. On the Structure of the Stomach of *Desmodus rufus*. Proc. Zool. Soc. 1865, April 11 (pp. 386–390, with a woodcut).

Lankester, E. R. On the Cerebrum of the Entellus Monkey. Quart. Journ. Science, 1865, July (pp. 562–565, with woodcuts).

Lucae, J. Ch. G. Die Hand und der Fuss. Ein Beitrag zur vergleichenden Osteologie der Menschen, Affen und Beutelthiere. Abhandl. Senckenb. ntrforsch. Ges. 1865, v. pp. 275–332, with four plates.

[The Hand and the Foot. A contribution to the comparative anatomy of Man, Apes, and Marsupials.]

Mivart, St. G. Contributions towards a more complete knowledge of the Axial Skeleton in the Primates. Proc. Zool. Soc. 1865, June 27 (pp. 545–592, with woodcuts).

——. Notes on the Myology of a specimen of *Cercopithecus sabæus*. Ibid. Jan. 10 (pp. 43–46, with two woodcuts).

Mivart, St. G., and Murie, J. Observations on the Anatomy of *Nycticebus tardigradus*. Ibid. Feb. 28 (pp. 240–256, with woodcuts).

This paper treats almost wholly of the myology of this animal.

Murie, J., and Mivart, St. G. On the Myology of *Hyrax capensis*. Ibid. April 11 (pp. 329–352, with woodcuts).

Murie, J. Observations upon *Presbytes albigena* (Gray) and *Colobus guereza* (Rüpp.). Ibid. Dec. 12 (pp. 740–745).

——. On the Anatomy of a Fin-Whale (*Physalus antiquorum*) captured near Gravesend. Ibid. Feb. 14 (pp. 206–227, with woodcuts).

——. On deformity of the Lower Jaw in the Cachalot (*Physeter macrocephalus*). Ibid. April 11 (pp. 390–396, with two woodcuts).

Owen, R. On zoological names of characteristic parts, and homological interpretations of their modifications and beginnings, especially in reference to Connecting Fibres of the Brain. Proc. Roy. Soc. 1865, March 23 (pp. 129–133).

This refers to the abstract of Mr. Flower's memoir on the Marsupial brain in Proc. Roy. Soc., quoted above.

Pagenstecher, A. H. Ein Fall von Offenbleiben des eiförmigen Loches im Herzen des Stachelschweines. Zool. Gart. 1865, pp. 214–217, with a woodcut.

[A case of open foramen ovale in the heart of a Porcupine].

Pettigrew, J. B. On the arrangement of the Muscular Fibres in the Ventricles of the Vertebrate Heart, with physiological remarks. Philos. Trans. 1864, pp. 445–500, with five plates.

——. On the Relations, Structure, and Function of the Valves of the Vascular System in Vertebrata. Trans. Roy. Soc. Edinb. xxiii. 1865, pp. 761–805, with two plates.

Reichert, K. Beitrag zur feinern Anatomie der Gehörschnecke des Menschen und der Säugethiere. Abhandl. Akad. Wiss. Berl. (1865), 1865, pp. 1–60, with three plates.

[Contribution to the minute anatomy of the cochlea of the ear of Man and Mammals.]

Rolleston, G. On the Placental Structures of the Tenrec (*Centetes ecaudatus*), and those of certain other Mammalia; with remarks on the value of the Placental system of classification. Trans. Zool. Soc. v. 1865, pp. 285–316, with a plate.

The author describes the female generative organs of the Tenrec, and the maternal and fœtal structures developed in utero in connexion with the embryos, and compares them with those of other Mammals known to him from autopsy or from a careful study of the literature on the subject. He believes that the modifications of the placental structures form a very safe basis for the classification of the Monodelphous Mammalia.

Rutherford, W. The Œsophagus of the Ruminantia. Journ. Proc. Linn. Soc., Zool. 1865, pp. 53–61, with woodcuts and a plate.

Van Bambeke —. Sur le squelette de l'extrémité antérieure des Cétacés.

This paper does not appear to have been published up to the present time; but there is a preliminary report on it by Prof. Van Beneden, in Bull. Acad. Sc., Lettres, &c. Belg. 1864, xix. pp. 388–392.

Welcker, H. Ueber die Entwicklung und den Bau der Haut und der Haare bei *Bradypus*, nebst Mittheilungen über eine im Innern des Faulthierhaares lebende Alge. Abhandl. ntrf. Ges. Halle, ix. 1864, pp. 17–72 *d* (with two plates).

[On the development and structure of the skin and hairs of *Bradypus*, with notes on an Alga (*Pleurococcus*) growing in the interior of the hairs of the Sloth.]

The author found a nearly mature embryo of *Bradypus tridactylus* (*cuculliger*?), 26·5 centim. long, enveloped in an amnion-like, tight-fitting sac. The embryo presented itself within this membrane, covered by a perfectly developed coat of hairs nearly an inch long. Microscopical examination, and the circumstance of this membrane passing into the outermost covering of the nails and into the epithelium of the mucosa of the mouth and umbilical cord, proved that it is not the amnion, but the uppermost stratum of the epidermal lamella of the embryo, raised by the hairy covering which is developed within this sac, called by the author *epitrichium*. In a younger embryo, 24·5 centim. long, the hairs are not developed, and consequently no epitrichium is formed. Such an epitrichium is found in *Cholœpus, Myrmecophaga, Dicotyles, Sus*, and probably in the *Horse*; and absent in *Dasypus, Cœlogenys, Dasyprocta, Hydrochœrus, Cervus, Ovis, Bos, Didelphys, Ursus, Felis*, and in *Man*. The remainder of the memoir treats of the structure of the hair of *Bradypus*, and of an Alga growing in the interior of the hair.

D. *Publications of a Popular Character.*

Brehm, R. L., und Zimmermann, Th. F. Bilder und Skizzen aus der Thierwelt im zoologischen Garten zu Hamburg. Liegnitz, 1865. 8vo. pp. 283, with 26 illustrations.

This book contains the description of a new species of Deer, named *Rusa paradoxa* (see below).

Cornelius, C. Die Zug- und Wanderthiere. Berlin, 1865. 8vo. pp. 341.

The author treats in systematic order of the animals, from the Mammalia to the Mollusca, of which periodical or isolated migrations are known.

Duméril, A. Des animaux utiles à l'homme, programme d'un cours de zootechnie ou zoologie appliquée. Mém. Soc. Imp. Sc. Nat. Cherbourg, xi. 1865, pp. 229–252.

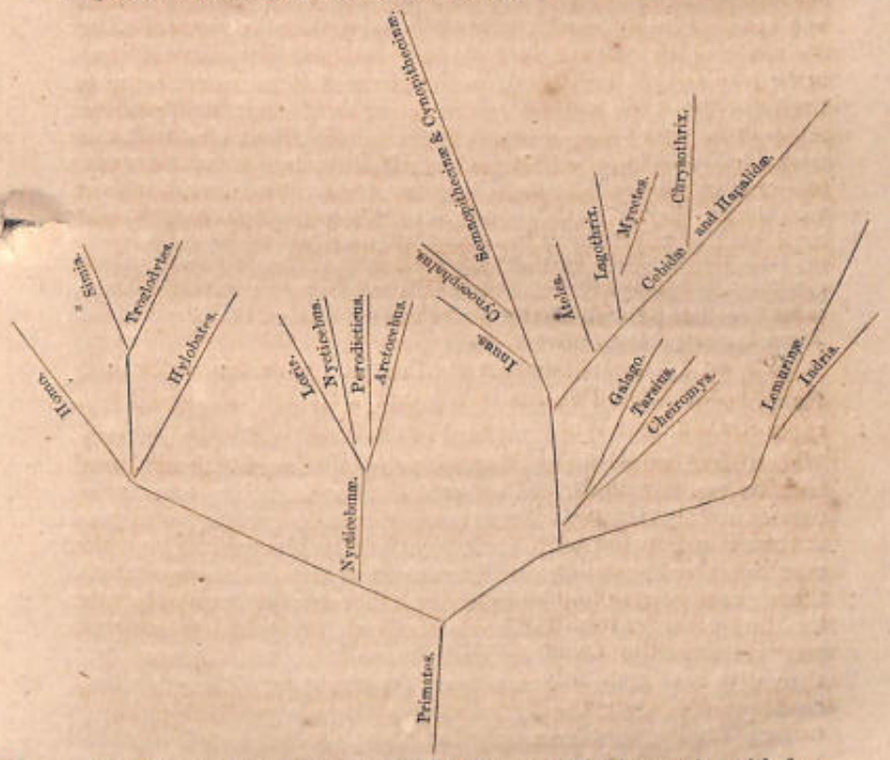
Without entering into a detailed enumeration of animals useful to man, the author shows in what various ways man derives benefit from the animal creation.

Small, H. B. The Animals of North America. Mammals. Montreal, 1864. 8vo (pp. 112, with woodcuts).

A poor popular account of Canadian Mammals, illustrated by rude woodcuts.

QUADRUMANA.

Mr. Mivart has entered into a detailed examination of the vertebral column of Quadrumana, Proc. Zool. Soc. 1865, pp. 545–592; and we have to refer to this anatomical paper here because the author has applied the results of his study to the determination of the natural affinities of the groups. The paper (illustrated by woodcuts) is divided into two parts: in the first the several portions of the axial skeleton are treated of; and in the second the vertebral peculiarities of each group or genus examined are summed up. The author himself gives the following as the results of his examinations:—



The Primates present us (as regards their vertebral column only) with four principal types of structure, well represented, respectively, by (1) *Simia*, (2) *Cercopithecus*, (3) *Nycticebus*, and (4) *Lemur*,—the first having, however, many points in common with the third, and the second with the fourth; so that the affinities between the various groups of the order (as regards their spinal characters) may be represented under the symbol of a tree (see fig.). The trunk of such a tree divides into two main branches,—one of them representing the forms possessing few caudal vertebræ, an elongated tapering sacrum, inconspicuous metapophyses or anapophyses, neural spines of trunk nearly

always vertical or backwardly inclined, and that of the axis more or less bifid or trifid, cervical vertebræ short, and cervical spines sometimes very produced—that is to say, the forms included in the family *Hominidæ* and in the subfamilies *Simiinæ* and *Nycticebinæ*; the other main branch representing all the rest of the order, and possessing the characters attributed above to the *Simiidæ* (other than the *Simiinæ*), the *Cebidæ*, the *Hapalidæ*, and the *Lemuroidea* in common.

The first main branch gives off a secondary one to represent the *Nycticebinæ*, and then divides into three others for (1) *Homo*, (2) for *Troglodytes* and *Simia*, and (3) for *Hylobates*. The second main branch bifurcates,—its first division representing the *Simiidæ* other than the *Simiinæ*, together with the *Cebidæ* and *Hapalidæ*; its second denoting the *Lemuroidea* other than the *Nycticebinæ*. From both the *Semnopithecinæ* and *Cynopithecinæ* *Inuus* and *Cynocephalus* distinguish themselves as separate twigs; and *Ateles* diverges from the *Cebidæ* generally, and very interestingly parallels *Hylobates* in its long cervical neural laminæ, backwards inclined neural spines of trunk-vertebræ, large transverse diameter of thorax, and slightly marked metapophyses and anapophyses. *Mycetes* and *Lagothrix* also, with their marked hyperapophyses, and *Chrysothrix*, with its undivided caudal transverse processes, are also special forms. The genera *Galago*, *Tarsius*, and *Cheiromys*, with their rudimental cervical spines, diverge so much from the typical Lemurs that they might almost be represented as a distinct primary division of the second main branch, instead of a subdivision of that bifurcation which culminates in *Lemur*, and which gives off a twig to represent *Indris*—a form, as we have seen, almost, if not quite, as distinct amongst the *Lemuroidea* as *Homo* is amongst the *Anthropoidea*.

Prof. Lucae has published the results of a detailed examination of the osseous structure of the hand and foot of various races of man, of Anthropoid and other Apes, and of two Marsupials (*Phalangista* and *Phascolarctos*), Abhandl. Senck. ntrf. Ges. v. pp. 275–332. We cannot enter into the anatomical details of this treatise without reproducing a greater portion of it than is consistent with the object of this Record. The chief results arrived at by the author are, that the development of a thumb commences on the hind limb of certain Marsupials, that the hinder hand of the tailless as well as of the tailed Apes agrees anatomically and physiologically more with the human hand than with any other extremity of the limbs of Mammals, and, consequently, that the *Quadrumana* form a perfectly distinct order; finally, that man only has a perfect hand and a perfect foot, with perfectly separate functions. This memoir, which must be consulted by every one who is engaged in the study of this subject, is illustrated by four plates.

Simiidæ.

Troglodytes gorilla. Prof. Owen's memoir "On the external characters of the Gorilla," read before the Zoological Society in 1859, has been published in the Transactions of the Society, vol. v. pp. 243–284, accompanied by seven plates:—

Acc no. 223
dt. 20.11.06

After giving the history of our knowledge of this Ape, the author describes in detail the external characters and appearance of a young but nearly full-grown specimen preserved in spirits, and adds descriptions of the adult of both sexes, and of the very young animal, from skins. Compared with the other Anthropoid Apes and with the long-armed Gibbons, the Gorilla proves to be the most nearly related to man, the Gibbons being the lowest in the scale. The appearance of superior cerebral development in the Siamang and other long-armed Apes is due to their small size and the concomitant feeble development of their jaws and teeth; it is an appearance which depends upon the precocious growth of the brain as dependent on the law of its development. In all Quadrumana the brain has reached its full size before the second set of teeth is acquired. If a young Gorilla, Chimpanzee, or Orang be compared with a young Siamang of corresponding age, the absolutely larger size and better shape of the brain, the deeper and more numerous convolutions of the cerebrum, and the more completely covered cerebellum in the former, demonstrate the higher organization of the shorter-armed Apes. As growth proceeds, the facial portion of the skull increases, and the bony fulcra for the temporal muscles rise, but the brain grows no more; yet it is still better and larger than is that of the long-armed Ape, which retains throughout life so much more of the characters of immaturity, especially in the structure of the skull.

The author then proceeds in detail to a variety of characters by which the Gorilla makes a closer step towards Man than does any of the other Apes named. He examines the fossil Quadrumana, and shows that none of them, as far as we are acquainted with them at present, comes as near to Man as do the living Anthropoid Apes.

After having given an account of the food and habits of the Gorilla, he enters into a discussion of the zoological value of the characters derived from the brain and limbs, and arrives at these conclusions:—that the human characteristics of the brain afford a zoological character of higher degree and importance than do those of the limbs; that, agreeably with this estimate of the value of cerebral characters, the Gorilla, like the Chimpanzee and Orang, remains with the Gibbons and lower Quadrumana, and stands apart in a distinct subclass from the genus *Homo*; and that, if an ordinal value be assigned to the limb-characters which distinguish *Carnivora* from *Quadrumana*, the same value must be assigned to the limb-characters which distinguish *Quadrumana* from *Bimana*.

To fix the position of the Gorilla among the Quadrumanes, the author proceeds to consider the divisions of this order. The Gorilla would belong to the suborder of Catarrhines, to the tribe of *Pithecina* (Is. Geoff. St.-Hil.), to the section of *Dasypyga* (Kuhl), and finally to the genus *Troglodytes*, Geoffroy's genus *Gorilla* being rejected.

In conclusion, the author enumerates the chief steps necessary to transmute a Gorilla into a man, and directs our attention to the contrast between the peculiarly limited range of geographical distribution of the Orangs and Chimpanzees and the cosmopolitan character of mankind.

Dr. Burt and Mr. Turner have examined three skulls of the Gorilla, and published their observations in Proc. Roy. Soc. Edinb. v. 1865, pp. 341–350.

Hr. R. Meyer has made remarks on an old example of a Gorilla, and on a skull. Fünft. Bericht d. Offenbach. Verein. 1864, pp. 58–62, with a plate.

M. Gratiolet has recognized in a large Chimpanzee from Tropical Africa a distinct species, which he names *Troglodytes aubryi* (Compt. Rend. lix. p. 321; Rev. et Mag. Zool. xvi. p. 266). It is distinguished by an entirely black face, and by a well-developed "talon" on the hinder part of the last lower molar. In dissecting this specimen and other Anthropoid Apes, he paid particular attention to the forearm and the hand, comparing it with those of Man, and shows that the large muscle which moves the thumb independently of the other digits in Man is entirely absent in the Gorilla and Chimpanzees, and that the thumb-portion of the tendon of the m. flexor digitorum communis is still more reduced in size than even in other monkeys. The author did not live to see the final publication of this last work of his; but in it he expressed his full conviction that anatomical facts have not given any foundation to the idea of a close affinity between Man and Ape.

Dr. Crisp has discovered an os penis in the Gorilla, as well as in the Chimpanzee. Proc. Zool. Soc. 1865, p. 48.

Prof. Wyman has given comparative measurements of the pelvis and limbs in two Europeans, a Hottentot, a Chimpanzee, and a Gorilla. Proc. Bost. Soc. Nat. Hist. ix. p. 356.

Semnopithecus entellus. Mr. E. Ray Lankester has examined and figured the brain. Quart. Journ. Science, 1865, pp. 562–565.

Colobus guereza. Dr. Murie has examined the anatomy of this species, which does not show any differences from that of the species examined by Prof. Owen. Proc. Zool. Soc. 1865, p. 744.

Cercopithecus sabæus. The muscles of the extremities are described by Mr. Mivart. Proc. Zool. Soc. 1865, pp. 43–46.

Cercocebus albigena. Dr. Murie has compared the skull of *Presbytes albigena* (Gray) with those of *Semnopithecus*, and confirms the opinion of M. Pucheran as to the propriety of referring this species to *Cercocebus*. Proc. Zool. Soc. 1865, p. 740.

Macacus ocreatus, fig. in Zoolog. Sketch. by Wolf and Sclater, vol. ii.

Inuus assamensis (Maclell.) is, according to Mr. Blyth, probably merely an individual variety of colour of *I. rhesus*. Journ. As. Soc. Beng. 1865, p. 192. Captain Hutton (ibid. 1864, Append. p. xiii) had stated in a note that this *I. assamensis* and *I. pelops* (Hodgs.) are totally distinct species.

Cebidæ.

Cebus. Dr. Gray (Proc. Zool. Soc. 1865) has examined the specimens of this genus in the British Museum, and enumerates sixteen species, of which the following are characterized as new:—

C. leucogenys, p. 825, pl. 45, from Brazil; *C. leucocephalus*, p. 827, from Columbia; *C. flavescens*, p. 827, from Brazil; *C. annellatus*, p. 827, from Brazil; *C. subcristatus*, p. 827, from Brazil; and *C. capillatus*, p. 827, from Brazil.

Ateles. Four new species are characterized by Dr. Gray, Proc. Zool. Soc. 1865, p. 732: *A. grisescens* (Sclater), *A. cucullatus*, *A. fusciceps*, and *A. vellerosus*.

Ateles cucullatus. The measurements of an animal in the flesh, and some notes on its anatomy, are given by Dr. Murie, Proc. Zool. Soc. 1865, pp. 739–740.

Hapale. Dr. Gray distinguishes four subgeneric groups: 1. *Hapale*, with *H. aurita* (Geoffr.); 2. *Iacchus*, with *H. iacchus*, of which *I. vulgaris*, *albicollis*, *penicillatus*, and *leucocephalus* are varieties; 3. *Cebuella*, with *H. pygmæa* (Spix); 4. *Mico*, with *H. melanura* (Geoffr.). Proc. Zool. Soc. 1865, p. 734.

Prof. Giebel has examined the skeletons of *Hapale jacchus*, *H. œdipus*, and *H. rosalia*, and the skull of *H. penicillata*, and describes osteological characteristics of these species. Zeitschr. gesammt. Ntrwiss. xxv. 1865, pp. 257–261.

Midas leucogenys, sp. n., Gray, Proc. Zool. Soc. 1865, p. 735, from Brazil. *Midas rufiventer* (Gray) = *M. elegantulus* (Slack) is characterized, *ibid.*

Lemuridæ.

Prof. Schlegel has determined two species of *Lemur*, one from Mayotte (Comoro Islands), and the other from the north-west coast of Madagascar, and enters, on this occasion, upon the distinctive characters of the species and their synonymy (Ned. Tydschr. Dierk. iii. 1865, pp. 74–78). He divides them thus:—

I. Tail with alternate black and white rings: *L. catta.*

II. Tail uniformly coloured.

A. Ears almost hidden below long hairs: *L. varius* (Geoffr.) and the true *L. macaco* (L.).

B. Ears not hidden.

a. Snout whitish: 1. *L. coronatus* (Gray) = *L. chrysampyx* (Schuurman). 2. *L. mongoz* (L., not Gray and other authors) = *L. nigrifrons* (Geoffr., not F. Cuv.) = *Prosimia albimana* et *collaris* (Gray, not Geoffr.).

b. Snout black or blackish brown.

α. Ears hairy to the margin: *L. rubriventer* (Geoffr.) = *L. flaviventer* (Geoffr.).

β. Ears with a broad naked marginal band: 1. *L. albifrons* (Geoffr.). 2. *L. rufifrons* (Benn.). 3. A species nearly always confounded with *L. mongoz* (L.), of a very variable coloration, and consequently described under various names, viz. by Geoffroy as *L. collaris*, *fulvus* (or *brunneus*, v. d. Hoeven), *rufus* et *albimanus*, by Gray as *Prosimia xanthomystax* et *melanocephala*, and probably also as *P. anjuanensis* (not Geoffr.), and by F. Cuvier as *L. nigrifrons*. The constant characters of this species are—the dark colour of the vertex, a dark band along the median line of the forehead connecting the dark colour of the vertex with that of the snout, a broad greyish or reddish band on each side of the dark one descending to the cheeks. The dark band varies frequently and much as regards its width, but never suppresses the light band entirely. To this species, which may be called *L. collaris*, belongs the Lemur from Mayotte, but, having a blackish

spot above the root of the tail (croupion), it may be distinguished by a specific name, *L. mayottensis* (p. 76). The author then describes the variations of colour in ten specimens.

The species from the south-west coast of Madagascar examined by the author is represented by two examples: the female agrees with *L. leucomystax* (Bartlett), the male with *L. macaco* (L.)=*L. niger* (Geoffr.), which names must be considered synonyms of the same species (p. 77).

Otolicnus crassicaudatus. Dr. Sclater, after a comparison of the typical specimens, arrives at the same conclusion as before (Proc. Zool. Soc. 1864, p. 711; Zool. Record, i. p. 15), viz. that *Galago monteiri* (Bartlett) is little, if anything, more than a pale variety of *O. crassicaudatus*; and that *O. crassicaudatus*, var. *kirkii*, is intermediate between it and the type of *O. crassicaudatus*.

Nycticebus tardigradus. Messrs. Mivart and Murie have examined and described the muscular structure. Proc. Zool. Soc. 1865, pp. 240–256. As points of especial interest are pointed out—1. The appearance of that anthropoid muscle, the flexor longus pollicis, and its resemblance, by the interlacements of its tendons with those of the flexor profundus, to the conditions always offered by the foot in Primates. 2. The almost atrophied gastrocnemius, but concomitantly augmented flexor longus communis, which last, inverting the analogy of the flexor longus pollicis, resembles a hand-flexor in its origin from the proximal bone of the limb. 3. The very large size of the rectus anticus major, and the generally extensive development of the muscles of the ventral surface of the spine.

Chiromys madagascariensis, fig. in Zoolog. Sketch. by Wolf and Sclater, vol. ii.

Mr. Bartlett states that the Aye-Aye in the Zoological Gardens in Regent's Park is fond of fresh sugar-cane, which confirms him in his belief that the creature feeds upon the juices of trees. Ann. & Mag. Nat. Hist. 1865, xvi. p. 142.

FERÆ.

Chiroptera.

Prof. Peters has communicated a systematic synopsis of the groups and genera of Chiropteres, which will form the base of a monograph of this family, on which he is engaged at present: Monatsber. Akad. Wiss. Berlin, 1865, p. 256. As we shall soon have occasion to record the forthcoming work, and as no characters are added in this synopsis, the present notice will suffice.

Prof. Peters has examined the typical specimens of the Brazilian species described by Spix: they appear to have suffered much from the way in which they have been prepared; but by softening some of them in a weak solution of alum, the author was enabled to recognize the original form of the distorted parts. The chief results of this examination are the following (*Ibid.* pp. 568–588):—

1. *Noctilio rufus*, Spix=*N. americanus* or *leporinus* (L.)=*N. unicolor* (Wied); *Vespertilio masticus* (Vahl)=*N. dorsatus* (Wied)=*N. leporinus* (Gerv. Casteln. pl. 12. figs. 6 & 6*a*) is probably merely a variety: p. 570.

2. *Noctilio albiventer*, Spix=*N. affinis* (D'Orb. & Gerv.)=*N. leporinus* (Gerv. Casteln. pl. 12. fig. 6*b*)=?*N. ruber* (Rengger). Very badly figured by Spix. Differing from *N. rufus* in size; with or without a light dorsal band, as *N. rufus*. Prof. Peters adds the measurements, p. 572, and figures the skull, fig. 1.

3. *Molossus ursinus*, Spix=*Dysopes alecto* (Temm.)=*M. rufus* (Geoffr.). The measurements are given, p. 576; and the skull is figured, fig. 3.

4. *Molossus nasutus*, Spix. Ears in form and size similar to those of *M. obscurus*, not united, the distance between them being 2 millim. Tragus very small, with broad base, and with a very small pointed process at the lower end of the base. Nares as in *M. obscurus*. Margin of the lips swollen, without a trace of cross folds. Wing-membrane terminating at the last third of the tibia. Calcaneum very long, extending nearly to the tail. Tail with eleven vertebræ, six projecting beyond the wing. Ventral side of lumbar portion of the wing with a thick woolly fur, continued in a broad strip below the forearm, and descending on both sides of the metacarpus of the fifth finger nearly to the middle of the same. The ventral surface of the humeral portion is hairy near the throat only, whilst on the dorsal surface of the same portion of the wing a tapering band of thick hair extends to the middle of the forearm. A band of thin hairs, 6 millim. broad, runs on the other side of the forearm, the hair becoming thicker between the fourth and fifth fingers, and descends to the commencement of the third fifth of the metacarpus of the fifth finger. Brown, lighter below: p. 576; skull, fig. 4.

5. *Molossus fumarius*, Spix, identical with the preceding species: p. 579.

6. *Thyroptera tricolor*, Spix, described by Rasch, Nyt Mag. Naturvid. Christ. 1843, iv. 1.

7. *Proboscidea* (=*Emballonura*, Temm.) *saxatilis*, Spix=*Vespertilio naso* (Wied). Generally with two upper incisors *on each side*: p. 581.

8. *Proboscidea rivalis*, Spix, identical with the preceding species: p. 581.

9. *Vespertilio brasiliensis*, Spix. Original specimen lost: p. 581.

10. *Vampyrus cirrhosus*, Spix=*Trachyops fuliginosus* (Gray). Cfr. p. 27.

11. *Vampyrus bidens*, Spix, belongs to the genus *Lophostoma* (D'Orb. & Gerv.). A detailed description is given: p. 585.

12. *Vampyrus soricinus*, Spix. Cfr. p. 28.

13. *Phyllostoma planirostre*, Spix=*Ph. perspicillatum* (Geoffr.) is an *Artibeus*: p. 587.

14. *Glossophaga amplexicaudata* (Geoffr.)=*soricina* (Pall.): p. 587.

15. *Diphylla ecaudata*, Spix. Young examples appear to have $\frac{2}{2}$ molars, adult ones $\frac{3}{4}$: p. 587.

Nycteris grandis, sp. n., Peters, Monatsber. Akad. Wiss. Berl. 1865, p. 351. Similar to *N. fuliginosa* in colours and fur, but exceeding in size even *N. javanica*. Ears as long as the head. The four upper incisors are three-lobed, and the second lower premolar is scarcely one-third the size of the preceding, not compressed in its longitudinal diameter. From Guinea.

Antrozous (Allen). Professor Peters has demonstrated that the nearest ally of this American genus is *Nyctophilus* from Australia. He thinks that,

for the present at least, it will be better to associate these two genera with the *Megadermata* than to introduce them into the natural group of *Vespertiliones*. Monatsber. Akad. Wiss. Berl. 1865, p. 521.

Rhinolophus ferrum equinum. Mr. Salter has recorded the occurrence of this species at Thomson Manor House, in Dorsetshire, and indicates this locality as being much frequented by bats. Zoologist, 1865, p. 9836.

Cælops bernsteinii (Ptrs.). Some remarks on the skull, and measurements of the typical specimen by Peters, *l. c.* p. 644.

Prof. PETERS has revised the genera and species allied to *Vampyrus spectrum*, uniting them into a group, *Vampyri* (Monatsber. Acad. Wiss. Berl. 1865, pp. 503–525). We give a full abstract of this paper :—

A. *Ears connected by a membrane.*

I. *Macrotus* (Gray) with two or three species.

B. *Ears not connected by a membrane.*

a. *Tail at least as long as the interfemoral membrane.*

II. *Lonchorhina* (Tomes), with one species.

III. *Macrophyllum* (Gray), with one species.

b. *Tail much shorter than the interfemoral membrane, or absent.*

α. *Molar teeth* $\frac{3.2}{3.3}-\frac{2.3}{3.3}$.

IV. *Vampyrus* (Geoffr.) with one species. Horseshoe-shaped appendage well developed, with the edge free. Lower lip with two broad warts, separated by a median groove. Ears large. First phalanx of middle finger conspicuously longer than one-half of the metacarpus, and but little shorter than the second phalanx. Wing-membranes reaching the toes. Tail none. Incisors $\frac{4}{4}$; the second lower premolar well developed.

V. *Chrotopterus* (subg. n., p. 505), differs from *Vampyrus* in having a short tail; and the second lower premolar is small, somewhat displaced inwards. Incisors $\frac{4}{2}$*. Type *Vampyrus auritus* (Peters).

VI. *Schizostoma* (Gervais). Horseshoe-shaped appendage well developed; two naked warts, separated by a median groove, in the middle of the lower lip. In other respects, externally, agreeing with *Lophostoma*. Incisors $\frac{4}{4}$; the second lower premolar well developed, longer than broad. With three species :—

1. *Sch. bilnii* (sp. n., p. 505). The distance between the ears equals that of the eye from the margin of the snout; they are rather shorter than the head, and provided with about eight deepish transverse folds on the outer margin; the lower auricular lobe forms an obtuse angle with the external edge of the ear. Tragus pointed, swollen along its inner edge, and provided with two protuberances at the base of its outer surface. Eyes much nearer to the ears than to the margin of the snout. The horseshoe-shaped appendage is conspicuously broader than the lanceolate appendage, which is three-eighths longer than broad, much pointed, and with the margins entire. On the dorsal

* Not $\frac{4}{4}$, which, the author informs us, is a misprint.

surface, the hairs extend over the basal half of the upper arm, and as far on the lumbar region of the wing-membrane, becoming thinner on the latter part. Tail not quite reaching the middle of the interfemoral membrane, four-jointed. *The second phalanx of the middle finger conspicuously longer than the first.* The wing-membrane terminates opposite the calcaneum, which is distinctly shorter than the foot. Brown above, paler below. The hairs of the back are white at the base; then follow a brown and a whitish ring; the tips are brown again. Measurements of the various parts are appended to the detailed description; total length 75 millim. From Cuyaba.

2. *Sch. minutum* (Gervais). The two first phalanges of the middle finger are equal in length. The alar membranes do not quite reach the end of the tibiæ; calcaneum shorter than the foot; the basal third of the forearm haired above and below.

3. *Sch. elongatum* (*Ph. elongatum*, Gray). The two first phalanges of the middle finger are equal in length. The alar membranes extend to the metatarsus; calcaneum conspicuously longer than the foot; the basal portion of the forearm nearly naked.

VII. *Lophostoma* (D'Orb.). Horseshoe-shaped appendage rudimentary. Lower lip with a median triangular naked space, which is warty on the borders. Ears large. First phalanx of middle finger but little shorter than one-half of the metatarsus and than the second phalanx. Wing-membranes extending to the tarsus or metatarsus. Calcaneum longer than the foot. Skull more or less narrowed behind the orbits; palate emarginate on each side to the penultimate molar. Incisors $\frac{4}{2}$; the second lower molar very small, but in the same series with the others. With three species, viz. *L. bidens* (Spix), *L. amblyotis* (Wagner), and *L. sylvicola* (D'Orb. & Gerv.).

Of these *L. amblyotis* is described from the typical specimens. Somewhat smaller than *L. elongatum*. Ears very large, longer than head, united inwards with the forehead by a short band. Tragus pointed. Eyes nearer to the ears than to the end of the snout. Lanceolate appendage pointed, one-third higher than broad. Fur continued over two-thirds of the upper arm, above and below; on the ventral surface, very slightly woolly hair runs beyond the first third of the forearm, and a stripe of similar hair on the lumbar part of the wing-membrane, these parts being naked on the dorsal surface. Metacarpal bone of the thumb a little longer than the first phalanx; second finger conspicuously shorter than metacarpus of third finger. Lower leg half as long as forearm; calcaneum long, one-fourth shorter than lower leg. Tail as long as foot, four-jointed, free at the tip. Wing-membrane extending nearly to the end of dorsal surface of metatarsus of second toe. Brown above, paler below. Total length 90 or 95 millim.

VIII. *Trachyops* (Gray). Inferior border of the horseshoe-shaped appendage ill defined; middle of the lower lip with a deep chin-groove and with a double row of warts; muzzle and chin with lobuliform warts. Ears large. First phalanx of middle finger somewhat shorter than one-half of the metacarpus, and very much shorter than the second phalanx. Wings as in *Phyllostoma*. Incisors $\frac{2}{4}$; the second lower molar very small, displaced inwards. *V. cirrhosus* (Spix) = *T. fuliginosus* (Gray) = *Tylostoma mexicanum* (Saussure).

IX. *Phylloderma* (subg. n., p. 512). Externally similar to *Phyllostoma*

s. s.; differing by the peculiar form of its skull, the rostral portion being much narrower than the narrowest part of the temporal portion, which is not narrower than the interorbital space. Incisors $\frac{4}{4}$, the small additional premolar displaced inwards. *Ph. stenops* (sp. n., p. 513) from Cayenne.

β. Molar teeth $\frac{3.2}{3.2}-\frac{2.3}{2.3}$.

? X. *Mimon* (Gray), not examined by the author. *M. bennettii* (Gray) erroneously identified by Tomes with *Phyllostoma elongatum*.

XI. *Tylostoma* (Gervais), not examined by the author.

XII. *Phyllostoma* (Pet.). Horseshoe-shaped appendage well developed; middle of lower lip with a triangular naked space surrounded by small warts. Ears moderately long. First phalanx of middle finger much shorter than one-half of metatarsus, and very much shorter than the second phalanx. Wing-membranes reaching the tarsus. Interfemoral membrane much developed. Tail present, but much shorter than interfemoral membrane. Skull behind the orbits but little compressed, but narrower than snout. Incisors $\frac{4}{4}$. With three species: *Ph. hastatum*, *Ph. discolor* (Wagn.) ? = *Ph. angusticeps* (Gerv.), and *Ph. elongatum* (Geoffr.).

As regards the last species, the author was induced by Tomes's statement, viz. that it is identical with *Mimon bennettii* (Gray), which has only two lower incisors, to describe in detail a specimen which agrees perfectly with *Ph. elongatum* (Geoffr.), having four lower incisors; so that Mr. Tomes appears to have been mistaken.

XIII. *Carollia* (Gray) = *Hemiderma* (Gervais). Horseshoe-shaped appendage scarcely separated from the upper lip in the middle; lower lip, ears, and the number of teeth as in *Phyllostoma*. Wing-membranes attached to the end of the tibia. Tail and calcaneum short. Angle of the W-shaped ridge of the molars very obtuse; cingulum on the inner side of the upper true molars with one tubercle only, so that these teeth have a triangular appearance when viewed from below. With one species only, viz. *Ph. brevicaudum* (Wied) = ! *Vampyrus soricinus* (Spix) = ! *Ph. bicolor* (Wagn.) = ? *Artibeus fimbriatus* (Gray) = *Carollia verrucata* (Gray) = *Ph. grayi* (Waterh.) = ! *Ph. lanceolatum* (Temm.) = ! *Ph. calcaratum* (Wagn.) = ! *Ph. brachyotum* (Burm., not Wied) = !*Carollia azteca* (Sauss.). Of the names marked with an (!), the typical examples were examined.

XIV. *Rhinophylla* (g. n., p. 355 & p. 525). Similar to the preceding genus as regards the development of the nasal appendage, ears and limbs, and the number of teeth. Wing-membranes reaching the toes; tail entirely absent. Upper true molars much longer than broad, without cingulum on the inner side; the upper middle incisors broad and lobate. *Rh. pumilio*, sp. n., p. 355, perhaps from Brazil.

Phyllostoma infundibuliforme (Rengger) and *Vampyrus auricularis* (Sauss.) are uncertain species, the former is perhaps a *Dermodus*.

Phyllostoma (*Carollia*) *brachyotum* (Wied). The typical specimen has been described by Peters, who is inclined to regard it as specifically identical with *Ph. brevicaudum*. Monatsber. Akad. Wiss. Berlin, 1865, p. 641.

Macrotus waterhousii (Gray) is described by Osburn, Proc. Zool. Soc. 1865, p. 74, who adds notes on its habits.

Glossophaga soricina. Prof. Peters (Monatsber. Akad. Wiss. Berl. 1865, p. 351) has given an historical account of the *Vespertilio soricinus* (Pallas), which has not been recognized by succeeding zoologists:—

1. Geoffroy St.-Hilaire (Ann. Mus. Hist. Nat. xiv. 1810, p. 179) first convinced himself of the correctness of Pallas's description, having examined specimens in spirits, which probably are the types, and which, originally in a Belgian museum, were transferred by the French to Paris. However, afterwards (Mém. Mus. iv. p. 418) he describes them as a distinct species of his genus *Glossophaga*, viz. as *G. amplexicaudata*, because Pallas's description contains the words "caudæ vestigium nullum." But Pallas did not mean to express thereby the absolute absence of a tail, but merely the absence of a *projecting* tail, as is evident from his description.

2. Gray proposes for the true Pallasian species the generic name of *Phyllophora*, retaining *Glossophaga* for *G. soricina* of Geoffroy, which is a merely imaginary species.

3. Blainville figures, in Ostéogr. Cheiropt. pl. 7, under the erroneous name of *Glossophaga soricinum*, a skull which, in fact, is *G. ecaudata*; it has $\frac{3.3}{3.3}$ molars, whilst *G. soricina* (Pall.) has $\frac{2.3}{3.3}$ molars only, as already described by Pallas.

4. Gervais, in Casteln. Anim. nouv. Cheiropt. p. 42, supposes that *Vespertilio soricinus* (Pall.) may be identical with *Ph. brevicaudum* (Wied); but the tongue, admirably described by Pallas, is quite different.

5. *Phyllophora nigra* (Gray, Voy. Sulph. pl. 5) does not show any characters by which it may be distinguished from *G. soricina*. *Phyllophora megalotis* (Gray) belongs, according to Gray, to the Vampyri.

Chæronycteris (Licht.) has a tail 7 millim. long, and there are $\frac{5-5}{6-6}$ molars; it is therefore different from *Anoura*, and rather a subgenus of *Glossophaga*. Peters, Monatsber. Akad. Wiss. Berl. 1865, p. 354.

Monophyllus redmanii (Leach). On its habits see Osburn, Proc. Zool. Soc. 1865, p. 69.

Phyllonycteris poeyi (Gundl.) is described, with notes on its habits, by Osburn, Proc. Zool. Soc. 1865, p. 81.

Prof. Peters has given a short synopsis of the genera and species of *Stenodermata* in Monatsber. Akad. Wiss. Berl. 1865, pp. 356, 357, and 524. The genera are characterized and the species enumerated; three of the latter are new, and will be characterized at the end of the Synopsis:—

1. *Artibeus* (Leach)*.

A. Molars $\frac{4}{4}$: *Artibeus* (*s. st.*); with *A. perspicillatus* (Geoff.) and *A. jamaicensis* (Leach).

B. Molars $\frac{4}{4}$: *Dermanura* (Gervais); with *D. cinereum* (Gerv.), ? *D. toltecum* (Sauss.), and *D. quadrivittatum* (sp. n.)

---

* We give this synopsis in the form modified by a correction in the footnote, p. 587.

C. Molars $\frac{5}{5}$: *Uroderma* (subg. n.); with *A. fallax* (sp. n.), *A. concolor* (sp. n.), and *A. personatus* (Wagl.).

2. *Phyllops*. Molars $\frac{5}{5}$; palate deeply excised, to between the molars; with *P. albomaculatus* (Gundl.) and *P. undatus* (Gervais).

3. *Vampyrops*. Skull and palate as in *Artibeus*; molars $\frac{5}{5}$, similar to those of *Sturnira*; with *P. lineatum* (Geoffr.) and *V. vittatus* (Pet.).

? 4. *Stenoderma* (Geoff.). Molars $\frac{4}{4}$; the dentition, according to Geoffroy, appears to be very similar to that of *Vampyrops*; the author is uncertain whether the absence of the small hinder molar is a peculiar character, or dependent on young age only.

5. *Pygoderma* (Ptrs.). Molars $\frac{4}{4}$, the fourth very small; facial portion of the skull very high; with *P. bilabiatum* (Wagn.).

6. *Ametrida* (Gray). Teeth as in *Pygoderma*; facial portion of the skull much flattened; with *A. centurio* (Gray).

7. *Chiroderma* (Peters), with *C. villosum* (Pet.) and *C. pusillum* (Wagn.).

8. *Sturnira* (Gray), with *P. lilium* (Geoffr.) and *S. chilensis* (Gerv.).

9. *Brachyphylla* (Gray); with *B. cavernarum* (Gray).

10. *Centurio* (Gray); with *C. senex* (Gray) and *C. m'murtrii* (Allen).

Artibeus fallax, sp. n., Peters, Monatsber. Akad. Wiss. Berl. 1865, p. 355. Extremely similar to *A. perspicillatus*, but with the lower border of the horse-shoe-shaped appendage longer, more distinct, and finely notched. Molars $\frac{5}{5}$. Coloration variable as in *A. perspicillatus*. Guianas.

Artibeus concolor, sp. n., Peters, *l. c.* p. 357. Much smaller than the preceding. Nasal appendage not notched on its lower free border. Ears and wing-membranes as in *A. perspicillatus*. Molars $\frac{5}{5}$. Uniform brown, paler below. Total length to the edge of the interfemoral membrane 85 millim. From Paramaribo.

Artibeus (Dermanura) quadrivittatus, sp. n., Peters, Monatsb. Akad. Wiss. Berl. 1865, p. 358. Of the size and appearance of *Stenoderma toltecum* (Sauss.), with which it also agrees in the nasal appendage and ears; interfemoral membrane less broad and less hairy. Brown above, paler below, with four white longitudinal stripes on the head. The fourth lower molar but little shorter than the third. Total length of a specimen not quite adult, 80 millim. From Surinam.

Artibeus perspicillatus (L.) and *A. brachyotus* (Neuwied). On their habits see Osburn, Proc. Zool. Soc. 1865, pp. 64 and 81.

Centurio senex (Gray). *C. flavogularis* (Licht., Pet.) and *C. mexicanus* (Sauss.) are identical with this species. Peters, *l. c.* p. 525.

Desmodus rufus. Prof. Huxley describes and figures the very extraordinary form of its stomach, the cardiac portion of which is prolonged into an exceedingly long diverticulum, the pyloric division being very short. Proc. Zool. Soc. 1865, p. 386. On this occasion the author suggests a division of the *Chiroptera* into three primary groups, viz. *Frugivora*, *Insectivora*, and *Hæmatophilina*: the last group would comprise *Desmodus* and *Diphylla*.

Mormoops blainvillii (Leach). On its habits see Osburn, Proc. Zool. Soc. 1865, p. 72; a detailed description is added.

Chilonycteris osburni (Tomes). On its habits see Osburn, *l. c.* p. 68.

Furia horrens (F. Cuv.) is described by Peters, Monatsber. Akad. Wiss. Berl. 1865, p. 645.

Prof. Peters has given a short synopsis of the genus *Molossus* and the genera allied to it in Monatsber. Akad. Wiss. Berl. 1865, pp. 573–575 :—

I. *Nyctinomus* (Geoff.). Upper lip with more or less distinct cross folds. Ears very approximate or connected by a membrane. Intermaxillaries separate as in *Vespertilio*. Lower incisors 6 in young age, 4 (rarely 2) in the adult state.

a. *Nyctinomus* s. s. Upper lip with distinct cross folds. One upper premolar. 1. *N. brasiliensis* (Geoffr.). 2. *N. gracilis* (Wagn.). ? 3. *N. auritus* (Wagn.).

b. *Mormopterus*, subg. n., p. 574. Upper lip with shallow cross folds; ears distinctly separate; snout flat. Two upper premolars. *M. jugularis*, sp. n., p. 258, from Madagascar.

II. *Chiromeles* (Horsf.). Upper lip thick, without cross folds. Ears distant. Intermaxillaries united; upper incisors contiguous, not touching the canines.

? III. *Myopterus* (Geoffr.).

? IV. *Mops* (F. Cuv.).

V. *Molossus* (Geoffr.). Upper lip thick, without cross folds. Intermaxillaries united; upper incisors contiguous.

a. *Promops* (Gerv.). Ears very large, directed forwards, and more or less united by a fold of the skin. Two upper premolars; upper incisors with the crowns divergent, and with the broad base touching the incisors. 1. *M. perotis* (Wied). 2. *M. gigas* (Pet.). 3. *M. abrasus* (Temm.) 4. *M. ferox* (Gundl.). 5. *M. nasutus* (Spix).

b. *Molossus* s. s. Ears inclined forwards, more or less distinctly united by a fold of the skin. One upper premolar; upper incisors with the inner edges parallel, and with the base touching the canines. 1. *M. rufus* (Geoffr.). 2. *M. obscurus* (Geoffr.).

c. *Molossops* (subg. n., p. 575). One upper premolar; upper incisors with the crowns divergent, and with their base separated from the canines by a diastema. Ears moderate, triangular, distinctly separate. Muzzle flat; lips thick, smooth. Skull similar to that of *Mormopterus*.

1. *M. temminckii* (Lund).

2. *M. planirostris*, sp. n., p. 575. Ears but little broader than high. Wing-membranes naked, except a narrow border of the lumbar portion, and below the dorsal surface of the lower arm, at the fifth finger, and on the humeral portion above the lower arm. Above dark ferruginous; lower parts light ferruginous laterally, and white mesially. Wings brownish black. Total length 78 millim. From British Guyana.

3. *M. brachymeles*, sp. n., p. 575. Ears but little broader than high. Ventral surface of the wings naked, except along a narrow strip on the

lumbar portion close to the trunk; on the dorsal surface, a patch of hairs above the lower arm near the humeral portion, and another between the fourth and fifth fingers and the forearm. Dark brown above, ferruginous below. 104 millim. long. From Peru.

4. *M. aztecus* (Sauss.).

Molossus fumarius (Spix). For notes on this species see Osburn, Proc. Zool. Soc. 1865, p. 79.

Nyctinomus (*Mormopterus*, subg. n.) *jugularis*, sp. n., Peters, Proc. Zool. Soc. 1865, p. 408, from Madagascar.

Nyctinomus nasutus (Spix). On its habits see Osburn, Proc. Zool. Soc. 1865, p. 61.

Synotus. Dr. Allen proposes to separate generically the two American Barbastelles, *S. macrotis* and *S. townsendi*, from the European species. Proc. Acad. Nat. Sc. 1865, p. 173. Adding fresh descriptions of both species, he characterizes the new genus, which he names *Corynorhinus*. Prof. Peters says that this genus differs from *Synotus* only by having $\frac{5}{6}$ molars, instead of $\frac{5}{5}$; Monatsber. Akad. Wiss. Berlin, 1865, p. 648.

Plecotus auritus. Mr. W. Sowerby has observed in an example kept in captivity that it caught flies by means of the interfemoral membrane, which, pressed against the abdomen, formed a kind of trap or bag, in which the insect was kept until withdrawn and devoured. Ann. & Mag. Nat. Hist. 1865, xvi. p. 302.

Histiotus velatus. Prof. Peters remarks that figs. 6 *a* and 6 *b* of plate 13 in Casteln. Voy. Amér. du Sud, Cheiropt., represent the dentition of this species, but that the head, fig. 6, is that of *Plecotus auritus*. Monatsber. Akad. Wiss. Berl. 1865, p. 571.

Natalus lepidus (Gervais). On its habits see Osburn, Proc. Zool. Soc. 1865, p. 67.

Lasionycteris, g. n., founded by Prof. Peters for *Vespertilio noctivagans* (Leconte), distinguished from *Vespertilio* and *Vesperugo* by its dentition $\frac{3.2}{3.3}\ \frac{1}{1}\ \frac{2-2}{6}\ \frac{1}{1}\ \frac{2.3}{3.3}$, and from *Miniopterus* by a different form of the ears, nose, and skull. Monatsber. Akad. Wiss. Berlin, 1865, p. 648.

Vespertilio (*Vesperus*) *mirza*, sp. n., De Filippi, Viaggio in Persia, p. 342, from western Persia.

M. E. Hardy has reported on a deposit of guano in a cave near Vesoul in France, the entire mass being estimated at 700 or 800 cubic metres. It is the accumulation of the excrements of innumerable bats inhabiting the cave. Compt. Rend. 1865, lx. p. 1044.

Insectivora.

Potamogale. Prof. du Bocage, in the memoir quoted above (p. 5), has given a most important contribution to the knowledge of this animal. A shorter communication on the same subject appeared in the Proc. Zool. Soc. 1865, p. 402. He received from Angola the perfect skin of an adult female, a skull, and the greater part of a skeleton, and a fœtus. It proves to

belong to the family of Insectivores. The author rejects not only the name *Potamogale* given by Du Chaillu, but also that of *Mythomys* proposed by Gray, because it is not a member of the Murine tribe; and adds, unfortunately, a third to the synonymy, viz., that of *Bayonia*. He gives a detailed description of the zoological and anatomical characters, figuring the animal, skull, and other parts of the skeleton, and regards it as the type of a distinct group of Insectivores, allied to *Solenodon* and *Sorex*. He fixes the generic characters thus:—

Rostrum productum, rotundatum, depressum; rhinarium minimum, nudum, bifidum; oculi parvi; auriculæ prominulæ, rotundatæ, pilosæ; pedes ambulatorii plantigradi, pentadactyli, posteriores syndactyli, digitis 2° et 3° usque ad basin phalangis tertiæ coadunatis; ungues falculares; cauda longa, alta, compressa, dimidio apicali compressissima, in acumen desinens. Mammæ uropygii duæ. Cranium arcu zygomatico nullo, bulla ossea oblonga, distincta, osse tympanico annulari. Claviculæ nullæ. Ossa antebrachii sejuncta. Ossa cruris connata. Dentes quadraginta, dentibus Solenodontis, quoad numerum, formam ac dispositionem, valde similes

$$\left(\tfrac{4.3}{4.3}\ \tfrac{1}{1}\ \tfrac{1-2-1}{4}\ \tfrac{1}{1}\ \tfrac{3.4}{3.4}\right).$$

Hæmal arches, articulating with the intervals of the caudal vertebræ, are much developed.

Dr. Gray, in a letter directed to Prof. Allman (who is engaged in a publication on this animal), wishes him to reconsider the question whether the name *Potamogale* given by Du Chaillu has any claim to be adopted. He persists in rejecting it, on account of the incorrectness of Du Chaillu's notes on the animal. Ann. & Mag. Nat. Hist. 1865, xvi. p. 426.

We fully agree with Dr. Gray as regards the principle on which he objects to the name *Potamogale*. If we commence to introduce names into the system given at random by inexperienced amateurs or popular writers, or names unaccompanied by such a diagnosis that the object can be recognized by the scientific zoologist, we consent to be constantly exposed to the danger not only of sharing the reward for our labours with men who do not deserve it (which is a matter of minor consideration and of too frequent occurrence), but to add to the multiplication of names which is getting more and more burdensome. For this reason Dr. Gray might have been justified in ignoring Du Chaillu's account altogether; but since he has adopted the specific name of *velox*, given by Du Chaillu at the same time, and as in this case the generic and specific names refer to the same individual specimen, succeeding naturalists have no other choice but to recognize or to reject both alike.

Potamogale is referred by Prof. Peters to the *Centetina*. Monatsber. Akad. Wiss. Berlin, 1865, p. 286.

Ericulus (Geoffr.) and *Echinogale* (Wagn.) are referred to the *Centetina*

by Prof. Peters, who has lately had an opportunity of examining specimens. Monatsber. Akad. Wiss. Berlin, 1865, p. 286.

Erinaceus libycus. Prof. Giebel has published a description of this hedgehog and of its skeleton, comparing it with that of the common European species. Zeitschr. gesammt. Ntrwiss. xxvi. 1865, pp. 1–7.

Tupaia splendidula, sp. n., Gray, Proc. Zool. Soc. 1865, p. 322, pl. 12, from Borneo.

Sorex remifer. Mr. Hogg discovered this Shrew between Norton and Billingham, and notices its differences from *S. fodiens.* Nat. Hist. Trans. of Northumberland and Durham, i.* 1865, p. 136.

Crossopus fodiens. Mr. N. L. Austen has published some notes on the habits of this Shrew. It is readily caught in traps baited with small frogs, and feeds greedily on live small fish. The author says that *C. remifer* is a distinct species. Proc. Zool. Soc. 1865, p. 519.

Sorex (Crocidura) fumigatus, sp. n., De Filippi, Viaggio in Persia, p. 343, from Tiflis and Teheran.

Talpa europæa. Voigtländer states that he had seen in one nest twenty-one young of the same size. Sitzgsber. Isis Dresden, 1864, p. 231.

Chrysochloris. Dr. Gray states, from a comparison of numerous examples and their skulls, that, besides the *Ch. aurata*, only *Ch. villosa* (Smith) can be maintained as a distinct species, and that the other forms distinguished by authors under various names should be reunited with the former. Proc. Zool. Soc. 1865, p. 678.

Felidæ.

Felis leo. Mr. Blyth mentions instances of the appearance of Lions in parts of India where they had been supposed to have been long exterminated. Nat. Hist. Review, 1865, p. 453.

Felis bengalensis, fig. in Zoolog. Sketch. by Wolf and Sclater, vol. ii.

Felis mexicana (Sauss.). M. de Saussure thinks that it is most probably identical with *F. canescens* (Swainson), but that the *F. ocelot* (H. Smith) is distinct. Rev. et Mag. Zool. 1865, p. 257.

Felis jacobita. For the diagnosis of this species see the preceding volume of this Record, p. 18. M. Cornalia gives a more detailed description and figure in Mem. Soc. Ital. Sc. Nat. 1865.

Felis catus. Notes on the skull, by Giebel, Zeitschr. gesammt. Ntrwiss. xxiv. p. 465.

Felix lynx, fig. in Zoolog. Sketch. by Wolf and Sclater, vol. ii.

Viverridæ.

Viverra schlegelii (Pollen), Schlegel, Ned. Tydschr. Dierk. iii. 1865, p. 78, from Mayotte and Nossi-Faly (Comoro Islands).

Viverricula malaccensis, fig. in Zool. Sketch. by Wolf and Sclater, vol. ii.

Artictis binturong, fig. in Zoolog. Sketch. by Wolf and Sclater, vol. ii.

* The 'Natural History Transactions of Northumberland and Durham' are a continuation of the 'Transactions of the Tyneside Naturalists' Field Club' under a different title, being, in fact, the Proceedings of the "Natural History Society of Northumberland, Durham, and Newcastle-upon-Tyne," incorporated with those of the Tyneside Naturalists' Field Club.

Canidæ.

Canis familiaris. Prof. Giebel repeats his belief in the existence of different species among the races of dog, and describes the skeleton of a young example of some small variety. Zeitschr. gesammt. Ntrwiss. xxiv. p. 468.

Canis dingo. On the antiquity of the Dingo, see Mr. Krefft's observations, reported on p. 2.

Canis cerdo and *Canis swinhoii*, fig. in Zoolog. Sketch. by Wolf & Sclater, vol. ii.

Canis vulpes. Notes on the skull, by Giebel, Zeitschr. gesammt. Ntrwiss. xxiv. p. 466.

M. Aucapitaine has observed the black-tailed and black-bellied varieties of fox in Corsica, the latter being more common in cold and exposed localities than in warm and sheltered places. However, Bonaparte's *Vulpes melanogaster* is merely a variety of the type, the black colour being assumed in winter, and passing into white during the spring. The foxes of Corsica are generally larger than those of Southern Europe, and very subject to madness. Rev. et Mag. Zool. 1865, p. 3.

Mustelidæ.

In the Record of last year we gave an account of two synoptical monographs—of the *Viverridæ* and *Ursidæ*—by Dr. J. E. Gray. They are followed this year by a similar one of the *Mustelidæ*, Proc. Zool. Soc. 1865, pp. 100–154. The groups, genera, and species are characterized by a diagnosis, and their synonymy is worked out. The author, again, directs attention to the form, size, and number of the bald parts of the feet as an excellent systematic character. He is acquainted with 75 species (many forms described by others as species being regarded by him as varieties), which he refers to 27 genera and 8 tribes. The arrangement is the following :—

I. Acanthopoda.

Feet rounded; toes short, curved, the last joint bent up; claws short, compressed, acute, retractile.

Tribe 1. Mustelina. Head oblong. Toes slightly webbed. Tail cylindrical. Terrestrial.

A. *Digitigrade.* Soles of the hind feet hairy, with four bald pads in front; anal glands developed; tubercular grinder short, transverse.

1. *Martes* (Cuv.), with nine species, subdivided into three subgenera, viz. *Martes* (type *M. abietum*), *Pekania* (type *M. pennantii*), and *Foina* (type *M. foina*). One of the species is described as new: *Martes japonica* (p. 104). The author has found that the Asiatic Sable (*M. zibellina*) agrees with the European Pine-Marten (*M. abietum*) in having the last upper tubercular grinder nearly twice as long on the inner as on the outer side, whilst the same tooth is only somewhat longer on the inner than on the outer side in the American Sable (*M. americana*).

2. *Putorius*, with four species.

3. *Mustela.* This name is retained for the Weasels; ten species. The Ermine and Weasel of North America (*M. noveboracensis*, *M. cicognani*, and *M. pusilla*) are not specifically different from those of Europe. Two subgeneric groups are indicated, viz. *Gale* (type *M. vulgaris*) and *Neogale* (type *M. brasiliensis*). *Zorilla albinucha*, Gray, Proc. Zool. Soc. 1864, p. 69, proves to belong to this genus, although it has the coloration of a *Zorilla*; therefore it forms a separate group, for which no name is proposed.

4. *Vison* (Gray), with four species, referred to two subgenera, viz. *Vison* (type *M. vison*) and *Lutreola* (type *M. lutreola*).

5. *Gymnopus* (Gray). Four species are referred to it: *Mustela nudipes* (Desm.) = *Gymnopus leucocephalus* (Gray), *M. kathiah* (Hodgs.), *M. strigidorsa* (Hodgs.), and *M. africana* (Desm.).

B. *Subplantigrade.* Soles and between the pads hairy; tail short, bushy; anal glands none; false grinders $\frac{3}{4}$. *Gulonina.*

6. *Gulo.*

C. *Plantigrade.* Soles of the hind feet bald, callous; anal glands distinct; false grinders $\frac{3}{3}$; tubercular grinders oblong, band-like, transverse.

7. *Galera.* 8. *Grisonia.*

Tribe 2. Lutrina. Head depressed. Feet normal, rounded; toes webbed. Tail thick, tapering, depressed. Tubercular grinder oblong, transverse.

A. Tail conical, entirely covered with hair.

† The palms and soles of the feet bald between the pads.

* The muzzle hairy; only the thin margin of the nostrils bald.

9. *Barangia* (g. n., p. 123), with two species: *Lutra barang* (F. Cuv.), the skull of which is figured; and *B.* (?) *nepalensis* (sp. n., p. 124), known from a skull only.

** The muzzle hairy between the nostrils; upper and front edge of the nostrils bald.

10. *Lontra* (Gray), with three species.

*** The muzzle bald, band-like between the front and upper edge of the nostrils. Orbit defined by a conical process behind.

a. Toes thick, webbed to the claws, sharply clawed; pads of toes and palm large, close together.

11. *Lutra*, with six species, of which *L. monticola* (Hodgs.) and *L. macrodus* (sp. n., p. 128) from Brazil are united in a subgenus, *Lutrogale.*

12. *Nutria* (g. n., p. 128), distinguished from *Lutra* on account of its short and broad skull; type *Lutra felina* (Molina) = *L. chinensis* (Benn.) = *L. californica* (Gray) = *L. platensis* (Waterh.).

β. Toes bluntly or imperfectly clawed.

13. *Aonyx*, with four species.

†† The palms and soles of the feet slightly hairy between the pads; the two inner hinder toes with a band of hair on the inner side of the under surface. Muzzle bald, transverse.

14. *Hydrogale* (g. n., p. 131); type *Lutra grayi* (Verreaux) = ? *L. maculicollis* (Licht.); skull figured.

††† Palms and soles of feet hairy between the pads. Muzzle bald between the nostrils, and produced into an angle on the upper edge.

15. *Latax* (Gray), with *Lutra canadensis* and *L. destructor* (Barnston; see Zool. Record, i. p. 22).

B. Tail flattened, with a narrow, fringe-like expansion on each side.

16. *Pteromura.*

Tribe 3. Enhydrina.

17. *Enhydris.*

II. Platypoda.

Feet elongate; toes straight; claws exserted, blunt.

A. *Plantigrade.* Soles bald, callous nearly to the heel.

Tribe 4. Melina. Tubercular grinder large, oblong, elongate. Palate produced behind. Flesh-tooth with two more or less distinct tubercles on inner lobe.

18. *Arctonyx**. 19. *Meles.* 20. *Taxidea.* 21. *Mydaus.*

Tribe 5. Mellivorina. Tubercular grinder transverse, band-like. Palate only slightly produced behind. Flesh-tooth with a small inner lobe and a single tubercle.

22. *Mellivora.* (See also p. 680.)

Tribe 6. Mephitina. Tubercular grinder oblong, four-sided. Palate scarcely produced behind; hinder opening in a line with the hinder grinders.

23. *Conepatus* (Gray) = *Thiosmus* (Licht.). The various forms described by authors are regarded as one species, referable to four varieties.

24. *Mephitis.* The author, finding that the extent of baldness of the sole varies in different specimens of the same variety, unites *M. chinga* with *M. mesomelas* and others into one species, keeping only *M. vittata* (Licht.) and *M. mexicana* (Gray) = *M. macroura* (Licht.) distinct. All have three pads in front of the sole of the hind feet.

25. *Spilogale* (g. n., p. 150), with four pads in front of the sole of the hind feet; type *M. zorilla* (Licht.) = *M. interrupta* (Rafin.).

B. *Subdigitigrade.* Soles hairy, with a narrow, elongate, triangular, bald space in front.

Tribe 7. Zorillina.

26. *Zorilla*, with two species.

Tribe 8. Helictidina.

27. *Helictis*, with four species, two of which, viz. *H. orientalis* and *H. nepalensis*, are united into the subgenus *Melogale*, because they have the flesh-tooth larger, and the aperture in front of orbits [? foramen infraorbitale] smaller, than the others.

Mustela. Prof. Giebel has published some notes on skulls and skeletons of *M. putorius*, *M. furo*, *M. vulgaris*, *M. foina*, *M. alpina*, and *M. vison*. Zeitschr. gesammt. Ntrwiss. xxiv. pp. 470–476.

Prof. Bischoff has examined the ovum and placenta of *M. foina*, *martes*, and *vulgaris*, and discovered a sac-like appendage to the placenta, similar to that of *Lutra*. Sitzgsber. Bayr. Akad. Wiss. Münch. 1865, i. p. 339.

Mustela vulgaris. Prof. Costa has described a variety from Southern

* Woodcut of skull, p. 681.

Italy, which he names var. *meridionalis*; it is intermediate between *M. vulgaris* and *M. boccamela* as regards the length of the tail, which is two-fifths of that of the body in the Sardinian Weasel, two-ninths in the common species, and two-sevenths in the variety mentioned. Rendic. Accad. Sc. Napol. 1865, pp. 32 & 33.

Zorilla albinucha (Gray). Du Bocage proposes to change this name into *Z. flavistriata*, because his specimens have yellow markings instead of white ones. Proc. Zool. Soc. 1865, p. 401. This alteration is inadmissible according to the rules of nomenclature.

Vison lutreola. Dr. M. Schmidt has given an account of a specimen living in the Frankfort Zoological Garden. Zoolog. Gart. 1865, pp. 168–175, with a woodcut. Hr. Claudius states that this species is not uncommon within a limited district in the vicinity of Lubeck. Arch. Ver. Freund. Ntrgesch. Mecklenb. 1864, p. 184.

Lutra vulgaris. Prof. Bischoff has discovered a sac-like appendage to the placenta, containing blood and hæmatoidin. *L. c.* p. 213, with two plates.

Enhydris lutris is figured by Gray, Proc. Zool. Soc. 1865, pl. 7.

Ursidæ.

Cercoleptes caudivolvulus. Dr. Gray remarks that it uses its feet as hands, much in the manner of a Lemur. Proc. Zool. Soc. 1865, p. 680.

Phocidæ.

Cystophora cristata. Prof. Reinhardt (Vidensk. Meddel. naturh. Foren. Kjöbenh. (1864) 1865, pp. 248–264, 277) has examined the milk-teeth. The embryo, 2 feet long, was evidently not mature, and probably would not have been born before some weeks. It had been brought from Greenland as a skin. The milk-teeth were still covered by the gingiva; and after removal of the latter all became visible, with the exception of the lower incisors, which, probably originally present, were lost during the first preparation of the skin in Greenland. The milk-teeth, although fully developed, are minute in size, and comparatively much smaller than those of other seals; they are evidently never used, and it is not improbable that they never break through the gingiva. There are on each side of the *upper jaw* two incisors, one canine, and three molars. The incisors and the canine are below, and somewhat inwards of the corresponding permanent teeth, which are entirely hidden in the alveoli; the three molars correspond to the second, third, and fourth of the five permanent molars. The first milk-incisor is styliform, about 1 millim. long, half as large as the second; the canine tooth is 7 millims. long, one-third of which projects *horizontally* beyond the alveolus, a peculiarity observed also by Nordmann in *Halichœrus grypus*, but not by Steenstrup in *Phoca grœnlandica*, *hispida*, and *barbata*, who, however, seems to have examined specimens in which a portion of these milk-teeth was apparently resorbed, so that their original position had become indistinct. The first milk-molar is 4 millims. long, its single root being 3 millims.; the second is scarcely half as large, and has also a single root; the third the largest, with two short but distinct roots. There was probably one incisor on each side of the *lower jaw*; the lower milk-canine is vertically implanted in the jaw; three molars, also corresponding to the second, third, and fourth permanent molars, and similar in form to the upper milk-molars, but the third is considerably larger than the third of the upper jaw. The milk-dentition of this species is: inc. $\frac{2-2}{?1-1?}$; can. $\frac{1-1}{1-1}$; mol. $\frac{3-3}{3-3}$.

Thus *Halichœrus*, *Phoca*, and *Cystophora* appear to agree in their milk-dentition; so that the number of incisors and canines is the same as that of the permanent dentition, but that there are two milk-molars less on each side of the upper and lower jaws *. Further, from a study of the milk-dentition of these animals, it is evident that Owen was mistaken when he regarded three of their permanent molars as premolars; such a division is easily explained from the form of those teeth, and was made at a time when the milk-dentition of *Otaria* only was known, and this very incompletely. In the present state of our knowledge we must divide these teeth into four premolars and one molar, and it is not improbable that also *Otaria* will be found to possess four premolars when its milk-dentition shall be better known than it is at present.

Phoca barbata. Prof. Steenstrup explains the reasons which induce him to regard a fourth molar observed in a young example as a milk-tooth, against the views of Prof. Reinhardt mentioned below, note. Vidensk. Meddel. naturh. Foren. Kjöbenh. (1864) 1865, pp. 270–274.

Otaria hookeri. Mr. Bartlett has made some observations on a tamed male Sea-lion, showing the great docility of these animals; it stands on all fours, and runs and jumps at a great rate. Ann. & Mag. Nat. Hist. 1865, vol. xv. p. 496.

ROSORES.

Prof. Giebel treats of the foramen in the zygomatic process, through which, in many Rodentia, a portion of the masseter passes. He examines its size, form, and position in the various groups, and comes to the conclusion that it may be used as a very good generic character, without being of a higher systematic value. Zeitschr. gesammt. Ntrwiss. xxv. 1865, pp. 427–432.

Mus rattus. M. A. de l'Isle has made researches into the affinity between *Mus rattus* and that form which has been distinguished as *Mus alexandrinus* by previous zoologists. Ann. Sc. Nat. 1865, iv. pp. 173–222. A part of these researches consisted of breeding-experiments continued for thirty months, during which time he obtained 26 litters with 129 young ones. We must remark, however, that all the individuals experimented upon were European examples, chiefly from France;

* Steenstrup observed in a young *Phoca barbata* (but not in *P. grönlandica* or *P. hispida*), with the second teeth much advanced in development, but with the milk-teeth still present, a fourth tooth behind the third molar, which he regards as a milk-tooth, without deciding whether it belongs *normally* to the milk-dentition or not. Reinhardt regards it as a tooth *abnormally developed in that individual*, and is inclined to refer it rather to the second than to the first dentition, on account of its *form and size*.

the correctness of the author's conclusions would have been beyond any doubt if a part at least of the experiments had been made with examples obtained from Egypt:—

The author commences by showing that the characters of form and anatomical structure are absolutely the same in *Mus rattus* and *M. alexandrinus*, and that the distinctive characters given by Blasius do not hold good, if numerous fresh examples are examined. *M. tectorum* and *M. leucogaster* (Pictet) are merely nominal species. Experience shows us that every distinct European species of *Mus* is distinguished by certain peculiarities in habits; but there is an absolute identity in this respect between *M. rattus* and *M. alexandrinus*; in fact the only distinctive difference is one of colour, the former species being intensely black above, which colour gradually passes into the greyish of the lower parts, the latter being pure white below, passing into a brownish grey above.

These extreme types of coloration are, however, united by a series of intermediate forms. As regards the question which of the two forms is the original stock, the author refers to the fact that the species of numerous natural genera show a similar system of coloration, and states, as his conclusion, that, as *M. alexandrinus* represents the general coloration of *Mus*, we must consider this species to be the parent stock from which the black *M. rattus* is a descendant. In like manner the uniformly coloured *M. musculus* is to be looked upon, not in the light of a specific type, but as the descendant of *M. incertus* (Savi), which continues to show the typical coloration of the genus *Mus*.

After having thus zoologically demonstrated the specific identity of the black- and white-bellied Rats, he was desirous of obtaining additional and conclusive proof. He gives a most instructive account of his experiments, crossing both races and producing hybrids which did not show any decrease in the power of reproduction, even after the offspring of the same parents, and of the same litter, had been paired through four generations. He observed some very curious facts in the course of these experiments: when a male *M. rattus* was crossed with a female *M. alexandrinus*, black Rats only (like the father) were produced; but when the sexes were reversed, half of the offspring were like the mother, the other half like the father. The author has a very ingenious explanation for these different results: there is, he says, in the first case, a union, and in the second an antagonism of two agencies, simultaneously at work during reproduction, viz. the influence of the male parent over the female, and the influence of the acclimatized race over the exotic. We cannot follow the author into all the details of his experiments; but after having obtained the black form from the union of two pure Alexandrine Rats, he came to the irresistible conviction that all the individuals experimented upon must belong to one and the same species.

Attempts to cross *M. rattus* with *M. decumanus* were entirely unsuccessful.

In the concluding chapter, the author enters into the probable history of the migration of *M. rattus*. Neither the black- nor the white-bellied forms are very recent additions to the French fauna; they are found inland in fields, not in or near the seaports. The centre of creation of this species is Arabia; hence it spread over the south-eastern coasts of the Mediterranean, and was imported into France towards the end of the twelfth century,

clothed in the light-coloured fur which it had when inhabiting its desert-home. After three centuries more, having passed through about 900 generations, we find evidence that it changed colour to black, probably under the influence of the diminished intensity of light and heat, *but without deriving any perspicuous advantage from such a change.*

In an Appendix, the author adds notes on the external and internal characteristics of the different European species of *Mus*, and on the development and dentition of young *Mus rattus*.

The Recorder trusts that this abstract will induce our readers to refer to the original of M. de l'Isle's paper, who deserves great credit, not for having abolished one of the infinite number of so-called species of *Mus*, but for having shown us, in a clear and convincing manner, the way to prove the identity or distinctness of species.

Mus. Mr. Blyth has made short remarks on numerous Indian species of this genus; however, little or no progress can be made in their investigation until much better specimens are available for examination. Journ. As. Soc. Beng. 1865, pp. 192–194.

Mus decumanus. A specimen suffering from hypertrophy of the skin has been observed by Mr. T. E. Gunn: Zoologist, 1865, p. 9645. See also a note on the same subject by Mr. E. R. Alston, ibid. p. 9708. This disease does not appear very uncommon among mice and rats, and there are notes on, and figures of, such individuals in Proc. Zool. Soc.

Mus. Prof. de Filippi found one species only of this genus (*M. silvaticus*) in Western Persia, *M. musculus* and *M. decumanus* being absent. Viaggio in Persia, p. 344.

Platacanthomys (Blyth). Prof. Peters has removed this genus from the *Myoxina* to the *Murina*, and characterizes it thus:—Habitus myoxinus. Rostrum acutum, rhinario nudo, labro fisso; oculi mediocres; auriculæ mediocres, nudæ; vellus molle, setis dorsalibus latis, sulcatis; artus mediocres; palmæ plantæque pentadactylæ, digito primo abbreviato, falculis modicis curvatis, acutis; cauda villosa, versus apicem fere disticha. Dentes primores læves, compressi, acuti; molares utrinque $\frac{3}{3}$, complicati. Cranium murinum, sed foraminibus incisivis parvis, coarctatis; ossibus intermaxillaribus inclusis, palato perforato et processu coronoideo brevissimo. Ossa antibrachii sejuncta, cruris connata.—The species, *P. lasiurus* (Blyth), is described and figured (with the skull). Proc. Zool. Soc. 1865, p. 397, pl. 20.

Cricetomys gambianus. Prof. Giebel has described external and osteological characters of this Rodent. Zeitschr. gesammt. Ntrwiss. xxvi. 1865, pp. 136–139.

Cricetus isabellinus, sp. n., De Filippi, Viaggio in Persia, p. 344, from Teheran.

Arvicola. Prof. du Bocage, in the memoir mentioned above (p. 5), distinguishes and describes three species occurring in Portugal—*A. musignani* (Selys), *A. incertus* (Selys), and *A. rozianus*, sp. n.; the zoological and anatomical distinctive characters are pointed out, and the new species, its skull and dentition are figured.

Arvicola mystacinus, sp. n., De Filippi, *l. c.* p. 334, from Western Persia. A variety of *A. amphibius* is also very common there.

Fiber zibethicus. Capt. Bulger mentions instances of the courage of the Musquash. Proc. Zool. Soc. 1865, p. 682.

Hystrix malabarica, sp. n., Sclater, Proc. Zool. Soc. 1865, p. 352, pl. 16, from Cochin. The author establishes this species on the ground of its external characters, as well as of those taken from the skull, which is figured. He enumerates six species of *Hystrix*.

Erethizon rufescens, sp. n., Gray, ibid. p. 321, pl. 11, from Columbia; it may prove to be the type of a distinct subgenus, *Echinoprocta*.

Capromys melanurus, sp. n., Poey, Monatsber. Ak. Wiss. Berl. 1864, p. 384, from Cuba.

Lagomys. Dr. Stoliczka has published a very good description of a species found by him in the eastern provinces of Ladak, and believed to be the *L. curzoniæ* (Hodgs.); it ranges to an altitude of about 19,000 feet. Journ. As. Soc. Beng. 1865, p. 108.

Jaculus labradorius. Its skeleton described by Giebel, Zeitschr. gesammt. Ntrwiss. 1865, xxv. pp. 272–274.

Sciurus vulgaris. On its habits see E. R. Alston in Zoologist, 1865, pp. 9481–9484; its partiality for truffles noticed by A. Newton, ibid. p. 9560.

EDENTATA.

Dr. Gray has published a revision of the genera and species of Insectivorous Edentata in Proc. Zool. Soc. 1865, pp. 359–386. This group offered to him fewer difficulties and fewer novelties than those previously revised by him; and as the paper itself will be consulted by all who may take up the study of these animals, it will suffice to indicate the general arrangement, with special notice of some more important additions to our knowledge of those points in which the author differs from his predecessors. He continues to follow the example of Cuvier in uniting the Monotremata with the Edentata. The groups, genera, and species are characterized by diagnoses; the synonymes are added, and the skulls of several species described and figured. The author distinguished 31 species, which are referred to 17 genera. The arrangement is the following:—

I. Cataphracta.

Fam. 1. *Manididæ.*

1. *Manis*, with *M. longicauda* and *M. tricuspis*,—*M. quadridactylus* (Thomps.) and *M. tridentata* (Focillon) being regarded as synonyms of the latter species. Skulls of this species are figured (pp. 364, 365).

2. *Pholidotus*, with *Manis javanica* (Fisch.) = *M. aspera* (Sundev.) = *M. guy* (Focillon), young?; *M. dalmannii* (Sundev.); *Pholidotus indicus* = *M. pentadactyla* (L.) = *M. crassicaudata* (Gray); *P. africanus* (sp. n., p. 368, pl. 17), from the river Niger. For the two last species a subgeneric name, *Phatages*, is proposed.

3. *Smutsia* (g. n., p. 369): *Manis temminckii.*

Fam. 2. *Dasypodidæ.*

Tribe a. *Dasypodina* or *Peltochlamydes.*

A. *Digitigrade: Chœrochlamydes.*

4. *Tatusia* (sp., F. Cuv.) = *Praopus* (Burm.).

Subg. *Tatusia*, with *D. septemcinctus* (L.) = *D. peba* (Desm.) = *Praopus longecaudatus* (Burm.); *P. hirsutus* (Burm.); and *D. hybridus* (Desm.).

Subg. *Praopus*, with *D. kappleri* (Krauss: see Zool. Record, i. p. 28).

B. *Plantigrade: Platychlamydes.*

5. *Prionodus: D. giganteus.*

6. *Dasypus*, with *D. sexcinctus* (L.) and *D. vellerosus* (sp. n., p. 376, pl. 18), from Santa Cruz de la Sierra.

7. *Euphractus*, with *D. villosus* and *D. minutus.*

8. *Xenurus*, with *D. gymnurus* (Ill.) and *D. hispidus* (Burm.).

Tribe b. *Tolypeutina: Sphærochlamydes.*

9. *Tolypeutes.*

Tribe c. *Chlamydophorina.*

10. *Chlamydophorus.*

11. *Burmeisteria* (g. n., p. 381): *C. retusus* (Burm.).

II. Armourless.

Fam. 3. *Orycteropodidæ.*

12. *Orycteropus.*

Fam. 4. *Myrmecophagidæ.*

13. *Myrmecophaga.*

14. *Tamandua.*

15. *Cyclothurus* (Gray), with *M. didactyla* and *Cyclothurus dorsalis* (sp. n., p. 385, pl. 19), from Costa Rica.

Fam. 5. *Ornithorhynchidæ* = *Monotremata.*

Tylopeutes conurus (Is. Geoffr.). Dr. Sclater has observed in a living Three-banded Armadillo (which differed from the ordinary form of the species in the entire absence of the rudimentary first digit, having but three front toes) that, in walking, only the pointed tips of the elongated nails of the second and third digits of the front feet touched the ground. Proc. Zool. Soc. 1865, p. 256.

Bradypus. On the epidermal covering of the fœtus and the hair see p. 4.

PACHYDERMATA.

Sus. For Hr. von Nathusius's work on this genus we refer to p. 4 of this Record.

Sus andamensis, fig. in Zoolog. Sketch. by Wolf and Sclater, vol. ii.

Centuriosus pliciceps. In the Record of the preceding year (p. 28) we mentioned that Dr. Gray and Dr. Sclater simultaneously contradicted Fitzinger's assertion that this Pig comes from Abyssinia, and not from Japan.

Dr. Fitzinger's note, which originally appeared in Sitzgsber. Akad. Wiss. Wien, 1864, p. 181, is reprinted in the Ann. & Mag. Nat. Hist. 1865, xv. p. 80. The latter periodical contains the replies of the two English zoologists on p. 154. Dr. Sclater at the same time expresses it as his opinion that this Pig is nothing more than a Chinese domesticated variety of the common species.

Hr. Brauer directs attention to the figure of the "Sukotyro" given by Nieuhof, Merkw. Zee- en Lant-Reize, p. 293, and reproduced by the author; he thinks that it represents this Pig. Zoolog. Garten, 1865, p. 413.

Dicotyles torquatus, fig. in Zoolog. Sketch. by Wolf and Sclater, vol. ii.

Hippopotamus amphibius. Dr. Sclater has reported upon the birth of a Hippopotamus in the Zoological Gardens at Amsterdam. The copulation had occurred in the first part of December, and the birth on the 29th of July, the period of gestation being estimated at 234 days. Nat. Hist. Review, 1865, p. 598.

Tapirus americanus. M. Chabrillac gives an interesting account of several domesticated individuals of this species. Bull. Soc. d'Acclim. 1865, p. 25.

Elephas indicus. Some notes by Capt. Heysham on the period of gestation of this species are recorded in Proc. Zool. Soc. 1865, p. 731.

Hyrax capensis. Messrs. Murie and Mivart have given a detailed account of almost all the muscles of this animal. Proc. Zool. Soc. 1865, pp. 320–352.

Equus caballus. An instance of a foal produced by a mule is recorded in Nat. Hist. Review, 1865, p. 147. The mule is said to have been covered by an ass.

Equus burchelli. A female living in the Zoological Gardens in Regent's Park is figured by Sclater, Proc. Zool. Soc. 1865, pl. 22; he refers it to the same form which is called *Equus chapmanni* by Mr. Layard, who has published notes on this supposed new species, ibid. p. 417.

RUMINANTIA.

Camelus dromedarius. On Mr. Walton's work on the Camel see p. 4.

M. Aucapitaine speaks of various races of the Dromedary, and particularly of those distinguished by their swiftness; it is his opinion that if not indigenous in Africa, it has been introduced and domesticated by tribes regarded as the first inhabitants of Africa. Rev. et Mag. Zool. xvi. pp. 369–375.

Camelus bactrianus. Dr. Crisp has published a paper on some points relating to the anatomy and habits of the Camel, and describes particularly circular glandular folds near the cæcal valve. Proc. Zool. Soc. 1865, pp. 257–265.

Cervus canadensis. Captain Hardy, in a paper on "Provincial Acclimatization," relates an instance of successful breeding of the Wapiti in America. Proc. & Trans. Nov. Scot. Inst. Nat. Sc. Halifax, ii. 1865, p. 29.

Cervus mantchuricus. The specimen to which this name was applied by Swinhoe (Proc. Zool. Soc. 1864, p. 169; Zool. Record, i. p. 30), has been sent by him to London. In a letter he expresses his doubt as to its being distinct from *C. pseudaxis.* Also *C. hortulorum* (Swinhoe) may be the same species. The buck in its summer coat (September) is described. Proc. Zool. Soc. 1865, p. 1.

Cervus wallichii, C. sika, C. humilis, C. taivanus, and *C. rusa,* fig. in Zoolog. Sketch. by Wolf and Sclater, vol. ii.

Rusa paradoxa. Dr. Brehm has described under this name as a new species a Deer said to be from the Mascarene Islands, and probably identical with that of Mauritius (Bilder u. Skizzen, p. 18, with a woodcut). [This is evidently the Indian *Cervus rusa*, stated by Mr. Blyth to be introduced into Mauritius from Java, Ibis, 1862, p. 92.]

Cervus peronii. M. Pucheran states that F. Cuvier's statement of the occurrence of this species in Timor is erroneous, and that the typical specimen was obtained on the Indian continent. Rev. et Mag. Zool. xvi. p. 376.

Cervus sp.? M. G. Claraz has attempted to identify the *Equus bisulcus* of Molina: he is inclined to regard it as a species of Tapir; but M. de Saussure informs us that the pieces of skin sent to him as being from this animal belong to a species of *Cervus.* Whatever the animal may be, it appears to inhabit South America, from the Straits of Magellan to 26° 30′ S. lat. Rev. et Mag. Zool. xvi. pp. 241–248. [We refer to an article by Philippi on this subject, Wiegm. Arch. 1857, pp. 135, 136.]

Antilocapra. Mr. Bartlett has, from observation of a male Prongbuck living in the Zoological Gardens in Regent's Park, established the highly interesting fact that this species differs from the other hollow-horned ruminants in shedding its horns periodically. The new horns attain to a considerable size within the hollow portion of the old ones, and are at first soft and covered with long hair. The shedding of the horns probably occurs annually. In the animal under observation the horns were scarcely 3 inches long in January; in July they were fully formed and measured 8 inches; they were cast on the 7th of November, the new horns being then about 4 inches long, and on the 28th of the same month the latter had grown to a length of 6 inches.

The fact, however, has been noticed before; thus, for instance, by Dr. Weinland (Zool. Gart. 1863, p. 255), who incidentally speaks of it as of an abnormal formation; and more explicitly by Hr. Martin (ibid. 1864, p. 254), who regarded the old shed horn, still adhering to the top of the new one, as the new horn which would grow *downwards* to the base of the frontal bone.

Mr. Bartlett is inclined to believe that *Antilocapra anteflexa* (Gray) has been founded on an individual with the horns deformed. Proc. Zool. Soc. 1865, p. 718.

The specimen living in the Zoological Gardens has been figured by Dr. Sclater, Proc. Zool. Soc. 1865, pl. 3.

Antilope saiga. A very exhaustive and interesting account of this Antelope has been published by Hr. C. Glitsch in Bull. Soc. Natur. Mosc. 1865, i. pp. 207–245. The author treats of its geographical distribution, stating

that it is rapidly decreasing in numbers in the European parts of Russia, but that it is still tolerably numerous in the plains between Don and Wolga, from the river Manitsch to 48° 42′ N. lat. He describes its external characters in various stages of growth and age, its habits and treatment in captivity*.

Cephalophus. Dr. Gray describes a new species, *C. longiceps*, from a skull received from the Gaboon, Proc. Zool. Soc. 1865, p. 204. On this occasion he has examined various skulls of other species of this genus, and directs attention, among other points, especially to the different direction of the horns, which in some are nearly in a line with the forehead (*C. coronatus, C. sylvicultrix, C. ogilbyi, C. natalensis, C. longiceps, C. altifrons*), and in others are implanted in a more ascending direction (*C. grimmius, C. ocularis*).

Oryx leucoryx, fig. in Zoolog. Sketch. by Wolf and Sclater, vol. ii.

Capra megaceros, fig. in Zoolog. Sketch. by Wolf and Sclater, vol. ii.

Ovis tragelaphus, fig. in Zoolog. Sketch. by Wolf and Sclater, vol. ii.

Bos taurus. Mr. E. R. Alston has published observations on the wild cattle at Cadzow (Lanarkshire). Zoologist, 1865, pp. 9514–9517.

CETACEA.

Sirenia.

Manatus. Dr. J. E. Gray commences an examination of a series of skulls and skeletons of these Cetaceans by giving a history of the osteological literature. He shows that none of the osteological characters by which, for instance, Cuvier attempted to distinguish American skulls from African, or on which additional species have been founded by succeeding authors, holds good, except the presence or absence of nasal bones, or rather their continuity or non-continuity with the frontals. He came to the conclusion that there is but a single species on either side of the Atlantic; that the species of each country varies in size and shape of the nasal cavity, in the length of the rostrum of the skull, and the angle at which it is bent in regard to the line of the palate, in size and form of the intermaxillary bones, and in the form and direction of the coronoid process. However, *Manatus americanus* has distinct, thick, subcylindrical nasal bones, with a notch and groove in the frontals for their reception. *M. senegalensis* has no such notch in the frontals; and if the nasal bones are not entirely absent, they must be loose in the flesh. Ann. & Mag. Nat. Hist. 1865, xv. pp. 130–139.

Cete.

Dr. J. E. Gray has published a paper on Cetaceans from the Cape of Good Hope. After a preliminary notice of them (Proc.

* Directors of Zoological Gardens will be glad to be informed that the author recommends Hr. Wilhelm Rückbeil in Sarepta (Gouvernement Saratoff) as the person from whom living specimens may be obtained.

Zool. Soc. 1865, p. 357), the author was enabled, through the kindness of Mr. Layard, to examine the specimens themselves, and to complete his previous notes (ibid. p. 522). The collection consisted of the skulls of seven species, viz. *Delphinus doris* (Gray), *Delphinus euphrosyne* (Gray), *Steno frontatus* (Gray), *Steno capensis* (sp. n., p. 522), *Grampus richardsonii* (Gray), of the skull of which a description is given (p. 522), *Ziphius layardi* (sp. n., p. 358, with a woodcut, and p. 523), and *Petrorhynchus capensis* (g. and sp. n., p. 524, with woodcut) = *Hyperoodon capensis* (p. 359).

The study of the skulls of the last-named species, and of *Ziphius indicus* (Van Ben.), has induced the author to reconsider the arrangement of Ziphioid Whales, which he now forms into a family, *Ziphiidæ*, with the following characters:—

Head beaked; blower linear, transverse, on the back of the head. The upper jaw toothless, or with a few rudimentary teeth; lower jaw with a few teeth on the side or in front, which are sometimes early deciduous or not exposed. Body elongate; dorsal fin falcate; pectoral fins small, low down, and rather close together on the middle of the chest; fingers five, of four or five phalanges. Skull with an enlarged nasal over the blowers, which are more or less sunken.

This family is subdivided thus:—

I. Hyperoodontina, with *Hyperoodon* and *Lagenocetus*.

II. Epiodontina. Teeth in front of lower jaw cylindrical or conical. Beak conical; the intermaxillary enlarged behind, forming a more or less large cavity round the blowers.

1. *Aliama**. Vomer simple; intermaxillary only slightly elevated on the sides of the blower. Teeth large. *Ziphius indicus* (Van Ben.).

2. *Epiodon.* Vomer forming a sunken groove; intermaxillary forming a moderately high basin round the blower. *E. desmarestii* = *Ziph. cavirostris* (Cuv., quære Gervais?)*.

3. *Petrorhynchus* (g. n.). Vomer swollen, forming a large, prominent, elongate, pyriform pad between the callous intermaxillary; intermaxillary forming a high basin round the blower. *P. capensis* (sp. n.), from the Cape of Good Hope.

III. Ziphiina.

1. *Berardius*, type *B. arnouxii*.
2. *Ziphius*, type *Z. micropterus*.
3. *Dioplodon*, type *Z. sechellensis*.

* In 1864 Dr. Gray proposed the generic name of *Aliama* for the *Delphinus desmarestii* (Proc. Zool. Soc. 1864, p. 242), and therefore this name cannot be applied again to a different type. However, we may add, anticipating the Record of next year, that in the 'Catalogue of Seals and Whales, 1866,' the author reunites *Ziphius indicus* and *Petrorhynchus* into the same genus, having had an opportunity of examining a cast of the skull of the former species.

Balæna cisarctica, sp. n., Cope, Proc. Acad. Nat. Sc. Philad. 1865, p. 168, the Black Whale of the whalers of the Atlantic coasts of the United States, referred to *Eubalæna* (Gray). Some additional notes on remains of whales, ibid. p. 180.

Balæna aleoutiensis has been indicated as a probably new species, by Van Beneden, Bull. Acad. Sc. Belg. 1865, xx. p. 853; found in the North Pacific, between 40° and 60° lat. N.

Megaptera. Prof. van Beneden has examined and described the skeleton of the Rorqual of the Cape of Good Hope in the Paris Museum (*M. poeskop*), confirming Dr. Gray's opinion that it is specifically distinct from the arctic *M. longimana*. Bull. Acad. Sc. Lettr. etc. Belg. xviii. 1864, pp. 389–400, with woodcuts.

Megaptera osphyia, sp. n., Cope, Proc. Acad. Nat. Sc. Philad. 1865, p. 178, from the coast of Maine, U.S.

Physalus antiquorum. Dr. Murie has published a description of a specimen, 60 feet long, captured in the Thames in May 1859. After having described its external appearance and internal anatomy, he gives a very detailed account of the skeleton. Proc. Zool. Soc. 1865, pp. 206–227. Mr. Flower has published his observations on an adult male specimen stranded in Pevensey Bay, Sussex. He took particular care to preserve the pelvic bones to which, in this species, a cartilaginous appendage is attached, a rudimental representative of the hind leg; and also directs attention to some well-developed muscles on the inner side of the forearm, between radius and ulna, ending in strong tendons passing to the palmar surface of the hand. Proc. Zool. Soc. 1865, pp. 699–705.

Physalus sibbaldii (Gray). Mr. Flower has found that his *Ph. latirostris* (Proc. Zool. Soc. 1864, p. 410) is identical with this species. Having examined the two typical specimens he points out in which points they agree with each other and differ from *Ph. antiquorum*. This species has 64 vertebræ, and the baleen of a deep-black colour. Proc. Zool. Soc. 1865, p. 472.

Physalus. A new species of Whale from the mouth of the Rio Plata is described by Dr. Burmeister in a letter to Dr. Gray, under the name of *Balænoptera patachonica*. Dr. Gray refers it to *Physalus*. Proc. Zool. Soc. 1865, p. 190, with woodcuts, representing osteological details.

Sibbaldius antarcticus has been described as a new species by Dr. Burmeister from a bladebone, the only part examined; it was found south of Buenos Ayres. Proc. Zool. Soc. 1865, p. 713.

Balænoptera swinhoii, sp. n., Gray, Ann. & Mag. Nat. Hist. 1865, xvi. p. 148; and Proc. Zool. Soc. 1865, p. 725, from the Island of Formosa.

Balænoptera robusta (Lilljeb.). Dr. Gray has added this species to the British fauna, recognizing it in a cervical vertebra (fourth or fifth) found on the coast of Devonshire. This vertebra is distinguished by the great width of the canal of the spinal marrow, which is greater than the width of the body of the vertebra, and by the regular and well-developed form of its lateral processes. The species is therefore considered to be the type of a distinct genus, *Eschrichtius*. Proc. Zool. Soc. 1865, pp. 40–43, with a woodcut.

Balænoptera syncondylus, sp. n., Aug. Müller, Schrift. Phys.-ökon. Gesellsch. Königsberg, iv. p. 38, from the Baltic; described from an incomplete skull. Occipital condyles united.

Pterobalæna rostrata (Fabr.). Prof. van Beneden has observed hairs in the lips of a fœtus. Bull. Acad. Sc. Belg. 1865, xx. p. 852. He adds some observations on the parturition of the same species and of *Globiceps*.

Catodon krefftii, sp. n., Gray, Proc. Zool. Soc. 1865, p. 439, from the Australian Seas. This Sperm-Whale is known from the cervical vertebræ only, which are figured. Dr. Gray considers it to be the type of a distinct subgenus, *Meganeuron*, the atlas being subcircular, but little broader than high, with the central canal circular in the middle of the body and widened above; whilst in the typical *Catodon* the atlas is nearly twice as broad as high, with the central canal subtrigonal, and narrow below.

Dr. Gray expresses his opinion (Proc. Zool. Soc. 1865, p. 529) that the Physeters should be separated from the Catodontes into a separate family, *Physeteridæ*, with the three genera *Kogia* (Gray), *Euphysetes* (MacLeay), *Physeter* (Gray). This family would be characterized thus:—

Head of an oblong rounded form; blowers on the hinder part of the crown; mouth small, narrow, inferior; dorsal fin elevated, pectoral ovate. The concavity on the crown divided by a more or less central bony ridge into two cells (this part being simple in the Catodontes).

Physeter macrocephalus. Dr. Murie describes and figures some cases of crooked lower jaw in this species; this deformity does not appear to be of rare occurrence. The author is inclined to regard it as the result of periosteitis during the growth of the animals. Proc. Zool. Soc. 1865, p. 390.

[*Kogia*] *Euphysetes macleayii*, sp. n., Krefft, Proc. Zool. Soc. 1865, p. 708, with woodcuts; from New South Wales. Scarcely distinct from *Physeter breviceps* (Blainv.).

Delphinorhynchus australis, an sp. n., ? = *D. micropterus* (Dumort.), Burmeister, Zeitschr. gesammt. Ntrwiss. xxvi. 1865, p. 262, from Buenos Ayres.

Delphinus. Three new species are described by Dr. Gray, Proc. Zool. Soc. 1865, viz. *D. moorii*, p. 736, caught in lat. 34° S., long. 7° 3′ W.; *D. walkeri*, p. 737, from lat. 35° 38′ S., long. 10′ E.; *Clymene punctata*, p. 738, from lat. 16° 40′ N., long. 21° W.

Mr. Cope, Proc. Acad. Nat. Sc. Philad. 1865, has given notes on skulls of *Delphinus doris*, *D. clymene*, and *D. styx* on p. 201, of *D. delphis*, var., on p. 203, and of *D. delphis* and *Steno frontatus* on p. 204. The author describes two new species from skulls, viz. *D. asthenops*, p. 201, and *D. crotaphiscus*, p. 203; habitat unknown. A third new species, probably from the Atlantic coasts of the United States, is named by him *D. erebennus*, p. 281; formerly, p. 199, he referred the skeleton, on which the species is founded, to *D. tursio*, comparing it with other Dolphins known to him.

Lagenorhynchus obliquidens, sp. n., Gill, Proc. Acad. Nat. Sc. Philad. 1865, p. 177, from San Francisco.

Lagenorhynchus leucopleurus (Gray). Measurements of a cranium by Mr. Cope, in Proc. Acad. Nat. Sc. Philad. 1865, p. 199.

Orca (*Pseudorca*) *meridionalis*. Mr. Flower, who described this species last year (see Zool. Record, i. p. 38), states, in an additional note, that two different Cetaceans are confounded under the name of "Blackfish," viz. this species and a *Globiocephalus*, and that the notes on the habits and external appearance of the Blackfish, sent to him by his correspondent, Mr. Crowther, and published in his description of the *Pseudorca*, do not apply to that species, but to the *Globiocephalus*. Proc. Zool. Soc. 1865, p. 470.

Notes on the front part of a skull of *Orca meridionalis* by Mr. Cope, in Proc. Acad. Nat. Sc. Philad. 1865, p. 198.

Phocæna spinipinnis is a very singular new species from the Rio Plata, described by Dr. Burmeister in Proc. Zool. Soc. 1865, p. 229. The anterior margin of its dorsal fin is concave, and beset with small spine-like tubercles. The dorsal fin is in the middle of the back. Views of the skull and dorsal fin are given. This discovery was followed by another not less interesting, viz. of

Phocæna tuberculifera, sp. n., Gray, Proc. Zool. Soc. 1865, p. 318, from the mouth of the Thames. Also this species has the anterior margin (which is convex) of the dorsal fin tubercular. This fin is behind the middle of the back.

Phocæna vomerina, sp. n., Gill, Proc. Acad. Nat. Sc. Philad. 1865, p. 178, from California.—*P. brachycium*, sp. n., Cope, ibid. p. 279, from the coast of Massachussets.

Beluga. Three new species from Arctic North America are noticed by Mr. Cope, Proc. Acad. Nat. Sc. Philad. 1865, p. 278, viz. *B. rhinodon*, *B. declivis*, and *B. concreta*.

Globiocephalus melas. Prof. Reinhardt reports on the capture of a young female in the Kattegat, April 23rd, 1863. Vidensk. Meddel. naturh. Foren. Kjöbenh. (1864) 1865, p. 275.

Globiocephalus intermedius (Hartl.). Notes on a specimen, by Mr. Cope, in Proc. Acad. Nat. Sc. Philad. 1865, p. 198.

Hyperodon semijunctus, sp. n., Cope, Proc. Acad. Nat. Sc. Philad. 1865, p. 280.

MARSUPIALIA.

Mr. Flower has examined the brain of various Marsupials (Kangaroo, Wombat, Thylacinus, Phalangista, Didelphys) and of *Echidna*, especially with regard to the existence or non-existence of a *corpus callosum*, Philos. Trans. 1865, pp. 633–651. For the purpose of comparing their brain with that of placental Mammals, he describes the modifications of the *corpus callosum*, as they appear in the Sheep, Rabbit, Sloth, and Hedgehog. He maintains that the *corpus callosum* is present in the Marsupials and Monotremes, although but little developed, even less than in the Hedgehog, and that, therefore, the differentiating characters of the Implacentals should be expressed thus:—

1. The peculiar arrangement of the folding of the inner wall of the cerebral hemisphere. A deep fissure, with corresponding projection within, is continued forwards from the hippocampal fissure, almost the whole length of the inner wall. In other words, the hippocampus major, instead of being confined as it is, at least in the higher forms of placental mammals, to the middle or descending cornu of the lateral ventricle, extends up into the body of the ventricle, constituting its inner wall.

2. The altered relation (consequent upon this disposition of the inner wall) and the very small development of the upper transverse commissural fibres (*corpus callosum*).

3. The great increase in amount, and probably in function, of the inferior set of transverse commissural fibres (*anterior commissure*).

The paper is accompanied by three plates, showing vertical, transverse, and longitudinal sections of the brains of the animals mentioned. It elicited from Prof. Owen the remark that the presence of a *corpus callosum* in Marsupials has been denied by him from a zoological point of view only, and that its rudimentary condition not only has been observed but described by him in several anatomical treatises, Proc. Roy. Soc. 1865, p. 129. Mr. Flower replied to this, ibid. p. 134.

Phascolomys. Dr. Murie (Proc. Zool. Soc. 1865, pp. 838–854) has examined the typical specimen of *P. lasiorhinus* (Gould), which had been living for some time in the Zoological Gardens in Regent's Park. He took this opportunity of comparing it with other specimens (stuffed examples and osteological preparations) in the London collections, some of which had been used as types for specific descriptions; and after having given an account of the history of the species, he comes to the conclusion that only three species may be regarded as well established, the *P. lasiorhinus* being identical with *P. latifrons* (Owen) and the type of a distinct subgenus. The author gives the following generic and specific characters:—

a. Phascolomys (Geoffr.). Fur rough and coarse; muffle naked. Skull of moderate breadth in proportion to length; postorbital ridge and frontal process obsolete; nasal bones of moderate breadth; supratympanic cavity moderately excavated; foramen magnum of a trefoil figure. Upper incisor teeth forming one-third of a circle, and set with the enamelled surface chiefly outwards. Dorsal vertebræ 15, lumbar vertebræ 4, and ribs 15 in number; transverse processes of caudal vertebræ long and broad.

1. *Phascolomys wombat* [Shaw]. Body of moderate size; seldom more than 3 feet long. Ears short and rounded. Colour dark grizzly greyish brown, produced by dark-brownish hairs for the most part tipped with silvery grey, the longer ones with black points. Skull between $5\frac{1}{2}$ and $6\frac{1}{2}$ inches in length; nasal bones relatively long and narrow; supratympanic excavation very shallow; postpalatine foramina oblong and of moderate size; scapula long as compared with its breadth.

2. *Phascolomys platyrhinus* (Owen) = *P. mitchelli* (Owen), fossil = *P. latifrons* (Gould) = *P. setosus* (Gray), pale var. = *P. angasii* (Gray), brown var. = *P. niger* (Gould), black var. Body large, generally above 3 feet long. Colour varying from pale yellowish brown (isabelline hue) to blackish brown,

or even approaching black, but nearly always uniform according to the variety; no silvery grey tint. Skull from 7 to 8 inches long; nasal bones relatively broad to their length; supratympanic cavity moderately deep; postpalatine foramina triangular, large; scapula broad as compared with its length.

β. *Lasiorhinus* (Gray). Fur smooth and silky; muffle hairy; incisors much curved, forming nearly a semicircle; the enamelled surface directed nearly forwards. Dorsal vertebræ 13; ribs 13; lumbar vertebræ 6. Skull broad in proportion to length; nasal bones relatively very broad; frontal bones broad, presenting a well-marked supraorbital ridge and postorbital process; supratympanic hollow, very large; foramen magnum oval; transverse processes of caudal vertebræ short and narrow.—With one species: *Phascolomys latifrons* (Owen, Angas, M'Coy) = *P. lasiorhinus* (Gould) = *Lasiorhinus m'coyii* (Gray), p. 854, pl. 47. Size about equal to that of *P. wombat*, but body longer. Fur of a light silvery mouse-colour, with mottled, darker, buff and purplish hairs; muffle broad, white, and hairy; ears large, prominent, and acutely pointed; white spot above each eye; chest, neck, and inside of fore limbs whitish; rump of a rufous tint.

Phascolomys lasiorhinus [*latifrons*], fig. in Zoolog. Sketch. by Wolf and Sclater, vol. ii.

Macropus rufus, fig. in Zoolog. Sketch. by Wolf and Sclater, vol. ii.

Pterogale longicauda, sp. n., Krefft, Proc. Zool. Soc. 1865, p. 324, from New South Wales.

MONOTREMATA.

Our knowledge of the history of propagation of the Monotremates has been much advanced by a memoir of Prof. Owen in Philos. Trans. 1865, pp. 671–686, in which he publishes his discovery of a pair of marsupial pouches in the impregnated female of *Echidna hystrix*:—

The specimen was caught in August, with one of the mammary fœtus attached to it, and sent to Dr. F. Müller in Melbourne, who forwarded it to Prof. Owen. The pouches were small, half an inch in depth and two-thirds of an inch in length of aperture, and so well concealed by the hair that they were not perceived by the gentleman in Australia who examined the animal. At the fundus of each pouch is an elliptic surface, about four lines in diameter, on which the orifices of about 50 ducts of the mammary gland can be discerned. There is no nipple to which the fœtus hangs, as in Marsupials; and it is evident that the young simply nestles itself within the marsupial fossa, clinging, perhaps, by its precocious claws to the skin of that part. The fœtus obtained was little more than one inch long, and found dead and detached from the mother on the fifth day of her captivity; it is probable that the other pouch was occupied by a second fœtus, but that this was lost at a somewhat earlier period.

There is no trace of such pouches in immature or unimpregnated females*:

* The change in the development of the egg-pouches of *Nototrema* is an example perfectly analogous to this observation.

they commence with the growth or enlargement of the mammary glands preliminary to birth, and probably increase in size with the growth of the young; but it is very doubtful whether they increase ever so much as to include or wholly conceal the young animal.

No such structure has ever been found in *Ornithorhynchus*; nor is it likely that this animal, compelled to seek its food in water, could safely carry its progeny during such quest.

The author describes the mammary glands and the urogenital organs of the female *Echidna*, and its fœtus; in the latter he notices, beside a scarcely visible trace of an umbilicus, especially an internarial tubercle which he previously observed in the fœtal *Ornithorhynchus*, and which is obviously homologous with the hard knob on the upper mandible of chelonians and birds, by which they break their way through the covering of the egg.

And, indeed, from the latest accounts sent to the author from Australia, it would appear that the question of the Monotremates being viviparous or ovoviviparous is far from being settled.

The memoir is accompanied by three plates showing the female with the fœtus in situ, the mammary glands and genital organs, and various views of the embryonal *Echidna* and *Ornithorhyuchus*.

Echidna hystrix. Mr. Krefft observes that, strange as it may appear, the Echidna probably lives on grass, as the intestines of several specimens were found to be full of digested grass or herbs. On the Vertebr. of the Lower Murray, p. 23.

AVES

BY

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

IT is hoped that the present 'RECORD' will be found in all respects more perfect than its predecessor. Though its completion has been deferred until the last moment possible, several parts of journals which have a claim to notice in it, as being professedly published in the past year, have not yet reached our hands. Among these may be specified the 'Revue et Magasin de Zoologie,' of which we have not been able to see the numbers for November and December last, and the 'Journal für Ornithologie,' the concluding *Heft* of which, we believe, has not yet appeared, though when it is published it will doubtless bear the date, November 1865, at which it ought to have been issued. That the study of Ornithology is being most actively pursued a very cursory inspection of our 'Record' will show; the necessity, therefore, of some such annual summary as is here given becomes year by year greater. In its compilation we have endeavoured, as before, to do justice equally to the authors from whose works it is drawn and to the public for whose use it is designed; and thus, with our sincere thanks to the many good friends, both at home and abroad, to whom we are especially indebted for assistance, we leave it to the kind consideration of our brother ornithologists.

BIBLIOGRAPHY.

HARTLAUB, GUSTAV. Bericht über die Leistungen in der Naturgeschichte der Vögel während des Jahres 1864. Archiv für Naturgeschichte, Jahrgang xxxi. Band ii. pp. 28. Berlin: 1865.

We observe with pleasure that many of the opinions expressed by ourselves in the 'Record' for last year are confirmed by Dr. Hartlaub in this "Report," which goes over the same ground. Though not entering so much into details as our own work, the general features of ornithological progress in the year 1864 are sketched in a masterly manner. The author observes with regret that his countrymen appear to have a tendency to confine their researches to European ornithology, and consequently to be neglecting the

ornithology of other parts of the globe, a subject in which they have hitherto so much distinguished themselves; but the following pages will, we fear, from the disproportionately long list of publications relating to the Palæarctic Region, show that this tendency is not exclusively confined to the ornithologists of Germany. Dr. Hartlaub, however, prefixes to his "Report" fewer general observations than usual, and these do not seem to require any detailed notice on our part. It is almost needless to add that the work is compiled with its author's accustomed ability.

FINSCH, O. Index ad Caroli Luciani Bonaparte Conspectum Generum Avium. Lugd. Batav.: 1865. Roy. 8vo, pp. 23.

The titlepage of this publication fully explains its scope; its utility will be self-evident to every working ornithologist. It is only to be regretted that it was not extended so as to contain every name, whether generic or specific, mentioned in the 'Conspectus,' instead of being limited to the genera therein adopted, and the species described or named by Bonaparte. It has been most accurately compiled. (*Cf.* Journ. für Orn. 1864, p. 466; Ibis, 1865, p. 532.)

SUNDEVALL, C. J. Les Oiseaux d'Afrique de Levaillant, critique de cet ouvrage. Trad. du Suédois par LÉON OLPH GALLIARD. Rev. et Mag. de Zool. 1865, pp. 153–159, 192, 209–212, 249–254, 279–285, 323–329.

The original of this able paper appeared some years ago in the Transactions of the Stockholm Academy (Vet. Akad. Handl. ii. no. 3), before which it was read in 1857! M. Galliard, however, has certainly conferred a benefit on those ornithologists to whom the introductory part, written in the Swedish language, was inaccessible. At present, however, he has not half got through his task. (*Cf.* Ibis, 1859, pp. 324, 325.)

THE GENERAL SUBJECT.

FITZINGER, LEOP. JOS. Ueber das System und die Charakteristik der natürlichen Familien der Vögel. Sitzungsb. der Kaiserl. Akad. der Wissensch. Wien, 1865, pp. 285–322.

This is the third and concluding portion of the author's paper. The first appeared in the same journal for 1856, and comprised, according to his classification and nomenclature, the orders *Psittacini*, *Raptatores*, *Nocturni*, *Scansores*, and *Ambulatores*, the latter being further divided into suborders, of which two, *Gressorii* and *Conirostres*, were then included. The second portion, in the volume for 1862 (pp. 194–240), treated of the remaining suborders of *Ambulatores*—*Uncirostres*, *Coracirostres*, *Subuli-*

rostres, and *Tenuirostres*, and the order *Hiantes*. The portion we have to deal with includes the orders *Columbini*, *Cracini*, and *Gallinacei*, grouped in a "Reihe" as *Rasores*, the orders *Cursorii*, *Gallinograllæ*, and *Herodiæ* similarly grouped as *Vadantes*, and *Natatores* comprehending the orders *Anserini*, *Macropteri*, and *Peropteri*. Dr. Fitzinger further divides his orders into families (of which he gives the characters at some length), genera, and, we imagine, subgenera, and appends to each of the last the name of the type-species. Classification, in ornithology at least, is, now-a-days, so much a matter of opinion, that it hardly seems necessary for us to pass judgment upon Dr. Fitzinger's. We have briefly indicated its chief peculiarities.

Hutton, F. W. Notes on some of the Birds inhabiting the Southern Ocean. Ibis, 1865, pp. 276–298.

These valuable notes are the results of personal observations made during seven voyages round the Cape of Good Hope, and from information obtained by the author's friends. They refer to *Chionis minor*, *Lestris catarrhactes*, and many species of *Procellariidæ*. The inordinate number of ocean-birds found in cold regions may be accounted for by the fact that the lower plants, and consequently the lower animals, are there more abundant. Captain Hutton then notices the phenomenon of representative species in the two hemispheres, and considers it probable that the northern species crossed the equator from the south during a glacial period, after which they have varied through isolation. The form of the beak in the *Procellariidæ*, he thinks, marks their close resemblance to, and perhaps their descent from, the *Lestres*. Their prolonged nostrils he considers due to the fact of all crepuscular birds having some organs more highly developed than usual, and the species which take their prey under water have the tubes not so prolonged. The author's experience is against the belief that birds follow ships incessantly for very great distances. He then passes on to consider the manner of flight in *Diomedea*, and differs from the opinion uttered by Dr. Bennett on that subject. The act of "sailing," in particular, is performed by the bird's momentum, acted upon by the wind according to known mechanical laws. (*Cf.* Ibis, 1865, p. 527.)

Jaeckel, Joh. Ueber Schnabel-Missbildungen verschiedener Vögel. Zool. Garten, 1865, pp. 133–138, and 175–179.

The first article consists of a list of nineteen species in which malformation in the bill of birds has been observed, with references to the authors by whom the instances have been recorded. In the second the author endeavours to account for the origin of these monstrosities.

Liais, E. On the Flight of Birds and Insects. Ann. & Mag. Nat. Hist. 3rd ser. xv. pp. 155–158. (Translated from Comptes Rendus, 1864, p. 907.)

The author considers three cases:—(1) Flight without locomotion; (2) Flight with locomotion and beating of the wings; (3) Flight without beating of the wings, or Gliding Flight. This third mode presupposes a previous locomotion, produced by beating of the wings. The whole matter seems to be left very nearly as it was before.

Milne-Edwards, H. Rapport sur quelques acquisitions nouvelles faites par la galerie ornithologique du Muséum. Nouv. Arch. du Mus. Bulletin, pp. 75–78, pls. iii.–v.

This report contains an indication of a new species of *Polyplectrum*, and descriptions and figures of five other new species, *Gecinus erythropygius*, *Capito quinticolor*, and *Buthraupis edwardsi* by Mr. D. G. Elliot, and *Turdus goudoti* and *Sitta villosa* by M. Jules Verreaux.

Parker, W. K. Preliminary Notes on some Fossil Birds from the Zebbug Cave, Malta. Proc. Zool. Soc. 1865, p. 752.

The specimens found are assigned to *Cygnus falconeri* (a gigantic new species), *C. olor*?, *C. bewicki*?, and a *Bernicla* or large *Anas*.

Pelzeln, August von. Reise der österreichischen Fregatte *Novara* um die Erde in den Jahren 1857, 1858, 1859, u. s. w. Zoologischer Theil. Erster Band. Vögel. Wien: 1865. 4to, pp. 176, tabb. 6.

The course of the Austrian frigate 'Novara,' on this voyage, was from the Mediterranean to Rio Janeiro, touching at Madeira, thence to the Cape of Good Hope and St. Paul's Island; after that to Ceylon, the Nicobars, Malay Archipelago, and China, then touching at the Ladrone and Caroline Islands (Puynipet) to Australia and New Zealand; thence across the Pacific, visiting the Society Islands, Pitcairn, Mitchell's Islands, and Juan Fernandez, to Valparaiso, and so home round Cape Horn. Collections were not only made throughout this long voyage by the zoologist on board, Herr Zelebor, but at several of the places visited collections more or less extensive were also procured from residents interested in science; so that the present work contains enough to make the cruise of the 'Novara' for ever memorable in the annals of zoology. In the introduction the author suggests the expediency of forming the ocean south of the tropic of Capricorn into a new zoological region, in addition to the well-known six shown to exist by Mr. Sclater (Proc. Linn. Soc., *Zoology*, ii. p. 130), and adopted in this 'Record,'

grounding his opinion chiefly on the fact of the members of the genus *Chionis* and of the yellow-hooded group of *Eudyptes* being confined within that limit. Herr von Pelzeln includes also some general remarks on the changes and variations observed in the plumage of many of the *Falconidæ*, which have since been extended and contributed to another publication. (They are further noticed under the heading "Pterylography.") He has also some remarks on the geographical distribution of *Accipitres*. The new species described are *Micrastur macrorhynchus, Gerygone aucklandica, Mecistura swinhoii, Volvocivora schierbrandi, Carpophaga frauenfeldi,* and *Aramides zelebori*; but observations on upwards of 700 species of all orders and from all regions (exclusive of those mentioned in the pterylological dissertation) are introduced, which alone makes the work one of great importance. The true habitats of several rare birds are now for the first time determined with precision, and the eggs of sixteen species are figured. (*Cf.* Ibis, 1866, pp. 115, 116.)

Pucheran, —. Indications que peut fournir la Géologie pour l'explication des différences que présentent les Faunes actuelles. Rev. et Mag. de Zoologie, 1865, pp. 9–15, 33–40, 65–74, 97–115, 161–170, 193–197, 225–240, 289–295.

This series of papers (still, so far as we know, unfinished) is in the form of a letter to Prof. d'Archiac; and from the well-known reputation of the author as an ornithologist, the fact may be at once inferred that a great many of his inferences are drawn from the class *Aves*. The first question to which Dr. Pucheran turns his attention is to decide whether the harmony existing between "Desert-species" and the places they occupy has been pre-established or post-established. Finding (1) that the Great African Desert is by geology proved to have been an arm of the sea, and (2) that the forms inhabiting it are represented in the bordering districts by others only a little differing in coloration, he comes to the conclusion that the harmony is post-established. The next question is as to the mode whereby this harmony, which in birds seems confined to coloration, is produced; and the author appears to consider contact with the soil a sufficient cause, though one particular case which he cites, that of the rufescence of specimens of *Gypaetus* from Algeria (*cf.* Ibis, 1859, p. 85, and F. W. Meves in Œfvers. Vet.-Akad. Förh. Stockholm, xvii. p. 487), shows that the change of hue thus acquired is merely superficial, and therefore not really in point. Dr. Pucheran then proceeds to enter upon the subject of the distribution of species, and propounds the question as to the basis that should justify a zoologist in considering any particular region to possess a special fauna. On this point he is of opinion that mere differences of species are insufficient, but that differences of genera, if not of families, are required; and accordingly

he is doubtful whether Africa can be looked upon as having a special ornithological fauna, since out of more than forty families of birds therein found, two only, the *Musophagidæ* and the *Struthionidæ* (?) are peculiar to it. On the other hand, Dr. Pucheran regards Madagascar, South America, and Australia, with many of the Polynesian archipelagos, as forming indubitable centres of creation. The peculiarities of the South American ornis are then concisely stated, and after a digression on mammals the proposed division of the country by Lafresnaye (R. Z. 1845, pp. 81–92, 113–119) into two provinces, the Brazilian and Colombian, which further south become the Guaranian and Patagonian. The author then arrives at the conclusions (1) that the characters which serve to distinguish species offer numerous and frequent variations in the American fauna, and (2) that south of the Isthmus of Panama a certain number of provinces can be laid down, each having a special ornis. After a few remarks on these conclusions, the series of articles, so far as we have seen it, concludes; the learned author would, however, have done well to have cited some of the works of other ornithologists who have written on the same subjects. (*Cf.* Sclater, Proc. Linn. Soc., *Zool.* ii. p. 130, and Tristram, Ibis, 1859, p. 429.)

Salvadori, Tommaso. Intorno ad alcune Specie nuove o poco conosciute d'Uccelli del Museo di Torino. Note ed Osservazioni. Atti della Società Italiana di Scienze Naturali, vol. vii. Seduta del 4 Settembre 1864 a Biella.

These notes and observations refer chiefly to species of *Turdidæ, Cotingidæ, Tyrannidæ, Formicariidæ,* and *Oriolidæ,* to which heads the reader is referred for details. Seven species are described as new.

Schlegel, H. Observations Zoologiques. I. Nederlandsch Tijdschrift voor de Dierkunde, 1865, pp. 181–213. II. *Op. cit.* pp. 249–258.

These articles contain countless important facts and opinions, chiefly ornithological, of which it is impossible here to give more than the very briefest summary; and the task of doing this is increased by the author's plan of seldom citing sufficiently the works in which the old species concerned are described or mentioned, and the absence of any typographical indication or precise specific characters of the new ones. It is, therefore, not always possible for the reader, without considerable trouble, to be certain to which of these categories any one subject of Prof. Schlegel's observations is to be referred. In the first article the following appear to be new species or *conspecies*:—*Strix rosenbergi, Noctua ochracea, Loriculus exilis, Dacelo fallax, Pitta atricapilla sanghirana, Otagon tanagra, Goura coronata minor, Carpophaga neglecta,* and *Rallina rosenbergi*. In the second:—*Psittacula*

gulielmi III. (!), *Campephaga sloeti*, *Scolopax rochusseni*, and *Noctua franseni*. The knowledge of all these birds is due to the indefatigable exertions of Dutch travellers or residents in the Malay archipelago.

Schmidt, Max. Die Ueberwinterung. Zool. Garten, 1865, pp. 330–340.

This article is in continuation of one in the same volume (p. 293) referring to Mammals, and treats of the effects of wintering in the climate of Frankfort on the Maine on exotic birds.

Turrel, L. Des moyens les plus efficaces pour prévenir la destruction des Oiseaux de passage. Bull. Soc. Impér. d'Acclimat. 1865, pp. 497–532.

The folly of the indiscriminate destruction of birds, especially carried on in the south of France and Italy, is very fairly shown, and the author by doing this probably supplies a better means of checking the bad practice than any other that he suggests. The paper contains no information that will be new to the naturalist.

Vian, Jules. Causeries Ornithologiques. Rev. et Mag. de Zool. 1865, pp. 40–47, 74–79, 129–133.

These papers treat chiefly of the economy of *Cuculus canorus*, and merit attention from those ornithologists to whom it is a matter of interest. The author very properly scouts the idea that the hen Cuckoo can voluntarily give her egg any colour desirable to assimilate it to those of the bird into whose nest she intends to introduce it, and considers that the variety in the colour of Cuckoos' eggs has been much exaggerated. He believes that intimidation is the means employed to induce other birds to foster them, and that a fight always takes place between the ovipositing Cuckoo and the owners of the nest. Acting on this belief, he instituted a series of experiments, of which he gives the details, proving that birds will not foster the egg of another species unless one of their own has been broken in or near the nest. The other subjects mentioned are the "cérémonies de mariage" of *Corvus corone*, and the "réunion" of a *Turdus viscivorus* with a *Fringilla cœlebs*!

Weir, J. Jenner. On the power possessed by Birds, natives of warm climates, to resist with impunity the cold of higher latitudes. Zoologist, pp. 9411–9414.

The author's experience is of some practical use to those who have the management of zoological gardens, tending as it does to show that birds from the tropics have a far greater power of resisting cold than is commonly supposed, and are kept in better health by being exposed to severe weather than sheltered from it.

Wolf, Joseph. Zoological Sketches made for the Zoological Society of London, from Animals in their Vivarium in the Regent's Park. Edited, with Notes, by P. L. Sclater. Second series. Parts i.–viii. London: 1865. Folio.

The second series of this magnificent work shows in a more striking manner than ever the extraordinary skill of Mr. Wolf, both as artist and zoologist. The subjects have been well selected by Mr. Sclater, and the temporary letterpress which accompanies them contains explanatory notices judiciously compiled. The following are the birds represented:—

Ptilonorhynchus holosericeus, *Gallophasis vieilloti*, *Talegalla lathami*, *Balæniceps rex*, *Aquila nævia*, *Struthio camelus*, juv., *Oeydromus australis*, *Casarca leucoptera*, *Ceriornis satyra*, *Rhinochetus jubatus*, and *Chloephaga magellanica*.

The first series of this work, which was completed in 1861, contained figures of *Falco sacer*, *F. grœnlandicus*, *F. islandicus*, *Gypohierax angolensis*, *Phasianus torquatus*, *P. versicolor*, *Gallophasis horsfieldi*, *Tetraogallus caspius*, *Galloperdix lunulosa*, *Rhea americana*, *Casuarius bennetti*, *Apteryx mantelli*, *Otis tarda*, *Grus montignesia*, *Mycteria australis*, *Cygnus nigricollis*, and *Chloephaga poliocephala*.

PALÆARCTIC REGION.

Bettoni, Eugenio. Storia Naturale degli Uccelli che nidificano in Lombardia ad illustrazione della raccolta ornitologica dei fratelli Ercole ed Ernesto Turati con tavole litografate e colorate prese dal vero da O. Dressler. Vol. I. Milano: 1865. Folio. Fascicoli i.–iii.

This very luxurious work, which we believe to be published at the expense of the Counts Turati, will sufficiently commend itself to Italian ornithologists, though it does not appear to contain much of interest to the general student. The illustrations represent the species depicted at their nests, which contain either eggs or young, generally the latter.

Collett, Robert. Zoologisk-Botaniske Observationer fra Gudbrandsdalen og Dovre. Christiania: 1865. 8vo, pp. 64.

It contains (pp. 6–13) a list of the birds of the neighbourhood of Lillehammer in the south of Norway, and one (pp. 54–64) of those appearing at Dovre. Neither contains anything of more than local interest. (*Cf.* Ibis, 1866, p. 212.)

Crommelin, J. P. van Wickevoort. Bijdrage tot de Vogelfauna van Nederland. Nederl. Tijdschr. Dierk. 1865, pp. 242–248.

General observations, but not many of more than local interest. *Falco barbarus* has occurred in Holland.

Czernay, A. Nachtrag zur Fauna des Charkowschen Gouvernements. Bull. Soc. Impér. Moscou, 1865, vol. xxxviii. p. 61.

Nine species of birds are added to the list published in 1853, of which *Caprimulgus ruficollis* alone seems worthy of remark here.

Daniloff, Pierre. Catalogue des Oiseaux de la partie sud-est du gouvernement d'Orel. Bull. Soc. Imp. Moscou, 1864, part i. pp. 452–464.

About 176 species are mentioned; but the catalogue is little more than a nominal one, and none but well-known species are included.

Dépierre, M. Contributions à la Faune vaudoise des oiseaux. Bull. Soc. Vaud. viii. pp. 146–148.

The author's observations have reference to the dates of appearance of migratory birds in the year 1862, and also to the occurrence of several species not commonly met with in the district, but nothing of very general interest is brought forward.

Droste, Ferdinand von. Die Vögel Borkum's. Journ. für Orn. 1864, pp. 416–429.

This paper contains a description of the island, and a list of the thirty-four birds which breed upon it, followed by one of the hundred and thirty-nine species which visit it. The particulars only possess local interest.

——. Zu Borkum, im Entenloche. *Op. cit.* 1865, pp. 341–353.

Remarks in continuation of the paper last named.

Drummond-Hay, H. M. Birds noticed in the Island of Crete during a Stay of nearly Two Months. Appendix V. to vol. ii. of Captain Spratt's 'Travels and Researches in Crete. London: 1865,' pp. 397–407.

This is a reprint, with many emendations, of a 'List of the Birds of the Island of Crete' by the author (then Captain Drummond), with notes by the late H. E. Strickland, which appeared in the 'Annals and Magazine of Natural History' (vol. xii. pp. 423–427), having been read at the Cork Meeting of the British Association in 1843. Colonel Drummond-Hay remained in Crete from the 27th April to the 18th June in the year just mentioned, and, so far as we know, is the only person in modern times who has had such facilities for becoming acquainted with its ornithology. The chief changes made in the present reprint are *Falco eleonoræ* for *F. subbuteo*, *Sylvia elaica* for *S. palustris*, *Anthus campestris* for *A. richardi*, *Linota linaria* (of course not the Linnæan species) for *L. montium*, *Perdix græca* for *P. saxatilis*, *Sterna leucoptera* for *S. nigra*, *Puffinus obscurus* for *P. anglorum*, and *Pelecanus crispus* for *P. onocrotalus*. *Perdix coturnix* of the former list is now altogether omitted, and it is suggested that *Fringilla cælebs* should be *F. spodiogenia*. One hundred and five species are included.

Fatio, Victor. Distribution verticale des Sylviadées en Suisse. Bull. Soc. Orn. de Suisse, i. pp. 39–67.

The author takes four localities, the borders of the Lake of Geneva, the Hasli, the Valley of Urseren, and the Upper Engadina, at all of which careful observations have been made. At the first, 24 species of *Sylviidæ* occur, 21 breed, and *two* are resident; at the second, 19 occur, 16 breed, and *one* is resident; at the third, 18 occur, 12 or 14 breed, and *none* are resident; and at the fourth locality 8 occur, 4 breed, and *none* reside. The general results are conveniently shown by means of tables.

Filippi, F. de. Note di un Viaggio in Persia. Milano: 1865, 8vo. pp. 398.

The author was a member of an embassy sent, in 1862, by the Italian government to Persia, and in this work gives an account of the expedition from a zoological point of view, in which ornithology has a full share. The observations relating to birds are very numerous, and towards the end of the volume (pp. 344–352) a complete list of the species which occurred between the Caucasus and Teheran is given. The spring-passage of birds over the Mediterranean is mentioned (pp. 6, 7), and the flocks of *Puffinus anglorum* which haunt the Bosphorus (p. 9). Notice is also taken of the species observed near Tiflis (pp. 79, 80), Mount Ararat (p. 97), and Tabriz, and especially the locust-destroying services of *Pastor roseus* (pp. 161–164), as well as of the ornithology of Sultanieh (p. 196), Casbin (pp. 211, 212), and Ask (p. 276). The list of Persian birds includes 167 species, of which seven were the discoveries of the author and his companions. Five of these, *Irania* (gen. nov. *Saxicolinum*) *finoti*, *Dromolæa chrysopygia*, *Otocorys larvata*, *Emberiza cernutii*, and *Picus khan*, were described in 1863 or 1864 (Archiv. per la Zoologia, &c., Modena, vol. iii. p. 377 *et seq.*); the two remaining are now announced as new under the names of *Crateropus salvadorii* and *Sylvia doriæ*. The avifauna of Western Persia is characterized (pp. 365, 366) by a very great prevalence of European species; besides the new discoveries just mentioned, it appears that there are only some five species of *Passeres* not found within the limits of Europe; these are *Ixus leucotis*, *Pratincola hemprichi*, *Serinus pusillus*, *Erythrospiza obsoleta*, and *Garrulus melanocephalus*.

Fontaine, A. de la. Faune du Pays de Luxembourg ou Manuel de Zoologie, contenant la description des Animaux Vertébrés observés dans le Pays de Luxembourg. Luxembourg: 1865, 8vo, pp. 152.

The district of which the author writes is that which, prior to the political arrangements of 1759, formed the then Duchy of Luxemburg, extending from the neighbourhood of Verdun and Metz on the south to that of Liège and Büttgenbach on the north, and from Givet and Carignan on the west to Prüm and Wittlich below Trèves on the east. At present the part of the work published only comprehends the *Accipitres*, *Passeres*, and a few *Picarii*, to the entire number of 148 species, to which several more have a tolerably fair claim to be added. The local names, both Walloon and German, some of which are very odd ones, are always given. The author expresses his acknowledgements for assistance to M. de Sélys-Longchamps.

Giglioli, Henry. Notes on the Birds observed at Pisa and in its Neighbourhood during the Winter, Spring, and Summer of 1864. Ibis, 1865, pp. 50–63.

A paper sufficiently interesting in its details, but containing no great novelty.

Gould, John. The Birds of Great Britain. Parts vii. and viii. London: 1865. Imp. folio.

Two parts of this grand work have, as usual, made their appearance within the past year.

Hintz I., W. Ornithologischer Jahresbericht u. s. w. in der Umgegend von Schlosskämpen bei Cöslin in Pommern. Journ. für Orn. 1865, pp. 81–96, 230–244.

This report is in continuation of that noticed last year (Zool. Record, i. p. 43), and is of the same nature. *Falco peregrinus* was the only species noticed for the first time breeding.

Homeyer, A. von. Streifereien über die böhmischschlesischen Grenzgebirge. Journ. für Orn. 1865, pp. 355–367.

An account of the species observed at eight different localities on the frontier of Bohemia and Silesia. None seem to require any special notice here.

Lilford, Lord. Notes on the Ornithology of Spain. Ibis, 1865, pp. 166–177, pl. v.

These notes refer almost exclusively to the birds of prey in the neighbourhood of Valencia. The author has seen *Aquila nævioides* several times in Spain, and a plate representing it in two stages of plumage accompanies the paper. None of the other species mentioned require further notice here.

Malmgren, A. J. Nya Anteckningar till Spetsbergens fogelfauna. Œfvers. K. Vet.-Akad. Förh. 1864, pp. 377–412. (Translated by Dr. C. F. Frisch) Journ. für Orn. 1865, pp. 192–216, 261–270.

This paper is in continuation of one published in the same journal for 1863 (pp. 87–126), and contains the results of the author's further observations made in 1864. He reckons twenty-seven species as the avifauna of the country. Very many that were formerly assigned to it rest upon insufficient authority. Renewed researches have not led him to take a more favourable view of their claims than he did in 1863, but he makes some few changes in the identification of the species met with. No naturalist has enjoyed such opportunities of becoming acquainted with the zoology of Spitsbergen as the author, and his opinions in regard to it must retain their influence for many years; but personally we are unable to agree with all of them, though this is chiefly on general grounds of principle, such, for instance, as what differences are sufficient to constitute "a species." This paper, like its predecessor, is worked up with great care. It contains also a short notice of the birds of Bear Island, lying between North Cape and Spitsbergen, a place not visited before by any ornithologist.

Marchand, Armand. Catalogue des Oiseaux observés dans le département d'Eure-et-Loir. Rev. et Mag. de Zool. 1865, pp. 262–266.

In continuation of the series of papers noticed last year (Zool. Record, i. p. 43).

Milne-Edwards, H. Rapport sur diverses Collections envoyés au Muséum par le P. Armand David, missionnaire à Pékin. Nouv. Arch. du Muséum, Bull. pp. 30, pls. 1 & 2.

Father David's collections were formed in the north of China, and the report upon them contains several observations on the general natural history of that still little-known country, ornithology, however, occupying the principal position both in collections and observations. Two species are described as new, *Carpodacus davidianus* and *Abrornis armandi*, both of which are figured.

More, A. G. On the Distribution of Birds in Great Britain during the Nesting-Season. Ibis, 1865, pp. 1–27, 119–142, 425–458. With a map (pl. i.).

The object of this series of articles is to show more accurately than has hitherto been done the precise limits of each species in Great Britain during the breeding-season, that being the only time when the birds could be treated as stationary. For this purpose the division of the whole country into districts,

proposed by Mr. H. C. Watson in his botanical works, has been adopted; and by references to the accompanying map, which is copied from one designed by that gentleman, the range of the different species is very compendiously shown. Following the same model, the author classes the birds of Great Britain into six categories, representing respectively the "British," "English," "Germanic," "Atlantic," "Scottish," and "Highland" types of distribution. Some such arrangement must necessarily have been adopted; but these names, if they be construed too literally, may lead to some misconception. Mr. More states that his work is confessedly imperfect, but we must express our opinion that it goes very far beyond anything in the way of completeness that has yet been attempted. The aid of about one hundred correspondents has been obtained to carry out the author's design; and as these include nearly all the best living ornithologists of Great Britain, it is no wonder that his mode of dealing with this interesting subject has met with success, especially as he also has bestowed a great amount of care and trouble on the task.

Mueller, A. & K. Charakterzeichnungen der vorzüglichsten deutschen Singvögel. Leipzig und Heidelberg. 8vo, 11 tabb.

We have not seen this work, and only know of its existence from an advertisement.

Newton, Alfred. Notes on the Birds of Spitsbergen. Ibis, 1865, pp. 199–219, 496-525, pl. vi.

The first part of this paper contains a narrative of the author's ornithological proceedings in Spitsbergen, and the second a catalogue of the species found there. The number of these tallies with that of Dr. Malmgren (*vide suprà*), but this result is obtained by dismissing *Bernicla leucopsis* from, and inserting into the list *Strepsilas interpres*. From that naturalist the author also dissents in the assignment of several species of *Alcidæ*. *Fratercula glacialis* is figured.

Paessler, W. Beobachtungen aus den Jahren 1863 und 1864 in Anhalt. Journ. für Orn. 1865, pp. 30–42.

——. Beobachtungen in Anhalt aus dem Jahre 1865. *Op. cit.* pp. 297–306.

These observations have apparently only a local interest.

"Radde, Gustav." The Zoology of Siberia. Nat. Hist. Review, 1865, pp. 457–466.

This article contains an excellent abstract of, and commentary on, the second volume of Herr Radde's 'Travels in the South of Eastern Siberia,' published at St. Petersburg in 1863 (4to, pp. 392, tabb. 15), a most important work for the ornithologist, since it gives a complete account of the avifauna of South-Eastern Siberia, a region of which so little was before known, as it was left almost untouched by previous explorers. (*Cf.* Ibis, 1866, pp. 118, 119.)

Salvadori, Tommaso. Katalog der Vögel Sardiniens mit Noten u. Beobachtungen. Aus dem Italienischen übertragen durch Dr. Carl Bolle. Journ. für Orn. 1865, pp. 45–67, 128–144, 271–288, 314–326.

A German translation of the work we noticed last year (Zool. Record, i. pp. 44, 45). Another article is required to complete the task; this will probably appear in the sixth *Heft* of the 'Journal,' which has not yet reached us.

Saxby, Henry L. Catalogue of the Birds of Shetland. Naturalist, ii. pp. 121–126, 142–146, 158–162.

One hundred and seventy-four species are enumerated, of which fifty seem to be inhabitants. Some appear to be introduced on very slight authority.

——. Ornithological Notes from Shetland. Zoologist, pp. 9401–9405, 9435–9439, 9484–9489, 9518–9526, 9566–9572, 9587–9591, 9760–9772.

This series of papers, in continuation of that we noticed last year (Zool. Record, i. p. 45), contains a mass of facts, some of them highly interesting, but far too numerous to specify.

Sclater, P. L. A collection of Bird-skins from Japan. Proc. Zool. Soc. 1865, p. 618.

Twenty species enumerated, in addition to those mentioned by Capt. Blakiston (Ibis, 1862, pp. 309–333, and 1863, pp. 97–100), but some of them are not precisely determined.

Seidensacher, Eduard. Die Vögel von Cilli. Mitth. naturw. Ver. Steiermark, 1864, 34 pp.

Two hundred and four species, to which two others are added by the author in manuscript, are enumerated. None seem to be of any great rarity, but many of interest, and the whole article contains much useful information respecting the ornithology of Styria.

Sundevall, C. J. Svenska Foglarna. Parts XVI. and XVII. Stockholm: 1865. Oblong 4to.

These contain half-sheets 45 to 52, and plates lxi. to lxviii. The letterpress continues to give an account of the birds of prey.

Tristram, H. B. On the Ornithology of Palestine. Part I.,

Ibis, 1865, pp. 67–83; Part II., *op. cit.* pp. 241–263, pl. ii.

These articles contain fuller details of the birds observed by the author and his friends. The characters of the Palestine avifauna as shown by Mr. Tristram's "Report" (P. Z. S. 1864, p. 426) we last year mentioned (Zool. Record, i. p. 46). The first of the two papers we have here to notice enlarges on the general features of the country from an ornithological point of view, and on some of the most remarkable species found in it, such as *Nectarinia osea* (of which a beautiful plate is given), *Cypselus galilæensis* (since shown by Mr. Sclater to be identical with *C. affinis*), *Hirundo rufula*, *Crateropus chalybeius*, *Ixus xanthopygius*, and *Drymœca gracilis*. The second article contains a catalogue, with notes, of all the birds of prey observed by the author's party. The fact here most noticeable is the identification of what was in his "Report" named *Accipiter sphenurus* with the *Astur brevipes* of Severzow (*Cf.* Ibis, 1865, pp. 341, 342). Further details of the singular and interesting discovery of *Ketupa ceylonensis* in the Holy Land are also given. The publication of Mr. Tristram's paper is being still continued.

Tristram, H. B. The Land of Israel; a Journal of Travels in Palestine, undertaken with special reference to its physical character. London: 1865, 8vo, pp. 652.

This entertaining volume furnishes a connected account of the author's travels, of the results of which we have before spoken.

[Wheelwright, H. W.] Ten Years in Sweden, &c. By an Old Bushman. London: 1865, 8vo.

Pages 249–450 of this work contain a "List of all the Birds met with at the present day in Scandinavia, Denmark, Finland, Greenland, and Spitzbergen," which is chiefly compiled from the labours of the best-known northern ornithologists, and among them especially Prof. Nilsson's 'Skandinavisk Fauna' (Lund: 1858), while the papers of Prof. Reinhardt (Ibis, 1861, pp. 1–19) and Dr. Malmgren (Œfvers. K. Vet.-Akad. Förhandl. 1863, pp. 87–126) are respectively laid under contribution for the birds of Greenland and Spitsbergen. The whole has been worked up with a good deal of care; but it contains no small number of errors, and some of them grave ones, while the author has omitted to notice several valuable articles bearing upon the subject. It will, however, be useful to English readers.

Willemoes-Suhm, R. v. Beiträge zur Vogelfauna Norddeutschlands. Zool. Garten, 1865, pp. 76–78.

This paper consists of notes on various birds occurring near the mouth of the Elbe or in Holstein; but nothing of importance is recorded, except that *Sylvia philomela* is not found there.

Willemoes-Suhm, R. v. Zu Andernachs Vogelfauna. *Op. cit.* pp. 355–357.

Only species which are well known to occur in the district are mentioned.

Wright, Charles A. Second Appendix to a List of Birds observed in the Islands of Malta and Gozo. Ibis, 1865, pp. 459–466, pl. x.

The original list and its first appendix were noticed by us last year (Zool. Record, i. pp. 46, 47). Three species are now added, as well as some further notes on seven formerly included.

ETHIOPIAN REGION.

Adams, A. L. Beobachtungen über Vorkommen und Lebensweise der Vögel Egyptens und Nubiens. Aus dem Englischen, &c., von Dr. Rob. Hartmann. Journ. für Orn. 1864, pp. 447–457.

A conclusion of the translation noted last year (Zool. Record, i. p. 47).

Antinori, Orazio. Beschreibung und Verzeichniss einer von Mai 1859 bis Juli 1861 in Nord-Central-Afrika angelegten Vögelsammlung. Aus dem Italienischen auszugsweise übersetzt und mit einigen Anmerkungen versehen von Dr. R. Hartmann. Journ. für Orn. 1865, pp. 67–77.

The beginning of a German translation of the work noticed in our last volume (Zool. Record, i. p. 48). The translator's notes are not numerous.

Bianconi, G. G. Specimina Zoologica Mosambicana. Fasciculus xiv. Mem. Acad. Scienze di Bologna, 2 ser. tom. iv. pp. 519–523, tab. ii.–iv.

This is one of a series of papers commenced in the same "Memorie" some sixteen years since. It contains descriptions and figures of *Ploceus spilonotus*, Vigors, fœm., with nest and egg, and of *Coturnix fornasini*, supposed to be a new species. A few other remarks are added, but none that need be noticed here.

Bulger, G. E. Record of a Day in Kaffraria. Zoologist, pp. 9810–9814.

Contains several ornithological observations.

Garnier, —. Sur les Animaux domestiques et sauvages et sur

les Oiseaux du Soudan. Bull. Soc. Impér. d'Acclimat. 1865, pp. 385–393.

This paper contains nothing that can be of use to the ornithologist.

Gurney, J. H. A Seventh additional List of Birds from Natal. Ibis, 1865, pp. 263–276.

The former lists were published in the same journal (Zool. Record, i. p. 48). Thirty-five species are now added, of which *Butalis cærulescens* and *Estrelda nitidula* are described as new by Dr. Hartlaub. Remarks on several other species are appended.

Hartlaub, G. Descriptions of Seven New Species of Birds discovered by Mr. J. J. Monteiro in the Province of Benguela, Angola, West Africa. Proc. Zool. Soc. 1865, pp. 86–88, pl. iv.–vi.

The species are *Crateropus gymnogenys, Dryoscopus guttatus, Upupa decorata, Toccus elegans, T. monteirii, Cursorius bicinctus,* and *Otis picturata*. A few notes upon other species collected by Mr. Monteiro are added. The two *Tocci* and the *Otis* are figured.

——. On Two New Species of African Birds. Proc. Zool. Soc. 1865, pp. 428, 429, pl. xxiii.

The species are *Tchitrea spekii* and *Saxicola spectabilis*.

——. On a New Species of Francolin discovered by Messrs. Speke and Grant in Central Africa. Proc. Zool. Soc. 1865, pp. 665–667, pl. xxxix.

The bird is called *Francolinus granti*, a list of the twenty-five known species of African *Francolini* is added, and a description of *F. icteropus*, Heuglin.

——. On two New Species of South African *Saxicola*. Proc. Zool. Soc. 1865, pp. 746–747.

Saxicola castor and *S. pollux*.

Heuglin, Th. von. Ornithologische Miscellen aus Central-Afrika. Petermann's Mittheilungen, Ergänzungsband iii. no. 15, 1865, pp. 33–38.

This is an appendix to the author's journal kept while on the well-known expedition of Madame Tinne. It contains notes on a vast number of birds, some of which are said to be new species; but where these are described it does not appear. Names, however, are given to them by the author.

——. Notizen über den Vogelzug im Herbst 1864 so wie über die ornithologischen Vorkommnisse in den Ländern der Bischárin, Omaráb und Hádendoa zwischen Berber und Sauakin. *Tom. cit.* pp. 39, 40. Extract, Journ. für Orn. 1865, pp. 42–45.

These observations are of considerable interest, nearly all the species observed in passage being European. The avifauna of that part of Nubia lying between Berber on the Nile and Sauakin on the Red Sea is very varied, and a brief list of the species observed by the author is given.

Heuglin, Th. von. Nachträge zu den Ornithologischen Berichten vom Bahr-el-abiad. Journ. für Orn. 1865, pp. 98–100.

This paper contains the description of a *Ploceus* (which the author does not name) akin to, but distinct from, *P. rubiginosus*, Rüpp., and also of a new *Cursorius*; to the last are added some notes on the four other species known to him.

Monteiro, J. J. Notes on Birds collected in Benguela. Proc. Zool. Soc. 1865, pp. 89–96.

The seventy species enumerated were collected in 1862 and 1863 in the coast-region of the province, which is, generally speaking, dry, barren, and rocky, vegetation being abundant only near the few rivers or some twenty to thirty miles towards the interior. Some of the species are new, and have been described by Dr. Hartlaub (P. Z. S. 1865, pp. 86–88), who also determined the names of the remainder.

Newton, Alfred. On Two New Birds from the Island of Rodriguez. Proc. Zool. Soc. 1865, pp. 46–48, pl. i.

The two birds are *Foudia flavicans* and *Drymœca* (?) *rodericana*.

——. On an apparently undescribed Bird from the Seychelle Islands. Ibis, 1865, pp. 331–333, pl. viii.

The bird is named *Copsychus sechellarum*.

——. List of Animals collected at Mohambo, Madagascar, by Mr. W. T. Gerrard. Proc. Zool. Soc. 1865, pp. 832–837.

Forty-four species of birds, none of which are new, though some are rare, were contained in the collection.

Newton, Edward. Notes of a Visit to the Island of Rodriguez. Ibis, 1865, pp. 146–154.

The only two aboriginal land-birds observed proved to be new, *Foudia flavicans* and *Drymœca rodericana*. Three bones of the extinct Didine species peculiar to the island were also found by the author and one of his friends (Proc. Zool. Soc. 1865, pp. 199–201).

Schlegel, H. Contributions à la Faune de Madagascar et des îles avoisinantes, d'après les découvertes et observations de

MM. François Pollen et M. D.-C. van Dam. Nederl. Tijdschr. Dierk. 1865, pp. 73–89.

The author gives an account of some of the more interesting of the specimens sent home by the two travellers named from Réunion, Mayotte, the north-west of Madagascar, and the islands of Nossi-bé and Nossi-faly, which account is to be taken in connexion with M. Pollen's "Enumération des animaux vertébrés de Madagascar", contained in the same journal for 1863 (pp. 277–345). Prof. Schlegel describes as new species *Nisus brutus, Noctua polleni, Xenopirostris dami, Dicrurus waldeni, Zosterops flavifrons*, Pollen (*nec* Latham), and *Columba polleni*. He considers *Tinnunculus newtoni* to be identical with *T. punctatus*, and *Tchitrea mutata, T. pretiosa*, and *T. holosericea* to be synonymous, and the Madagascar Pigeons, which have been distributed under several genera, *Funingus, Alectroœnas*, and *Erythrœna*, to belong strictly to the genus *Ptilopus* (qu. *Ptilonopus*?). (*Cf.* Ibis, 1866, pp. 210 & 211.)

Sclater, P. L. Description of a New Species of Passerine Bird from Madagascar. Proc. Zool. Soc. 1865, pp. 326, 327, pl. xiii.

This bird is the type of a new genus, *Hylophorba*, belonging to the family *Muscicapidæ*, and is named *H. ruticilla*.

INDIAN REGION.

Beavan, R. C. Indian Ornithological Notes, chiefly on the Migration of Species. Proc. Zool. Soc. 1865, pp. 690–695.

This paper contains records of very numerous observations made at Barrackpore, near Calcutta, between July 28th and November 21st, 1864, of which it would be almost impossible to give an abstract.

——. Notes on various Indian Birds. Ibis, 1865, pp. 400–423.

The species noticed are some of those which occur around Darjeeling, in the Maunbhoom district and near Barrackpore. Of the physical features of the Maunbhoom district the author gives a rapid sketch. No new species are described, but, following the arrangement of Dr. Jerdon's work, nearly one hundred are remarked upon.

Blyth, Edward. A few Identifications and Rectifications of Synonymy. Ibis, 1865, pp. 27–50.

The birds to which these multitudinous remarks apply are chiefly the types of Horsfield's well-known paper on the ornithology of Java (Trans. Linn. Soc. xiii. p. 133) many of which are identical with Australian species, a fact only recently determined by the author and Mr. Swinhoe, but since greatly corroborated by the researches of Prof. Schlegel and Mr. Gould. From the nature of the case it would be impossible to bring within the limits of this compilation an abstract of the many (not "few") identifications and rectifications of synonymy made by Mr. Blyth. The paper is one that must not be neglected by any student of Indian or Australian ornithology.

Gould, John. The Birds of Asia. Part xvii. London: 1865. Imp. folio.

Of the sixteen species described and figured, two are new—*Saxicola capistrata* (=*S. leucomela*, Jerdon *nec* Pallas) and *S. montana*, the last from Afghanistan. The true *S. leucomela* is also figured, but does not appear to be really Asiatic. Several others are not "Indian," but essentially "Palæarctic" or "Australian."

——. Descriptions of Four New Species of Birds from Eastern Asia. Proc. Zool. Soc. 1865, pp. 663–665.

They are *Nectarinia* (*Arachnechthra*) *insignis, Otocompsa fuscicaudata, Enicurus* (lege *Henicurus*) *guttatus*, and *E.* (*H.*) *sinensis*.

Swinhoe, Robert. Letters on Formosan and Chinese Ornithology. Ibis, 1865, pp. 107–112, 230–234, 346–359, 538–546.

These letters are crowded with interesting details, and contain the descriptions of several new species, of which due notice will be found under the groups to which they belong.

——. *Neau-Show*. Birds and Beasts (of Formosa). From the 18th Chapter of the revised edition of *Tai-wan foo-che*, Statistics of Taiwan. Proc. As. Soc. Shanghai, 1865, pp. 39–52.

This is a catalogue of Chinese names which the translator has endeavoured to identify with their scientific equivalents. As it is probably the first translation of the writings of a Chinese ornithologist, it is to be regarded as a curiosity.

AUSTRALIAN REGION.

Bernstein, H. A. Ueber einen neuen Paradiesvogel und einige andere neue Vögel. Journ. für Orn. 1864*, pp. 401–410.

Descriptions of *Schlegelia calva, Arachnothera vagans, Zosterops fusca, Corvus megarhynchus*, and *Ptilonopus ochragaster*

* Not published till after March 1865.

are given in German, these having been already published in Dutch (N. T. D. pp. 320–324), as noticed by us last year (Zool. Record, i. pp. 75, 86, and 87); but two other species, *Lycocorax morotensis* and *L. obiensis*, are described for the first time.

Finsch, Otto. Neu-Guinea und seine Bewohner. Bremen: 1865, 8vo, pp. 186.

In the body of the volume the more prominent features of the avifauna of the country are pointed out (pp. 19–30), and in an appendix (pp. 154–185) a list of the birds hitherto observed in it and neighbouring localities, from North Australia (to lat. 30° S.) to Timor, is given. The total number of species enumerated is 920, of which 252 are known from New Guinea, 246 from North Australia, 129 from the Aru and 26 from the Ké Islands, 94 from Ceram, 95 from Mysol, 92 from Waigiou, 49 from Salwatty, 83 from Ternate, 129 from Halmaheira, 124 from Batchian, 75 from Amboyna, 157 from Celebes, and 147 from Timor. The new species made known since 1858, when Mr. Wallace's discoveries drew attention afresh to this part of the world, are separately distinguished, and are no less than 178 in number, most of them being due to that traveller. Full of information as this volume is beyond any other on the subject, it only serves to show how little really is known of the animal productions of the wonderful island of which it treats.

Gould, John. Handbook to the Birds of Australia. London: 1865. Royal 8vo, vol. i. pp. 636, vol. ii. pp. 629.

In its effects this will most likely prove to be the most important work on ornithology published during the past year, and, if we except Dr. Jerdon's 'Birds of India,' it might even be safely said the most important published for several years, as it is almost impossible to overrate the stimulus which this 'Handbook' will be to the progress of science in Australia.

Six hundred and seventy species are enumerated as forming the avifauna of "the Australian continent, Tasmania, and those islands of the Great Barrier Reef which properly belong to Australia," to which limits the author confines his labours, though two dozen species from New Guinea, New Zealand, Norfolk, Lord Howe's, and other Islands, which were figured in his 'Birds of Australia,' are noticed in the Appendix. Very considerable care has been bestowed in amending the nomenclature and in working up the synonymy of the birds included, and this feature in the undertaking is one that can be dwelt upon with the greatest pleasure, for the execution of other parts of it is not equal to this. Diagnoses, whether generic or specific, are in almost every case wanting, and the descriptions are often so vague as very imperfectly to supply their absence. *Nine* new genera are proposed by the author, and names given

to them, but few, if any, of them can be said to be defined. They are as follows:—*Hylochelidon*, *Lagenoplastes* (*Hirundinidæ*), *Melanodryas*, *Amaurodryas*, *Pœcilodryas* (*Sylviidæ*), *Stigmatops* (*Meliphagidæ*), *Ptistes* (*Platycercidæ*), *Ægialophilus* (*Charadriidæ*), and *Limnocinclus* (*Scolopacidæ*). For simplicity's sake it is to be hoped that no future systematist will think it necessary to re-name these suggested genera in the event of his adopting and furnishing characteristics of them, though in most cases his right to disregard Mr. Gould's names would be unquestionable according to the generally recognized principles of zoological nomenclature. *Six* new species are also described in the present work, these are, "*Melanodryas picata*," "*Ptistes coccineopterus*," *Chalcophaps longirostris*, *Lophophaps ferruginea*, *Synoicus* (lege *Synœcus*) *cervinus*, and *Excalfatoria* (lege *Excalfactoria*) *australis*. In the matter of synonymy the most important result of Mr. Gould's later researches and comparisons is the identification of numerous Australian species formerly looked upon as distinct with well-known Indian or even Palæarctic forms. This is most especially to be remarked, as might have been expected, in the case of many of the *Grallæ* and *Anseres*, other orders having come in for their share of this treatment at the hands of Messrs. G. R. Gray and Strickland many years ago (Ann. N. H. xi. pp. 189 and 333). It is impossible, even in the special division of this 'Record,' to notice more than a portion of the changes brought about by the author's meritorious labour in this respect; and here we can only mention, to show what we mean, that *Charadrius veredus* and *Ardea leucophæa* are now identified with *C. asiaticus* and *A. cinerea*. The tables at the end of the work, indicating the distribution of the species throughout the seven Colonies into which Australia is at present divided, are also very useful, though, as Mr. Gould is careful to remark, these Colonies are by no means so many natural provinces. It is stated that, on a review, it will be seen that of the 670 species of birds found in Australia 400 have been observed in New South Wales, 427 in Queensland, 348 in Victoria, 312 in South Australia, 239 in West Australia, 235 in North Australia, and 162 in Tasmania. In West and North Australia probably many more have to be added, but in the other Colonies the numbers of species may be taken as a fair approximation to reality. A comparison of these tables with those contained in the author's 'Introduction to the Birds of Australia,' published in 1848, will alone show the progress that has been made in the accurate knowledge of the avifauna of the great island-continent.

Gould, John. Descriptions of Two new Australian Birds. Proc. Zool. Soc. 1865, pp. 198, 199.

They are *Malurus leuconotus* and *Artamus melanops*.

Ramsay, E. P. List of Birds received from Port Denison, Queensland. Ibis, 1865, pp. 83–87.

A nominal list of forty-five species, some notes being added respecting a few of them. *Nectarinia australis* is perhaps the most remarkable.

——. On the Nests and Eggs of some New Zealand Birds. Ibis, 1865, pp. 154–157. [See "Oology."]

——. Notes on Birds breeding in the neighbourhood of Sydney. Ibis, 1865, pp. 298–306. [See "Oology."]

——. Notes upon the Cuckoos found near Sydney, New South Wales. Proc. Zool. Soc. 1865, pp. 460–465.

The species mentioned are *Chalcites lucidus*, *Cuculus inornatus*, and *C. cineraceus*. Many details of their habits, especially when breeding, are given.

Schlegel, H. De Vogels van Nederlandsch Indië beschreven en afgebeeld. Monographie 2, Ijsvogels (Martin-Pêcheurs). Harlem: 1864. 4to, pp. 68, tabb. 16, figg. 67.

The first part of this work, forming a monograph of the *Pittidæ* of the Dutch Indies, was published in 1863. The second contains the *Alcedinidæ* of the same region; and under the heading of that family further details will be found. The text is partly in Dutch and partly in French, the "Revue synoptique" of the whole being in the latter. The figures, though on a small scale, are very beautifully executed.

Travers, Henry Hammersley. Notes on the Chatham Islands (lat. 44° 30′ S., long. 175° W.). Proc. Linn. Soc. *Botany*, ix. pp. 135–144.

While describing the human inhabitants, formation, fauna, and flora of the group, the author enumerates the birds found upon the two islands which compose it. As may be expected, they are all of New Zealand type, though their precise identity with New Zealand species is rather inferred than proved. Very curious is the reported occurrence there of so many flightless forms, such as *Apteryx*, *Ocydromus*, and *Strigops*, which, are stated to have become extinct since the Maori invasion of 1832 or 1835. Two species, termed a "Pigeon" and a "Titmouse," but not scientifically named, have made their appearance in the islands, and colonized them, at a recent date. The ornithological portion of this interesting paper is reprinted, 'Ibis,' 1866, pp. 113–115.

Wallace, Alfred R. On the Pigeons of the Malay Archipelago. Ibis, 1865, pp. 365–400, pl. ix.

This paper is a worthy companion to the author's treatise on

the *Psittaci* of the same region, noticed last year (Zool. Record, i. pp. 53–55). Like that group of birds, the *Columbæ* attain their maximum development in the limited district of which the great island of New Guinea forms the centre, and which he calls the Austro-Malayan subregion. Its actual land-area is less than one-sixth of Europe, and yet it contains more than a fourth of all the species of Pigeons known to exist. This peculiar distribution is, Mr. Wallace suggests, owing to the total absence from it of all forest-haunting and fruit-eating mammals, such as Monkeys and Squirrels; at least the converse is no doubt the reason why, in the Amazon valley, Pigeons are scarce or almost entirely absent, such species as there are having mostly habits of feeding on the ground and breeding lower in the bushes than Monkeys descend. In the Malay countries also there are no great families of fruit-eating *Passeres*, and their place seems to be taken by the true Fruit-Pigeons, which, unchecked by rivals or enemies, often form with the *Psittaci* the prominent and characteristic features of the avifauna.

Mr. Wallace divides the order *Columbæ* into three great families: the *Treronidæ*, with short legs and broad-soled grasping feet, feeding entirely on fruit, and never descending to the ground, are entirely confined to the eastern hemisphere; the true *Columbidæ*, with larger feet but slenderer toes, feeding either on the trees or on the ground, are of the most general distribution; and the *Gouridæ*, with longer legs, running quickly, feeding always on the ground, and only ascending trees to roost, chiefly abound in the Australian and [South] American regions. Each of these families is distinguished by a characteristic type of colouring.

Of the *Treronidæ* fifty-four species are confined to the Austro-Malayan, while twenty-eight inhabit the Indo-Malayan subregion. In India fourteen, and in Africa six species (all of the same genus *Treron*) are found; thirty inhabit the Pacific islands; and eight occur in Australia or New Zealand; while New Guinea has fourteen species.

The true *Columbidæ* are, in the Archipelago, chiefly represented by the genus *Macropygia*, but more than a single species is rarely found in any one island, except Java. The Old-World genus *Turtur* has a few representative species in the Indo-Malay islands, but does not properly extend to the Australian region.

Of the seven genera of *Gouridæ* found in the Archipelago, only two extend to the continent of Asia, while five are confined to the Austro-Malayan subregion, and three to New Guinea. The singular *Calœnas nicobarica* Mr. Wallace believes to have spread westward from New Guinea to the islands whence it takes its name. The other genera have a very limited range, *Chalcophaps* being the only exception; but all its species are

very closely allied, and their extended distribution has probably been of not very ancient date; human agency, indeed, may have aided it.

The entire number of Pigeons known to exist is about three hundred: of these the Malay Archipelago already counts one hundred and eighteen, while only twenty-eight are found in India, twenty-three in Australia, less than forty in Africa, and not more than eighty in the whole of America. These facts show that the Malay Archipelago is preeminently the metropolis of the *Columbæ*: but there they are very unequally distributed; for while the Indo-Malayan subregion contains nine genera and forty-three species, the Austro-Malayan has fifteen genera and eighty-four species. Here, then, is the focus of the order; and the condensation is carried to the utmost in New Guinea, in which, though only a few points on its coast have been visited, twenty-five species have been obtained.

Mr. Wallace therefore believes that the distribution of the *Columbæ* fully confirms the results furnished by the study of other groups of birds, mammals, and insects; the chief of which is that the Malay Archipelago is not one of the primary divisions of the globe, and that while one half belongs to the Indian region the other forms part of the Australian.

We have here only given a brief sketch of the introduction to this paper, touching upon those points which seem to have a general interest. The remainder will be found noticed under the head "Columbæ."

Wallace, Alfred R. Descriptions of New Birds from the Malay Archipelago. Proc. Zool. Soc. 1865, pp. 474–481, pls. xxviii., xxix.

The species are named *Accipiter æquatorialis, A. muelleri, Gerygone neglecta, G. palpebrosa, Muscicapa helianthea, Cyornis rufigula, C. rufifrons, Rhipidura longicauda, R. torrida* (figured pl. xxviii.), *R. cinerea, Prionochilus aureolimbatus* (figured pl. xxix. fig. 1), *Pachycephala brunnea, Dicrurus leucops, Ptilotis rostrata, Nectarinia flavostriata* (figured pl. xxix. fig. 2), *N. porphyrolæma, N. grayi, Munia tristissima, Turnix rufilatus, Porzana moluccana*, and *P. rufigenis*.

NEARCTIC REGION.

Allen, J. A. Catalogue of Birds found at Springfield, Mass., with Notes on their Migrations, Habits, &c., together with a List of those Birds found in the State not yet observed at Springfield. Proc. Essex Instit. iv. p. 48.

This paper we have not seen. We quote its title from the list of publications printed by the Institute.

Ambrose, John. Observations on the Sea-Birds frequenting St. Margaret's Bay, N.S. Proc. Nov. Scot. Inst. Nat. Sc. ii. pp. 51–59.

Twenty-nine species are mentioned by their local names, and some of them are scientifically identified, but the list is admitted by the author to be incomplete. A very great and unnecessary destruction of birds appears to go on in this district.

Baird, S. F. Review of American Birds in the Museum of the Smithsonian Institution. Part I. (continued). North and Middle America. Washington: 1865. Royal 8vo, pp. 177–320.

The scope of this work was explained in the last volume of the 'Record' (p. 55). The continuation published during the past year completes the family *Mniotiltidæ*, including descriptions of thirteen or fifteen species which are new or renamed; and three new subgenera, *Myioborus, Idiotes*, and *Ergaticus*, are characterized. This portion of the work concludes with the family *Hirundinidæ*, of which six or seven new species are described. *Phæoprogne, Pygochelidon, Notiochelidon*, and *Callichelidon* are new subgenera formed. The author characterizes every species and group included in his work with a degree of minuteness which is almost excessive; but the abundance of materials at his disposal probably renders this necessary, while the perspicuity of his descriptions does much to remove any evil that might in consequence arise, though this does not make the task of the present compiler the easier, it being impossible for him generally to condense the numerous peculiarities, which in some instances appear to belong rather to the individual, sufficiently to reproduce them in the special part of the 'Record.'

Coues, E. Ornithology of a Prairie-Journey, and Notes on the Birds of Arizona. Ibis, 1865, pp. 157–165.

The route taken by the author was through Fort Leavenworth and Santa Fé to Fort Whipple, in the spring of 1864. At St. Louis he had the first indication of entering upon an avifauna different from that of the east, and near Fort Riley he found still greater changes, though its type was still essentially eastern; but directly westward of this place the true prairie-species are met with. *Calamospiza bicolor* is the characteristic bird of the district, but stops abruptly at the first mountains. *Xanthocephalus icterocephalus, Eremophila cornuta*, and *Sturnella neglecta* continue through New Mexico into Arizona. *Carpodacus frontalis* is the common town-bird of New Mexico. Several eastern forms are common on the Rio Grande. The avifauna of Arizona inclines decidedly towards that of corresponding regions in California, as is shown by the list of birds with which Dr. Coues

concludes this interesting paper on a country of which so little was known.

Downs, A. On the Land-Birds of Nova Scotia. Proc. Nov. Scot. Inst. Nat. Sc. ii. pp. 38–51.

Sixty-one species are treated of, but the paper has only a local interest.

Dresser, H. E. Notes on the Birds of Southern Texas. Ibis, 1865, pp. 312–330, 466–495. [Concluded 'Ibis,' 1866, pp. 23–46.]

The author resided in this region from June 1863 to July 1864, and made many excursions to different localties. At San Antonio he fell in with the late Dr. A. L. Heermann, who aided him materially. These notes consequently contain much information relating to the birds of the country, and especially to their distribution in it. Several species of considerable rarity were met with.

[Mueller, J. W.] Systematisches Verzeichniss der in Mexico beobachteten und gesammelten Vögel. pp. 26, 8vo.

It appears from Dr. Hartlaub's 'Bericht' for 1864 that this list, which is said to be the fullest yet published of the Birds of Mexico, is from the third volume of the author's 'Reisen in Mexico und den Vereinigten Staaten.' The separately-printed copy we have seen bears no author's or printer's name or date or place of publication: 621 species are enumerated, and a few synonyms added.

Whitely, H. Catalogue of North American Birds and Eggs, arranged in cabinets in the museum of the Royal Artillery Institution, Woolwich. Woolwich: 1865. Roy. 8vo, pp. 23.

We notice this publication chiefly for the purpose of drawing attention to the flourishing Museum at Woolwich.

NEOTROPICAL REGION.

Cassin, John. On some Conirostral Birds from Costa Rica in the Collection of the Smithsonian Institution. Proc. Acad. Philad. 1865, pp. 169–172.

Twenty-two species are mentioned, of which three, *Arremon rufidorsalis*, *Buarremon crassirostris*, and *Euphonia anneæ* [sic] are described as new.

Landbeck, Luis. Beiträge zur Ornithologie Chiles. Archiv für Naturgesch. 1864, i. pp. 55–62.

Two supposed new species are described, *Dendræca atricapilla* and *Arundicola citreola*.

Landbeck, L. and Philippi, R. A. (See Philippi, R. A., and Landbeck, L.)

Lawrence, G. N. Descriptions of four new species of Birds from the Isthmus of Panama. Proc. Acad. Philad. 1865, pp. 106–108.

The species are *Tachyphonus rubrifrons*, *Anthus parvus*, *Thamnophilus nigricristatus*, and *Geotrygon albiventer*. They are all founded on specimens which have been described under other names.

——. Descriptions of Six New species of Birds from Central America. Ann. Lyc. New York, 1865, pp. 171–174.

The species described are named *Spermophila hicksi*, *S. badiiventris*, *S. fortipes*, *Formicivora schisticolor*, *Elainea frantzii*, and *Mitrephorus aurantiiventris*.

——. List of Birds from near David, Chiriqui, New Granada, collected for the Smithsonian Institution, Washington, by Mr. Fred. Hicks, with Descriptions of New Species. *Op. cit.* pp. 175–179.

The collection consisted of thirty-nine species, of which three, *Spermophila collaris*, *Elainea chiriquensis*, and *E. semiflava* are described as new.

——. Catalogue of a Collection of Birds in the Museum of the Smithsonian Institution, made by Mr. H. E. Holland at Greytown, Nicaragua, with Descriptions of New Species. *Op. cit.* pp. 179–185.

Sixty-one species are enumerated, of which *Thryothorus brunneus*, *Synallaxis nigrifumosa*, and *Thamnophilus hollandi* are described as new.

Philippi, R. A., and Landbeck, L. Beiträge zur Ornithologie Chiles. Archiv für Naturgesch. 1864, i. pp. 41–54. *Op. cit.* 1865, i. pp. 56–104.

The first of these papers contains the descriptions of three species supposed to be new, namely *Accipiter chilensis*, *Chlorospiza* [?] *plumbea*, and *Sycalis aureoventris*. The second article includes the description of *Pteroptochus castaneus*, and two treatises, one on "Die Lerchen Chiles" which belong to the family *Dendrocolaptidæ* (*cf.* Sclater, Ibis, 1865, p. 59), and the other a "Monographie der südamerikanischen *Muscisaxicolinen*" (*Tyrannidæ*).

Salvin, Osbert. The Sea-birds and Waders of the Pacific Coast of Guatemala. Ibis, 1865, pp. 187–199.

This paper does for the western shore of Central America

what the paper noticed last year (Zool. Record, i. p. 56) did for the eastern, and is of exactly the same description.

Sclater, P. L. On two rare Species of the American genus *Dendræca*. Ibis, 1865, pp. 87–89. [Error corrected, *op. cit.* p. 237].

——. Description of a New Accipitrine Bird from Costa Rica. Proc. Zool. Soc. 1865, pp. 429, 430, pl. xxiv.

Named *Leucopternis princeps*.

ANATOMY AND PHYSIOLOGY.

Bianconi, G. G. Studi del Tarso-metatarso degli Uccelli ed in particolare su quello dell' *Æpyornis maximus*. Continuazione e fine. Mem. Accad. Scienze di Bologna, 2 ser. tom. v. (12 Jan. 1865), pp. 31–112, tabb. v.–xiv.

This is the conclusion of a paper * by the author in the same journal for 1863 (tom. iii. pp. 173–199, tabb. i.–iv.). In the former part Prof. Bianconi examined the structure of the tarso-metatarsus in the *Scansores* and *Grallæ*. In the present memoir the same bone in the *Gallinæ*, *Struthiones*, *Accipitres*, *Passeres*, *Anseres*, and finally in *Æpyornis maximus* (of which it is, with the egg, the sole relic) is taken into consideration. He at length arrives at the conclusion that this last-named species was a Vulture, and very nearly allied to the Condor (*Sarcorhamphus gryphus*). The plates represent the tarso-metatarsus of the following birds:—*Meleagris gallopavo*, *Tetrao urogallus*, *Perdix cinerea*, *Columba turtur*, *Corvus frugilegus*, *Cypselus apus*, *Struthio camelus*, *Rhea americana*, *Aquila chrysaetus*, *Asio otus*, *Sarcorhamphus gryphus*, *S. papa*, *Gypaetus barbatus*, *Colymbus arcticus*, *Podiceps*, sp., *Anas boschas*, *Clangula glaucion*, *Pelecanus*, sp., *Phalacrocorax carbo*, *Hydrochelidon nigra*, and *Æpyornis*. A brief extract from this paper is contained in Ann. des Sci. Naturelles, iii. pp. 59, 60, and an abstract of it in Rev. Zool. 1865, pp. 47–49. (*Cf.* P. Z. S. 1865, p. 196, and Ann. & Mag. N. H. 3rd ser. xvi. p. 59.)

Crisp, E. On the Anatomy and Habits of the Water-Ousel (*Cinclus aquaticus*). Proc. Zool. Soc. 1865, pp. 49–52.

The first object of the author is to ascertain by what means the bird is enabled to dive. This, he thinks, is accounted for by the shortness of the wing and great development of its muscles. The caudal muscles also are much developed. The visceral anatomy differs very little proportionately from that of other

* The series of articles in connexion with the subject has its beginning in the Memoirs of the Bologna Academy several years ago, and is continued in those for 1862, pp. 3–64.

Turdidæ examined, and, as in most of them, the bones contain no air.

Cullen, W. H. On the Gular Pouch of the Male Bustard (*Otis tarda*, Linn.). Ibis, 1865, pp. 143–145.

The author has rediscovered this curious structure, the existence of which had been doubted (*cf.* Ibis, 1862, pp. 107–127; J. f. O. 1862, pp. 137–153), in two examples of the bird examined by him in Bulgaria, of one of which he gives two figures, showing the orifice under the tongue and the sack expanded. No light is thrown on the development or application of this mysterious organ.

Dareste, C. Investigations on Eggs with a Double Germ, and on the Origin of Double Monsters in Birds. Ann. & Mag. Nat. Hist. 3rd ser. xv. pp. 432, 433.

The observations herein contained are of a nature purely physiological.

Davy, J. On the Freezing of the Egg of the Common Fowl. Trans. Roy. Soc. Edinb. xxiii. pp. 505–513.

The careful experiments made by the author are entirely of a physiological nature. They differ from those of Hunter and Mr. Paget, wherein the eggs were exposed to extreme artificial cold, and only for a short time. Dr. Davy generally made use of natural frost, but some experiments with freezing mixtures are also mentioned. The question of how much cold a fertile egg can endure without its vitality being injured seems to be still undecided.

Dusseau, J. L. Musée Vrolik. Catalogue de la Collection d'anatomie humaine, comparée et pathologique de MM. Ger. et W. Vrolik. Amsterdam: 1865. Roy. 8vo, pp. 464.

The ornithological portions of this Catalogue are scattered about in a manner rather puzzling to the student. The following references to them will, we believe, serve as a guide to any ornithologist consulting the work—pp. 152, 153, 163–166, 177–182, 190, 191, 194–198, 200, 203, 207, 210, 211, 213, 231, 233, 244–246, 253, 256, 259, 263, 264, 270, 271, 459; but not much information is contained in it that, apart from the collection, which is now at Amsterdam, would be found useful.

Eudes-Deslongchamps, E. Note sur des Moisissures abondamment développées dans l'intérieur d'un œuf de Casoar de la Nouvelle Hollande. Bull. Soc. Linn. de Normandie, ix. pp. 381–385.

The author supposes the spores to have penetrated the egg-shell.

Flower, W. H. On the Gular Pouch of the Great Bustard (*Otis tarda*, Linn.). Proc. Zool. Soc. 1865, pp. 747, 748.

The specimens dissected by Dr. Cullen (*vide suprà sub eo nom.*) are here fully described. There is a distinct and unquestionably natural opening under the tongue, surrounded by well-marked folds of mucous membrane, which close it by coming into apposition. A band of muscular fibres runs on each side of the neck of the sack, and is evidently the sphincter spoken of by several observers; it appears, however, only to be part of the general muscular system. One sack measured 9 inches in length, and held easily three imperial pints. Both of them contained a few pieces of grass and leaves. There appears to be no glandular structure connected with the organ; and it is probably a simple reservoir for fluid, more analogous to the pouch of the *Pelecanidæ* than anything else.

Germain, R. Note sur la structure du gésier chez le Pigeon Nicobar. Ann. des Sc. Nat. iii. p. 352.

The note seems to confirm Mr. Flower's more detailed observations (P. Z. S. 1860, pp. 333, 334).

Giebel, C. Zur Charakteristik der Pelekane. Zeitschrift für die gesammten Naturwissenschaften, 1865, pp. 250–257.

The osteology of the genus *Pelecanus* as represented by three of its species, *P. erythrorhynchus*, *P. crispus*, and *P. onocrotalus*, is very carefully and at the same time succinctly described.

Harting, P. L'appareil épisternal des Oiseaux. Natuurk. Verhand. Utrechtsch Genootsch. Kunst. Wetenschapp. Nieuwe Reeks. I. iii. pp. 20, *cum tab.*

By the term "episternal apparatus" the author means all that structure, whether membranous or osseous, which commonly unites the clavicles [furcula] to the sternum, and has generally been considered as forming its anterior part, but is in reality as distinct from it as are the clavicles and the coracoids. After describing in some detail the form it takes in various birds (remarking on the curious fact that in the male of *Meleagris gallopavo* there is a strong osseous superior apophysis, while in the female of the same species there is simply a thickening of the median plate only composed of tendinous tissue without any trace of cartilage), he briefly sums up the results of his observations nearly as follows:—

1. All birds have an apparatus comparable to the episternum of saurians and some mammals.
2. The episternal apparatus of birds is sometimes altogether, and always for the most part, in a membranous state.
3. When it is complete, it consists of a vertical median posterior plate, with two lateral plates and a horizontal median and anterior one, which last is sometimes wanting.
4. These taken together correspond to the T-shaped or cruciform episternum of saurians, with the exception of the upper parts of the lateral plates, which are equivalent to the lateral prolongations of the coracoids in those animals.
5. Sometimes the episternal apparatus remains membranous for the bird's whole life. The place of ossification is generally in the median posterior plate. The superior apophysis, which is its result, bifurcates when it also extends into the lateral plates. Another point of ossification is close to the angle of the furcula. The prolongation of this, which forms the furcular apophysis, varies much in different species, sometimes extending to the lower end of the crest. The least-frequent ossification is that of the middle and posterior part of the median horizontal and anterior plate between the branches of the furcula and giving rise to the median apophysis.
6. When the trachea enters the keel, the osseous walls of the cavity are part of the episternal formation.

The plate illustrating this paper is most beautifully executed. The sternum of *Grus cinerea*, however, is represented as that of *Cygnus musicus*, though the mistake does not impair the value of the author's observations. (*Cf.* Comptes Rendus, 1865, p. 727, Rev. Zool. 1865, pp. 118, 119, and 'Ibis,' 1866, p. 116.)

Haughton, Samuel. On the Muscular Mechanism of the Leg of the Ostrich. Ann. & Mag. Nat. Hist. 3rd ser. xv. pp. 262–272, plates vi., vii.

A very elaborate and excellent piece of descriptive anatomy. The author believes that in the digastric rectus femoris muscle lies the key to the explanation of the complicated muscular apparatus of the Ostrich's leg. This mechanism Dr. Haughton considers to be a strong argument against the theory of natural selection.

Homeyer, Alexander von. Das Wiederaufleben eines durch nasse Kälte erstorbenen Zwerg-Fliegenfängers, *Erythrasterna parva*. Journ. für Orn. 1865, pp. 221-224.

An instance of resuscitation of a half-drowned cage-bird, not very remarkable.

Landois, H. Die Eierschalen der Vögel in histologischer und genetischer Beziehung. Zeitschr. für Wissensch. Zoologie, 1865, pp. 1–31, taf. i.

The histological and genetic relations of egg-shells are considered in much detail by the author, who bases his researches on an examination of the eggs of upwards of sixty species of birds. The plate represents the microscopic appearance of dif-

ferent layers in the shell of the eggs of *Meleagris gallopavo*, *Upupa epops*, *Phasianus colchicus*, *Hirundo rustica*, *Podiceps minor*, *Sylvia atricapilla*, and *Emberiza citrinella*.

Milne-Edwards, Alphonse. Observations sur l'appareil respiratoire de quelques Oiseaux. Ann. des Sc. Nat. iii. pp. 137–142.

The author confirms the observations of Prof. Owen (P. Z. S. 1835, pp. 9–12) as to the communication existing between the lungs and the subcutaneous air-cells in some of the *Pelecanidæ*, which had been denied by Messrs. Natalis Guillot (Ann. Sc. Nat. 2 ser. 1816, v. p. 25) and Sappey (Recherches sur l'appareil respiratoire des Ois. pp. 70–80).

Owen, Richard. Description of the Skeleton of the Great Auk or Garfowl (*Alca impennis*, L.). Trans. Zool. Soc. vol. v. pp. 317–335, pls. li., lii.

The specimen was found on Funk Island, near Newfoundland (P. Z. S. 1863, pp. 435–438); being defective in the bones of the extremities, the author procured specimens of these from Mr. John Hancock, and, thus having at command the materials for a description of the complete osteology of the bird, he proceeds to give an account of it, entering into very minute details of every bone, and finally comparing the skeleton with that of other diving birds, especially that of *Uria* (*Cepphus*) *grylle* and *Aptenodytes antarcticus*. With the latter, as might have been expected, *Alca impennis* has no affinity. It has twenty-two free vertebræ between the skull and sacrum, while *A. torda* has one less. The plates appended to this valuable paper serve very insufficiently to illustrate it.

——. On the morbid appearances observed in the dissection of the Penguin (*Aptenodytes forsteri**). Proc. Zool. Soc. 1865, pp. 438, 439.

The most remarkable peculiarity observed was the presence of a well-developed urinary-bladder.

Parker, W. K. On the Osteology of *Microglossa alecto*. Proc. Zool. Soc. 1865, pp. 235–238.

The author by way of introduction states his concurrence in the views of many modern systematists as to the high position occupied by the *Psittaci*, and then proceeds to describe in detail the cranium of the species under consideration, and subsequently, but more briefly, its sternal apparatus.

The sternum of *Phlogœnas crinigera* is described and figured. P. L. Sclater, P. Z. S. 1865, pp. 239, 240.

The sternums of *Cypselus apus*, *Chætura zonaris*, *Collocalia*

* Lege *A. pennanti*.

francica, and *Dendrochelidon wallacii* are figured; *Idem, op. cit.* pp. 594, 595, and the bones of the foot of *Panyptyla melanoleuca* and *Chætura zonaris*, p. 596.

The cranium, sternum, and tongue of *Leptosoma discolor* (sc. *afer*) described and figured. *Idem, op. cit.* pp. 684–688.

PTERYLOLOGY.

Altum, B. Leucismen münsterländischer Vögel. Zoolog. Garten, 1865, pp. 114–116.

This paper is in continuation of an article on the subject in the preceding volume of the same journal. Cases of albinism in twenty-seven, and of melanism in four species of birds are mentioned.

Dallas, W. S. On the Feathers of *Dinornis robustus*, Owen. Proc. Zool. Soc. 1865, pp. 265–268; Ann. Mag. Nat. Hist. 3rd ser. xvi. pp. 66–69.

The feathers were from the specimen whose discovery we last year noticed (Zool. Record, i. pp. 97, 98). The portion of the skin bearing them was from the region of the pelvis. They are all very imperfect, consisting only of the basal parts of the shafts and accessory shafts (which latter are considerably shorter than the former), with here and there some traces of the barbs. The structure of the web differs somewhat from that of *Dromæus* and *Casuarius*; but, from the decomposed state of the specimens, it cannot be decided whether the basal barbs had the hair-like tips possessed by those birds. But undoubtedly *Dinornis* had a large accessory plume, showing another proof of its relationship to those genera and its difference from the *Struthioninæ* proper. Figures of the feathers are given.

Doebner, —. Ueber die Farbenabänderungen der Säugethiere und Vögel, namentlich in Weiss und Schwartz. Zoolog. Garten, 1865, pp. 3–11.

Some general remarks on the variation in colour towards albinism and melanism are followed by lists of species subject to this peculiarity which have come under the author's notice. The list of birds contains the names of twenty-one species in which the former, and of four in which the latter, has been noticed.

Murie, J. Note upon the Abnormality of a Tail-feather in a male Sœmmering's Pheasant. Proc. Zool. Soc. 1865, p. 746.

One of the middle rectrices of a *Phasianus sœmmeringi* was turned completely upside-down, but at its posterior third the feather seemed to endeavour to recover its normal condition. The twist would appear to have taken place during its growth.

Pelzeln, A. von. Ueber Farbenabänderungen bei Vögeln. Verhandl. zool.-bot. Gesellsch. Wien, 1865, pp. 911–946.

This contains the remarks, with additions, on the same subject introduced into the author's portion of the zoology of the 'Novara' voyage (pp. 14–25), already mentioned under the heading "General Subject," wherein he confined himself to the *Falconidæ*. Of the kind of variation which Herr von Pezeln calls "Albinismus," his observations are founded on complete instances in 32 species, incomplete in 45, and partial in 37. Of "Melanismus" complete instances are mentioned in 15 species, incomplete in 6, and partial in 2. Of "Erythrismus" there are 17 cases. (*Cf.* Ibis, 1866, p. 209.)

Sclater, P. L. On the Structure of *Leptosoma discolor*. Proc. Zool. Soc. 1865, pp. 682–689.

In this bird the body-feathers have a long, downy auxiliary plume, which is entirely deficient in the *Cuculidæ*. The upper ptilosis resembles that of *Coracias* and *Eurystomus*, the spinal tract bifurcating between the shoulders. The branches are then discontinuous for a short space, but reappear and unite on the rump, where a very abnormal feature presents itself, to be found neither in the *Coraciidæ* nor in any other group of *Picariæ*. This is the existence of two large and highly-developed powder-down patches placed on the flanks on each side of the rump. The oil-gland almost entirely disappears. Figures showing these peculiarities illustrate this interesting paper.

NEOSSOLOGY.

Bettoni, Eu. Storia Naturale degli Uccelli che nidificano in Lombardia, &c. [See under heading "Palæarctic Region."] Milano: 1865. Folio. Fascicoli i.–iii.

The young of *Calamoherpe turdoides, Ardeola minuta, Pratincola rubetra, Coturnix communis*, and *Curruca atricapilla* are figured.

Gould, J. The Birds of Great Britain. London: 1865.

Part VII. includes figures of the very young state of *Falco æsalon* and *Vanellus cristatus*, and Part VIII. those of *Ardea cinerea, Sternula minuta, Sterna hirunda, Fratercula arctica*, and *Stercorarius parasiticus*.

Marchand, A. Poussins des oiseaux d'Europe couverts de duvet à la sortie de l'œuf. Rev. et Mag. de Zool. 1865.

The series of illustrations for the past year includes the following species:—

Mormon fratercula	Pl.	1.	Perdix coturnix	Pl.	8.
Thalassidroma pelagica	„	2.	Strix flammea	„	9.
Strepsilas collaris	„	3.	Buteo apivorus	„	10.
Œdicnemus crepitans .	„	4.	Anas mollissima.....	„	11.
Perdix cinerea	„	5.	Scolopax rusticola	„	12.
Anas nigra	„	6.	Fulica atra	„	14.
Gallinula chloropus ..	„	7.	Cursorius isabellinus .	„	15.

Pelzeln, A. von. Reise der österreichischen Fregatte Novara, u. s. w. Vögel. [See under "General Subject."]

Plate v. of this work represents the young of *Eudyptes chrysocome*.

OOLOGY.

Balch, D. M. Notes on the Habits and Distribution of the Duck Hawk or American Peregrine Falcon in the Breeding-Season, and Descriptions of the Eggs. Proc. Essex Inst. iv. p. 153.

This paper we have not seen. We quote its title from the list of publications printed by the Institute.

Elliot, D. G. A Monograph of the *Tetraoninæ* or Family of the Grouse. New York: 1865. Imp. fol.

Two of the plates in this work contain most excellent figures of the eggs of the following species:—

Tetrao urogallus	Pl. i.	figs. 1, 2	Lagopus scoticus....	Pl. ii.	figs. 6–9
Lyrurus tetrix	„	3, 4	Bonasa umbelloides	„	11–15
Dendragapus obscurus	„	5–7	—— sylvestris.....	„	14, 13
—— richardsoni	„	8–12	—— sabinii.....	„	16
Canace canadensis	„	13–17	—— umbellus.....	„	17–21
—— franklini	„	18	Lagopus rupestris (reinhardti).....	„	22, 23
Pediœcetes columbianus	„	19–21	—— —— (*rerus*) ..	„	24, 25
—— phasianellus	„	22–25	—— —— (islandicus)	„	26
Cupidonia cupido	„	26–30	—— mutus	„	27–30
Lagopus albus	Pl. ii.	figs. 1–5			

Fatio, V. L'Oomètre. Bull. Soc. Orn. Suisse, i. pp. 94–110, pl. iii.

The description of a very ingenious instrument, by means of which not only may the dimensions of an egg be accurately taken, but its actual shape can be expressed in an algebraical formula. The instrument would be of equal service to conchologists.

Holtz, L. Beobachtungen aus der Vogelwelt Neu-Vorpommerns. Journ. für Orn. 1865, pp. 100–128, 174–191.

This paper contains a very great quantity of facts from observations most carefully made, and nearly all relating to the breeding of the birds found in the district. Very precise details

are also given of the weight and size of many of their eggs. As a rule, however, the observations are not of a very important kind to the general ornithologist.

KUTTER, —. Ein Beitrag zur Fortpflanzungsgeschichte von *Gallinula pusilla*. Journ. für Orn. 1865, pp. 334–341.

An account of the breeding of the species named near Cottbus in Posen.

LORD, J. K. Catalogue of Birds' Nests and Eggs collected in North-west America. Proc. R. A. Instit. Woolwich, 1865, pp. 337–339.

The nidificatory habits of eighteen species are briefly described. (*Cf.* Ibis, 1866, p. 208.)

PELZELN, A. VON. Reise der österreichischen Fregatte Novara, u. s. w. Vögel. [See under "GENERAL SUBJECT."]

Plate vi. of this work contains figures of the eggs of the following species :—

Bubo maculosus.	Ploceus capensis.
Collocalia linchi.	Crithagra canicollis.
Drymœca subruficapilla.	Phytotoma rara.
—— maculosa.	Megapodius nicobariensis.
Copsychus saularis.	Prion vittatus.
Malacocercus griseus.	Sterna vittata.
Laniarius boulboul.	Graculus gaimardi.
Hyphantornis aurifrons.	—— carunculatus.

Particulars of the mode of nidification of these and other species are to be found in the text.

RAMSAY, EDWARD P. On the Nests and Eggs of some New Zealand Birds. Ibis, 1865, pp. 154–157.

The species mentioned are *Eudynamis taitensis, Anthornis melanura, Rhipidura flabellifera, Creadion carunculatus,* and *Platycercus auriceps.*

——. Notes on Birds breeding in the Neighbourhood of Sydney. Ibis, 1865, pp. 298–306. (Error corrected, Ibis, 1866, p. 127.)

This is in continuation of a series of papers in the same journal for former years. The species treated of now are *Pardalotus striatus, Chelidon arborea, C. ariel, Gymnorhina tibicen, Myiagra plumbea, Monarcha carinata, Corvus coronoides, Myzomela sanguinolenta,* and *Parra gallinacea.*

——. Notes upon the Cuckoos found near Sydney. Proc. Zool. Soc. 1865, pp. 460–465.

The eggs of *Chalcites lucidus, Cuculus inornatus,* and *C. cineraceus* described.

RAMSAY, EDWARD P. Note on the Nidification of *Mirafra horsfieldi*. *Op. cit.* pp. 689, 690.

It seems to resemble that of the ordinary *Alaudidæ.*

SEIDENSACHER, E. Ueber das Ei des kurzbeinigen Sperbers, *Astur brevipes* s. *dussumieri, Falco badius.* (*Cf.* Zool. Record, i. p. 65.) Reprinted Journ. für Orn. 1865, pp. 464–466.

Eggs of *Phasianus sæmmeringi* and *Ceriornis satyra* exhibited. P. L. Sclater, P. Z. S. 1865, p. 256.

Eggs of *Elanoides furcatus, Nucifraga caryocatactes, Didunculus strigirostris, Phalaropus fulicarius, Opisthocomus cristatus, Mareca americana,* and *Fulix affinis* were exhibited or described. A. Newton, P. Z. S. 1865, p. 256.

Eggs and nest of *Totanus ochropus* are figured. J. Gould, B. G. B. part viii.

Eggs and nest of *Cisticola schœnicola* are described and figured. G. Lunel, Bull. Soc. Orn. Suisse, i. pp. 9–30, pl. i.

ACCIPITRES.

VULTURIDÆ.

Vultur auricularis, from North-eastern Africa (*V. nubicus*, Smith), has the ear-wattle hardly at all developed and the occiput slightly feathered, differing in these respects from specimens from the Cape Colony. P. L. Sclater, P. Z. S. 1865, p. 675.

Gyps africanus is the name bestowed upon African specimens hitherto confounded with *G. bengalensis*. They have the beak compressed, elongated, and quite black, and are of a greyish cream-colour. The species is supposed (Sitzungsb. Akad. Wien, 1856, p. 256) to have been before designated *Vultur moschatus* by Duke Paul of Würtemberg. T. Salvadori, Gazz. Uffic. del Regno d'Italia, 1865, no. 126 (Adunanza della Classe di Sc. Fis. e Matemat., R. Accad. delle Scienze di Torino, 7 May, 1865).

Neophron percnopterus (?), from Calcutta, has the whole bill and claws white. (This is the *Vultur ginginianus* of Latham. *Cf.* Ibis, 1866, pp. 233, 234.) P. L. Sclater, P. Z. S. 1865, p. 675.

FALCONIDÆ.

The supposed occurrence of *Haliaetus albicilla* in North America (P. Z. S. 1863, p. 251) proves to be a mistake. The birds obtained in Nova Scotia and Newfoundland turned out to be *H. leucocephalus*. P. L. Sclater, P. Z. S. 1865, p. 731.

Aquila nævia is figured. J. Wolf, Zool. Sketches, 2nd series.

Aquila nævioides has been seen several times in Spain, and is figured in two stages of plumage. Lord Lilford, Ibis, 1865, pp. 172, 173, pl. v. This species, under the name of *A. adalberti*, has been before mentioned as occurring there. P. L. Sclater, *tom. cit.* pp. 359, 360. (*Cf.* Ibis, 1863, p. 352.)

Milvago crassirostris, Pelz. (Sitzungsb. Acad. Wien, 1861, p. 9) is further described and figured. A. v. Pelzeln, Reise Novara, Vögel, pp. 3–5, tab. i.

Polyborus audubon is described as a new species from Texas and Mexico, founded on the type-specimen of the *P. vulgaris* and *P. brasiliensis* of Au-

dubon, *nec* Vieillot, *nec* (Gmel.), which are identical with *P. tharus* (Molina). From this last it differs by having the back and rump brownish-black in all stages of plumage, and the under tail-coverts nearly pure white, or with a few indistinct dark brown bars. Numerous examples of the newly recognized species are in the Smithsonian Collection. J. Cassin, Proc. Acad. Philad. 1865, p. 2.

Spilornis bacha (Daud.) certainly does occur in Western Africa. Whether it is identical with the Indian *S. bido* (Horsf.) is another matter. J. Cassin, Proc. Acad. Philad. 1865, pp. 2–4.

Limnaetus africanus is a new species from Western Africa. It bears a general resemblance to *L. cirrhatus* and *L. kieneri*, but has the tarsi much more thickly feathered. It has the upper parts black, the lower white. J. Cassin, Proc. Acad. Philad. 1865, pp. 4, 5.

Leucopternis princeps is a very fine new species from Costa Rica, very distinct in colouring from any other of the group. P. L. Sclater, P. Z. S. 1865, pp. 429, 430, pl. xxiv.

Buteo lineatus of North America has occurred in Scotland. E. C. Newcome, Ibis, 1865, p. 549.

Stringonyx anderssoni is the name proposed for a supposed new form from Damaraland, remarkable for its extremely wide gape, small bill destitute of a tooth, and the rudimentary pectination of the middle claw. [Identified with *Machærhamphus alcinus*, Westerm., A. D. Bartlett, P. Z. S. 12 June, 1866.] J. H. Gurney, P. Z. S. 1865, p. 618. The paper will be published in the Zoological Transactions.

Brodrick, W. Falconer's Favourites. London: 1865. Folio.

Half a dozen well-executed plates, with appropriate letterpress; of course from a falconer's point of view.

Falco peregrinus (♂ hornot. and ♀ juv.) is figured, W. Brodrick, Falconer's Favourites, pls. i. & v.

Falco barbarus shot in Holland in 1857. J. P. v. W. Crommelin, N. T. D. 1865, p. 243.

Falco æsalon is figured, W. Brodrick, Falconer's Favourites, pl. vi., and again with young, J. Gould, B. G. B. part vii.

Falco subbuteo is figured, W. Brodrick, Falconer's Favourites, pl. iv., and again J. Gould, B. G. B. part viii.

Falco eleonoræ: a good abstract of Dr. Krüper's account of this species (Zool. Record, i. p. 66) is given. A. Gindroz, Bull. Soc. Orn. Suisse, 1865, pp. 132–144.

Tinnunculus newtoni from Madagascar and *T. gracilis* from the Seychelles are considered to be identical with *T. punctatus* of Cuvier, whose habitat has been usually assigned to Mauritius. H. Schlegel, N. T. D. 1865, pp. 76, 86. An opposite opinion maintained, A. Newton, P. Z. S. 1865, p. 833. (*Cf.* Ibis, 1866, p. 211.)

Tinnunculus cenchris asserted to have occurred in Great Britain. E. Newman, Zool. 9846. (N.B. The assertion contradicted, Zool. 1866, p. 96).

"*Nisus brutus*, Pollen," is described as a new species from Mayotte, said to differ from all others in its system of coloration as well as by having a very large head and bill in proportion to its size. The under parts are characterized by cross bands of a deep red tint. It belongs to the group which contains *Accipiter tinus*, *A. minullus*, and *A. erythropus*. [Qu. distinct from *A. madagascariensis*?] H. Schlegel, N. T. D. 1865, pp. 80, 81.

"*Astur brevipes*, Severzow" (Bull. Soc. Impér. Moscou, 1850, ii. pp. 234–239), has been identified as the species found breeding at Smyrna by Dr. Krüper (Zool. Record, i. p. 67), and by him referred to *Accipiter badius*. It is also the *A. sphenurus* of Mr. Tristram's "Report on the Birds of Palestine" (P. Z. S. 1864, p. 429), and identical with the *A. gurneyi* of Dr. Bree (B. Eur. iv. p. 390). P. L. Sclater, Ibis, 1865, pp. 341, 342.

Accipiter nisus, ♂ adult, and

Astur palumbarius, ♂ adult, are figured, W. Brodrick, Falconer's Favourites, pls. ii., iii.

Accipiter chilensis is announced as a new species, but it may be the "*A. erythronemia* [lege *erythrocnemius*], G. R. Gray," first characterized by Dr. Kaup (Isis, 1847, p. 954; Contrib. Orn. 1850, p. 64). Very full descriptions of both old and young are given, but no diagnosis whereby the reader may be assisted in forming an opinion of his own. R. A. Philippi and L. Landbeck, Ann. Univers. Chile, Apr. 1864; Arch. f. Naturgesch. 1864, i. pp. 41–47.

Accipiter æquatorialis is described as a new species from Batchian and other localities in the Malayan Archipelago, larger than *A. rufitorques* and with different proportions and colours. It is smaller than *A. griseogularis*, and wants the bands that species has on the body, wings, and tail. A. R. Wallace, P. Z. S. 1865, pp. 474, 475.

Accipiter muelleri is a new species from Gilolo, very like *A. hiogaster*, but much larger, the throat less distinctly rufous, the under parts faintly banded with white, and having other points of difference. *Idem, op. cit.* p. 475.

Accipiter virgatus (Temm.), a specimen from Formosa described. R. Swinhoe, Ibis, 1865, pp. 108, 109.

Accipiter gularis and *A. trivirgatus* occur in Formosa. J. H. Gurney, Ibis, 1865, pp. 236, 547.

Micrastur concentricus (Illig.), *M. gilvicollis* (Vieill.), and *M. macrorhynchus* are carefully described. The last is a species discovered by Natterer in Brazil, but which has hitherto remained undescribed. A. v. Pelzeln, Reise Novara, Vögel, pp. 8–12.

Circus æruginosus, *C. cyaneus*, and *C. cineraceus*. Further observations in continuation of those noticed before (Zool. Record, i. p. 67). J. P. v. W. Crommelin, N. T. D. 1865, pp. 237, 238.

Circus wolfi is described and figured as a new species from New Caledonia, very similar to *C. maillardi* from the Comoros and Réunion, but differing in many minor characters. J. H. Gurney, P. Z. S. 1865, pp. 823, 824.

Strigidæ.

Altum, B. Die Nahrung unserer Waldohreule. Journ. für Orn. 1864, pp. 429–434.

This article is in continuation of others by the author (J. f. O. 1863, pp. 41–46, and Ber. xiv. Versamml. D. O. G. pp. 30–34); and all show, by the best of all proofs, an examination of the pellets of bones, fur, and feathers

cast up by Owls, the enormous benefit these birds render to man by the destruction of *Muridæ* and *Arvicolidæ*, the remains of animals of these groups forming the great bulk of the examples examined.

Strix rosenbergi is an apparently new species from Celebes, approaching *S. castanops* and *S. personata* in size and the distribution of its colours. It is very different from *S. javanica*. H. Schlegel, N. T. D. 1865, pp. 181, 182.

Strix flammea. Evidence relating to the food of this species, agreeing in the main with the observations of Herr Jäckel and Dr. Altum. Troschel, Verhandl. nat. Ver. preuss. Rheinlande und Westphalen, 1864, Correspondenzblatt, p. 102. The dark-coloured variety usually found in Denmark has occurred in England. H. Stevenson, Zool. p. 9495.

"*Ulula nebulosa*" said to have occurred in Silesia (qu. *Syrnium uralense*?). F. Tiemann, J. f. O. 1865, p. 218.

Ketupa ceylonensis: further details of the singular discovery of this bird in Palestine. H. B. Tristram, Ibis, 1865, p. 261.

Noctua polleni is described as a new species from the north-west of Madagascar. In size and the spotting on the wings it resembles *N. maculata* from Australia, and is characterized in a striking manner by the lower parts being reddish-white banded with reddish-brown. H. Schlegel, N. T. D. 1865, pp. 81, 82.

The "conspecies" of *Noctua hirsuta* are treated of. *Idem, op. cit.* pp. 182, 183.

Noctua ochracea is an apparently new species from Celebes, on the whole like *N. philippensis*, but with a longer tail and a different system of coloration. *Idem, op. cit.* pp. 183, 184.

Noctua franseni is a new species from Waigiou, nearly as large as *N. strenua* from Australia, but differing from it in its system of coloration. *Idem, op. cit.* pp. 256, 257.

PSITTACI.

Plyctolophidæ.

Microglossa alecto, remarks on its osteology. W. K. Parker, P. Z. S. 1865, pp. 235-238.

Cacatua ophthalmica (Zool. Record, i. p. 68), the description reprinted. Ann. & Mag. N. H. 3rd ser. xv. pp. 73, 74.

Nasiterna pusio is a new species from the Salomon Islands, larger than *N. pygmæa* from New Guinea, and easily to be distinguished by the colour of its head, face, and tail as well as the form of the latter. Some structural and anatomical peculiarities of the genus are also remarked on; the former are not such as to entitle it to a place among the *Plyctolophidæ*, and it should either rank with the true *Psittacidæ* or else stand as the type of a distinct group. P. L. Sclater, P. Z. S. 1865, pp. 620-622, pl. xxv.

Platycercidæ.

Psephotus hæmatogaster, Gould (P. Z. S. 1837, p. 89), was, as now stated, founded on a specimen from the western part of Australia; but, a wrong

locality having originally been given, the name was soon after misapplied to the representative species from New South Wales, the distinctness of which was not immediately recognized, and this last was consequently figured under the name of the first by its describer (B. Austral. v. pl. 33). The mistake on being discovered was thought to be set right by Bonaparte, who, in a nominal list of the order (R. Z. 1854, p. 154), introduced, but without diagnosis, a *P. xanthorrhous* to the world, still leaving a *P. hæmatogaster*. Subsequently Mr. G. R. Gray misquoted (List B. Brit. Mus. part iii. sect. ii. p. 7) this word as "*hæmatorrhous*," which is now used by Mr. Gould as the name for the New South Wales species, while he terms the western one *P. xanthorrhous*, though it is the true *P. hæmatogaster*. It is to be hoped the other form may stand as *P. hæmatorrhous*. J. Gould, Handb. B. Austral. ii. pp. 62–64.

Platycercus auriceps, its nest and eggs described. E. P. Ramsay, Ibis, 1865, pp. 156, 157.

Ptistes is the name proposed for a new genus to comprehend the *Aprosmictus erythropterus* of Australia and a new species from the same country, as well as the *Platycercus vulneratus*, Wagler, from Timor. These are "sufficiently different in form and colouring to warrant their being separated from *Aprosmictus* and formed into a new genus . . . . . They have a very laboured flight, consequent on the great size of their wings." No characters are given. J. Gould, Handb. B. Austral. ii. p. 37.

"*Ptistes coccineopterus*" is a new species from Port Essington, differing from the form found on the east coast (*Aprosmictus erythropterus*) by being smaller in all its measurements except those of the bill, which is larger, and being more richly coloured. J. Gould, Handb. B. Austral. ii. p. 39.

Strigopidæ.

Strigops habroptilus. A retranslation into German from 'The Ibis' of Dr. Haast's observations on this species (*Cf.* Zool. Record, i. p. 68). G. von Frauenfeld, J. f. O. 1864, pp. 458–464.

Psittacidæ.

Palæornis alexandri: the statements of ancient writers respecting this bird noticed. F. Schlegel, Zool. Garten, 1865, pp. 470, 471.

Psittacula gulielmi III. (!) is a new species from Salwatty and New Guinea, allied to *P. desmaresti* and *P. diophthalma*, but with a rounded and not cuneiform tail. H. Schlegel, N. T. D. 1865, pp. 252, 253.

Conurus heinii is a new species from Bogota with a very peculiar form of bill, having a broad and comparatively large under mandible, rendering it the type of a proposed new section, *Guathosittaca*. In general colouring it approaches the group *Pyrrhura*. J. Cabanis, J. f. O. 1864*, pp. 414–416.

Psittacus (*Chrysotis*) *nattereri*, is a new species brought from Brazil by Natterer, who in his notes rightly separated it from *C. thalassima* on account of its blue-green colouring. It is allied to *C. guatemalæ*; but that has a blue

* Not published till after March 1865.

forehead and upper part of the head, besides wanting the red shoulder. O. Finsch, J. f. O. 1864*, p. 411.

Chrysotis augustus, remarks on. P. L. Sclater, P. Z. S. 1865, pp. 437, 438.

Specimens from the island of Sanghir are intermediate in character between *Tanygnathus albirostris*, Wall. (P. Z. S. 1862, p. 336) (*Psittacus sumatranus*, Raffles), and *T. muelleri*; the former is therefore thought to be not a good species. H. Schlegel, N. T. D. 1865, p. 185.

Loriculus exilis is a new species, remarkable for its very small size and simple colouring, having no yellow about it and the red limited to the rump, upper tail-coverts, and a small spot on the breast. H. Schlegel, N. T. D. 1865, p. 185, 186.

Trichoglossidæ.

Chalcopsitta rubiginosa, Bp. (P. Z. S. 1850, p. 26, note, pl. 16). The true locality of this rare and beautiful species is now ascertained to be Puynipet, one of the Caroline Islands. A. von Pelzeln, Reise Novara, Vögel, p. 99.

Lorius (*Eos*) *wallacii* is *Eos cochinchinensis*, var., G. R. Gray (P. Z. S. 1861, p. 431), from Waigiou. It differs from *E. cochinchinensis* (Lath.), from Ternate and other places, by its narrow neck-band and its red hind-head and nape. O. Finsch, J. f. O. 1864*, pp. 411, 412.

PICARIÆ.

Picidæ.

Picus khan. The characters of this species described as new in 1863 or 1864 are repeated. F. de Filippi, Viagg. Pers. p. 350.

Picus martius, its disputed claims to be reckoned a "British Bird." E. Newman, Zool. pp. 9626, 9627. J. E. Harting, *op. cit.* pp. 9730–9732. E. H. Rodd, *op. cit.* pp. 9783, 9847.

Gecinus erythropygius is a new species sent from Cochin China by M. Germain, easily distinguishable from its congeners by its red rump. D. G. Elliot, Nouv. Arch. du Muséum, Bull. i. p. 76, pl. iii.

Trogonidæ.

Harpactes hodgsoni, *H. diardi*, *H. orescius*, *H. reinwardti*, and *H. mackloti* are figured. J. Gould, B. As. part xvii.

Bucconidæ.

Monasa pallescens is figured. J. Cassin, Proc. Acad. Philad. 1864, pl. 4.

Leptosomatidæ.

Sclater, P. L. On the structure of *Leptosoma discolor*. Proc. Zool. Soc. 1865, pp. 682–689.

A very important monograph of this curious bird. After treating of the bibliography of the species, the author remarks

* Not published till after March 1865.

on the external characters of the head, of which, with the cranium, life-size figures are given. He then proceeds to consider the pterylology of the species, the body-feathers of which have a long [illegible]ny auxiliary plume, and describes the powder-down patches [illegible]ced one on each side of the rump, this being the only bird of the order *Picariæ* in which such are known to exist. He then figures and describes the sternum and tongue, and remarks on the structure of the feet. The result of all these researches seems to show that *Leptosoma* can no longer be left among the *Cuculidæ*, and that its natural position is as the type of a separate family near the *Coraciidæ*, with which it is perhaps connected by *Brachypteracias*.

Leptosoma discolor (sc. *afer*). Mr. Sclater's opinion as to its affinities agreed with. A. Newton, P. Z. S. 1865, p. 834.

Meropidæ.

Merops philippensis, L., occurs also in Formosa. R. Swinhoe, Ibis, 1865, pp. 230, 231.

Alcedinidæ.

Schlegel, H. De Vogels van Nederlandsch Indië, &c. Monographie 2. Ijsvogels. Haarlem: 1864, 4to, pp. 68, tabb. 16, figg. 67!

The general scope of this work, which should be studied in conjunction with the author's catalogue (Mus. P.-B. *Alcedines*) published in 1863, has been briefly indicated under the heading "Australian Region." Thirty nine species or conspecies are described, and all but two (*Dacelo cinnamomina* and *D. nigrocyanea*) figured. These are, according to Prof. Schlegel's nomenclature, as follows:—

Alcedo euryzona, tab. i. figg. 1, 2.
—— minor, tab. i. fig. 3.
—— —— moluccensis, tab. i. fig. 4.
—— melanorhyncha, tab. ii. fig. 1.
—— leucocephala, tab. ii. figg. 2–4.
—— beryllina, tab. iii. fig. 1.
—— meninting, tab. iii. figg. 2, 3.
—— azurea, tab. iii. fig. 4.
—— solitaria, tab. iii. fig. 5.
—— pusilla, tab. iii. fig. 6.
Dacelo macrorhina, tab. iv. fig. 1.
—— gaudichaudi, tab. iv. figg. 2–4.
—— pulchella, tab. v. figg. 1, 2.
—— melanops, tab. v. figg. 3, 4.
—— cyanotis, tab. vi. figg. 1, 2.
—— torotoro, tab. vi. figg. 3, 4.
—— princeps, tab. vii. 3 figg.
—— coromandeliana, tab. viii. fig. 1.
—— concreta, tab. viii. figg. 2, 3.
—— fulgida, tab. ix. fig. 1.
Dacelo pileata, tab. ix. fig. 2.
—— melanoptera, tab. ix. figg. 3, 4.
—— sancta, tab. x. fig. 1.
—— coronata, tab. x. fig. 2.
—— chloris, tab. x. figg. 3, 4.
—— forsteni, tab. xi. fig. 1.
—— funebris, tab. xi. fig. 2.
—— albicilla, tab. xi. figg. 3, 4.
—— lazuli, tab. xii. figg. 1, 2.
—— diops, tab. xii. figg. 3, 4.
—— dea, tab. xiii. 5 figg., tab. xv. figg. 1, 2.
—— sabrina, tab. xiv. 5 figg., tab. xv. fig. 3.
—— hydrocharis, tab. xv. fig. 4.
—— rufidorsa, tab. xvi. fig. 1.
—— rubra, tab. xvi. fig. 2 (*errore* "3").
—— cajeli, tab. xvi. fig. 3.
—— lepida, tab. xvi. figg. 4, 5.

It will thus be seen that, in the author's opinion, neither the

number of toes nor of rectrices affords a sufficient generic character. Under the name *Dacelo dea* Prof. Schlegel includes, for various reasons, which he states at some length, *Tanysiptera nais*, *T. galatea*, *T. nympha*, *T. iris* (lege *isis*), *T. margarethæ*, and *T. acis*, and to *Dacelo sabrina* he also refers *T. doris*.

Schlegel, H. Notice sur le sous-genre *Tanysiptera*. Nederl. Tijdschr. Dierk. 1865, pp. 269–277.

In this paper the author reiterates his opinion as expressed in the work last noticed respecting *Tanysiptera dea* and its nearest allies, strengthening it by adducing a number of facts relating to the geographical distribution of these pretended species, and, in conclusion, animadverts on the injury done to science by the irrational acts of many of its followers at the present day.

Dacelo (?) *fallax* is a new species from Celebes with *four* toes. H. Schlegel, N. T. D. 1865, pp. 187, 188.

Alcedo ispida, with eggs and section of nest, is figured. E. Bettoni, Ucc. Lombard. fasc. ii.

Capitonidæ.

Capito quinticolor is a new species from New Granada, resembling *C. maculicoronata*, but easily to be distinguished by its red head and nape. D. G. Elliot, Nouv. Arch. du Muséum, Bull. i. pp. 76, 77, pl. iv. fig. 1.

Tetragonops frantzii has been met with in a new locality in Costa Rica. A. v. Frantzius, Ibis, 1865, p. 551.

Bucerotidæ.

Toccus elegans is a new species from Benguela, nearly allied to *T. flavirostris*, but differing in the colour of the upper mandible, wing-coverts, and remiges. G. Hartlaub, P. Z. S. 1865, pp. 86, 87, pl. iv.

Toccus monteirii is another new species from the same country, allied to *T. limbatus*, but much smaller and widely-different in the structure of the bill and the colour of the wing-coverts and rectrices. *Idem*, *op. cit.* p. 87, pl. v. J. J. Monteiro, *op. cit.* p. 91.

Upupidæ.

Upupa decorata is a new species from Benguela, with a crest like *U. capensis*, but the rufous of the underparts extending further down, and the white part of the secondaries has two black bars. G. Hartlaub, P. Z. S. 1865, p. 86; J. J. Monteiro, *op. cit.* p. 94.

Irrisor erythrorhynchus and *I. senegalensis* have been met with in the same flock, and are probably specifically identical. C. J. Andersson, Ibis, 1865, pp. 549, 550.

Musophagidæ.

Corythaix livingstonii, rather abundant in the Celis country (W. Africa). Its habits in confinement. J. J. Monteiro, P. Z. S. 1865, p. 92.

Schizorrhis concolor (?) from Benguela, almost specifically distinct from Natal specimens, being paler, more grey, less brownish, and the sides of the head whitish. G. Hartlaub, P. Z. S. 1865, p. 88.

Cuculidæ.

Rowley, George Dawson. On certain Facts in the Economy of the Cuckoo (*Cuculus canorus*). Ibis, 1865, pp. 178–186, pp. 360, 361.

This contains a notice of Dr. Baldamus's remarkable paper (Naumannia, 1853, p. 307). The author considers that naturalist's theory of a similarity existing between the eggs of *Cuculus canorus* and those of the species into whose nests they are introduced not to be proved. In some other respects his own coincides with the opinion of Dr. Baldamus. After a statement of the various birds which are recorded as having fostered Cuckoo's offspring, Mr. Rowley adds to the "canons" laid down by Dr. Baldamus three principles (1), that the period of oviposition in England is between 5 May and 19 July (2), that traces of a scuffle between the Cuckoo and the owner of the nest often appear; and (3) that it is not usual to find the full complement of eggs of the owner after the Cuckoo has introduced hers.

Vian, Jules. Causeries ornithologiques. Rev. et Mag. de Zool. 1865, pp. 40–47, 74–79, 129, 130.

Some curious particulars relating to the economy of *Cuculus canorus* are recorded, which we have already mentioned while noticing these papers under the "General Subject."

Cuculus monosyllabicus is a new species from Formosa. R. Swinhoe, Ibis. 1865, pp. 545, 546.

Chalcites lucidus, *Cuculus inornatus*, and *C. cinereaceus* of Australia; many details of their habits, especially when breeding, given. E. P. Ramsay, P. Z. S. 1865, pp. 460–465; Ann. & Mag. N. H. 3rd ser. xvi. pp. 290–295.

Eudynamis taitensis, its eggs described. E. P. Ramsay, Ibis, 1865, p. 155.

Caprimulgidæ.

Caprimulgus poliocephalus, Rüpp. (Neue Wirbelth. p. 106; System. Uebers. Vög. N.-O. Afrika's, p. 15, tab. iv.), is said to be the only species found in Mosambique. G. G. Bianconi, Mem. Accad. Sci. Bologna, iv. p. 523.

Hydropsalis ypanemæ and *H. pallescens* are undescribed species, discovered in Brazil by Natterer. The first generally resembles *H. forcipata*, but is smaller and has the three middle pairs of rectrices differently marked; the second is like *H. torquata*, but is larger and paler in colour. A. v. Pelzeln, Verhandl. zool.-bot. Gesellsch. Wien, 1865, pp. 985–988.

Cypselidæ.

Sclater, P. L. Notes on the genera and species of *Cypselidæ*. Proc. Zool. Soc. 1865, pp. 593–617, pls. xxxiii., xxxiv.

The author's opinion of the systematic position of the family agrees with that of L'Herminier, Nitzsch, and Burmeister. He proceeds to describe and figure the sternum in the genera *Cypselus*, *Chætura*, *Collocalia*, and *Dendrochelidon*, and then treats of the structure of the foot. Here he shows that *Panyptila* agrees with *Cypselus* in having the abnormal number of three phalanges in each digit, except the hallux, which has the ordinary two.

These two genera, therefore, he places together in the subfamily *Cypselinæ*, while *Chætura*, *Cypseloides*, *Collocalia*, and *Dendrochelidon*, which all have toes of normal structure, he groups in the subfamily *Chæturinæ*. To these remarks is appended a synonymatic, diagnostic, and geographical list of all the species of the family, forty-eight in number (of which two are described for the first time), the whole paper forming a most valuable contribution to ornithology.

Cypselus infumatus is a new species from Borneo, allied to *C. batassiensis* from India, but of a deeper colour and with a shorter and less-forked tail. P. L. Sclater, P. Z. S. 1865, p. 602.

Cypselus galilæensis, Antinori, notes on its habits. H. B. Tristram, Ibis, 1865, pp. 76–79. Identical with *C. affinis*, Gray, and *C. abessinicus*, Streubel. P. L. Sclater, Ibis, 1865, pp. 234, 235, and P. Z. S. 1865, pp. 603, 604.

Cypselus apus, its autumnal migration. A. v. Homeyer, J. f. O. 1865, pp. 311–314.

Cypselus squamatus, Cassin, is figured. P. L. Sclater, P. Z. S. 1865, pp. 605, 606.

Chætura biscutata is a species brought from Brazil by Natterer, like *C. zonaris*, but with a whitish face and the sides of the neck the same colour as the back. P. L. Sclater, P. Z. S. 1865, p. 609, pl. xxxiv.

Collocalia linchi is figured with its nest. A. v. Pelzeln, Reise Novara, Vögel, tab. ii. fig. 2.

Trochilidæ.

Burmeister, H. Sobre los Picaflores descriptos por D. Felix de Azara. Anales del Mus. Publ. de Buenos Aires, 1864, pp. 67–70. Journ. für Orn. 1865, pp. 225–229.

The *Trochilidæ* described by Azara are thus referred by the author:—no. 289 to *Agyrtria albiventris*; nos. 290, 291 to *Hylocharis ruficollis*; nos. 292, 293, 294 to *Hylocharis flavifrons**; nos. 295, 296 to *Lampornis mango*; nos. 297, 299 to *Heliomaster angelæ*; no. 298 still remains doubtful. (*Cf.* Ibis, 1865, p. 535.)

Campylopterus inornatus is identical with *Heliomaster angelæ*. H. Burmeister, P. Z. S. 1865, pp. 466, 467.

Chalybura æneicauda is described as a new species from Venezuela resembling *C. buffoni* and *C. urochrysea*, but differing from either chiefly in having the upper surface of the tail only decidedly bronzed. G. N. Lawrence, Proc. Acad. Philad. 1865, pp. 38, 39.

Chalybura carnioli (lege *carmioli*) is described as a new species from Costa Rica, but, in a MS. marginal note of the author's, identified with *C. melanorrhoa*, Salvin, P. Z. S. 1864, p. 585. G. N. Lawrence, *ut suprà*, p. 39.

Eupherusa nivicauda is a new species from Costa Rica, smaller and with

* Referred to *H. bicolor* in the letterpress, but corrected as above in a MS. marginal note of the author's. However, in P. Z. S. 1865, p. 467, it is identified with *Chlorostilbon phaethon*.

a shorter bill than *E. eximia*, lighter in colour, and having the white on the rectrices (which are narrower than in that species) extending over both webs. G. N. Lawrence, Ann. Lyc. N. Y. 1865, pp. 134, 135.

Panychlora parvirostris is described as a new species from Costa Rica, having a much smaller bill than *P. aliciæ*, the upper tail-coverts golden orange, and the rectrices white at the base. G. N. Lawrence, Proc. Acad. Philad. 1865, p. 39.

PASSERES.

Pittidæ.

Wallace, A. R. Remarks on the Habits, Distribution, and Affinities of the genus *Pitta*. Bull. Soc. Orn. Suisse, 1865, pp. 115–121.

This is a very complete abstract of the paper we noticed last year (Zool. Record, i. pp. 73–74), by M. A. Humbert.

Pitta atricapilla sanghirana is the name applied to a specimen from Sanghir, resembling *P. melanocephala* from Borneo, and only to be distinguished from it by the deeper and less-bright green colours, as well as the metallic tints of the wing-coverts and the deeper and less-silvery blue-green under tail-coverts. H. Schlegel, N. T. D. 1865, p. 190.

Formicariidæ.

Thamnophilus nigricristatus is described as a new species from the Isthmus of Panama, differing from *T. doliatus* and *T. affinis* in having no white in the crest. G. N. Lawrence, Proc. Acad. Philad. 1865, pp. 107, 108. (*Cf.* Ibis, 1866, pp. 119, 120, where it is suggested that the supposed new bird is identical with *T. radiatus*.)

Thamnophilus hollandi is described as a new species from Greytown, Nicaragua, allied to *T. melanurus*, *T. transandeanus*, and *T. melanocrissus*, but is larger, and has a more powerful bill than any of them. It also differs from the first two by its black crissum, and from the last by the black on the side of the head terminating in a line with the rictus. G. N. Lawrence, Ann. Lyc. N. Y. 1865, pp. 181, 182.

An example of *Thamnophilus albicans*, Lafr. (R. Z. 1844, p. 22), a species not recognized by Mr. Sclater (P. Z. S. 1858, pp. 202–224), exists in the Turin Museum, and corresponds perfectly with the original description. It is from Bahia. T. Salvadori, Atti Soc. Ital. Sc. Nat. 4 Sept. 1864.

Thamnistes affinis is described as a new species nearly allied to *T. anabatinus*, but smaller, and having the interscapular spot white instead of orange. T. Salvadori, Atti Soc. Ital. Sc. Nat. 4 Sept. 1864.

Dysithamnus striaticeps and *D. rufiventris* are new species from Costa Rica and Panama respectively. The first somewhat resembles *D. semicinereus*, but is browner above, has a much larger bill, and differs from all others of the genus in its striated head, as does the last in its rufous under plumage. G. N. Lawrence, Ann. Lyc. N. Y. 1865, pp. 130, 131.

Myrmotherula albigula is described as a new species from Panama. G. N. Lawrence, Ann. Lyc. N. Y. 1865, pp. 131, 132.

Myrmotherula minor is a new species from Brazil, nearly allied to *M. brevicauda*, but smaller. T. Salvadori, Atti Soc. Ital. Sc. Nat. 4 Sept. 1864.

Formicivora schisticolor is described as a new species from Costa Rica. G. N. Lawrence, Ann. Lyc. N. Y. 1865, p. 173.

Myrmeciza stictoptera is described as a new species from Costa Rica, allied to *M. exul* and *M. læmosticta*, but differing from the former in its narrower bill, in having a concealed white dorsal patch, and in the middle wing-coverts being black, with larger and more conspicuous spots; from the latter in being larger, and having the throat unspotted, white shoulders, and wing-coverts as just mentioned. G. N. Lawrence, Ann. Lyc. N. Y. 1865, pp. 132, 133.

Myrmeciza marginata is described as a new species from Brazil. It differs from *M. ruficauda* by having the top of the head and neck olivaceous lead-coloured, the wing-coverts margined with white, and in other respects. It is very like *M. hemimelæna*, but differs from it in the points just mentioned, and by having a uniformly reddish belly. T. Salvadori, Atti Soc. Ital. Sc. Nat. 4 Sept. 1864.

Hypocnemis (?) *striativentris* is a new species from Brazil. It has the typical form of that genus, but wants the hidden interscapular spot. T. Salvadori, Atti Soc. Ital. Sc. Nat. 4 Sept. 1864.

Menuridæ.

Menura superba in confinement. G. Bennett, P. Z. S. 1865, p. 59; Ann. & Mag. N. H. 3rd ser. xvi. pp. 53, 54.

Pteroptochidæ.

Pteroptochus castaneus is a new species from Chili, very like *P. tarnii*, but having the forehead to the crown, and thence a broad streak over the eyes to the nape, with the chin, throat, and breast, chestnut-brown, and the back olive-brown. R. A. Philippi and L. Landbeck, Arch. f. Naturgesch. 1865, i. pp. 56–58.

Dendrocolaptidæ.

Philippi, R. A., and Landbeck, C. L. "Die Lerchen Chiles." Arch. f. Naturgesch. 1865, i. pp. 58–73.

Under this title the authors treat of six birds, which have undoubtedly some apparent resemblance to the family *Alaudidæ*. Three of them they refer to the genus *Certhilauda*, and the other three to *Geobamon*, Cab. (J. f. O. 1860, p. 249, note).

The first is *Geositta cunicularia* (Bp. ex Vieill.); the next,

Certhilauda (potiùs *Geositta*?) *frobeni* from Peru, described as a new species, characterized by having the outer rectrix entirely white, with the exception of a dark spot near the tip (*op. cit.* pp. 62, 63); the third

Certhilauda (potiùs *Geositta*?) *isabellina* from Chili, described as a new species, to be known by its bill being as long as the tarsus, and curved, breast unspotted, base of the tail whitish-red (*op. cit.* pp. 63–66).

Of the birds referred to *Geobamon*, the first is *G. rufipennis*, Burm.; the next

Geobamon fasciata, described as a new species, having most of the wing- and tail-feathers of a lively rust-red, with broad black cross bars at the end (*op. cit.* pp. 68–73);

The third is the *Certhilauda nigrofasciata* of Lafresnaye.

Synallaxis nigrifumosa is described as a new species, from Greytown, Nicaragua, much like *S. pudica*, but having the chestnut a little darker and brighter, and the other colours very much darker and of quite different shades. G. N. Lawrence, Ann. Lyc. N. Y. 1865, p. 181.

Philydor rufobrunneus is described as a new species from Costa Rica. G. N. Lawrence, Ann. Lyc. N. Y. 1865, p. 127.

Anabazenops lineatus is described as a new species from Costa Rica. G. N. Lawrence, Ann. Lyc. N. Y. 1865, pp. 127, 128.

Margarornis rubiginosa and *M. guttata* are described as new species from Costa Rica and Ecuador respectively. The first differs from *M. squamigera* in having a larger bill, shorter wings and tail, and in being darker in colour above, with very inconspicuous spots. The second differs from both the other species mentioned in the decided spots of its upper plumage; it partially resembles *M. brunnescens*, but has the lower part of the back, tail, and outer quill-edges rufous. A possible third species is also mentioned, which is proposed to be called *M. brunneicauda*. G. N. Lawrence, Ann. Lyc. N. Y. 1865, pp. 128–130.

Meliphagidæ.

Hartlaub, G. Monographischer Versuch über die Gattung *Zosterops*. Journ. für Orn. 1865, pp. 1–30.

This careful monograph treats first of the systematic position, the geographical distribution, and the habits of birds of this form, to which follows a full descriptive and synonymatic list of the fifty-two species known to the author, grouped geographically, the result of this arrangement showing that eleven species are African, eleven Asiatic, six Australian, fifteen Polynesian, and one of uncertain habitat, besides eight which are placed under other generic names, *Oreosterops*, *Heleia* (qu. *Helia*?), gen. nov., *Malacirops*, and *Speirops* (qu. *Spirops*?). Three more species, *Zosterops obscura*, H. & J., *Z. ambigua*, Sw., and *Z.* (?) *glaucura*, Reich., remain still doubtful. This paper is of the highest value.

Zosterops sundevalli is the name proposed for *Z. lateralis*, Sund. (*nec* Temm.), from Caffraria. *Idem, op. cit.* p. 8, 9.

Zosterops tenella is the name proposed for *Z. aurifrons*, Heugl. (*nec* Temm., nec Wall.), from the north-eastern part of Central Africa. *Idem, op. cit.* p. 11.

Zosterops heuglini is the name proposed for *Z. pallescens*, provisionally described by Heuglin (*Cf.* Zool. Record, i. p. 75). *Idem, op. cit.* p. 11.

Heleia (qu. *Helia*?) is a new genus established for the reception of two species in the Leyden Museum. It has a strong bill, stout feet, spotted plumage, and a long rounded tail. *Idem, op. cit.* pp. 3, 26.

H. muelleri and *H. frigida* are new species from Timor and Sumatra respectively, standing in the Leyden Museum as "*Zosterops frontalis*, Müll.," and "*Z. frigida*, Müll." The former is the larger, the plumage above greenish-grey, with the feathers on the top of the head black, bordered with yellowish; the latter is smaller, the plumage above brownish-olive, the top of the head dull crocus-yellow, with blackish longitudinal spots. *Idem, op. cit.* pp. 26, 27.

Zosterops rufilata is a new species in M. J. Verreaux's collection from an unknown locality. *Idem, op. cit.* pp. 29, 30.

"*Zosterops flavirons*, Pollen," is described as a new species from Mayotte. It is not the same as *Z. flavifrons*, Gray, and Hartlaub *ex* Latham; and if distinct from all others, as appears to be likely, it will require a new specific name. H. Schlegel, N. T. D. 1865, p. 87.

Stigmatops is the name proposed for a new genus to receive *Glyciphila ocularis* and *G. subocularis* (now once more separated from the former) of Australia, and some other species from the islands to the northward. No characters are given. J. Gould, Handb. B. Austral. i. p. 500.

Ptilotis rostrata is a new species from New Guinea, Waigiou, and Mysol, differing from *P. megarhynchus* from Aru by wanting the yellow ring round the eye and the markings of the under surface, as well as by the remarkably serrated bill. A. R. Wallace, P. Z. S. 1865, p. 478.

Anthornis melanura, its nest and eggs described. E. P. Ramsay, Ibis, 1865, pp. 154, 155.

Myzomela sanguinolenta, its nest and eggs described. E. P. Ramsay Ibis, 1865, pp. 304, 305.

Nectariniidæ.

A species of *Nectarinia* allied to *N. ebocnsis*, but distinct, from the neighbourhood of Lagos, is mentioned, but not described. T. J. Moore, Proc. Lit. & Philos. Soc. Liverpool, xix. p. 225.

Nectarinia flavostriata is a new species from Celebes, very near *N. siparaja*, but larger, and having a yellow-striped throat, red-margined quills, blue tail-coverts, darker under surface, and shorter tail. A. R. Wallace, P. Z. S. 1865, pp. 478, 479, pl. xxix. fig. 2.

Nectarinia porphyrolæma and *N. grayi* are two new species, the first from Macassar, the second from Menado. *Idem, op. cit.* p. 479.

Nectarinia osea from Palestine, male, female, and nest, is figured and its breeding-habits described at length. H. B. Tristram, Ibis, 1865, pp. 72–76, pl. ii.

Nectarinia (*Arachnechthra*) *insignis* is a new species from Penang, intermediate between *A. lotenia* and *A. asiatica*, differing from either in its green crown and purple breast and abdomen. J. Gould, P. Z. S. 1865, pp. 663, 664.

Nectarinia australis, abundant near Port Denison, Queensland. Notes respecting its nidification. E. P. Ramsay, Ibis, 1865, pp. 85, 86.

Æthopyga loloisia is a new species, with a violet crown, a yellow rump, and grey abdomen. T. Salvadori, Ibis, 1865, pp. 548, 549.

Cotingidæ.

The species of the genus *Lipaugus* are remarked on. T. Salvadori, Atti Soc. Ital. Sc. Nat. vii. 4 Sept. 1864.

The four known species of *Chasmorhynchus* are described, and *C. tricarunculatus* is figured. O. Salvin, Ibis, 1865, pp. 90–95, pl. iii.

Ampelidæ.

Prionochilus aureolimbatus is a new species from North Celebes. A. R. Wallace, P. Z. S. 1865, p. 477, pl. xxix. fig. 1.

Pachycephala brunnea is a new species from the Banda Islands and Salwatty, but the specimen from the first locality is rather lighter-coloured on the head and brighter on the back. A. R. Wallace, P. Z. S. 1865, p. 478.

Pardalotus affinis occurs also in Australia: differences in its plumage and that of *P. punctatus* and *P. striatus* pointed out. Nest and eggs of the latter described. E. P. Ramsay, Ibis, 1865, pp. 298, 299.

Hirundinidæ.

Delaharpe, J. Renseignements sur la migration des hirondelles Bull. Soc. Vaud. 1864, pp. 111–126, and 1865, p. 168.

These observations are made in connexion with those of Ritter von Frauenfeld (Zool. Record, i. pp. 40, 41).

Nest and eggs of *Chelidon arborea* and *C. ariel* described. E. P. Ramsay, Ibis, 1865, pp. 299, 300. Error corrected, *Id. op. cit.* 1866, p. 127.

Hylochelidon is the name proposed for a new genus to receive the *Chelidon arborea* of Australia and another species from Timor, which are stated to nidify in the holes of trees without building any real nest, to have bare tarsi, thus separating them from *Chelidon*, and also to differ, though in what way is not mentioned, from *Petrochelidon*. J. Gould, Handb. B. Austral. i. p. 111.

Lagenoplastes is the name proposed for another new genus, to receive the *Chelidon ariel* of Australia, and probably another species from India. The former builds a retort-shaped nest. "What the members of the genus *Hylochelidon* are to the Swallows, those of the present are to the Martins, from which they differ in their diminutive and bare tarsi, and from the American Hylochelidons [?] in their more feeble structure and colouring." J. Gould, Handb. B. Austral. i. pp. 112, 113.

Hirundo rufula, its habits in Palestine. H. B. Tristram, Ibis, 1865, p. 79.

Phæoprogne, *Notiochelidon*, *Pygochelidon*, and *Callichelidon* are proposed subgenera; the first of *Progne*, the second and third of *Atticora*, with *A. pileata* and *A. cyanoleuca* as their respective types, and the fourth of *Hirundo*, with *H. cyanoviridis* as its type. The actual type of *Phæoprogne* is not stated; but *P. fusca* (Vieill.) and *P. tapera* (L.) are referred to it. S. F. Baird, Rev. Am. B. pp. 269–271, 283–286, 294, 303, 305, 306, 308.

Progne elegans is described as a new species from Buenos Ayres and Brazil, nearly allied to *P. purpurea* (L.). The adult male steel-blue all over, the female and immature male uniform brown or greyish-brown beneath, with the edges of the feathers paler. It is supposed to be the *P. purpurea* of Darwin, B. 'Beagle,' p. 38. S. F. Baird, *op. cit.* pp. 274, 275, 276, note.

Progne cryptoleuca from Cuba is another species nearly allied to *P. purpurea*, but with more pure though concealed white about the anal region and on the anterior part of the rump. The wings and tail more highly glossed, and the latter somewhat more deeply forked. S. F. Baird, *op. cit.* pp. 273–277.

Progne furcata from Chili is a third species allied to *P. purpurea*, but with the anal feathers dark brown at base. Wings and tail dull. The latter deeply forked. S. F. Baird, *op. cit.* pp. 273–278, note.

Progne leucogaster is described as a fourth new species, from Southern Mexico, Central America, and probably the north-eastern part of South America, and is the *P. dominicensis* of most of the lists of birds from those regions. It differs from that bird, however, being brownish beneath (with the exception of the white belly, the shafts of the feathers on which are dusky), a character possessed also by *P. domestica* (Vieill.), but this last is much larger. S. F. Baird, *op. cit.* pp. 274, 282, 283, notes.

A variety of *Atticora cyanoleuca* from Costa Rica, and south along the Andes to Chili, is described under the name *montana*. S. F. Baird, *op. cit.* pp. 310, 311.

Stelgidopteryx fulvigula is described as a new species from Costa Rica. Its conspicuous light rump distinguishes it from all its allies except *S. uropygialis*, than which it is smaller and darker. S. F. Baird, *op. cit.* p. 318.

Oriolidæ.

Details of some specimens belonging to different species of the black-headed section of the genus *Oriolus* from Africa and Asia are given. T. Salvadori, Atti Soc. Ital. Sc. Nat. 4 Sept. 1864.

Oriolus galbula is figured. J. Gould, B. G. B. part vii; C. J. Sundevall, Sv. Fogl. pl. lxvii.

Vireonidæ.

Hylophilus acuticaudus is a new species from Venezuela, differing in its narrow pointed rectrices from all others of the genus that the author has seen. G. N. Lawrence, Proc. Acad. Philad. 1865, pp. 37, 38.

Tyrannidæ.

Arundinicola citreola is described at great length as a new species from Chili, but apparently only differs in a very slight degree from the *A. flaviventris* of D'Orbigny. L. Landbeck, Ann. Univers. Chile, April 1864; Arch. f. Naturgesch. 1864, i. pp. 58–62.

Philippi, R. A., and Landbeck, C. L. Monographie der Südamerikanischen Muscisaxicolinen. Arch. f. Naturgesch. 1865, i. pp. 74–109.

Fifteen species of the genus *Muscisaxicola* are discriminated and described at considerable length, four of them, all from the Chilian Cordilleras, as new, namely:—

M. cinerea, known by having all the upper surface of a pale ash-grey (*op. cit.* pp. 80–82).

M. rubricapilla, olive-brown on the upper part of the head, with dark rusty-red central spots, the back greyish-brown (*op. cit.* pp. 90–95).

M. flavivertex, having the first and third remiges of equal length and a large pale rusty-yellow spot on the head (*op. cit.* pp. 98–101).

M. nigrifrons, with the forehead and middle of the crown black and the bill much curved downwards (*op. cit.* pp. 101–104).

Obs.—Mr. Sclater has some remarks on this paper (Ibis, 1866, pp. 56–59), wherein he identifies *M. flavivertex*, above-mentioned, with *M. rufinucha*, Lafresnaye, and suspects *M. nigrifrons* to be the same as *Ptyonura frontalis*, Burmeister.

Anæretes cristatellus is a new species from Hayti. T. Salvadori, Atti Soc. Ital. Sc. Nat. 4 Sept. 1864.

Elainea frantzii is described as a new species from Costa Rica, in its upper plumage much like *E. subpagana*, but having the throat and breast dull greenish-olive and the abdomen pale yellow. G. N. Lawrence, Ann. Lyc. N. Y. 1865, pp. 173, 174.

Elainea chiriquensis and *E. semiflava* are described as new species from Chiriqui, New Granada; the former is somewhat like *E. subpagana*, but smaller and of a duller olive above, the breast and the sides cinereous, and the abdomen duller and paler. *Idem, op. cit.* pp. 177, 178.

Rhynchocyclus cerviniventris is a new species from Brazil. T. Salvadori, Atti Soc. Ital. Sc. Nat. 4 Sept. 1864.

Myiobius rufescens is described as a new species from Brazil. Very like *M. nævus*, but smaller. *Idem, op. cit.*

Pyrocephalus mexicanus perhaps not distinct from *P. rubineus*. *Idem, op. cit.*

Mitrephorus aurantiiventris is a new species from Costa Rica, much resembling *M. phæocercus*, but smaller and above greener, and with the abdomen and sides bright orange-yellow. G. N. Lawrence, Ann. Lyc. N. Y. 1865, p. 174.

Empidonax pygmæus is indicated as a new species from Arizona. E. Coues, Ibis, 1865, p. 537. (Renamed *Mitrephorus pallescens*, *Idem*, P. Ac. Phil. Jan. 1866.)

Empidonax flavescens, from Costa Rica, is described as new species not much like any other of the genus. G. N. Lawrence, Ann. Lyc. N. York, 1865, p. 133.

Contopus lugubris is described as a new species from Costa Rica, somewhat resembling *C. richardsoni*, but very much darker as well as larger. G. N. Lawrence, Ann. Lyc. N. York, 1865, p. 134.

Myiarchus venezuelensis is described as a new species from Venezuela, nearly allied to *M. panamensis*, but is smaller and has bright rufous margins to the rectrices, besides other points of difference. More perfect specimens of the last-named bird have also been received, enabling the author to give further details of its plumage. G. N. Lawrence, Proc. Acad. Philad. 1865, p. 38.

Dicruridæ.

Dicrurus waldeni is a new species from Mayotte. In the form of the bill and in the texture and colour of the plumage it resembles *D. forficatus* from Madagascar and *D. cristatus* from Zambesia, but it has no crest. In the form of the tail it resembles the Asiatic group of which *D. macrocercus* is the

type. It is possible that this new species is the *D. forficatus* of Sclater (Ibis, 1864, p. 290), from Joanna. H. Schlegel, N. T. D. 1865, pp. 86, 87.

Dicrurus leucops is described as a new species from Celebes, exactly like *D. pectoralis* in coloration, except the irides, which are milk-white. A. R. Wallace, P. Z. S. 1865, p. 478.

Laniidæ.

Dryoscopus guttatus is a new species from Benguela. G. Hartlaub, P. Z. S. 1865, p. 86; J. J. Monteiro, *op. cit.* p. 93.

Artamus melanops is a new species from South Australia, most nearly allied to *A. albiventris*, but having the under tail-coverts jet-black. It is smaller than *A. cinereus* and has more black on the face. J. Gould, P. Z. S. 1865, pp. 198, 199; Ann. & Mag. N. H. 3rd ser. xvi. pp. 60, 61; *Idem*, Handb. B. Austral. i. pp. 149, 150.

"*Xenopirostris damii*, Pollen," is described as a new species from the north-west of Madagascar, rather smaller than *X. lafresnayi*, with a white chin and the grey on the wings differently disposed. It is possible also that there may be a third species in Madagascar, provisionally named by M. Pollen *X. albifrons*. H. Schlegel, N. T. D. 1865, pp. 82–84.

Campephagidæ.

Hartlaub, G. Monographische Studien über die Gruppe der Campephaginen. Journ. für Orn. 1864*, pp. 435–446; 1865, pp. 153–173.

The birds of this group are distributed in Africa from the Cape to 18° N. lat., as well as in Madagascar and the Mascarene Islands, in Asia over the whole of India, the Indo-Chinese territories, South and Middle China (except Formosa), the Philippines, Sunda Islands, and Moluccas, New Guinea, together with the whole of Australia, Tasmania, Norfolk Island, New Caledonia, New Hebrides, Louisiades, Solomon Islands, Feejees, the Navigators' and Society Islands. The centre of their distribution may be taken to be the Moluccas and New Guinea, as the greatest diversity of species is there to be found in the smallest space. The author divides the group into nine genera, five of which, *Graucalus*, *Campephaga*, *Oxynotus*, *Volvocivora*, and *Lalage*, have the very characteristic stiff shafts to the rump-feathers, a structure which seems to attain its maximum in *Oxynotus*; in *Artamides* and *Lanicterus* this peculiarity is less remarkable, and it appears to be altogether wanting in *Pteropodocys* and *Symmorphus*. The author rejects the genus *Ceblepyris*, making it a section of the typical genus *Campephaga*. The paper contains a descriptive and synonymatic list of the sixty-seven species of the group, three of which are new, drawn up in Dr. Hartlaub's usual admirable style.

Graucalus concretus is a new species from Borneo, having the lores the

* Not published till after March 1865.

same grey colour as the back, and the bill exceedingly stout and rounded. It stands between *G. lagunensis* and *G. swainsoni*. The two specimens known are in the Leyden Museum and that of Hr. Heine. G. Hartlaub, J. f. O. 1864*, p. 445.

Campephaga amboinensis seems to be a new species from Amboyna, much allied to *C. morio* from Celebes, but paler in colour and rather larger. G. Hartlaub, J. f. O. 1865, p. 156.

Campephaga sloeti is a new species from the western part of New Guinea. It belongs to the subgenus [genus] *Lalage*, but in appearance resembles a *Pericrocotus*, and approaches *C. aurea* from Halmaheira. H. Schlegel, N. T. D. 1865, pp. 253, 254.

Volvocivora schierbrandi is described and figured as a new species from Borneo, very like *V. fimbriata*, but smaller and having the black of the throat and breast circumscribed and abruptly separated from the colour of the lower parts. A. v. Pelzeln, Reise Novara, Vögel, pp. 80, 81, tab. ii. fig. 1; G. Hartlaub, J. f. O. 1865, p. 161.

Volvocivora melanura is a new species from India (?), very like *V. melaschistus* (*Ceblepyris lugubris*, Sundev.), but with a tail entirely black and a slenderer bill. G. Hartlaub, J. f. O. 1865, p. 162.

Pollen, François. Note sur l'*Oxynotus ferrugineus*. Bull. de la Soc. d'Acclimat. et d'Hist. Nat. de l'île de la Réunion, tom. iii. Saint Denis: janvier 1865, pp. 4, pl. i.

The observations of the author as made by himself in Réunion (Bourbon) are valuable, but they are mingled with several statements with regard to other matters of doubtful accuracy, some of which, however, appear to be of much importance. It is probable that the author's descriptions and figures refer to a species distinct from that which has been usually identified with the *Lanius ferrugineus* of Gmelin. (*Cf.* Ibis, 1865, p. 530, and 1866, p. 224.)

Oxynotus ferrugineus (Quoy et Gaimard) is proposed to be called *O. typicus*. G. Hartlaub, J. f. O. 1865, p. 160.

Muscicapidæ.

Hylophorba is a new genus, the characters of which are given at some length. It is allied to *Hyloterpe*, and is instituted for the reception of

Hylophorba ruticilla, a new species of bird from Madagascar. P. L. Sclater, P. Z. S. 1865, pp. 326, 327, pl. xiii.

Butalis cærulescens is a new species from Natal. G. Hartlaub, Ibis, 1865, pp. 267, 268.

Muscicapa (*Erythrosterna*) *parva* has again occurred in England. E. H. Rodd, Ann. & Mag. N. H. 3rd ser. xvi. p. 447; ♀ figured, C. J. Sundevall, Sv. Fogl. pl. lxviii.

Muscicapa helianthea is described as a new species from Celebes. A. R. Wallace, P. Z. S. 1865, p. 476.

* Not published till after March 1865.

Tchitrea mutata, *T. pretiosa*, and *T. holosericea* are probably synonymous. H. Schlegel, N. T. D. 1865, pp. 84–86. A. Newton, P. Z. S. 1865, p. 835.

Tchitrea spekii is described as a new species from Eastern Africa. G. Hartlaub, P. Z. S. 1865, p. 428.

Cyornis rufigula and *C. rufifrons* are new species, the former from Celebes, the latter from Borneo. A. R. Wallace, P. Z. S. 1865, p. 476.

Myiagra plumbea and *Monarcha carinata*, their nests and eggs described. E. P. Ramsay, Ibis, 1865, pp. 301–303.

Rhipidura longicauda is a new species from Sumatra, very near *R. javanica*, but has a longer tail, narrower white tips to only three outer rectrices, and a black chin. A. R. Wallace, P. Z. S. 1865, p. 476.

Rhipidura torrida is a new species from the summit of the volcano of Ternate, very like *R. semicollaris*, but has a shorter bill and a different arrangement of colouring. *Idem*, *op. cit.* p. 477, pl. xxviii.

Rhipidura cinerea is a new species from Ceram, nearest to *R. assimilis*, but wanting the terminal white spots on the rectrices. *Idem*, *loc. cit.*

Rhipidura flabellifera, its nest and eggs described. E. P. Ramsay, Ibis, 1865, p. 155.

"*Muscipeta melaleuca*, Quoy et Gaimard," is distinct from "*Muscicapa tricolor*, Vieill.," to which it had formerly (Arch. du Mus. vii. p. 357) been referred. The latter seems to be identical with *Rhipidura motacilloides*, Vig. & Horsf. Pucheran, R. Z. 1865, pp. 15–17.

Mniotiltidæ.

Geothlypis melanops is a new species from Eastern Mexico, resembling *G. trichas*, but of a uniform yellow beneath, including the under surface of the wings, and with the mask broadly bordered with bluish-white. S. F. Baird, Rev. Am. B. pp. 219–222.

Geothlypis poliocephala is described as a new species from the west coast of Mexico and Guatemala, with a very stout bill and much curved culmen. The black of the face confined to the loral region or extending only in a narrow ring round the eye. S. F. Baird, *op. cit.* pp. 220, 225, 226.

A supposed new species of *Geothlypis* from Guatemala is indicated but not named. It may, however, be the female of *G. speciosa*. S. F. Baird, *op. cit.* pp. 227, 228.

Motacilla canadensis no. 2, of Linnæus, is now proposed to be termed *Dendræca cærulescens*, the former name being a synonym of *D. coronata*, of earlier date than as used for the present species, to which also *Sylvicola pannosa* of Gosse is referred (*cf.* P. Z. S. 1861, p. 71). S. F. Baird, Rev. Am. B. pp. 186, 187.

Dendræca gundlachi is the name proposed for the *Sylvia æstiva*, Lembeye, from Cuba, and the peculiarities wherein it differs from its allies are described in much detail. S. F. Baird, *op. cit.* pp. 197–199.

Dendræca petechia (L.), from Jamaica, is very fully differentiated from *D. æstiva*. The former is larger, with disproportionately broader quills. S. F. Baird, *op. cit.* pp. 194, 199–201.

A new species of *Dendræca* from some of the West-Indian Islands (St. Croix, St. Thomas, and Barbadoes) is indicated but not named. It is supposed to be identical with the *Motacilla ruficapilla* of Gmelin, founded on a specimen from Martinique, and has been confounded with *D. æstiva* by A. & E. Newton (Ibis, 1859, p. 143) and with *D. petechia* by Cassin (Proc. Philad. Acad. 1860, pp. 192, 376). The examples at the author's disposal are not sufficiently perfect to exhibit their true character. S. F. Baird, *op. cit.* pp. 201–203.

Dendræca rufigula is the name proposed for the *Sylvia ruficapilla* of Vieillot, which is not the *Motacilla ruficapilla* of Gmelin and Latham. It is much smaller than *D. vicilloti*, and has the orange-brown of the head and throat extending down the neck to the jugulum. The specimen is in the Philadelphia Academy, but its original locality is unknown. S. F. Baird, *op. cit.* pp. 204, 205.

Dendræca graciæ [sic] is a new species discovered in Arizona by Dr. Coues. Very like *D. nigrescens*, but with a yellow chin and throat. It also resembles *D. dominica*; but has a yellow subocular crescent and is without the white patch behind it. It is still more closely related to *D. adelaidæ*, but has the yellow of the underparts extending to the crissum, and the sides scarcely streaked. S. F. Baird, *op. cit.* pp. 210–212.

Dendræca adelaidæ is a new species obtained from Porto Rico by Mr. Swift, having some peculiarities of form which almost entitle it to rank in a separate genus. The nape has a number of long bristles with fibrillæ at the end. S. F. Baird, *op. cit.* pp. 212, 213.

Dendræca atricapilla is described as a new species from Chili, greatly resembling *D. varia* from North America, but it has a white stripe along the middle of the head and a second over the eyes; the feathers of the back are also bordered with white. L. Landbeck, Ann. Univers. Chile, Apr. 1864; Arch. f. Naturgesch. 1864, i. pp. 56–58.

Dendræca niveiventris is referred to *D. occidentalis*, and diagnoses of this with the allied *D. virens*, *D. chrysoparia*, and *D. townsendi* given. P. L. Sclater, Ibis, 1865, pp. 87–89. Error corrected *op. cit.* p. 237.

Sclater, P. L. On a New Species of the Genus *Basileuterus* of Cabanis, with a Synopsis of the known Species of the Genus. Proc. Zool. Soc. 1865, pp. 282–286, pls. ix., x.

The author considers the proper position of the genus to be between *Myiodioctes* and *Setophaga*, and gives a diagnostic and synonymatic list of fifteen species belonging to it, exclusive of *Myiothlypis nigricristata* and *Euthlypis lacrymosa*, which he thinks can scarcely be separated generically.

Basileuterus mesoleucus, from Demerara, is a new species, allied to *B. stragulatus* from Eastern Brazil, but with a whole-coloured head, red eyebrows, a white belly, and shorter wings and tail. It is figured (fig. 1) together with *B. cinereicollis* (fig. 2), *op. cit.* pl. ix., and *B. semicervinus* (fig. 1) and *B. uropygialis* (fig. 2), *op. cit.* pl. x.

Myioborus, *Idiotes*, and *Ergaticus* are proposed subgenera of *Setophaga*, *Basileuterus*, and *Cardellina* respectively. The first has for its type *S. verticalis*, the second *B. rufifrons*, and the third *C. rubra*. S. F. Baird, Rev. Am. B. pp. 237, 257, 247, and 264.

The *Setophaga ruficoronata* of Sclater (Cat. Am. B. p. 37) is supposed to be

distinct from the species so described by Kaup; but the former receives no name. S. F. Baird, *op. cit.* p. 258.

Setophaga aurantiaca is a new species from Costa Rica, very similar to *S. verticalis* from Bogota, but with the lower parts yellowish-orange, the forehead and sides of vertex black, and outer rectrix with less than the terminal half white. S. F. Baird, *op. cit.* pp. 254, 261.

Setophaga torquata is another new species from Costa Rica, to be distinguished from all its congeners by its clear yellow face without any dusky marks, and the yellow underparts crossed by a dusky pectoral band. S. F. Baird, *op. cit.* pp. 254, 261, 262.

Granatellus francescæ is a new species from the Tres Marias, off the west coast of Mexico, similar to *G. venustus*, but wanting the black pectoral band and having a longer, broader, and more rounded tail. S. F. Baird, Rev. Am. B. pp. 331–333.

Turdidæ.

Cinclus aquaticus, its anatomy and habits treated of. The shortness of the wing and great development of its muscles probably account for its diving-powers and progress under water. There is no evidence of the bird eating fish-spawn. E. Crisp, P. Z. S. 1865, pp. 49–52; Ann. & Mag. N. H. 3rd ser. xvi. pp. 49–52.

Turdus atrogularis, *T. naumanni*, and *T. pallens* have all occurred in Italy. The last was described by Gené as *T. icterneri* and has been regarded by Blasius as identical with *T. pallidus*. T. Salvadori, Atti Soc. Ital. Sc. Nat. 4 Sept. 1864.

Turdus goudoti is a new species from Madagascar. Olive-brown above, rufous below, the head black, forehead grey, and a white collar. In form it seems to approach some of the American species. J. Verreaux, Nouv. Arch. du Muséum, Bull. i. pp. 77, 78, pl. v. fig. 2.

Turdus varius is figured. C. J. Sundevall, Sv. Fogl. pl. lxvii.

Mimocichla, a subgenus of Mr. Sclater's, is proposed to be raised to generic rank, with *Turdus rubripes*, Temm., as its type; and

Mimokitta (lege *Mimocitta*) is a new genus proposed for the reception of *Turdus plumbeus*, L., a detailed description of which is appended, while prefixed are some general remarks on the genus *Galeoscoptes*, at whose expense these changes are made. H. Bryant, Proc. Boston Soc. N. H. ix. pp. 369–372.

Mimus polyglottus (?) breeding in confinement at Bordeaux. C. Chapella, Bull. Soc. Impér. d'Acclimat. 1865, pp. 466–473.

Otagon tanagra is a new species with the bill longer and stouter than in *O. turdus* (*Turnagra crassirostris*) from New Zealand. Its habitat is not stated. H. Schlegel, N. T. D. 1865, p. 190.

Crateropus gymnogenys is a new species from Benguela. G. Hartlaub, P. Z. S. 1865, p. 86; J. J. Monteiro, *op. cit.* p. 93.

Crateropus salvadorii is described as a new species from the neighbourhood of Shiraz in Persia. F. de Filippi, Viagg. Pers. pp. 346, 347.

Crateropus chalybeius from Palestine, its habits described. H. B. Tristram, Ibis, 1865, pp. 79–81.

Hypsipetes nicobariensis is figured. A. v. Pelzeln, Reise Novara, Vögel, tab. iii. fig. 2.

Copsychus sechellarum is an apparently undescribed species from the Seychelles, perhaps allied to *C. pica* from Madagascar, but glossy black all over, except the upper wing-coverts, which are white. A. Newton, Ibis, 1865, pp. 331–333, pl. viii.

Otocompsa fuscicaudata is described as a new species from Southern India, where it is very common. It differs from *O. emeria* of Bengal and *O. jocosa* of China in the uniform colour of the tail. J. Gould, P. Z. S. 1865, p. 664.

Lxus xanthopygius from Palestine, its habits described. H. B. Tristram, Ibis, 1865, pp. 81, 82.

Sylviidæ.

Fatio, V. Distribution verticale des Sylviadées en Suisse. Bull. Soc. Orn. Suisse, 1865, pp. 39–67.

A notice of this paper is contained under the heading "Palæarctic Region."

Irania finoti. The generic and specific characters of this entirely new form of Saxicoline bird, first described in 1863 or 1864, are again repeated. F. de Filippi, Viagg. Pers. p. 347.

Bradyornis spekii, Hartl. (P. Z. S. 1863, p. 105), is identical with *Cichladusa arquata*, Peters (Monatsb. Berlin Akad. Wiss. 16 March, 1863), which name has the priority. G. Hartlaub, Ibis, 1865, pp. 546, 547.

Saxicola spectabilis is a new species from South Africa. G. Hartlaub, P. Z. S. 1865, pp. 428, 429, pl. xxiii. Particulars of its habits, E. L. Layard, *op. cit.* pp. 619, 620.

Saxicola castor and *S. pollux* are two new species from South Africa. The last is smaller than the first, with longer tail, wings, and legs, white under tail-coverts, and the rectrices differently coloured. G. Hartlaub, *op. cit.* pp. 746, 747.

Saxicola capistrata is described and figured as new. It is *S. leucomela*, Jerdon (*nec* Pallas). J. Gould, B. As. part xvii.

Saxicola montana, from Afghanistan, is described and figured as new. *Idem, loc. cit.*

Saxicola leucomela, Pall., and *S. deserti* are also figured. *Idem, loc. cit.*

Dromolæa chrysopygia, the characters of this species, described as new in 1863 or 1864, are repeated. F. de Filippi, Viagg. Pers. pp. 347, 348.

Dromolæa picata and *D. opistholeuca* are figured. J. Gould, B. As. part xvii.

Melanodryas is the name proposed for a new genus consisting of "the Pied Robins, of which at least two species inhabit Australia." J. Gould, Handb. B. Austral. i. p. 283.

"*Melanodryas picta*" is described as a new species from North-western Australia, the representative of *Petræca cucullata* (Lath.) (*P. bicolor*, Gould, *olim*), which it is very like in colour and general form, but than which it is much smaller. A specimen from Port Essington probably indicates the existence of a third species of the group. J. Gould, *op. cit.* p. 285.

Amaurodryas is the name proposed for a new genus, to receive *Petræca fusca* (now identified with *Muscicapa vittata*, Quoy & Gaim.), as that species differs from the true *Petræca* "not only in colour, but in the stouter and more robust or thicker form of the bill." The eggs are also very different from those of that group, and the sexes are alike in colouring. J. Gould, *op. cit.* part i. p. 286.

Pœcilodryas is the name proposed for a new genus, to receive *Petræca cerviniventris* and *P. superciliosa*, because on reference to the figures of those birds "it will be at once seen that these two species cannot be associated with either of the preceding genera, and must be separated into a new one." No characters are given. J. Gould, B. Austral. i. p. 287.

Saxicola (*Pratincola*) *rubicola* is figured. C. J. Sundevall, Sv. Fogl. pl. lxvi.

Pratincola rubetra with young is figured. E. Bettoni, Ucc. Lombard. fasc. ii.

Ruticilla moussieri. M. Galliard's original description of this species (Mém. Soc. Lyon, 1852) is noticed, without any mention of the additional information respecting it furnished by Messrs. Tristram and Salvin (Ibis, 1859, 1860). Rev. Zool. pp. 285–287.

Luscinia (*Ruticilla*) *tithys* is figured. C. J. Sundevall, Sv. Fogl. pl. lxvi.

Cyanecula suecica, its supposed residence in the Isle of Wight. H. Hadfield, Zool. pp. 9605, 9724, 9846; figured J. Gould, B. G. B. part viii.

Accentor alpinus breeds on the Riesengebirge. J. A. Jahn, Zool. Garten, 1865, pp. 473, 474.

Gerygone aucklandica, from New Zealand, is described as a new species, very like *G. modesta* from Norfolk Island, but is smaller and has different markings on the tail. Its habits resemble those of *Regulus cristatus*. A. v. Pelzeln, Reise Novara, Vögel, pp. 65, 66.

Gerygone neglecta and *G. palpebrosa* are two new species,—the first from Waigiou and Mysol, most like *G. chloronota*; the second from the Aru Islands. A. R. Wallace, P. Z. S. 1865, p. 475.

Drymœca (?) *rodericana* is a new species from Rodriguez, cinereous-olive above, yellowish below, with a yellowish-white circle round the eye. A. Newton, P. Z. S. 1865, pp. 47, 48, pl. i. fig. 3; E. Newton, Ibis, 1865, pp. 149, 150.

Drymœca madagascariensis, Hartl., having twelve rectrices, is referred to the genus *Cisticola*. A. Newton, P. Z. S. 1865, p. 835.

Drymœca gracilis, its habits in Palestine. H. B. Tristram, Ibis, 1865, pp. 82, 83.

Cisticola schœnicola: observations on this bird, which in fact amount to a monograph of it, are given. G. Lunel, Bull. Soc. Orn. Suisse, 1865, pp. 9–30, pl. i.

Calamoherpe turdoides is figured. C. J. Sundevall, Sv. Fogl. pl. lxvii., and, with young, E. Bettoni, Ucc. Lomb. fasc. i.

Sylvia locustella and *S. cariceti* are figured. C. J. Sundevall, Sv. Fogl. pl. lxviii.

Sylvia doriæ is described from Persia as a new species, much resembling *S. conspicillata*, but with a shorter bill and stouter toes. F. de Filippi, Viagg. Pers. p. 348.

Sylvia cinerea and *S. curruca* are figured. J. Gould, B. G. B. part vii.

Curruca cinerea, var. *persica*, is mentioned but not characterized. F. de Filippi, Viagg. Pers. p. 348.

Curruca atricapilla is figured, J. Gould, B. G. B. part vii., and, with young, E. Bettoni, Ucc. Lomb. fasc. iii.

Curruca hortensis is figured. J. Gould, B. G. B. part viii.

Hippolais (lege *Hypolais*) *elaica* (Lind.) has occurred in Italy and is figured. F. Magni-Griffi, Mem. Soc. Ital. di Sci. Nat. i. no. 2, pp. 6, c. tab.

Ficedula hypolais is figured. J. Gould, B. G. B. part vii.

Phylloscopus superciliosus caught near Leyden. J. P. v. W. Crommelin, N. T. D. 1865, p. 244; figured, C. J. Sundevall, Sv. Fogl. pl. lxviii.

Phyllopneuste tristis is figured. J. Gould, B. As. part xvii.

Abrornis armandi is described as a new species much resembling *A. viridana*, Blyth, and *A. lugubris* (Blyth), Journ. As. Soc. 1843, xii. p. 968. H. Milne-Edwards, Nouv. Arch. Mus. Bull. i. pp. 22, 23, pl. ii. fig. 3.

Motacillidæ.

Enicurus (lege *Henicurus*) *guttatus* and *E.* (*H.*) *sinensis* are two new species, the first supposed to be from Sikim, and there to be the eastern representative of *H. maculatus*; the second is from China, very similar to *H. leschenaulti* from Java, but with only half the crown white. J. Gould, P. Z. S. 1865, pp. 664, 665.

Motacilla alba (?), from Persia, is distinguished by having the white on the wing-coverts more extended, as in *M. dukhunensis*. F. de Filippi, Viagg. Pers. p. 348. [Qu. = *M. lugubris*, Temm. ?]

Motacilla sulphurea is figured. C. J. Sundevall, Sv. Fogl. pl. lxvi.

The synonymy and distribution of the five species of Indian *Motacillæ*, *M. maderaspatana*, *M. luzoniensis*, *M. hodgsoni*, *M. personata*, and *M. duchunensis*, and the three of Indian *Budytes*, *B. calcarata*, *B. melanocephala*, and *B. viridis*, are particularized. E. Blyth, Ibis, 1865, pp. 48–50.

Budytes citreoloides (*B. citreola*, Gould *olim*, *et* Jerdon, *nec* Pallas) is figured. Gould, B. As. part xvii.

Pipastes agilis is figured. J. Gould, B. As. part xvii.

Anthus (*Notiocorys*) *parvus* is described as a new species from the Isthmus of Panama, founded on specimens formerly referred (Ann. Lyc. N. Y. vii. p. 322) to *A. rufus*, from which they differ by their smaller size and the colour of the two outer rectrices. G. N. Lawrence, Proc. Acad. Philad. 1865, pp. 106, 107.

Anthus ricardi, four examples observed in one day, 24 Oct. (1863?), near Caen. O. Fauvel, Bull. Soc. Linn. Normand. ix. p. 127. Its occurrence in England: G. F. Mathews, Zool. p. 9436; G. D. Rowley, Zool. p. 9466. Figured, C. J. Sundevall, Sv. Fogl. pl. lxvi.

Anthus rufescens has again occurred in England. G. D. Rowley, Ibis, 1865, p. 113.

Anthus spinoletta, supposed occurrence in England. P. L. Sclater, P. Z. S. 1865, p. 60. J. Gould, Ibis, 1865, pp. 114, 115.

Anthus rupestris, occurrence in England. Ibis, 1865, p. 237.

Troglodytidæ.

Thryothorus brunneus is described as a new species from Greytown, Nicaragua. G. N. Lawrence, Ann. Lyc. N. Y. 1865, pp. 179, 180.

Certhiidæ.

Tichodroma muraria, its habits in confinement and at large. A. Girtanner, Bull. Soc. Orn. Suisse, i. pp. 126–131. Translated from Verhandl. der St. Gallischen naturw. Gesellsch. 1863–64.

Sittidæ.

Sclater, P. L. Notes on Krüper's Nuthatch, and on the other known Species of the Genus *Sitta*. Ibis, 1865, pp. 306–311, pl. vii.

The author characterizes and figures the *Sitta krueperi* of Von Pelzeln from Asia Minor, which is a very distinct species, its black cap, chestnut pectoral band, and small size separating it at once from all other Old-World birds of the genus. He afterwards remarks on the other species of the group, of which he enumerates twelve, adding short details of their distribution and synonymy. *S. formosa* is quite isolated. He follows Prof. Blasius in not allowing the specific distinction of *S. cæsia*, *S. advena*, and *S. europæa*, to which he also refers the specimens collected in Palestine by Mr. Tristram and called by him (P. Z. S. 1864, p. 433) "*S. krueperi*." The author also refuses to admit the *Sitta aculeata* as distinct from *S. carolinensis*. To this last the Asiatic *S. leucopsis* is most nearly allied, having a black head and nape; the latter character is wanting in *S. krueperi*.

Sitta villosa is a new species from North China, having a great resemblance to *S. canadensis*, but distinguished by its long and silky plumage. It belongs to the black-capped group (*vide suprà*). J. Verreaux, Nouv. Arch. du Muséum, Bull. i. p. 78, pl. v. fig. 1.

Paridæ.

Parus afer from Benguela is much smaller than southern specimens. G. Hartlaub. P. Z. S. 1865, p. 88.

Parus hudsonicus, var. *littoralis*, is described from Nova Scotia. It differs from the type in size quite as much as do *P. carolinensis* and *P. atricapillus*, and in colour as the latter and *P. septentrionalis*. H. Bryant, Proc. Boston Soc. N. H. ix. pp. 368, 369.

Parus alpestris, Bailly, does not differ from *P. borealis*, De Selys, but is specifically distinct from *P. palustris*. V. Fatio, Bull. Soc. Orn. Suisse, 1865, pp. 79–93, tab. ii. figg. 1–3.

Parus cyaneus is figured. C. J. Sundevall, Sv. Fogl. pl. lxviii.

Lophophanes atricristatus occurs near Vera Cruz in Mexico. P. L. Sclater, P. Z. S. 1865, p. 397.

Mecistura swinhoii is described and figured as a new species from Shanghai, resembling *M. glaucogularis*, but differing in its reddish throat, white belly, and breast wanting the silver-grey. A. v. Pelzeln, Reise Novara, Vögel, pp. 66, 67, tab. iii. fig. 1.

Orites (sc. *Acredula* sive *Mecistura*) *tephronotus* is a new species from Asia Minor, rather larger than *A. caudata*, and having the back pure grey without any black, and indistinct dark stripes on the sides of the neck and under surface. A. Günther, Ibis, 1865, pp. 95–97, tab. iv.

Paroides pendulinus, notes on its nidification near Pisa. H. Giglioli, Ibis, 1865, pp. 53–55.

Polioptila plumbiceps is a new species from Venezuela, in the colouring of the back and wings coming nearest to *P. leucogaster*, but it is more plumbeous beneath and has much narrower rectrices. Its dark lead-coloured crown will probably render it the foundation of a fourth section of the genus, in addition to those defined by Prof. Baird (Rev. Am. B. i. pp. 67, 68); G. N. Lawrence, Proc. Acad. Philad. 1865, p. 37.

Maluridæ.

Malurus leuconotus is a new species from the interior of Australia, like *M. lamberti* in size, but *M. leucopterus* in colour, and differing from both in the whiteness of its back. J. Gould, P. Z. S. 1865, p. 198; Ann. Mag. N. H. 3rd ser. xvi. p. 60; *Idem*, Handb. B. Austral. i. p. 332.

Tanagridæ.

Euphonia anneæ [sic] is a new species from Costa Rica, resembling *E. rufiventris*, but with the underparts of the body clear yellow and the under tail-coverts white. It belongs to the group *Acroleptes*. J. Cassin, Proc. Acad. Philad. 1865, pp. 171, 172.

Iridornis reinhardti is a new species described and figured from Peru, allied to *I. dubusia*, but distinguishable by its black cap and broad golden nuchal band. P. L. Sclater, Ibis, 1865, pp. 495, 496, pl. xi.

Buthraupis edwardsi is described as a new species from New Granada, olive-green, with cheeks, eyebrows, and nuchal band blue, and a yellow breast-spot. D. G. Elliot, Nouv. Arch. du Muséum, Bull. tom. i. p. 77, pl. iv. fig. 2.

Tachyphonus rubrifrons is a new species from the Isthmus of Panama, formerly confounded by the author (Ann. Lyc. N. Y. vii. p. 331) with *T. xanthopygius*, Sclater, but differing from that bird chiefly by having black shoulders and wanting the red postocular stripe. G. N. Lawrence, Proc. Acad. Philad. 1865, p. 106.

Arremon rufidorsalis is a new species from Costa Rica, allied to *A. aurantiirostris*, *A. spectabilis*, and *A. erythrorhynchus*, but with the back chestnut. J. Cassin, Proc. Acad. Philad. 1865, p. 170.

Buarremon crassirostris is a new species from Costa Rica, and forms a new division of the genus, easily characterized by its strong and more *Pyranga*-like bill. It is most nearly related to the species of the group *Pipilopsis*, but does not intimately resemble any of them known to the author. J. Cassin, Proc. Acad. Philad. 1865, p. 170.

Buarremon ocai is described as a new species from Mexico, resembling *B. brunneinuchus*, but much larger, with a stouter bill and various differences of coloration. G. N. Lawrence, Ann. Lyc. N. York, 1865, pp. 126, 127.

Ploceidæ.

Hyphantornis royrii is a new species described from a specimen in the Leyden Museum, which bears this name in M. J. Verreaux's writing. It is typical in form, but cannot be mistaken for any other. G. Hartlaub, J. f. O. 1865, p. 97.

Ploceus ——. A supposed new species allied to *P. rubiginosus*, Rüpp. is described but not named. T. v. Heuglin, J. f. O. 1865, p. 98.

Ploceus spilonotus, Vigors, ♀ described and figured (the male only having been hitherto known), with nest and egg. G. G. Bianconi, Mem. Accad. Sci. Bologna, 2 ser. iv. pp. 519–521, tab. ii. fig. 1, tab. iii. figg. 1, 2.

Foudia flavicans is a new species from Rodriguez, most nearly allied to *F. erythrocephala*, but larger and with stouter feet, and having the head and breast yellow. A. Newton, P. Z. S. 1865, p. 47, pl. i. figs. 1, 2; E. Newton, Ibis, 1865, p. 148.

Munia tristissima is a new species from New Guinea, and the first Finch that has been recorded thence. A. R. Wallace, P. Z. S. 1865, pp. 479, 480.

Munia formosana is a new species from Formosa, like *M. rubronigra*, but with a dusky occiput and nape. R. Swinhoe, Ibis, 1865, p. 356.

Estrelda minima, *E. amandava*, and *E. cinerea*, breeding in confinement. E. Rey, Zool. Garten, 1865, pp. 310–312 and 391–394.

Estrelda nitidula is a new species from Natal and the Gold Coast (?). G. Hartlaub, Ibis, 1865, pp. 269, 270.

Fringillidæ.

Cardinalis virginianus (?) breeding in confinement. E. Billot, Bull. Soc. Impér. d'Acclimat. 1865, pp. 463–465.

Paroaria cucullata breeding in confinement. M. Schmidt, Zool. Garten, 1865, pp. 12–16.

Fringilla canaria (fera) is figured. C. J. Sundevall, Sv. Fogl. pl. lxv.

Chlorospiza [?] *plumbea* is described as a new species from Chile, very like *C. xanthogramma*, Gray; but this is larger, more robust, and has a far thicker Sparrow-shaped bill. R. A. Philippi and L. Landbeck, Ann. Univers. Chile, Apr. 1864; Arch. f. Naturgesch. 1864, i. pp. 47–49. (Dr. Hartlaub, Bericht, 1864, refers this species to the group *Emberizinæ*.)

Sycalis aureiventris is a new species from Chile, very fully described, nearly allied to *Emberiza luteocephala* of D'Orbigny; but that bird is plain brownish-grey above, where this is olive-green, mixed with grey and streaked with black, and has the rump yellowish-green, besides other differences. R. A. Philippi and L. Landbeck, Ann. Univers. Chile, Apr. 1864; Arch. f. Naturgesch. 1864, i. pp. 49–54.

Spermophila hicksi, *S. badiiventris*, and *S. fortipes* are described as new species from Panama. No diagnosis is given of the first. The second resembles *S. corvina*, except in the bay colour of the under plumage and the light straw-colour of the under wing-coverts and wing-spot. The third is, in general appearance, much like *S. semicollaris*, but has the white collar extending across the throat, white on the chin, and a white line down each side of the throat, and stouter feet. G. N. Lawrence, Ann. Lyc. N. Y. 1865, pp. 171, 172.

Spermophila collaris is described as a new species from Chiriqui, New Granada. *Idem, op. cit.* p. 177.

Cassin, John. An Examination of the Birds of the Genus *Chrysomitris* in the Museum of the Academy of Natural Sciences of Philadelphia. Proc. Acad. Philad. 1865, pp. 89–94.

Sixteen species are carefully differentiated, and their synonymy, characters, and distribution dwelt upon. They are divided into six groups, *Chrysomitris*, *Pyrrhomitris*, *Melanomitris*, *Sporagra*, *Astragalinus*, and *Pseudomitris*, of which the names of the third and last are new to us. *Pseudomitris* includes the species *Chrysomitris psaltria*, *C. mexicana*, and *C. columbiana*, which are probably entitled to generic distinction.

Chrysomitris bryanti is a new species from Costa Rica, allied to *C. atrata* and *C. urogyialis*, but is smaller and has the entire head and upperparts uniform lustrous black and the underparts yellow. The yellow spots on the wings are also restricted. It belongs, with the two species just mentioned, to the group termed by the author *Melanomitris*. J. Cassin, *ut suprà*, pp. 91, 92.

Linota montium is figured. J. Gould, B. G. B. pt. viii.

Carpodacus erythrinus has again occurred in Holland. J. P. v. W. Crommelin, N. T. D. 1865, p. 246; is figured, C. J. Sundevall, Sv. Fogl. pl. lxv.

Carpodacus davidianus is, with hesitation, described and figured as a new species, much resembling *P. rhodochroa* (Vigors), P. Z. S. 1831, p. 23, but differing from the various figures and descriptions of that bird. H. Milne-Edwards, Nouv. Arch. Mus. Bull. i. pp. 18–20, pl. ii. figs. 1, 2.

Carpodacus frontalis is the common town-bird of New Mexico. E. Coues, Ibis, 1865, p. 159.

Erythrospiza obsoleta breeds abundantly in the gardens of Casbin, and seems to replace in Persia the *E. rhodoptera* of Europe. F. de Filippi, Viagg. Pers. p. 349.

Corythus enucleator, *Loxia pityopsittacus*, and *L. curvirostra*: some remarks on the changes of plumage in these three species are given. H. W. Wheelwright, 'Ten Years in Sweden,' pp. 341–345.

Emberizidæ.

Schœnicola arundinacea (*Emberiza schœnicolus*, L.) is figured. J. Gould, B. G. B. pt. vii.

Emberiza cernuii. The characters of this species, described as new in 1863 or 1864, are repeated. It is allied to *E. cæsia*. F. de Filippi, Viagg. Pers. pp. 112, 113.

Emberiza pusilla, Pall., has occurred near Brighton. G. D. Rowley, Ibis,

1865, p. 113 (*cf.* J. Gould, P. Z. S. 1864, p. 377); is figured, C. J. Sundevall, Sv. Fogl. pl. lxv.

Emberiza rustica is figured. C. J. Sundevall, Sv. Fogl. pl. lxv.

Calamospiza bicolor is the characteristic bird of the southern prairies. E. Coues, Ibis, 1865, p. 158.

Alaudidæ.

Otocorys larvata. The characters of this species, described as new in 1863 or 1864, are repeated. F. de Filippi, Viagg. Pers. pp. 348, 349.

Otocorys penicillata has really occurred in Europe, namely at Astrakan. *Idem, op. cit.* p. 349, note.

Pyrrhulauda modesta is described as a new species from the Canaries, differing from *P. frontalis*, Licht., from Nubia and the Cape Verd Islands, by its black outer rectrices. It is more allied to *P.* (*Coraphites*) *melanauchen*, Cabanis, from Abyssinia, but is of a lively rusty yellowish-red above and on the two middle rectrices, with the breast entirely of the same colour but paler. O. Finsch, J. f. O. 1864 *, pp. 412, 413.

Mirafra horsfieldi, particulars of its nidification given. E. P. Ramsay, P. Z. S. 1865, pp. 689, 690.

Obs.—"Die Lerchen Chiles." R. A. Philippi and C. L. Landbeck, Arch. f. Naturgesch. 1865, i. pp. 58–73. The species of birds mentioned in this paper, some of which are referred by the authors to the genus *Certhilauda*, in reality belong to the family *Dendrocolaptidæ*, q. v. (*Cf.* P. L. Sclater, Ibis, 1866, p. 59.)

Sturnidæ.

Schlegel, H. Description d'un oiseau remarquable et inconnu des Naturalistes, *Charitornis albertinæ*. Nederl. Tijdschr. Dierkunde, 1865, pp. 1–3. Vogels, pl. 8.

This remarkable bird, for which the author establishes (though without strict definition) a new genus, was sent from the Soula Archipelago by the late Dr. Bernstein. The bill is much the same as in *Gracula*, the throat and sides of the head, round and beyond the eye, are bare, but the ears are covered by a tuft of feathers. The feet are pretty stout, and resemble those of *Gracula*. The wings are rather longer than the body, the first quill only half an inch longer than the great coverts. The tail is graduated and much longer than the body, being about three-fifths of the whole length of the bird, which is about 16 inches. The head, neck, mouth, and lower parts of the bird, as far as the vent, are white, the rest of a rather lustrous greenish-black. The bill and feet are yellow, and the bare skin of the head blue.

The author also takes occasion to observe that *Streptocitta albicollis* (which *Charitornis albertinæ* at first sight much resembles), though hitherto generally classed with the *Corvidæ*, in reality, like the present bird, belongs to the *Graculinæ*.

* Not published till after March 1865.

Acridotheres tristis, its habits in India. T. P. Norgate, Zool. 9585–9587.

Pastor roseus is figured. J. Gould, B. G. B. part vii.

Creadion carunculatus, its nest and eggs described. E. P. Ramsay, Ibis, 1865, p. 156.

Ptilonorhynchus holosericeus, with its bower, is figured. J. Wolf, Zool. Sketches, 2nd ser.

Paradiseidæ.

"*Schlegelia calva*, Bernstein," is figured, N. T. D., 1865, Vogels, pl. 7, and the account formerly given of it (*cf.* Zool. Record, i. p. 86) translated into French, *op. cit.* pp. 4–7; into German, J. f. O. 1864, pp. 401–405. Supposed to be identical with *Diphyllodes wilsoni*, Cassin (Journ. Acad. Philad. ii. pl. 15), P. L. Sclater, P. Z. S. 1865, p. 465; Ibis, 1865, pp. 343, 344. Their identity accepted, H. Schlegel, N. T. D. 1865, p. 249.

Corvidæ.

Corvus coronoides, its nest and eggs described. In New South Wales there are two distinct races, if not species, one with white, the other with dark irides. The eggs of these two birds differ. E. P. Ramsay, Ibis, 1865, pp. 303, 304. The birds with white irides are adult. J. Gould, Handb. B. Austral. i. p. 476.

Corvus splendens (?), its habits in India. T. P. Norgate, Zool. pp. 9649–9653.

Lycocorax morotensis and *L. obiensis* are described as new species,—the former, first indicated by Prof. Schlegel some years since (Ibis, 1863, p. 119), from the islands of Mortay and Rau, resembles *L. pyrrhopterus*, but is to be distinguished by its considerable size and the second to seventh wing-quills being white at the base of their inner webs; the latter is from the Obi Islands, and differs from both the species just named by being intermediate in size, having a dull green half-metallic gloss over the whole body, excepting the wings. H. A. Bernstein, J. f. O. 1864 *, pp. 408–410. The three species further differentiated, H. Schlegel, N. T. D. 1865, pp. 191, 192.

Nucifraga caryocatactes is figured, J. Gould, B. G. B. part viii.; its eggs exhibited, A. Newton, P. Z. S. 1865, p. 256.

Gymnorhina tibicen, its very variable eggs described. E. P. Ramsay, Ibis, 1865, pp. 300, 301.

COLUMBÆ.

Columbidæ.

Wallace, A. R. On the Pigeons of the Malay Archipelago. Ibis, 1865, pp. 365–400, plate ix.

Under the heading "Australian Region" we have attempted to give an abstract of the general principles contained in this paper. The introduction which contains them is followed by a catalogue, concisely synonymatic, geographical, and occasionally diagnostic, but in nearly every instance with the addition of a

* Not published till after March 1865.

few field-notes as to the colours of the soft parts, which in this order are so brilliant and so evanescent. One hundred and eighteen species are thus mentioned, and many more incidentally referred to. Of the former, four may be spoken of as newly described. To this part of the paper succeeds a table of many pages, showing the geographical distribution of all the species, and a folding sheet doing the same with regard to the genera.

Ptilonopus cæsarinus is a new species from the Feejees, allied to *P. elementinæ*, *P. apicalis*, and *P. roseicapillus*; but the red crown has no bordering of any other colour. G. Hartlaub, J. f. O. 1864 *, pp. 413, 414.

"*Ptilonopus formosus*, G. R. Gray," from Macassar and Menado, formerly indicated as distinct (P. Z. S. 1860, p. 300) is now described as resembling *P. superbus*, but with a broader dark purple pectoral band, a smaller bill, and other differences. A. R. Wallace, Ibis, 1865, pp. 379, 380.

Ptilonopus pectoralis, its confused synonymy treated. H. Schlegel, N. T. D. 1865, pp. 208, 209.

Columba palumbus, *C. œnas*, *C. livia*, and *C. turtur*, the habits of these four well-known species as observed in Münsterland. B. Altum, J. f. O. 1865, pp. 306–310.

Columba pollenî is a new species from Mayotte. The size of *C. palumbus* (?) and recognizable by its lemon-yellow bill and feet, as well as by the purplish brown-grey of its plumage, excepting on the nape, where the elongated feathers are blackish passing into grey at the tips, outwardly bordered with white. H. Schlegel, N. T. D. 1865, p. 87.

Funingus, *Alectrœnas*, and *Erythrœna* are considered unnecessary genera, the birds belonging to them being more properly referable to *Ptilopus* (seu *Ptilonopus*). H. Schlegel, N. T. D. 1865, p. 88.

Geotrygon albiventer is described as a new species from the Isthmus of Panama; it is quite distinct from *G. violacea*, with which it had before been confounded (Ann. Lyc. N. Y. vii. p. 477), having the crown brownish-violet, the back and wing-coverts cinnamon-brown, and the tail and wing-quills of a darker red. G. N. Lawrence, Proc. Acad. Philad. 1865, p. 108. (A writer in 'The Ibis,' 1866, pp. 120, 121, suspects the supposed new species may be the same as *G. chiriquensis*.)

Goura coronata minor is apparently a new species from Waigiou, considerably smaller than the true *G. coronata* from New Guinea. H. Schlegel, N. T. D. 1865, pp. 192, 193.

Henicophaps albifrons seems to have been described by Mr. Gray (P. Z. S. 1861, p. 432, pl. 44) from a young bird. The adult is now described. H. Schlegel, N. T. D. 1865, pp. 193, 194.

Carpophaga neglecta is a new species from Ceram, Amboyna, and Banda, rather stouter than *C. perspicillata*, and with the grey-blue of the head very light. This extends to the mantle, and only has a slight blackish shade on the upper part of the neck. H. Schlegel, N. T. D. 1865 †, pp. 195, 196.

* Not published till after March 1865.
† Bears date 1866 on wrapper.

Carpophaga temminckî is a new species from Bouru, Batchian, Gilolo, and Waigiou, like *C. perspicillata*, but the back and wings bluer, the head and neck slate-colour. A. R. Wallace, Ibis, 1865, pp. 384, 385.

These two descriptions may have reference to the same species; in that case Mr. Wallace's name has the priority of publication.

Carpophaga concinna (*C. chalybura*, G. R. Gray, P. Z. S. 1858, p. 186, *nec* Bp. Consp. Av. ii. p. 32), from Matabello, Sanguir, Aru, Banda, and Ké Island, is described as a new species, very closely allied to the true *C. chalybura*. A. R. Wallace, Ibis, 1865, pp. 383, 384.

"*Carpophaga sundevalli*, Bp.," is proposed to be called *C. tumida* by A. R. Wallace, Ibis, 1865, pp. 382, 383; and *C. roseinucha* by H. Schlegel, N. T. D. 1865 *, pp. 197–199. *Cf.* A. v. Pelzeln, Reise Novara, Vögel, p. 106.

Carpophaga sylvatica, Tickell, var. Blyth, J. A. S. B. xv. p. 371, is referred to *C. œnea* var. *nicobarica*. A. v. Pelzeln, Reise Novara, Vögel, p. 105.

Carpophaga frauenfeldi is described as a new species from Stewart Island, very like *C. œnea*, but larger, with the ashy grey of the head wanting any mixture of red, and other differences. It also much resembles *C. van-wicki*, Cassin (Proc. Acad. Philad. 1862, p. 320), from New Ireland; but that has a white orbit, and the neck and breast shot with purple. A. v. Pelzeln, Reise Novara, Vögel, pp. 106, 107.

Schlegel, H. Notice sur le sous-genre *Chalcophaps*. Nederl. Tijdschr. Dierk. 1865, pp. 265–268.

The seven species of *Chalcophaps* generally adopted by naturalists may be referred, the author believes, to two only, *C. indica* (including *C. augustæ*, *C. javanica*, *C. moluccensis*, *C. chrysochlora*, and *C. longirostris*) and *C. stephani*.

Chalcophaps longirostris is a new species from Port Essington, differing from *C. chrysochlora* in the much greater length of the mandibles, the more brilliant colouring of the plumage, and in the more distinct bands across the rump. J. Gould, Handb. B. Austral. ii. pp. 119, 120.

Chalcophaps formosana is a new species from Formosa, like *C. indica*, but with black under tail-coverts. R. Swinhoe, Ibis, 1865, pp. 357, 358, 540.

Lophophaps ferruginea is a new species from Western Australia, differing from *L. plumifera* in the nearly uniform rust-red colouring of the body and in the absence of the broad white pectoral band. J. Gould, Handb. B. Austral. ii. pp. 137, 138.

Chalcopelia brehmeri is a new species from the Gaboon, nearly allied to *C. puella*, but smaller and differing in the reddish colour of the forehead and rectrices. G. Hartlaub, Ibis, 1865, pp. 236, 237; *Idem*, J. f. O. 1865, p. 97.

Phlogœnas bartletti, Sclater (P. Z. S. 1863, p. 377) is identical with *Pampusanna criniger*, Pucheran (Voy. au Pôle Sud, Zool. iii. p. 118). Its breeding in confinement noticed and its sternum figured. P. L. Sclater, P. Z. S. 1865, pp. 238–240.

Phlogœnas tristigmata is figured. A. R. Wallace, Ibis, 1865, p. 393, pl. xi.

* Bears date 1866 on wrapper.

Didunculidæ.

Didunculus strigirostris: notes on this species, with a figure from a photograph of the living bird. The former contain nothing that has not been printed elsewhere. W. Denison, J. As. Soc. Beng. xxxiii. pp. 373, 374, tab. Its egg mentioned, A. Newton, P. Z. S. 1865, p. 256.

Dididæ.

Newton, Alfred. On some recently discovered Bones of the largest known species of Dodo (*Didus nazarenus*, Bartlett). Proc. Zool. Soc. 1865, pp. 199–201, pl. viii.; Ann. & Mag. N. H. 3rd ser. xvi. pp. 61–63.

The specimens were a tarso-metatarsus and a humerus, found by the author's brother and Capt. Barclay in Rodriguez (Ibis, 1865, p. 152). They are referred to *Didus nazarenus*, Bartlett (P. Z. S. 1851, p. 284), *nec* Gmelin, and are figured.

——. On a remarkable Discovery of Didine Bones in Rodriguez. Proc. Zool. Soc. 1865, pp. 715–718.

The announcement of the discovery was first made to the British Association at Birmingham, 11 Sept. (Ibis, 1865, p. 551). The specimens, eighty-one in number, were sent to the author's brother by Mr. George Jenner, of Rodriguez. They are remains of no less than *sixteen* or *seventeen* individuals, all apparently of one species but of two sizes, the very marked difference in this respect being probably owing to sex. Among them are examples of the upper end of the tibia, portions of the sacrum and coracoid, ulna, radius, and digital phalanx, which have not before been discovered. The author now thinks that all these (together with the bones previously found in the same island) belong to the *Didus* or *Pezophaps solitarius* of Strickland, and that the *D. nazarenus*, Bartlett (P. Z. S. 1851, p. 284), cannot be accounted a good species. From the extraordinary disproportion in the size of the specimens, he suggests that the "*Solitaire*" may have been polygamous in its habits. All the bones appear to have been those of birds eaten by men or predatory animals.

Pezophaps solitarius, a metatarsus exhibited. G. Lunel, Bull. Soc. Orn. Suisse, 1865, p. 150.

Didus ineptus. Interesting discovery of its remains in Mauritius by Mr. George Clark. P. Z. S. 1865, p. 732. (Further details are given, Ibis, 1866, pp. 128 and 141–146. Nearly all the bones of the skeleton have been recovered and were described by Prof. Owen before the Zoological Society, 9 Jan. 1866, and some by M. A. Milne-Edwards before the Académie des Sciences, 23 April, 1866.)

GALLINÆ.

Cracidæ.

Aquarone, Paul. Note sur l'éducation des Hoccos. Bull. Soc. Impér. d'Acclimat. 1865, pp. 449–462. (Abstract Zool. Garten, 1865, pp. 428–430.)

The species treated of appears to be *Crax globicera*. The success attained does not seem to have been very striking.

Phasianidæ.

Pomme, —. Sur les Races Gallines. Bull. Soc. Impér. d'Acclimat. 1865, pp. 9195.

A comparison of the respective merits of the "poule d'Asie" with those of the "poule commune de France," which the author says is much in favour of the latter.

Rufz de Lavison, —. Note sur les Faisans acquis et à acquérir. Bull. Soc. Impér. d'Acclimat. 1865, pp. 280–306.

This paper consists of remarks on the three epochs at which the reclaimed or naturalized species of *Phasianidæ* have been introduced into Europe, followed by an enumeration of all the species of the family, from Mr. Sclater's paper, P. Z. S. 1863, pp. 113–127.

Crossoptilum auritum, ♂ and ♀, and *Pucrasia xanthospila*, ♂ and ♀ (with which last the *P. davidiana* of the Museum of the Jardin des Plantes is identical), are figured. H. Milne-Edwards, Nouv. Arch. Mus. Bull. i. pl. i. p. 14.

Ceriornis caboti, a supposed example procured at Hong Kong. R. Swinhoe, Ibis, 1865, p. 350.

Ceriornis satyra is figured. J. Wolf, Zool. Sketches, 2nd series.

Catreus wallichi is figured. J. Gould, B. As. part xvii.

Phasianus sœmmeringi, accidental abnormality in one of its rectrices. J. Murie, P. Z. S. 1865, p. 746.

The crosses of which the different species of *Euplocomus* are capable are remarked on. A. Touchard, Bull. Soc. d'Acclim. 1865, pp. 307–310.

Argus grayi is a supposed new species, the type of which is in the British Museum, and making, with the somewhat doubtful *A. ocellatus*, the third of the genus known. D. G. Elliot, Ibis, 1865, pp. 423–425.

Gallophasis vieilloti is figured. J. Wolf, Zool. Sketches, 2nd series.

Tetraonidæ.

Elliot, D. G. A Monograph of the *Tetraoninæ* or Family of the Grouse. Parts iii., and iv. and v. New York: 1865. Imp. folio.

This work is now concluded. In part iii. are represented *Cupidonia cupido*, *Tetrao urogallus*, *Dendragapus richardsoni*, *Lagopus persicus*, and *L. albus* (in summer and winter). Parts iv. and v. (published together) contain figures of *Bonasa um-*

bellus, *Tetrao urogalloides*, *Falcipennis hartlaubi*, *Lagopus mutus* (in summer and winter), *L. rupestris*, and *L. hyperboreus* (sc. *hemileucurus*), together with two plates beautifully representing the eggs of seventeen species. A few of the author's determinations are mentioned below. (*Cf.* Ibis, 1865, p. 345, and 1866, pp. 213, 214.)

Lagopus saliceti (sc. *albus*), remarks on the habits of this bird, with reference to its distinctness from *L. scoticus*. E. R. Alston, Zool. pp. 9439, 9440.

Lagopus scoticus unsuccessfully tried to be introduced on Lüneburg-heath; called "Grau" in England! P. V. Heinzel, Verhandl. naturf. Vereines in Brünn, ii. p. 30.

Lagopus persicus is only a light-coloured variety of *L. scoticus*. D. G. Elliot, Monogr. Tetr. Introduction.

Lagopus reinhardti and *L. islandorum* are both referred to *L. rupestris*. *Idem*, *op. cit.* no. 21.

Lagopus hemileucurus, Gould (*L. hyperboreus*, alic.), fully described; referred to *L. alpinus* (sc. *mutus*). A. J. Malmgren, Œfvers. Vet.-Akad. Förh. 1864. Probably identical with *L. rupestris*: A. Newton, Ibis, 1865, p. 503; D. G. Elliot, Monogr. Tetr. no. 22.

Perdix cinerea, its northward advance in Scandinavia noticed. Now very plentiful at Œrebro. R. v. Willemoes-Suhm, Zoolog. Garten, 1865, p. 152. Its habits in Germany, K. Müller, *op. cit.* pp. 472, 473.

Perdix saxatilis and *P. petrosa*, hybrids between these species. L. Olph-Galliard, Bull. Soc. Orn. Suisse, 1865, pp. 69–72.

Coturnix communis with young is represented. E. Bettoni, Stor. Nat. Ucc. Lombard. fasc. i.

Coturnix fornasinii is described and figured for a new species, "*ut aiunt.*" Very like *C. communis* and *C. textilis*. *C. delagorguei* (Voy. dans Afrique australe, p. 615) approaches the supposed new bird. G. G. Bianconi, Mem. Accad. Sci. Bologna, 2 ser. iv. pp. 521, 522, tab. ii. fig. 2.

Coturnix cainecana is described as a new species from Swatow and Canton. R. Swinhoe, Ibis, 1865, pp. 351, 352.

Francolinus granti is a new species from Central Africa. It resembles *F. pileatus*, but is much smaller, the red spots on the neck only form a broad collar, and the back is irregularly marked with cross bars. A list of the known species of African *Francolini* is added. G. Hartlaub, P. Z. S. 1865, pp. 665, 666, pl. xxxix. fig. 1.

Francolinus icteropus, Heuglin, ♀, is figured from that naturalist's drawing of the only specimen ever obtained. Idem, *op. cit.* pp. 666, 667, pl. xxxix. fig. 2.

Bussière de Nercy, —. Note sur le Colin de Californie et son acclimatation en France. Bull. Soc. Impér. d'Acclimat. 1865, pp. 637, 638.

After three years' almost entire failure, the result of 1865 was that 122 individuals arrived at maturity.

Synoicus (lege *Synœcus*) *cervinus* is a new species from Port Essington, one of the smallest members of the genus, and distinguished by a more delicate and sandy-buff colouring. J. Gould, Handb. B. Austral. ii. pp. 195, 196.

Excalfatoria (lege *Excalfactoria*) *australis* is the name applied to Australian birds which have been hitherto referred to *Tetrao chinensis*, L. They are altogether smaller than Indian specimens, have a more delicate bill, shorter tarsi, darker upper surface, with more conspicuous black blotches. J. Gould, Handb. B. Austral. ii. p. 197.

Pteroclidæ.

Syrrhaptes paradoxus, two said to have occurred on Borkum in 1861 [!], F. von Droste, J. f. O. 1864, p. 425; others in Holland, in 1861 and 1862 [!], B. Altum, *op. cit.* p. 434. One shot at Sokolnitz, May 15 [1863], out of a flock of four (other remarks not free from error), P. V. Heinzel, Verhandl. naturf. Vereines in Brünn, ii. pp. 32, 33. One killed 7 September 1863, on the Rhine, W. Nicolaus, J. f. O. 1865, p. 79. Its occurrence in Silesia, F. Tiemann, *op. cit.* pp. 217, 218. *Sixteen* to *twenty* observed 29 Oct. 1864, near Wreschen in the province of Posen, F. Schwaitzer, *op. cit.* pp. 291, 292. Its occurrence in Holland, H. Meier, *op. cit.* pp. 293–295, J. P. v. W. Crommelin, N. T. D. 1865, pp. 239–241; in Mecklenburg, — v. Preen, J. f. O. 1865, p. 332; near Fontenay-sur-Eure, A. Marchand, R. Z. 1865, p. 264; in Switzerland, V. Fatio, Bull. Soc. Orn. Suisse, i. pp. 111–114; in England, R. Tyrer, Zool. p. 9563.

Turnicidæ.

Turnix rufilatus is a new species from Celebes, most resembling *T. fasciatus*, but that has a black head and a darker belly. A. R. Wallace, P. Z. S. 1865, p. 480.

Turnix rostratus is a new species from Formosa. R. Swinhoe, Ibis, 1865, pp. 543, 544.

Megapodiidæ.

Schlegel, H. Notice sur les espèces du gènre *Megapodius* habitant l'archipel Indien. Nederl. Tijdschr. Dierk. 1865, pp. 259–264.

The author reviews Mr. G. R. Gray's paper (P. Z. S. 1861, pp. 288–296), limiting himself to the species of the restricted genus *Megapodius*, which he divides into two groups, those having light-coloured and those having dark-coloured feet. Under the name *M. duperreyi* he unites the *M. reinwardti*, Wagl., *M. rubripes*, Temm. (*nec* Q. & Gaim.), *M. tumulus*, Gould, and *M. gouldi*, Gray. This, with *M. bernsteini*, *M. nicobariensis*, *M. macgillivrayi*, and *M. lapeyrousii*, forms his first group. In his second he places *M. freycineti* (to which he refers *Alectthelia urvillii*, Less., and *M. quoyi*, Gray), *M. forsteni*, *M. gilberti*, and *M. wallacii*. With the other species, known only by their eggs or by insufficient descriptions, Prof. Schlegel does not trouble himself.

Megapodius nicobariensis is figured. A. v. Pelzeln, Reise Novara, Vögel, tab. iv., and its eggs, tab. vi. fig. 12.

Talegalla lathami is figured. J. Wolf, Zool. Sketches, 2nd series.

Tinamidæ.

Crypturus rufescens. Some particulars of its habits are given. — de Vernouillet, Bull. Soc. Impér. d'Acclimat. 1865, pp. 600, 601.

GRALLÆ.

Rallidæ.

Schlegel, H. Muséum d'Histoire Naturelle des Pays-Bas. 7me Livraison. Ralli. Leyde: 1865. Royal 8vo, pp. 76.

This portion of the Catalogue of the Leyden Museum is practically complete, though still wanting about half the "Résumé." In it the author includes the genera *Grus* (!) with twelve species, *Aramus* one species, *Rallus* eleven, *Aramides* five, *Rallina* ten, *Hypotænidia* four, *Crex* six, *Himantornis* one, *Porzana* fourteen, *Gallinula* fourteen, *Porphyrio* eight, *Fulica* five, *Parra* eight, *Palamedea* three, *Ocydromus* two, and *Eurypyga* two species. Like the rest of Prof. Schlegel's Catalogues, this will be found in future an absolute necessity to all ornithologists who are engaged with the group to which it refers, and on that account there is less need to enter into details respecting it; but some few particulars of identification, which seem to be the most important or most novel, are given below. The groups above mentioned are represented in the Leyden Museum by about 630 mounted skins and upwards of forty osteological specimens! Professor Schlegel preserves his excellent method of giving characteristic descriptions of each species and (to use his term) "conspecies."

Rallina rosenbergi is a new species from the north of Celebes, resembling *R. plumbeiventris* in size, but having a larger bill, greenish-grey feet, differently coloured plumage, and the eyes surrounded by a large bare space. H. Schlegel, N. T. D. 1865, pp. 212, 213.

Rallina minahasa, Wallace, is referred to *R. tricolor*. H. Schlegel, Mus. P.-B., *Ralli*, p. 18.

Porzana carolina has occurred in England. A. Newton, P. Z. S. 1865, p. 196; H. S. Eyre, Zool. p. 9540.

Porzana moluccana and *P. rufigenis* are two new species,—the first from Amboyna and Ternate, the second, which is near *P. fasciata* and *P. rubiginosa*, from Borneo. A. R. Wallace, *op. cit.* pp. 480, 481.

Porzana leucophrys, Gould, is referred to *Rallus quadristrigatus*, Horsf. J. Gould, Handb. B. Austral. ii. p. 343. Both are identified with *Porphyrio cinereus*, Vieill. H. Schlegel, Mus. P.-B., *Ralli*, p. 32.

Porzana pusilla, an account of its breeding near Cottbus in Posen. — Kutter, J. f. O. 1865, pp. 334–341.

Rallus pectoralis, Gould (*nec* Cuvier), is identified with *R. philippensis*, L., and referred to the genus *Hypotænidia*. H. Schlegel, Mus. P.-B., *Ralli*, p. 23; J. Gould, Handb. B. Austral. ii. p. 334.

Rallus sulcirostris, Wall., from Bouru, is referred to *Hypotænidia celebensis* (Quoy & Gaim.). H. Schlegel, Mus. P.-B., *Ralli*, p. 22.

Rallus lewini, Swains., is considered identical with *R. brachypus*, Swains.; J. Gould, Handb. B. Austral. ii. p. 336. Both are referred to *R. pectoralis* Cuv. (*nec* Gould): H. Schlegel, Mus. P.-B., *Ralli*, p. 12.

Porphyrio martinica and *P. alleni* are referred to the genus *Gallinula*. H. Schlegel, Mus. P.-B., *Ralli*, p. 38.

A *Porphyrio*, the species not named, has occurred in England. W. Stares, Zool. p. 9418.

Gallinula frontata, Wall., is considered identical with *G. hæmatopus*, Temm. H. Schlegel, Mus. P.-B., *Ralli*, p. 44.

Gallinula burnesi from India, *G. orientalis* from the Eastern Archipelago, and *G. galeata* are all referred to *G. chloropus* (L.). H. Schlegel, Mus. P.-B., *Ralli*, pp. 45–49.

Canirallus kioloides. The specimens so called obtained by Dr. Roch (Ibis, 1863, p. 173) proved to be *Rougetius bernieri*. A. Newton, P. Z. S. 1865, p. 836.

Corethrura guatemalensis, Lawr. (Ann. Lyc. N. Y. 1863), is probably identical with *C. rubra*, Scl. & Salv. (P. Z. S. 1860, p. 300). O. Salvin, Ibis, 1865, p. 238.

Aramides zelebori is described as a new species from Brazil, coming very near *A. bicolor* from Chili, but is smaller and has the throat dark grey. A. v. Pelzeln, Reise Novara, Vögel, p. 133.

Ocydromus australis is figured. J. Wolf, Zool. Sketches, 2nd series.

Parridæ.

Hydrophasianus chirurgus has occurred in Formosa. R. Swinhoe, Ibis, 1865, pp. 541, 542.

Parra gallinacea, the egg described. E. P. Ramsay, Ibis, 1865, pp. 305, 306; J. Gould, Ann. & Mag. N. H. 3rd ser. xvi. p. 70 (from P. Z. S. 1864, p. 661) (*cf.* Zool. Record, i. p. 64).

Scolopacidæ.

Schlegel, H. Muséum d'Histoire Naturelle des Pays-Bas. 7me Livraison. Scolopaces. Leyde: 1865. Royal 8vo, pp. 103–112.

The two preceding portions of this Catalogue were briefly noticed in the 'Record' for last year (p. 91). The concluding part, which we had not then received, contains descriptions of the genera *Recurvirostra* and *Himantopus*, which, according to the arrangement we have adopted, are classed under the next family. The author's identifications are in many cases most important, and several of them are noticed below, but, for the reason previously stated, it does not seem incumbent upon us

to dwell at great length on these details. The Leyden Museum contains no less than 1170 mounted skins, and 48 osteological preparations of what we term *Scolopacidæ*, a group which has been so long without revision by a competent authority, that it had become almost impossible for ornithologists to get any connected idea of what species were already described; and, in consequence, through pardonable ignorance of each other's labours, a very great number of birds have been twice, thrice, or even more times redescribed as new, thus forming an enormous mass of synonyms, with which any ordinary naturalist would find himself quite powerless to cope. The amount of materials at Prof. Schlegel's command, combined with his singular patience, has enabled him to deal with the subject most successfully.

Scolopax rochusseni is a new and remarkable species from Greater Obi in the Halmaheira Islands, most nearly resembling *S. rusticola* in appearance, but stouter and with a longer bill than that bird. The first remex is only some lines shorter than the following ones. H. Schlegel, N. T. D. 1865, pp. 254–256.

Scolopax rusticola has the power of inflexing the upper mandible, and the manner in which the movement is performed is illustrated by engravings. Ludwig Beckmann, Zool. Garten, 1865, pp. 130–133, figs. i.–iv. (*Cf.* R. Hill, Proc. Acad. Philad. 1864, p. 65, note; Zool. Record, i. p. 93.)

Gallinago burka, *G. stenura*, and *G. solitaria* = *G. megala*, minute particulars given. R. Swinhoe, Ibis, 1865, pp. 231–233.

Limnocryptes (*Gallinago*) *gallinula* is figured. J. Gould, B. G. B. part viii.

Schœniclus albescens, Gould, from Australia, is identified with *Calidris australis*, Cuv., and referred to the genus *Actodromas*. J. Gould, Handb. B. Austral. ii. p. 257. The first-named species is considered synonymous with *Tringa minuta*, Leisler, and the second with *Totanus acuminatus*, Horsf., to which also *Tringa rufescens*, Middend. (*nec* Vieillot), is referred. H. Schlegel, Mus. P.-B., *Scolopaces*, pp. 43 and 38.

Schœniclus magnus, Gould, is identified with *Totanus temmirostris*, Horsf., and *Tringa crassirostris*, Temm. & Schleg. J. Gould, Handb. B. Austral. ii. p. 260. On the other hand, it is averred that *Totanus temmirostris*, Horsf., is synonymous with *T. stagnatilis*, Bechst. H. Schlegel, Mus. P.-B., *Scolopaces*, pp. 28 and 68.

Totanus griseopygius, Gould, is referred to *T. pulverulentus*, Müller, and also to *T. incanus* (with which *T. brevipes* is synonymous). H. Schlegel, Mus. P.-B., *Scolopaces*, p. 74. J. Gould, Handb. B. Austral. ii. p. 268.

Limnocinclus is the name proposed for a new genus to receive the *Tringa acuminata*, Horsf. (*T. australis*, Jard. & Selby), of Australia, and the *T. maculata*, Vieill., of North America (*T. pectoralis*, Say). The former is said to "run about amongst the grass and herbage much after the manner of the true Snipes;" but no structural characteristics of the proposed genus are given. J. Gould, Handb. B. Austral. ii. p. 254.

Tringa canutus has occurred at Moreton Bay in Australia. J. Gould, Handb. B. Austral. ii. p. 250.

Tringa maculata, Vieill. (*T. pectoralis*, Say.), has again occurred in England. H. Stevenson, Zool. p. 9807.

Tringa pygmæa (Lath.) (*T. platyrhyncha*, Temm.), various observations upon it. It has the chin bare, a character unique and hitherto unnoticed among other European *Tringæ*. G. Lunel, Bull. Soc. Orn. Suisse, 1865, pp. 31–37, pl. i.

Totanus (*Helodromas*) *ochropus* is figured on its singularly placed nest. J. Gould, B. G. B. part viii.

Actitis empusa, Gould, from Australia, is identified with *A. hypoleucus* of Europe. J. Gould, Handb. B. Austral. ii. p. 263.

Numenius australis, Gould, is identified with *N. cyanopus*, Vieill., H. Schlegel, Mus. P.-B., *Scolopaces*, pp. 90, 91. J. Gould, *op. cit.* p. 277.

Numenius uropygialis, Gould, is referred to *N. phæopus*, Lath., H. Schlegel, Mus. P.-B., *Scolopaces*, p. 93. The two birds differentiated, J. Gould, Handb. B. Austral. ii. p. 279.

Numenius minutus, Gould, referred to *N. minor*, Müller, H. Schlegel, Mus. P.-B., *Scolopaces*, p. 101. J. Gould, Handb. B. Austral. ii. p. 280.

Charadriidæ.

Schlegel, H. Muséum d'Histoire Naturelle des Pays-Bas, 7me Livraison. Cursores. Leyde: 1865. Royal 8vo. pp. 80.

The general remarks already made on the author's Catalogues of *Ralli* and *Scolopaces* apply equally to this work. The confusion hitherto existing in the nomenclature of the *Scolopacidæ* was only equalled by that found in the *Charadriidæ*. The author divides his *Cursores* into two groups, *Otides* and *Charadrii*. Of the former, the *Otididæ* will be noticed under the next family; but the genera *Cursorius*, *Glareola*, and *Œdicnemus* have to be mentioned here. The first genus is represented in the Leyden Museum by seven species, the second by five, and the third by seven. Of the *Charadrii* twenty-one species are referred to the genus *Charadrius* (including the smaller forms more commonly termed *Ægialites*), three to *Strepsilas*, four to *Morinellus*, three with a "conspecies" to *Pluvialis*, thirteen to *Vanellus*, nine to *Lobivanellus*, and six to *Hæmatopus*. To these should be here added, from the catalogue of "*Scolopaces*," three species of *Recurvirostra* and five of *Himantopus*, which will show the wealth of the museum under the author's direction, to contain 709 mounted skins and 17 osteological specimens. We are sure we are only echoing the wish of naturalists of every country when we express our sincere hope that Prof. Schlegel may be able to bring his arduous series of catalogues to a successful termination. Their utility is so obvious that it seems almost ungracious to say a word of complaint respecting what we must term the awkward and inconvenient system of pagination adopted in them—awkward when a student wishes to find any particular

species, and inconvenient when a writer wishes to cite a passage; and cited these catalogues must be in future to a degree which is hardly at the present moment appreciated.

Cursorius superciliaris is described as a new species, though obtained more than ten years since, and mentioned by the author in his former list of North-east African birds under the name of *C. chalcopterus*, from which he now considers it to differ. Some remarks on the four other species known to him are added. T. v. Heuglin, J. f. O. 1865, pp. 98–100.

Cursorius bisignatus is a new species from Benguela allied to *C. bicinctus*, but much smaller, paler in colour, with the black collar hardly visible behind, and other distinctive features. G. Hartlaub, P. Z. S. 1865, pp. 87, 88; J. J. Monteiro, *op. cit.* p. 90.

Cursorius gallicus has again occurred in England. T. H. Allis, Zool. p. 9418.

Œdicnemus bistriatus occurs near Vera Cruz in Mexico. P. L. Sclater, P. Z. S. 1865, p. 397.

Chionis minor is common on both the Prince Edward's Islands and Kerguelen's Land. F. W. Hutton, Ibis, 1865, p. 277.

Chœtusia leucura has occurred in Malta, and is figured. C. A. Wright, Ibis, 1865, pp. 459–462, pl. x.

Pluvianus ægyptius is figured. J. Gould, B. As. part xvii.

Vanellus cristatus, with young, is figured. J. Gould, B. G. B. part vii.

Charadrius xanthochilus, Wagl. ?, *C. longipes*, Temm., and *C. pluvialis orientalis*, Schl., are all referred to *C. pluvialis*. A. v. Pelzeln, Reise Novara, Vögel, p. 115.

Charadrius longipes has again occurred at Malta. C. A. Wright, Ibis, 1865, pp. 462, 463.

Charadrius veredus, Gould, is the young of *C. asiaticus*, Pall., with which species also is identified *C. montanus*, Towns. H. Schlegel, Mus. P.-B., *Cursores*, p. 38; J. Gould, Handb. B. Austral. ii. p. 229.

Ægialophilus is the name proposed for a new genus to receive the *Ægialites cantianus* of Europe, the *Æ. ruficapillus* of Australia, and many other species, "all, or nearly all, of which have black bills and long legs, and are less banded with black than the members of the genus *Ægialites*." J. Gould, Handb. B. Austral. ii. pp. 234, 235.

Ægialites hiaticula has been received from Port Stevens, Australia. *Op. cit.* ii. p. 231.

Hiaticula inornata, Gould, from Australia, is referred to the widely ranging *Charadrius geoffroyi*, Wagler, with which *C. leschenaulti*, Lesson, *C. asiaticus*, Horsf. (*nec* Pallas), appears to be synonymous. H. Schlegel, Mus. P.-B., *Cursores*, p. 39.

Otididæ.

Eighteen species of the family, which are all referred to one genus, *Otis*, and are represented by seventy mounted skins, are contained in the galleries of the Leyden Museum. H. Schlegel, Mus. P.-B., *Cursores*, pp. 1–18.

Otis tarda. Rediscovery of the gular pouch in the male of this bird, W. H. Cullen, Ibis, 1865, pp. 143–146, figs. Description of the structure, W. H. Flower, P. Z. S. 1865, pp. 747, 748. Six examples captured through freezing, A. Marchand, R. Z. 1865, p. 265. Its occurrence in England, with anatomical description of the specimen, a female, W. W. Boulton, Zool. pp. 9442–9446.

Otis hartlaubi is denied specific rank. H. Schlegel, Mus. P.-B., *Cursores*, p. 9.

Otis houbara. This species, and not *O. macqueeni*, was met with at Djulfa in Persia. F. de Filippi, Viagg. Pers. p. 351.

Otis picturata is a new species from Benguela, belonging to the *Eupodotis* group. G. Hartlaub, P. Z. S. 1865, p. 88, pl. vi.; J. J. Monteiro, *op. cit.* p. 90.

Gruidæ.

An account of the specimens belonging to this family which are contained in the Leyden Museum is given by H. Schlegel, Mus. P.-B., *Ralli*, pp. 1–7.

Balearica regulorum (Licht.) is not recognized as distinct from *B. pavonina* (L.). H. Schlegel, Mus. P.-B., *Ralli*, p. 7.

Anthropoides virgo, its occurrence in Sweden. R. v. Willemoes-Suhm. Zoolog. Garten, 1865, pp. 151, 152.

Ardeidæ.

Ardea leucophæa, Gould, from Australia, is identified with *A. cinerea*, L., and *A. rectirostris*, Gould, from the same country, with *A. sumatrana*, Raffles. J. Gould, Handb. B. Austral. ii. pp. 295, 296.

Ardea cinerea. Notice of a Heronry in Switzerland, V. Fatio, Bull. Soc. Orn. Suisse, 1865, pp. 73, 78. It is figured, with young, J. Gould, B. G. B. part viii.

Herodias syrmatophorus, H. plumiferus, H. immaculata, and *H. pannosus*, Gould, from Australia, are identified respectively with *Ardea alba*, L., *Egretta egrettoides*, Bp., *Ardea melanopus*, Wagl., and *A. asha*, Sykes. *Herodias garzetta*, L., has been killed near Brisbane. J. Gould, Handb. B. Austral. ii. pp. 301–305.

Nycticorax gardeni is confounded with *N. griseus.* H. G. Vennor, Canad. Nat. 1865, pp. 53–56.

Ardetta stagnatilis, Gould, from Australia, identified with *Ardea javanica*, Horsf. J. Gould, Handb. B. Austral. ii. p. 317.

Ardeola minuta, with young, is represented. E. Bettoni, Ucc. Lombard. fasc. i.

Botaurus pinnatus. A specimen from Greytown, Nicaragua, is with some doubt referred to this species, which does not appear to have been before recorded from the north of the Isthmus of Panama. G. N. Lawrence, Ann. Lyc. N. Y. 1865, p. 185.

Botaurus australis, Gould, from Australia, is identified with *Ardea pœciloptera*, Wagl. J. Gould, Handb. B. Austral. ii. p. 313.

Ciconiidæ.

Schlegel, H. Muséum d'Histoire Naturelle des Pays-Bas. 7me Livraison. Ciconiæ. Leyde: 1864. Royal 8vo, pp. 26.

Descriptions, according to the author's classification, of seven species of *Ciconia*, four of *Mycteria*, two of *Anastomus*, four of *Tantalus*, and six of *Platalea* are contained in this catalogue. The specimens illustrating the group in the Leyden Museum amount to 113 mounted skins and 37 skeletons and crania.

Ciconia alba. The young birds only, and not the old ones, as has often been supposed, pair before their departure for Germany. A. J. Jäckel, Zool. Garten, 1865, pp. 378, 379.

"*Ciconia ruyssenaersi*, von Heuglin, Ibis, 1864, p. 430" (qu. *C. pruyssenaeri*?) (*cf.* Zool. Record, i. p. 93), is referred to *C. leucocephalus*, Gm., *C. umbellata*, Wagler, *C. biclavata*, Hodgs. H. Schlegel, Mus. P.-B., *Ciconiæ*, p. 9.

Balæniceps rex is figured. J. Wolf, Zool. Sketches, 2nd series.

Platalea major and *P. minor* are identical. H. Schlegel, Mus. P.-B., *Ciconiæ*, p. 21. (*Cf.* R. Swinhoe, Ibis, 1864, p. 364–369.)

Platalea regia, Gould, is referred to *P. melanorhyncha*, Reich. H. Schlegel, *op. cit.* p. 23.

Ibis falcinellus (L.): detailed tables of measurements of examples from various parts of the world, which are all referred to this species, are given. A. v. Pelzeln, Reise Novara, Vögel, pp. 125–127.

Avis incertæ sedis.

Rhinochetus jubatus is figured. J. Wolf, Zool. Sketches, 2nd series.

ANSERES.

Phœnicopteridæ.

Phœnicopterus erythræus is very abundant in Damaraland, especially on the coast. *P. minor*, on the contrary, is of rare occurrence there. Detailed descriptions of both species given. C. J. Andersson, Ibis, 1865, pp. 64–66.

Anatidæ.

Some bones found in the Zebbug Cave at Malta appear to belong to a gigantic *Cygnus*, nearly one-third larger than *C. olor*, with long legs and short toes, which is named *C. falconeri*. With them were others, which are assigned to *C. olor* (?), *C. bewicki* (sc. *minor*) (?), and a *Bernicla* or large *Anas*. The paper is to be printed in full in the Zoological Transactions. W. K. Parker, P. Z. S. 1865, pp. 752, 753.

Cygnus passmorii is described as new, from North America, smaller than *C. buccinator*, with a black bill and a more angular forehead than either that species or *C. americanus*, besides possessing some further anatomical characters. The sternum and trachea figured and described by Yarrell (Trans. Linn. Soc. xvii. pp. 1–4, tab. i.) as belonging to *C. buccinator* are referred to the new species. W. Hincks, Proc. Linn. Soc. viii. pp. 1–8, *cum figg.*

Cygnus olor breeds, though sparingly, in Neu-Vorpommern. L. Holtz, J. f. O. 1865, pp. 190, 191.

Chloephaga magellanica is figured. J. Wolf, Zool. Sketches, 2nd ser.

Casarca leucoptera is figured. Idem, *loc. cit.*

Querquedula crecca and *Q. circia* are figured. J. Gould, B. G. B. part vii.

Spatula clypeata has occurred in Australia. J. Gould, Handb. B. Austral. ii. p. 370.

Fuligula marila, *F. cristata*, and *F. clangula* are figured. C. J. Sundevall, Sv. Fogl. pl. lxii.

Fuligula glacialis and *F.* (*Somateria*) *stelleri* are figured. *Idem, op. cit.* pl. lxiii.

Fuligula (*Œdemia*) *fusca* and *F.* (*Œdemia*) *nigra* are figured. *Idem, op. cit.* pl. lxi.

Œdemia perspicillata has again occurred in England. E. H. Rodd, Zool. p. 9794.

Mergus merganser, *M. serrator*, and *M. albellus* are figured. C. J. Sundevall, Sv. Fogl. pl. lxiv.

Mergus squamatus from China is described as a new species. J. Gould, P. Z. S. 1864, pp. 184, 185; Ann. & Mag. N. H. 3rd ser. xv. p. 71.

Laridæ.

Chroicocephalus philadelphia (Ord.) has occurred at Falmouth. E. H. Rodd, Journ. Roy. Inst. Cornwall, no. iv. p. 89; *Idem*, Zool. p. 9501.

Xema sabinii has again occurred in England. M. A. Mathews, Zool. p. 9470.

Stercorarius catarrhactes breeding on Prince Edward's Islands and Kerguelen's Land. F. W. Hutton, Ibis, 1865, pp. 277, 278; figured, J. Gould, B. G. B. part viii.

Stercorarius pomatorhinus and *S. longicaudus* both occur in Spitsbergen, A. G. Malmgren, Œfvers. Vet.-Akad. Förh. 1864, pp. 391–393, 411, 412; A. Newton, Ibis, 1865, p. 509–511; both are figured, J. Gould, B. G. B. part viii.

Stercorarius parasiticus, with young, is figured. J. Gould, B. G. B. part viii.

Sylochelidon strenua, Gould, is identified with *S. caspia*, Pall. J. Gould, Handb. B. Austral. ii. p. 392.

Thalasseus torresi, Gould, identical with *Sterna affinis*, Rüpp. (*nec* Horsf.), and *S. bengalensis*, Less. H. Schlegel, Mus. P.-B., *Sternæ*, p. 6; J. Gould, Handb. B. Austral. ii. p. 397.

Sterna pelecanoides, King, is referred to *S. cristata*, Steph., J. Gould, Handb. B. Austral. ii. p. 394. This last considered identical with *S. galericulata*, Licht., and the former distinct, with *S. ressa*, Müller, as a synonym, H. Schlegel, Mus. P.-B., *Sternæ*, pp. 7–9.

Sterna hirundo and *S. macrura* figured. J. Gould, B. G. B. part viii.

Sterna grisea, Horsf., from Java, *S. indica*, Steph., from India, and *S. flu-*

viatilis, Gould (*nec* Naum.), from Australia, referred to *S. hybrida*, Pallas. H. Schlegel, Mus. P.-B., *Sternæ*, pp. 32, 33.

Sternula minuta figured, J. Gould, B. G. B. pt. viii.; its great abundance, with *Hydrochelidon nigra* and *H. leucoptera*, near Pisa, H. Giglioli, Ibis, 1865, p. 63.

Hydrochelidon leucoparia has again occurred in England. J. Gatcombe, Zool. p. 9629.

Procellariidæ.

Diomedea exulans, *D. melanophrys*, *D. fuliginosa*, *Procellaria gigantea*, *P. æquinoctialis*, *P. hæsitata*, Licht. (*nec* Kuhl), *P. macroptera*, *P. glacialoides*, *P. mollis*, *Daption capensis*, and *Prion vittatus* form the subjects of some valuable remarks. F. W. Hutton, Ibis, 1865, pp. 278–288.

Pelecanidæ.

Graculus bairdi, "Gruber, MSS.," is described as a new species from the Farallone Islands, closely related to *G. violaceus*, which it replaces on the coast of California, but has a slenderer bill and conspicuous white patches on the flanks. It may be the *Phalacrocorax leucurus* or *P. leuconotus* of Audubon, and it is supposed to have been also described as *Graculus bairdi*. J. G. Cooper, Proc. Acad. Philad. 1865, pp. 5, 6. A further note on this bird is added by J. Hepburn, *loc. cit.*

Sula sinicadvena is a supposed new species from China, hitherto confounded with *S. fusca* (P. Z. S. 1863, p. 258), but it has the whole of the under-neck and breast the same colour as above. R. Swinhoe, Ibis, 1865, p. 109.

Pelecanus philippensis, Gmel., a specimen from Formosa described. R. Swinhoe, Ibis, 1865, pp. 111, 112.

The osteology of *Pelecanus erythrorhynchus*, *P. crispus*, and *P. onocrotalus* is described. C. Giebel, Zeitshr. gesammt. Naturwiss. 1865, pp. 250–257.

The existence of communications between the lungs and the subcutaneous air-cells in birds of this family is confirmed. A. Milne-Edwards, Ann. des Sc. Nat. 5th ser. iii. pp. 137–142.

Spheniscidæ.

Aptenodytes pennanti brought alive to England, P. Z. S. 1865, p. 318; the same bird (though by mistake named *A. forsteri*) was found on dissection to have a well-developed urinary bladder, R. Owen, *op. cit.* p. 439. Figured, 'Intellectual Observer.'

Eudyptes chrysocome, with young, figured. A. v. Pelzeln, Reise Novara, Vögel, tab. v.

Colymbidæ.

Colymbus glacialis, supposed to breed in Shetland. H. Saxby, Zool. pp. 9524, 9525.

Eudytes (sc. *Colymbus*) *arcticus*, observations on the moult of this species. The author takes a view opposed to that of Naumann and Dr. Paulsen. — Böck, J. f. O. 1865, pp. 367, 368.

Both the above and also *Colymbus septentrionalis* are figured. J. Gould, B. G. B. part vii.

Alcidæ.

Owen, Richard. Description of the Skeleton of the Great Auk or Garfowl (*Alca impennis*, L.). Trans. Zool. Soc. vol. v. pp. 317–335, pls. li., lii.

This publication is fully noticed under the heading "Anatomy and Physiology."

Alca impennis. A very complete summary of this bird's history is given in an article entitled "The Gare-fowl and its Historians." Nat. Hist. Rev. Oct. 1865, pp. 467–488.

"A perfect specimen of a mummyfied *Alca impennis*," from Funk Island, has been presented to the Museum of Harvard College, L. Agassiz, Rep. Mus. Comp. Zoology, 1864, pp. 16–22. Further particulars of this and of other specimens found at the same place, E. [Field, Bishop of] Newfoundland, Proc. Nov. Scot. Inst. Nat. Sci. ii. p. 145.

Two specimens of the bird in the University Museum at Breslau. Alex. v. Homeyer, J. f. O. 1865, p. 151.

Tibia and humerus found in Caithness figured, S. Laing, 'Prehistoric Remains of Caithness,' pp. 50, 51. Notice of this discovery, Ibis, 1865, pp. 116, 117 and (with many incorrect details) E. Foxton-Firby, Naturalist, i. p. 323.

Uria bruennichi, as well as *U. lacrymans*, is referred to *U. troile*. The latter is found in Bear Island, but not in Spitsbergen. A. J. Malmgren, Œfvers. Vet.-Akad. Förh. 1864, pp. 404, 408.

Cepphus mandti differentiated from *C. grylle* and the allied species *C. columba* and *C. carbo*. A. Newton, Ibis, 1865, p. 519.

Fratercula glacialis specifically distinct from *F. arctica*, and figured. A. Newton, Ibis, pp. 212, 213, 521–524, pl. vi.

Fratercula arctica, with young, is figured. J. Gould, B. G. B. part viii.

STRUTHIONES.

Struthionidæ.

Allis, Thomas. Notice of a nearly complete Skeleton of a *Dinornis*, presented by Dr. Gibson to the Museum of the Yorkshire Philosophical Society. Proc. Linn. Soc. viii. pp. 50–52.

This is the paper referred to by us last year (Zool. Record, i. pp. 97, 98), which we had not then seen. It does not appear to us, however, that we can now add any further details to the abstract we formerly gave.

——. Further Note on a Skeleton of *Dinornis robustus*, Owen, in the York Museum. Proc. Linn. Soc. viii. pp. 141, 142.

This contains corrections of a few unimportant errors made in the author's former paper—the one noticed by us immediately above.

Hector, James. Notes on the Moa-bones in the New Zealand Exhibition of 1865. Proc. Zool. Soc. 1865, pp. 749–751.

This paper contains a list of the various remains, bones, or egg-shells of different species of *Dinornis* exhibited as above mentioned. The dimensions of the specimens in this magnificent collection are given in a table; and though the nomenclature is not to be implicitly relied upon, it appears that the following species were represented: *D. giganteus, D. didiformis, D. dromæoides, D. ingens, D. crassus, D. struthioides, D. curtus, D. ingens,* var. *robustus,* and *D. casuarinus.* There seems to be abundant evidence of the contemporaneous existence of at least some of these huge birds and the present race of men in New Zealand.

Dinornis robustus, its feathers described and figured. W. S. Dallas, P. Z. S. 1865, pp. 265–268; Ann. & Mag. Nat. Hist. 3rd ser. xvi. pp. 66–69; extract, Ann. Sci. Nat. iv. p. 292.

Dinornis ingens, an egg supposed to belong to this species exhibited. S. Stevens, P. Z. S. 1865, pp. 617, 618; Hector, *op. cit.* p. 750. *Cf.* Zool. pp. 9454, 9455.

Cnemiornis is the name of a proposed new genus of extinct birds from New Zealand, having a remarkable antero-proximal tibial process. *C. calcitrans* is the species on which it is founded. It is about the size of *Casuarius bennetti.* R. Owen, P. Z. S. 1865, p. 438. [The paper will be printed entire in the 'Transactions of the Zoological Society.']

Struthio camelus. The muscular mechanism of its leg elaborately described, S. Haughton, Ann. & Mag. N. H. 3rd ser. xv. pp. 262–272, pls. vi., vii. The young figured, J. Wolf, Zool. Sketches, 2nd ser.

REPTILIA

BY

Albert Günther, M.A., M.D., Ph.D.

A. *Works in progress.*

Jan, G. Iconographie générale des Ophidiens. Paris. Text 8vo, Plates 4to.

We gave a description of this work last year in the Record, vol. i. p. 99. In the year 1865 six parts of plates were issued, viz. No. 9 in February, No. 10 in April, No. 11 in June, No. 12 in August, No. 13 in October, and No. 14 in December. Of the text the second part (pp. 43–100) has appeared (1865, September); it contains the *Uropeltidæ, Tortricidæ,* and *Boidæ.* Of the first the author describes and figures seven species only; of the last, thirty-three,—not taking the least notice of twenty other species described by other herpetologists. Of the three species described as new we have already spoken in the preceding volume of the Record.

The letterpress on the plates is full of mistakes: not only are the names misspelt, but also numbers referring to the figures are sometimes confounded.

B. *Separate Publications.*

Hyrtl, J. Cryptobranchus japonicus. Vindob. 1865. 4to, pp. 132, with 14 plates.

Krefft, G. On the Vertebrata of the Lower Murray and Darling; and On the Snakes of Sydney. Read before the Philos. Soc. of New South Wales, 10th September, 1862. Sydney, 1865. 8vo, pp. 60.

This pamphlet consists of two parts, as is indicated by the title. The first contains observations on the habits, propagation, and geographical distribution of thirty-four reptiles, observed or collected during a nine months' sojourn on the Lower Murray and Darling. The second is a complete account of the seventeen species of Ophidians found in the neighbourhood of Sydney. The author gives descriptions of all the species, and adds as much

of their life-history as he could gather from a study of them continued during many years.

Müller, J. W. Reisen in den Vereinigten Staaten. See p. 3.

The List of Mexican Vertebrata contains the names of 269 Reptiles (pp. 63–85), viz. 20 Chelonians, 77 Saurians, 127 Ophidians, and 45 Batrachians. Several new species are described by Prof. Troschel, who is evidently the author of the parts containing the cold-blooded vertebrates. Those numbers may be fairly regarded as representing the true proportions of the Reptilian fauna of Mexico, according to our present knowledge, as the omission of several well-established Mexican species is counterbalanced by occasional repetitions of certain other species under different names (*Liophis tricinctus* and *Elapochrus deppei*) and by the enumeration of some nominal species (as in *Oxyrhina*, *Stenorhina*, &c.).

Unger and Kotschy. Die Insel Cypern. Wien, 1865, 8vo.

According to Dr. Steindachner's determinations, twenty-seven species of Reptiles are found on this island, viz. two Tortoises, fifteen Lizards, seven Ophidians, and three Batrachians (p. 572).

C. *Papers published in Journals.*

Betta, S. C. E. de. Sui serpenti italiani del genere *Tropidonotus* (Kuhl) osservazioni critiche. Atti Istit. Venet. Sc., Lett. ed Art. 1865, x. pp. 513–542.

——. Monografia degli Amfibi urodeli italiani e piu diffusamente delle specie viventi nelle Provincie Venete. Venez. 1865, 4to. (Memor. dell' Istit. Venet. xi. part 3.)

We have not seen this paper *.

Cope, E. D. Third contribution to the Herpetology of Tropical America. Proc. Acad. Nat. Sc. Philad. 1865, October (pp. 185–198).

——. Sketch of the primary groups of *Batrachia salientia*. Nat. Hist. Rev. 1865, January (pp. 97–120).

Duméril, A. Reproduction, dans la ménagerie des Reptiles au Muséum d'Histoire naturelle, des Axolotls, Batraciens urodèles à branchies persistantes, de Mexico, qui n'avaient encore jamais été vus vivants en Europe. Compt. Rend. 1865, lx. pp. 765–767; and Rev. et Mag. Zool. 1865, p. 142; translated in Nat. Hist. Rev. 1865, p. 454. A further communication on the same subject in Compt. Rend. 1865, lxi.

* All our endeavours to obtain a copy through booksellers were without success.

pp. 775–778, and finally a third in Bull. Soc. d'Acclim. 1866, February, with woodcuts *.

Filippi, F. de. Riassunto del Catalogo degli Animali vertebrati delle Provincie caucasiche e della Persia occidentale. Att. Soc. Ital. Sc. Nat. vii. Riun. straord. a Biella, 1864, September (pp. 184–186).

The contents of this paper are embodied and more fully treated of in the author's 'Viaggio in Persia,' see p. 3 of this Record. The author has observed 3 Tortoises, 22 Saurians, 14 Snakes (two of which are poisonous), and 3 Frogs (Viaggio in Persia, pp. 352–357). The new species will be mentioned below.

Gray, J. E. Notice of a new genus and species of the family *Trionychidæ* from Western Africa. Proc. Zool. Soc. 1865, March 28 (pp. 323–324, with a woodcut). [*Tetrathyra baikii*.]

——. On the development of the sternal callosities in *Cyclanosteus senegalensis*, and on the synonyms of *Cyclanosteus* and its allied genera. Ibid. May 9 (pp. 422–428, with a woodcut).

——. A Revision of the genera and species of Amphisbænians, with the descriptions of some new species now in the Collection of the British Museum. Ibid. May 23 (pp. 442–455, with woodcuts).

Günther, A. Fourth account of new species of Snakes in the Collection of the British Museum. Ann. & Mag. Nat. Hist. 1865, xv. February (pp. 89–98, with two plates).

The author states that the number of species in that collection amounts to 789, and that of the typical specimens to 289. The new species described will be mentioned below.

Hogg, J. Notes on some Amphibians. Ann. & Mag. Nat. Hist. 1865, xvi. August (pp. 120–123).

These notes refer to the families *Dactylethridæ* and *Proteidæ*, proposed by the author more than twenty years ago.

Jäckel, A. J. Ueber die Verbreitung der *Vipera berus*, L., in Bayern. Corr.-Blatt zool.-miner. Ver. Regensb. 1865, pp. 155–169.

[On the distribution of *Vipera berus*, L., in Bavaria.]

A paper of local interest.

Jan, G. Enumerazione sistematica degli Ofidi appartenenti al gruppo *Potamophilidæ*. Canestr. Arch. Zool. iii. 1865, April (pp. 201–265).

* The great interest attached to this subject must justify us in thus anticipating the Record of next year.

The author unites the *Natricidæ* and *Homalopsidæ* into one group, which he calls *Potamophilidæ*. He knows four genera of the former; of the latter he admits eight genera. Interesting and important forms like *Xenochrophis*, *Hipistes*, &c. are entirely omitted, and the list of species is very incomplete. The species described as new will be mentioned below, and we shall defer some critical remarks on them until their figures shall be published.

Jerdon, T. C. Remarks on observations contained in Dr. Günther's work on the 'Reptiles of British India.' Ann. & Mag. Nat. Hist. 1865, xv. pp. 416–418.

The author complains of the manner in which a paper of his on Indian Reptiles has been referred to by the Recorder.

Jones, J. M. Contributions to the Natural History of Nova Scotia: Reptilia. Proc. & Trans. Nov. Scot. Inst. Sc. Halif. vol. ii. part 3, 1865 (pp. 114–128).

This paper will be gratefully received by all zoologists, inasmuch as it contributes to our scanty knowledge of the Cold-blooded Vertebrates of British North America. Singularly, the Lizards are not represented in Nova Scotia; whilst three Chelonians occur, viz. *Chelydra serpentina*, *Emys picta*, and *E. insculpta* (De Kay). Five Snakes: *Coluber constrictor*, *Ablabes punctatus*, *Cyclophis vernalis*, *Tropidonotus sirtalis*, and *Ischnognathus occipito-maculatus*. Seven Frogs: *Rana mugiens*, *clamata*, *halecina*, and *temporaria*, *Bufo americanus*, *Acris pickeringii*, and *Hyla versicolor*. The four Salamanders are determined as *Salamandra subviolacea* (Harl.), *S. erythronota* (Holbr.), *S. salmonea*, and *Triton millepunctatus* (De Kay).

Kaup, J. J. Einige Nachträge zur Gattung *Heloderma horridum* (Wiegm.). Wiegm. Arch. 1865, pp. 33–40.
[Contributions to the genus *Heloderma*.]

Kirschbaum, C. L. Die Reptilien und Fische des Herzogthums Nassau. Nass. naturwiss. Jahrb. 1865, pp. 77–122. (Also separately printed.)

This is a paper of local interest. The author enumerates five Saurians, four Snakes (among which *Elaphis flavescens* and *Tropidonotus tessellatus*), and fourteen or fifteen Batrachians. He adds a tabular synopsis to facilitate their determination.

Peters, W. Further additions to the paper on *Typhlopina*. Monatsber. Akad. Wiss. Berlin, 1865, June 1 (pp. 259–263, with a plate).

Soland, Aimé de. Faune de Maine-et-Loire. Étude sur les Ophidiens. Ann. Soc. Linn. de Maine-et-Loire, 1865,

pp. 145–184; with a plate representing the heads of the three European vipers.

A paper of local interest, written with special regard to questions put by a commission, composed of members of the French Society of Acclimatization, to investigate the distribution of the vipers in France and the means of exterminating them (see p. 156, Report by M. Soubeiran). The author enumerates and describes *Tropidonotus natrix* and *viperinus*, *Coronella lævis*, *Coluber æsculapii*, *Vipera aspis*, and *Pelias berus*, also *Anguis fragilis*. *Zamenis viridiflavus* and *Coluber quadrilineatus* are mentioned as doubtful inhabitants of this "Département."

Strauch, A. Die Verbreitung der Schildkröten über den Erdball. Mém. Acad. Sc. St. Pétersb. 1865, viii. pp. 207.
[The distribution of Chelonians on the globe's surface.]

We shall give an abstract of this memoir in the special part of this Record.

Wied, Max Prinz zu. Verzeichniss der Reptilien welche auf einer Reise im nördlichen America beobachtet wurden. Nov. Act. Acad. Leopold. Carol. Nat. Curios. xxxii. 1865, pp. 144, pls. 1–7.

[Catalogue of Reptiles observed on a voyage in North America.]

The author treats of sixteen Tortoises, four Lizards, twelve Snakes, and sixteen Batrachians. Most of them are described in detail from specimens of various ages; much attention is paid to the coloration during life, and this character is regarded by the author as one of great importance for specific distinction. Several are described as new. The figures are coloured and taken from living examples. We shall refer to the several species in the special part of our Record.

D. *Anatomical Publications.*

Baudelot, —. Recherches expérimentales sur l'encéphale de la Grenouille. Ann. Sc. Nat. 1865, iii. pp. 5–10.

Beale, L. S. New observations upon the minute anatomy of the papillæ of the Frog's tongue. Philos. Trans. 1865, pp. 443–458, pls. 21 and 22.

Bruch, C. B. *Laqueus Owenii* und *Laqueus tympanicus petrosi*, ein Nachtrag zu meiner Schrift, Das Skelet der Krokodilinen; nebst einem Anhange: 1. Der *Laqueus Owenii* der Reptilien und Vögel und sein Verhältniss zu deren *Cochlea ossea*. 2. Bemerkungen über den *Krokodil-Corpus*. Wien, 1865. 4to, pp. 21, with three plates.

Duméril, A. Trois cas de Polymélie (membres surnuméraires) observés sur les Batraciens du genre *Rana*. Compt. Rend. 1865, lx. pp. 911–913.

The species in which this monstrosity has been observed are *Rana viridis*, *R. temporaria*, and *R. clamata* (see Record Zool. Lit. i. p. 105).

Ecker, A. Die Anatomie des Frosches. Ein Handbuch für Physiologen, Aerzte und Studirende. Braunschweig, 1864; with numerous woodcuts.

[The anatomy of the frog. A handbook for physiologists, physicians, and students.]

One part, containing the osteology and myiology, has been published.

Eudes-Des Longchamps. Premier mémoire sur les Téléosauriens comparés à ceux des Crocodiliens. Mém. Soc. Linn. Norm. xiii. 1864, pp. 138, with 9 plates.

Gegenbaur, C. Untersuchungen zur vergleichenden Anatomie der Wirbelthiere. Heft 1. *Carpus* und *Tarsus*. Leipzig, 1864. 4to (pp. 127, with 6 plates). Heft 2. Schultergürtel der Wirbelthiere. [The humeral arch of Vertebrates.] Leipzig, 1865. 4to (pp. 176, with 9 plates).

Haughton, S. On the muscular anatomy of the leg of the Crocodile. Ann. & Mag. Nat. Hist. 1865, xvi. pp. 326–331, with a plate.

Hulke, J. W. On the Chameleon's Retina; a further contribution to the minute anatomy of the Retina of Amphibia and Reptiles. Proc. Roy. Soc. 1865, p. 378 (abstract).

Mayer, F. J. C. Ueber das Ei der Vögel und der Reptilien. Nov. Act. Acad. Leopold. Carol. Nat. Curios. xxxii. 1865, pp. 95, pls. 1–4.

[On the ovum of birds and reptiles.]

Reissner, E. Der Bau des centralen Nerven-systems der ungeschwänzten Batrachier untersucht und beschrieben. Dorpat, 1864. 4to (pp. 119, with 12 plates).

[The structure of the central nervous system of Tailless Batrachians examined and described.]

Schenk, S. Untersuchungen über die erste Anlage des Gehörorgans der Batrachier. Sitzgsber. Akad. Wiss. Wien, 1864, November (pp. 347–350, with a plate).

[Researches on the first foundation of the organ of hearing in Batrachians.]

Stieda, L. Ueber den Bau der Haut des Frosches (*Rana temporaria*). Reichert and Du Bois-Raymond, Arch. Anat., Physiol. 1865, pp. 52–66, with a plate.

[On the structure of the skin of *Rana temporaria*.]

E. *Publications of a Popular Character.*

Cooke, M. C. Our Reptiles. A plain and easy account of the Lizards, Snakes, Newts, Toads, Frogs, and Tortoises indigenous to Great Britain. London, 1865, pp. 109, with original figures of every species, and numerous woodcuts.

The author professes to give merely a popular account of the seventeen species inhabiting Great Britain, but he has succeeded in producing a history of them so complete, so well written, and so instructive, that even scientific naturalists will gain by its perusal. The work certainly belongs to the best class of popular writings, the author being thoroughly acquainted with the subject, and avoiding all the fabulous stories by which other writers seek to excite the taste of the public. The figures are well executed, and superior to many published in scientific works.

Tytler, R. C. Observations on a few species of Geckos alive in the possession of the author. Journ. As. Soc. Beng. 1864, pp. 535–548.

The chief contents of the paper are indicated by the title. The author uses the collective name of *Gecko* in preference to the various generic divisions made by naturalists, and gives distinct specific names to the specimens observed by him (*Gecko tigris*, *tytleri*, *chaus*, &c.).

CHELONIA.

A most elaborate memoir on the geographical distribution of Chelonians, by Dr. Alex. Strauch, has appeared in Mém. Acad. Sc. St. Pétersb. viii. 1865 (pp. 207). It is divided into two parts. In the first the author treats in systematic order of each of the 194 species known to have been described up to the year 1864, stating, as exactly as possible, the localities whence they have been obtained, or their entire geographical range. The remarks on the synonymy of the species and on the subdivisions of groups proposed by other authors are embodied in this part, and are so numerous that we may as well state at once that no one who is engaged in the study of any portion of this order should neglect to consult Dr. Strauch's memoir. The second part contains the distribution of the species within the six regions

adopted by the author (the pelagic species not included), and, in conclusion, some general remarks on the distribution of the entire order, of its families, groups, and genera:

The author distinguishes three kingdoms, the *first* of which comprises the Circummediterranean and African regions, and is distinguished by the prevalence of Land-Tortoises.

1. The Circummediterranean region is inhabited by 6 species: 3 *Testudo*, 1 *Emys*, and 2 *Clemmys*.

2. Tropical Africa (Madagascar and the other eastern islands included) is inhabited by 32 species, 14 being Land- and 10 Freshwater Tortoises, and 8 Freshwater Turtles. The prevalence of *Chelydes* over *Emydes*, and the mixture of *Chelydes* with *Trionychides* are peculiar features of this region. As regards Madagascar, it is worthy of remark that of the 8 species known to inhabit this island, 7 are found in Southern and Eastern Africa, and that one only (*Pyxis arachnoides*) is found in India and not on the African continent. The African region may be divided into two subregions: the north-western, where Freshwater-Tortoises, and the south-eastern, where Land-Tortoises are prevalent.

The *second* kingdom comprises the Asiatic and North-American regions, and is distinguished by the prevalence of Emydes and by the presence of Trionychides.

1. The Asiatic region, bordered northwards by the Himalayas and the Amur River, and extending over the East-Indian Archipelago, is inhabited by 54 species: 9 Land- and 31 Freshwater Tortoises, and 14 Freshwater Turtles. It may be divided into four subregions *:—

a. The countries west of the Indus; scarcely known.

b. Continental British India, without the Malayan Peninsula.

c. Southern Asia, comprising the Malayan Peninsula, Siam, the Sunda and Molucca Islands, and the Philippine Islands. The author admits that, as S. Müller has shown, this subregion may be divided into two districts, the western comprising the parts of the continent mentioned, Sumatra, Java, and Borneo, and the eastern comprising Celebes, the Moluccas, and Philippines; but he states that the character of the Chelonian fauna of the latter is thoroughly Asiatic, without any admixture of Australian forms.

d. Eastern Asia, comprising Cochinchina, China, Japan, and Formosa.

2. The North-American region is inhabited by 44 species †: viz. 2 Land- and 40 Freshwater Tortoises, and 2 Freshwater Turtles. It may be divided into four subregions:—

a. North-western part, west of the Rocky Mountains, southwards to Upper California.

b. North-eastern part, from the Rocky Mountains to the Atlantic, southwards to Kansas and North Carolina.

c. South-eastern part, corresponding to Agassiz's third district.

* Dr. Strauch has not had an opportunity of consulting the Recorder's 'Rept. of Brit. India.'

† This comparatively large number is evidently due to the minuter examination and minuter specific distinction which has been applied to this portion of the Chelonians.

d. South-western part, with Mexico, Lower California, to the isthmus of Panama.

The *third* kingdom comprises the South-American and Australian regions, and is distinguished by the prevalence of Chelydes and the total absence of Trionychides.

1. The South-American region is inhabited by 35 species, 3 of which are Land- and 32 Freshwater Tortoises.

2. From the continent of Australia eight species only are known, all but one (*Manouria*) being *Chelydes*. No Tortoise is known from New Guinea, Tasmania, New Zealand, &c.

Cistudo carolina is described and figured by Prince Max, Nov. Act. Leop. Carol. xxxii. p. 1, taf. 1. fig. 1.

Emys. The following species are described by Prince Max, *l. c.*:—*E. insculpta*, p. 11; *E. picta*, p. 12; *E. terrapin*, p. 16; *E. pileata*, sp. n.?, p. 17, tab. 1. fig. 2 (male), tab. 2. figs. 1–4 (female); *E. guttata*, p. 22; *E. orthonyx*, sp. n., p. 23, tab. 2. fig. 5 and tab. 3; *E. pseudo-geographica*, p. 31; *E. oregoniensis*, p. 35; *E. elegans*, sp. n., p. 37, tab. 4.

[*Emys punctularia*, Daud.] *Chelopus punctularius.* Mr. Cope describes this species, adding remarks on its affinities. Proc. Ac. Nat. Sc. Philad. 1865, p. 185.

Chelonura serpentina. Some remarks by Prince Max, *l. c.* p. 47.

Dermatemys mawei. Notes on this species, by Cope, *l. c.* p. 187.

Claudius, g. n., near *Chelydra*, Cope, *l. c.* p. 187. A single row of marginal plates. Plastron small, cruciform, solid; hyo- and hyposternal bones connate, forming an exceedingly slender bridge, which connects the plastron with the carapace, and is not covered by a corneous axillary plate, but by thin epidermis. No inguinal or gular plates; anal united. Carapace completely ossified, extending much beyond plastron anteriorly and posteriorly, elevated and narrowed in front, neither dilated nor steeply descending behind; vertebral line nearly plane. Vertebral neural segments eight, the last pair of costals meeting on the median line, but separated from the small posterior marginal by a large penultimate shield. Anterior in contact with a very large anterior marginal, making together eleven vertebrals in an interrupted series. *Claudius angustatus*, sp. n., Cope, *l. c.*, from Tabasco, Mexico.

Staurotypus triporcatus. Notes on this species, by Cope, *l. c.* p. 188.

Cinosternum berendtianum, sp. n., Cope, *l. c.* p. 189; from Tabasco (Mexico).

Batagur picta. Dr. Strauch, rejecting the genus *Batagur*, proposes for this Tortoise the name of *Clemmys grayi*. Vertheil. Schildkr. p. 88.

Sternothærus odoratus described by Prince Max, *l. c.* p. 43.

Trionyx. Three species are described by Prince Max, *l. c.*:—*Gymnopus spiniferus*, p. 48; *G. muticus*, p. 53; and *G. olivaceus*, sp. n.?, p. 55, taf. 5.

Tetrathyra, g. n., Gray, Proc. Zool. Soc. 1865, p. 323, differs from the other African Trionychidæ with covered feet in having only two pairs of sternal callosities. *Tetrathyra baikii*, sp. n., p. 324, from West Africa, probably from the Niger. The sternum is figured.

Cyclanosteus. Dr. Gray, Proc. Zool. Soc. 1865, p. 422, has observed that the sternal callosities of *Cyclanosteus senegalensis* vary much with regard to their size and development, especially the hinder pair. One specimen is figured (p. 424), in which nearly the whole sternum is protected by those callosities. This is not entirely dependent on age, specimens of the same size showing variations in this respect. The author does not mention whether he has satisfied himself that these variations do not indicate sexual differences.

On this occasion Dr. Gray states also his reasons why he adopted, and still continues to use, the name *Heptathyra* (Cope) in preference to the prior one of *Cycloderma* (Peters), adding the rectified synonymy of these species. He regards now the *Cryptopus aubryi* (Dum.) as distinct from *Cyclanosteus frenatus* (Peters), whilst *Aspidochelys livingstonii* (Gray) should be united with the latter (p. 428).

Thalassiochelys albiventer, sp. n., Nardo, Atti Istit. Venet. Sc., Lett. ed Art. ix. 1864, p. 1418, tav. 35; from the Adriatic.

SAURIA.

Crocodilus vulgaris. The Rev. S. Haughton has described the muscles of the hind leg. Ann. & Mag. Nat. Hist. 1865, xvi. pp. 326-331, pl. 16.

Mecistops bathyrhynchus (Cope, Proc. Ac. Nat. Sc. Philad. 1860, p. 550). Mr. Cope observes, "This crocodile is the species identified by Dr. Gray with the *C. intermedius*, Graves; with the limited published material as a basis, I have reached a different conclusion." *L. c.* 1865, p. 185.

Alligator helois, sp. n., Cope, *l. c.* p. 185. *Hab.*—— ?

Alligator lucius. Mr. A. W. Foot reports on the dissection of a male specimen. Proc. Nat. Hist. Soc. Dublin, 1864, p. 42.

Heloderma horridum. Prof. Kaup has found palatine and pterygoid teeth in a young example; he regards it as the type of a distinct suborder, representing the "ophidian type" of the order, and considers it possible that the creature is really poisonous. Wiegm. Arch. 1865, p. 33.

Cnemidophorus guttatus (Wiegm.). Prof. Troschel maintains its specific distinctness from *Cn. sexlineatus*, and adds a description. He also directs attention to the fact that the species of *Cnemidophorus* described by Wiegmann have been very superficially treated by Duméril and Bibron. Müller, Wirbelth. Mex. p. 69.

Lacerta brandtii, sp. n., De Filippi, Viaggio in Persia, p. 354; from Basminsk, near Tauris.

Gerrhosaurus. Dr. Gray, Proc. Zool. Soc. 1865, p. 641, divides species of this genus thus: 1. *Cordylosaurus*, with *G. trivittatus* (Peters) = *C. tricirgatus* (Gray, *l. c.* pl. 38. fig. 2) and *G. subtessellatus* (Smith). 2. *Pleurostrichus*, with *G. bifasciatus* (Smith). 3. *Gerrhosaurus*, with *G. flavigularis, typicus*, &c.

Gerrhosaurus robustus. A reply by Dr. Kirk to some observations of Prof. Peters regarding the vernacular name of this Lizard (cfr. Zool. Record, i. p. 110) is published in Proc. Zool. Soc. 1865, p. 228.

Trachydosaurus rugosus is viviparous, Krefft, Vert. of the Lower Murray, p. 27.

Cyclodus gigas is viviparous Krefft, *l. c.* p. 28.

Euprepes affinis. De Filippi, Viaggio in Persia, p. 354, proves to be identical with *Eu. septemtæniatus.* De Filippi, Att. Soc. Ital. Sc. Nat. vii. Riun. straord. a Biella, p. 185.

Lygodactylus strigatus (see this Record, i. p. 114) proves to be identical with *Hemidactylus capensis* (Smith). Gray, Proc. Zool. Soc. 1865, p. 642. The same species has been discovered in fossil copal from Zanzibar by Prof. Peters, Monatsber. Akad. Wiss. Berl. 1865, pp. 455–457.

Homodactylus turneri (see this Record, i. p. 114) proves to be identical with *Pachydactylus bibronii* (Smith). Gray, Proc. Zool. Soc. 1865, p. 642.

Sphærodactylus glaucus, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1865, p. 192; from Yucatan.

Stenodactylus garrulus (Smith) has been described and figured by Dr. Gray as *Ptenopus* (g. n.) *maculatus*, Proc. Zool. Soc. 1865, p. 640, pl. 38. fig. 1.

Crotaphytus collaris described by Prince Max, Nov. Act. Leopold. Carol. xxxii. p. 58.

Leiocephalus alticoronatus, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1865, p. 192; from Yucatan.

Dactyloa schiedii (Wiegm.) has been described by Troschel in Müller, Wirbelth. Mex. p. 66.

Grammatophora cristata is able to remain below water for a considerable time. Krefft, Vert. of the Lower Murray, p. 29.

Stellio nuptus. Prof. De Filippi remarks that this species, named by him *Agama nupta* in Giorn. Istit. Lombard, vi. 1843, was afterwards described by Duméril as *Stellio carinatus.* Viaggio in Persia, p. 352.

Agama lessonæ, sp. n., De Filippi, *l. c.* p. 353. Allied to *A. mutabilis*, but with all the dorsal scales distinctly keeled. From western Persia.

Phrynocephalus persicus, sp. n., De Filippi, *l. c.* p. 353; from the deserts near Teheran.

Amphisbænidæ. Dr. J. E. Gray has published a revision of the genera and species of this family (Proc. Zool. Soc. 1865, p. 442). The genera and species are characterized. He enumerates 21 species*, 2 of which belong to the Mediterranean fauna, 5 to that of Tropical Africa, and 14 to that of Tropical America. As in his "Catalogue," he distinguishes the four families *Trogonophidæ, Chirotidæ, Amphisbænidæ*, and *Lepidosternidæ*, the genera of the third being rearranged thus:—

Tribe 1. Amphisbænina. Head depressed, rounded on the sides in front; nostrils on the upper part of the sides of the head.

A. Lateral and dorsal lines distinct: 1. *Blanus* (Wagl.).

B. Lateral lines distinct; dorsal none or very indistinct.

a. Nasal plates large, extending across the muzzle: 2. *Amphisbæna* (L.); 3. *Cynisca* (Gray).

* We may add four others omitted in Dr. Gray's memoir, viz. *A. quadrifrons* (Peters) from West Africa, *A. camura* (Cope), *A. antillensis* (Rhdt.), and *A. heterozonata* (Burm.) from Tropical America. We understand that the *A. innocens* (Weinland) has been previously described.

b. Nasal shields small, separate above, on the side of a large swollen rostral shield: 4. *Bronia* (g. n.) *brasiliana* (sp. n., p. 448, with figure of head).

c. Lateral and dorsal lines not defined, or the lateral line only visible on the hinder part of the body: 5. *Sarea* (Gray); 6. *Cadea* (Gray).

Tribe 2. ANOPININA. Head compressed, keeled on the sides in front; the nostrils lateral, on the underside of the keel.

A. Lateral line distinct and impressed: 7. *Anops* (Bell).

B. Lateral line none, or only very slightly visible on the hinder part of the body: 8. *Baikia* (g. n., p. 450) *africana* (sp. n., p. 451, with a figure of head), from West Africa.

In the *Lepidosternidæ* the following new species are described:—

Lepidosternon grayii, sp. n. (Smith, MS.), probably from South America; this may be the type of a distinct subgenus, *Sphenocephalus*. *L. c.* p. 452, with figure of head.

Monopeltis (Smith). A second species of this genus from Angola is described by Dr. Gray under the name of *Dalophia* (g. n.) *welwitschii*, *l. c.* p. 454 (with figure of head). [Closely allied to *M. capensis*, Smith.]

OPHIDIA.

TYPHLOPIDÆ.

PROF. PETERS has continued his researches on this family (Monatsber. Akad. Wiss. Berlin, 1865, pp. 259–263), and described the following species as new:—

Typhlops (*Onychocephalus*) *güntheri* (p. 259, fig. 1), from North Australia; *Typhlops* (*Onychocephalus*) *obtusus* (p. 260, fig. 2), from Mossambique.—*Stenostoma scutifrons* is redescribed (p. 261, fig. 5).

He has made the following remarks on the synonymy:—

1. *Onychophis franklinii* (Gray) = *Onychocephalus lalandii* (Schleg.).
2. *Onychophis barrowii* (Gray) = *Onychoc. liberiensis* (Hallow.) = *Onychoc. congestus* (D. & B.).
3. *Onychophis punctatus* (Gray) = *Typhlops eschrichtii* (Schleg.).
4. *Anilios australis* (Gray) = *T. preissii* (Jan).
5. *Anilios leachii* (Gray) = *T. richardii* (D. & B.) = *T. lumbricalis* (L.).
6. *Meditoria nasuta* (Gray) = *T. lumbricalis* (L.), var.
7. *Argyrophis truncatus* (Gray) = *Onychocephalus capensis* (Smith) = ? *T. accedens* (Jan) = ? *T. pammeces* (Gthr.) = *T. braminus* (Daud.).
8. *Anilios nigrescens* (Gray) = *T. polygrammicus* (Schleg.) = *T. rüppellii* (Jan) = *T. temminckii* (Jan).
9. *Argyrophis horsfieldii* (Gray) = *T. diardii* (D. & B.) = *T. striolatus* (Ptrs.) = *T. bothriorhynchus* (Gthr.) = *T. tenuis* (Jan).
10. *Onychocephalus verticalis* (Smith) = *O. macrurus* (Ptrs.).
11. *Typhlops excipiens* (Jan) = *T. russellii* (Gray).

He has figured at the same time four other species:—

Typhlops australis (Gray), fig. 3; *Typhlops ater* (Schleg.), fig. 4; and *Cathetorhinus melanocephalus* (D. & B.), fig. 6.

M. Jan has given an additional plate to his illustrations of the *Typhlopidæ*. Iconogr. part 9, pl. 1.

UROPELTIDÆ.

M. Jan's account of this family (Iconogr. pp. 43–50) does not contain any addition to our knowledge. He describes and figures the seven common species (part 9, pl. 2) *Uropeltis grandis*, *Rhinophis philippinus*, *R. melanogaster*, *R. homolepis*, *R. punctatus*, *Silybura elliotti*, and *Plectrurus perroteti*.

CALAMARIDÆ.

Calamaria. Dr. Günther has examined the typical specimens of the species described by Dr. Bleeker, and identified *C. rebentischii* with *C. leucogaster*; and *C. dumerilii* and *C. sinkawangensis* with *C. agamensis*. Ann. & Mag. Nat. Hist. 1865, xv. p. 89.

Calamaria flaviceps, sp. n., Günther, *l. c.* p. 90, from Borneo.

M. Jan figures the following species in Iconogr. part 10: pl. 1, *C. linnæi* and varieties, *C. versicolor* (Ranz.), *C. pavimentata*, and *C. quadrimaculata*. On pl. 2: *C. gervaisi*, *lumbricoidea*, *vermiformis*, *schlegelii*, *modesta*, and *bicolor*. On pl. 3: *C. occipitalis* and *cuvieri*.

Geophis. The following species are figured by Jan, *l. c.* part 10, pl. 3, *Rhabdosoma pöppigi*; pl. 4: *R. elaps* (Günth. 1858, described by M. Jan as a new species, viz. *R. brevifrenatum*), *R. peruvianum*, and *R. badium* with varieties. Part 11, pl. 1: another variety of *R. badium* and *R. longecaudatum*; pl. 2: *R. crassicaudatum*, *Geophis güntheri* (Wücherer, 1861, described by M. Jan as a new species, viz. *R. univittatum*), *R. favæ*, *R. occipitoalbum*, *R. lineatum* *; pl. 3, *R. trivirgatum*, *R. punctovittatum*, *R. varium* = *R. torquatum* (D. & B.), *R. dubium*. Part 12, pl. 1: *Platyptery.x perroteti*; pl. 2: *Elapoides semidoliatus*.

Colobognathus. The following species are figured by Jan, *l. c.* part 12, pl. 1: *Elapoides sieboldii*; pl. 2: *Elapoides rostralis*, sp. n., hab. —? †, *Col. hoffmanni*.

Stenognathus modestus, fig. by Jan, *l. c.* part 13, pl. 1. fig. 3.

Rhabdion forsteni, fig. by Jan, *l. c.* part 13, pl. 1. fig. 4, and *Pseudorhabdion torquatum*, part 10, pl. 3. fig. 3.

Adelphicus quadrivirgatus, fig. by Jan, *l. c.* part 11, pl. 3. fig. 5.

Brachyorrhos albus, fig. by Jan, *l. c.* part 13, pl. 2. figs. 4–5.

Aspidura. M. Jan appears to have confounded two species under the name of *A. scytale* (*l. c.* part 13, pl. 2). Figs. 1 and 3 seem to belong to *A. trachyprocta*, whilst fig. 2 is taken from a young *A. brachyorrhos*.

* Although M. Jan's attention has been repeatedly directed to the fact that this is not an Indian, but an American species, he persists in describing it as coming from Java!

† On the cover of this twelfth part the index of the plates contains the names of the species figured in part 11!

Elapoides fuscus, fig. by Jan, *l. c.* part 12. pl. 1.

Elapops modestus is figured by Jan, *l. c.* part 13, pl. 3. fig. 2, as *E. petersii*.

Elapotinus picteti, fig. by Jan, *l. c.* part 13, pl. 3. fig. 1.

Amblyodipsas microphthalma, fig. by Jan, *l. c.* part 14, pl. 1. fig. 1.

Elapomorphus. The following species are figured by Jan, *l. c.* part 14, pl. 1: *E. d'orbignyi*, *E. flavotorquatus*, *E. assimilis*; pl. 2: *E. bilineatus*, *E. tricolor*, *E. lemniscatus*; pl. 3: *E. blumii*, *E. lepidus*, *E. dimidiatus*.

Urobelus acanthias, fig. by Jan, *l. c.* pl. 3. fig. 4.

Uriechis. *Elapomorphus capensis* (Smith) belongs to this genus. Günther, Ann. & Mag. Nat. Hist. 1865, xv. p. 89.

Polemon barthii. Dr. Günther has examined an example with divided subcaudal plates, and is inclined to refer this snake, with *Uriechis*, *Microsoma*, *Urobelus*, and *Miodon*, to one and the same genus. *L. c.* p. 90.

Tropidoclonium storerioides, sp. n. Cope, Proc. Ac. Nat. Sc. Philad. 1865, p. 190; from Mexico.

Streptophorus bifasciatus and *St. sebæ*, fig. by Jan, Iconogr. part 12, pl. 3; *St. sebæ*, var. *drozii*, and *St. lansbergii*, part 13, pl. 1.

Carphophis amœna, *Virginia valeriæ*, and *V. elegans* are figured by Jan, *l. c.* part 12, pl. 2.

Conocephalus striatus, fig. by Jan, *l. c.* pl. 3.

Chersodromus liebmanni, fig. by Jan, *l. c.*

Homalosoma. The following species are figured by Jan, *l. c.* part 13, pl. 3: *H. lutrix*, *H. coronelloides* (quære = *coronella*?); pl. 4: *H. mite*, *H. episcopum*, *H. coronella*, *H. baliolum*.

Rhynchocalamus melanocephalus (See Zool. Record, i. p. 119) proves to be the same species as *Homalosoma melanocephalum*, Jan, *l. c.* part 13, pl. 3. fig. 4. It was scarcely possible to recognize so distinct a snake among the species of *Homalosoma*.

Oligodontidæ.

Lytorhynchus diadema, fig. by Jan, Iconogr. part 10, pl. 6. fig. 2. *Chatachlein* (!), Jan, is synonymous with *Lytorhynchus* (Peters).

Oligodon. The snakes mentioned by Dr. Bleeker under the names of *Rhabdion waandersii* and *Rh. cruciatum* have been described by Dr. Günther as *Oligodon waandersii*. Ann. & Mag. Nat. Hist. 1865, xv. p. 91.

Oligodon subquadratus, fig. by Jan, Iconogr. part 13, pl. 4. figs. 5 & 6.

Simotes. The following species are figured by Jan, *l. c.* part 11, pl. 6: *S. russellii*, *S. ancoralis*, *S. binotatus*; part 12, pl. 4: *S. trilineatus*, *S. multifasciatus* (sp. n.), *S. quadrilineatus* (sp. n.); pl. 5: *S. octolineatus*, *S. purpurascens*.

Simotes vertebralis, sp. n., Günther, Ann. & Mag. Nat. Hist. 1865, xv. p. 91, from Bandjermassing.

Colubridæ.

Megalabes, g. n., Günther, Ann. & Mag. Nat. Hist. 1865, xv. p. 92. Body rather elongate and slender; head of moderate size, rather depressed, with a flat crown. Two nasals; one loreal; two anterior and two posterior oculars. Scales smooth, without apical groove, elongate on the anterior parts of the trunk, and square posteriorly. Ventrals rounded, about 200; anal entire; subcaudals two-rowed. Eye rather large. The maxillary teeth form a continuous series, and gradually increase in length posteriorly, none of them being grooved. *M. olivaceus*, sp. n., from Manado.

Coronella austriaca. A most accurate account of the habits of this snake by Dr. E. Opel, translated by the Rev. W. W. Spicer, appeared in the 'Zoologist,' 1865, pp. 9505–9512. Figured by Jan, Iconogr. part 14, pl. 6. fig. 4.

Coronella doliata and varieties, fig. by Jan, *l. c.* pl. 4; and described by Prince Max, Nov. Act. Leopold. Carol. xxxii. p. 99, taf. 7. figs. 4–6 (head).

Liophis. M. Jan has figured two species, Iconogr. part 13, pl. 6: *L. leucogaster*, which is the young of some Colubrine snake, the native country of which is not known; and *L. pœcilostictus*, very similar in appearance to *L. merremii*.

Cemophora coccinea and *C. copei*, fig. by Jan, *l. c.* part 11, pl. 5.

Pliocercus dimidiatus, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1865, p. 190, from Costa Rica.

Pliocercus euryzonus (Cope), has been named by M. Jan *Cosmiosophis splendens*. Cope, *l. c.*

Coluber. The following species are figured by Jan, Iconogr. part 12, pl. 6: *Coluber getulus*; part 13, pl. 5: *C. quadrilineatus*; part 14, pl. 5: *C. getulus*, var. *sayi* and var. *californica*; pl. 6: *C. conspicillatus* and *C. rufodorsatus* (*sexlineatus*).

Stegonotus (Dum. and Bibr.). Mr. Cope states that *Lielaphis* (Gthr.) is identical with this genus, Proc. Ac. Nat. Sc. Philad. 1865, p. 197; but *Lielaphis* has neither a diacranterian dentition, like *Stegonotus*, nor has it the body compressed. *Stegonotus* is described as having some 25 teeth in each maxillary, *Lielaphis* has about half this number.

Lielaphis batjanensis, sp. n., Günther, Ann. & Mag. Nat. Hist. 1865, xv. p. 93, pl. 2. fig. A, from Batjan.

Spilotes megalolepis, sp. n., Günther, Ann. & Mag. Nat. Hist. 1865, xv. p. 93, from South America.

Zamenis ventrimaculatus, var. C, Günth., has been named *Z. rhodorachis* by M. Jan. De Filippi, Viaggio in Persia, p. 356.

Pituophis melanoleucus described by Prince Max, *l. c.* p. 95.

Spalerosophis (!), Jan, is the name of a new Ophidian genus from Western Persia. It is said to belong to the family of Colubridæ; and the following is the description:—Aspect of a *Periops* and of a Boöid. Head covered above with 20 or 25 small irregular shields, occupying the place of the frontals; eye surrounded by 10 or 13 shields; loreal and temporals replaced by numerous small shields. Teeth smooth, equal in size. Fourteen or fifteen upper labials; scales in 41–43 series; subcaudals divided.—*Sp. microlepis*, sp. n.; ventral shields 263, subcaudals 100. De Filippi, Viaggio in Persia, p. 356.

Dromicus godmanni, sp. n., Günther, Ann. & Mag. Nat. Hist. 1865, xv. p. 94, from Guatemala.

Tropidonotus. M. Jan has described the following species as new (Ca-

nestr. Arch. Zool. iii. p. 204):—*T. intermedius* from —?, *T. collaris* from Mexico, *T. scaliger* from —?, *T. glaphyros* and *T. kennicotti* from North America, *T. ornatus* from —?, *T. incertus* from —?, *T. subradiatus* from Columbia, *Amphiesma schistaceum* from the East Indies.—No mention is made of *T. chinensis*, formerly described as a new species.

M. de Betta has published a paper on the Italian species, in which the synonymy and description of three species and their varieties are given, viz. *T. natrix*, *T. tessellatus* and *T. viperinus*. As regards the second (which is the *T. hydrus*), the author was not acquainted with Peters's remarks in Monatsber. Ak. Wiss. Berl. 1863, p. 370. The paper is instructive, inasmuch as it contains critical references to some publications which are almost unknown or inaccessible to herpetologists not living in Italy. Atti Istit. Venet. Sc., Lett. ed Art. 1865, x. pp. 513–542.

Prince Max, Nov. Act. Leopold. Carol. xxxii., has described *T. fasciatus*, p. 84; *T. sirtalis*, p. 87; and *Eutænia proxima*, p. 90.

Tropidonotus natrix. Hr. O. Herklotz mentions a case of an example subsisting 311 days without food. Verh. zool.-bot. Gesellsch. 1865, p. 379.

Tropidonotus melanogaster (Peters) has been described by Troschel as *T. baronis Mülleri* in Müller, Wirbelth. Mex. p. 76; and by Jan as *T. mesomelanus*, Canestr. Arch. Zool. iii. p. 230.

Tropidonotus plumbicolor (= *Xenodon viridis*) is described as a new species, *Amphiesma brachyura*, by Jan, Canestr. Arch. Zool. iii. p. 237.

Tropidonotus sundanensis, sp. n., Günther, Ann. & Mag. Nat. Hist. 1865, xv. p. 95, pl. 2. fig. D, from Sumatra.

Leionotus schlegelii, sp. n., Jan in Canestr. Arch. Zool. iii. p. 241, from Ashantee, appears to be closely allied to *Neusterophis* (Gthr.).

Limnophis, g. n., Günther, Ann. & Mag. Nat. Hist. 1865, xv. p. 96. Habit stout, cylindrical; form of the head as in *Tropidonotus*; tail rather short. Scales smooth, short, in nineteen rows; anal and subcaudals divided. A single anterior and two posterior frontals; loreal present. Maxillary teeth in an uninterrupted series, gradually increasing in size posteriorly, the last being distinctly larger than the preceding, and not grooved. *L. bicolor*, sp. n., pl. 2. fig. C, from Angola.

Heterodon. The following species are figured by Jan, Iconogr. part 10, pl. 5: *Heterodon nasicus*; pl. 6. fig. 1: *Heterodon madagascariensis*; part 11, pl. 4: *H. pulcher*, *H. histricus*, *H. de filippii*.

Homalopsidæ.

Helicops of Jan is compounded of such species as *Tropidonotus mortuarius*, *Atretium schistosum*, *Helicops angulatus*, &c. He describes four new South American species of this genus: *H. wagleri*, *H. spixii*, *H. scalaris*, and *H. infrataeniatus*. Canestr. Arch. Zool. iii. p. 245.

Homalopsis robustus, sp. n., Jan, *l. c.* p. 257, from Brazil.

[*Ferania*] *Hypsirhina bocourti*, sp. n., Jan, *l. c.* p. 259, from Siam.

Fordonia unicolor is described by M. Jan as *Hemiodontus chalybæus* (sp. n.). *L. c.* p. 264.

Psammophidæ.

Psammophis trigrammus, sp. n., Günther, Ann. & Mag. Nat. Hist. 1865, xv. p. 95, pl. 2. fig. E, from West Africa. It is also mentioned that *Chrysopelea prærnata* may, perhaps, prove to be a *Psammophis*.

Psammophis doriæ, sp. n., Jan, allied to *Ps. moniliger*, but distinguished by a triple nasal shield and other characters. From Western Persia. De Filippi, Viaggio in Persia, p. 356.

Dendrophidæ.

Ahætulla frenata, sp. n., Günther, Ann. & Mag. Nat. Hist. 1865, xv. p. 94, pl. 2. fig. B; hab. —?

Tortricidæ.

M. Jan's account of this family (Iconogr. pp. 51–58) does not contain any addition to our knowledge. He describes and figures the three species known, adding *Xenopeltis* (part 9, pls. 3–5).

Erycidæ.

M. Jan has published the text to the species mentioned in our last Record (p. 123). Iconogr. pp. 65–74.

Eryx jaculus. A variety from Teheran is described in De Filippi, Viaggio in Persia, p. 355.

Bolyeria multicarinata (Dum. & Bibr.) is not a native of New South Wales, but has been obtained from some of the islands near New Guinea, by Krefft, Snak. of Sydney, p. 41.

Boidæ.

M. Jan has published the text to the species mentioned in our last Record (p. 123). Iconogr. pp. 74–93.

Pelophilus fordii (Gthr.) is referred to *Chilabothrius* by Jan, *l. c.* p. 87.

Chrysenis batesii (Gray) is regarded as identical with *Xiphosoma caninum* by Jan, *l. c.* p. 91.

Pythonidæ.

M. Jan has published the text to the species mentioned in our last Record (p. 123). Iconogr. pp. 94–100.

Python sebæ and *P. natalensis* are considered to be the same species by Jan, *l. c.* p. 96.

Liasis amethystinus, fig. by Jan, *l. c.* part 9, pl. 6.

Morelia variegata and *M. spilotes* are probably varieties only of the same species. Krefft, Vert. of the Lower Murray, pp. 30 and 38.

Elapidæ.

Brachyurophis (Günth.). This genus proves to be provided with venomous fangs; *B. semifasciata* (Gthr.), from Tasmania, and *Simotes australis* (Krefft), from Queensland, belong to it. Günther, Ann. & Mag. Nat. Hist. 1865, xv. p. 97.

Neelaps calonotus is not from New Granada, but from Tasmania (as stated by Duméril). Günther, *l. c.*

Diemenia reticulata is mentioned by Mr. Krefft, in 'Snakes of Sydney,' p. 42, under the name of *D. psammophis*. But these two snakes ought not to

be confounded, the latter being a distinct species which is not found in South-eastern Australia.

Pseudechis australis. Mr. Krefft speaks under this name of the "brown variety of *Ps. porphyriacus*," which is common on the Lower Murray. Verh. of the Lower Murray, pp. 32 and 47. We cannot but suppose that he has not had an opportunity of examining the true *Ps. australis*, which appears to be scarce and limited to the north-eastern part of Australia, and is decidedly specifically distinct from *Ps. porphyriacus*.

Dendraspis. Dr. Günther has described two new species, *D. welwitschii* and *D. intermedius*, Ann. & Mag. Nat. Hist. 1865, xv. p. 97; the heads of these species, as well as those of *D. angusticeps* and *D. polylepis*, are figured on pl. 3.

Crotalidæ.

Crotalus durissus described by Prince Max, Nov. Act. Leopold. Carol. xxxii. p. 65, taf. 7. figs. 1–3 (head). *Crotalophorus tergeminus*, ibid. p. 74.

Crotalus intermedius is described as a new species by Troschel, in Müller, Wirbelth. Mex. p. 79; from Mexico.

Crotalus ravus is described as a new species by Cope, Proc. Ac. Nat. Sc. Philad. 1865, p. 191; from the Tableland of Mexico.

Caudisona polysticta is described as a new species by Cope, Proc. Ac. Nat. Sc. Philad. 1865, p. 191; from the Tableland of Mexico.

Viperidæ.

Vipera. In a report on the Vipers of France written by M. Soubeiran, the geographical distribution, habits, and varieties of the three species found in France (*V. berus, V. aspis, V. ammodytes*) are described. Statistics of accidents caused by them are given, and the methods of treatment of wounded persons discussed. In the Département Haute-Marne, rewards for 57,045 vipers, killed in the years 1856–1861, have been paid. This paper, published in France in 1863, is reprinted in Corr.-Blatt zool.-miner. Ver. Regensb. 1865, pp. 143–154.

Vipera berus. On its distribution in Bavaria, see Jäckel, Corr.-Blatt zool.-miner. Ver. Regensb. 1865, pp. 155–160.

Vipera aspis. A paper by Ed. de Betta, entitled "Nota sopra un caso di dicefalia-alloidica di una giovane Vipera raccolta nel Vicentino," in Atti dell' Istit. Venet. x. dispens. 7, with a plate, is known to us from the title only, as this part of the journal mentioned has not yet reached this country.

Pelias chersea. Dr. L. Heinzel, having been bitten by a viper, gives an account of the symptoms as experienced by himself. Verh. zool.-bot. Gesellsch. Wien, 1865, pp. 493–498.

Clotho nasicornis, fig. in Zoolog. Sketch. by Wolf and Sclater, vol. ii.

BATRACHIA.

BATRACHIA SALIENTIA.

Mr. Cope has published the outlines of a system of *Batrachia salientia*, based chiefly on osteological characters, to which but little attention has been paid up to the present time, as will appear from the following abstract (Nat. Hist. Rev. 1865, pp. 97–120) :—

First suborder. Aglossa.

Vertebræ opisthocœlian; sternum of the arciferous type.

Fam. 1. *Pipidæ.* Fam. 2. *Dactylethridæ.* Fam. 3. *Palæobatrachidæ.*

Second suborder. Bufoniformia.

Teeth and manubrium sterni absent; diapophysis of the sacrum dilated; sternum with or without cartilaginous arches.

Fam. 1. *Rhinophrynidæ.*

Ethmoid septal walls ossified to the end of the muzzle, and separating the prefrontals; its superior plate covered by the completely ossified fronto-parietale. Fronto-nasalia well developed, entirely in contact with fronto-parietalia, separated by a median point of the latter and by the ethmoid septum. No os pterygoideum or pterygoid wing of ectopterygoid; the latter straight, with a short maxillary suture. Sacral diapophysis dilated. Coracoid and epicoracoid divergent, connected by a narrow single cartilage *; the former not dilated, in contact with, or slightly separated from, that of the opposite side. A strong bony manubrium. Tongue bound or retractile posteriorly. Ear imperfectly developed. *Rhinophrynus* and *Hemisus.*

Fam. 2. *Engystomatidæ.*

Ethmoid septal walls cartilaginous; the interorbital portion of the superior plate usually covered by the completely ossified fronto-parietals. No pterygoideum. Sacral diapophyses dilated. Coracoids dilated, always in contact with each other, also with the epicoracoids when present (with one exception), and always without arciform cartilages. Tongue free, not retractile posteriorly.

a. *Brachycephalus, Rhinoderma, Atelopus,* sp.

b. *Microhyla, Calohyla, Cacopus, Diplopelma, Engystoma, Calophryne.*

Fam. 3. *Brachymeridæ.*

Superior plate of ethmoid not ossified, either medially or wholly cartilaginous or fibro-cartilaginous. Epicoracoids divergent from coracoids, and connected with them by a single or double narrow cartilaginous band; the latter in contact with each other †; no manubrium. Fronto-parietals ossified on their superciliary borders only, thus enclosing a large fontanelle. Sacral diapophyses dilated. Ear perfectly developed. Tongue free, not retractile posteriorly. *Chelydobatrachus, Breviceps, Brachymerus.*

Fam. 4. *Bufonidæ.*

Epicoracoidei divergent from coracoidei; the latter dilated, nearly or quite in contact, each connected with the former on the same side by a

* Plainly homologous with those connecting the coracoids and epicoracoids of the Lacertilia. They are homologized by M. Dugès with the clavicles; and the bones usually so called in the Batrachia salientia he terms acromials. A superficial view favours the opinion that the latter are neither, but rather epicoracoids, and that the clavicles of the Lacertilia have no homologue among the Frogs.

† Not observed in *Brachymerus.*

cartilaginous arch, of which that on the right (the animal being on its back) overlaps with its convexity the left coracoid, and that of the left coracoid underlaps that on the right. Superior plate of the ethmoid completely ossified, very rarely prolonged anteriorly, usually covered by the completely ossified fronto-parietals, or by these and the prefrontals together. No pterygoideum. Sacral diapophyses dilated; coccyx attached to two condyles. Tongue free, not retractile posteriorly. *Pseudophryne, Phryniscus, Epidaleæ* (*Bufo calamita*), *Bufo, Incilius, Sclerophrys, Peltaphryne, Rhæbo, Paludicola, Schismaderma, Otilophus, Phrynoïdis, Nectes.*

Fam. 5. *Dendrobatidæ.*

Epicoracoidei transverse, their distal extremities in contact with each other and with the dilated distal extremities of the coracoidei, which are also in contact with each other. A manubrium. Sacral diapophysis cylindrical. Fronto-parietal bones completely and strongly ossified. Tongue not retractile posteriorly. Ear perfectly developed. *Dendrobates.*

Third suborder. ARCIFERA.

Teeth present. Coracoid and epicoracoid bones divergent, and connected by a longitudinally placed cartilaginous arch, that of the one side overlapping that of the other.

Fam. 1. *Discoglossidæ.*

Sacral diapophyses dilated; vertebræ opisthocœlian; ribs; diapophyses of first coccygeal vertebra; outer metatarsi separated by web. (*Latonia*), *Discoglossus, Alytes, Bombinator.*

Fam. 2. *Asterophrydidæ.*

Sacral diapophyses dilated; vertebræ opisthocœlian; no ribs or coccygeal diapophyses; outer metatarsi bound together. *Cryptotis, Asterophrys, Megalophrys, Xenophrys, Leptobrachium.*

Fam. 3. *Scaphiopodidæ.*

Sacral diapophyses dilated; vertebræ procœlian; terminal phalanges continuous, conic, simple. *Chiroleptes, Scaphiopus, Telmatobius, Pelobates, Alsodes, Helioporus, Hyperolia, Pelodytes.*

Fam. 4. *Hylidæ.*

Sacral diapophyses dilated; vertebræ procœlian. Terminal phalanges with a swollen base, and slender, curved, claw-like termination *.

Fam. 5. *Cystignathidæ.*

Sacral diapophyses cylindrical; vertebræ procœlian.

a. External metacarpal bones free, separated by natatorial membrane: *Myxophyes, Pseudis* (*Lysapsus*?).

b. External metacarpal bones bound together: *Hylodes, Elosia, Limnochatis, Phyllobates, Crossodactylus, Enhydrobius, Cystignathus, Gnathophysa, Ceratophrys, Tomopterna, Calyptocephalus, Pithecopsis, Cyclorhamphus, Hylorhina, Pleurodema, Gomphobates, Liuperus, Borborocœtes, Limnodynastes, Eusophus* (g. n., for *Cystignathus nodosus*, D. & B.), *Crinia.*

Fourth suborder. RANIFORMIA.

With teeth, the sacral diapophysis cylindrical, and a sternum of the following structure. The axes of the coracoid and epicoracoid are parallel, not divergent, their distal extremities separated only by interposed articular cartilage, and that of the epicoracoid resting upon that of the coracoid, which is much dilated: there are therefore no arciform cartilages. There is always a bony manubrium, and usually an osseous styliform xiphisternal piece.

Fam. 1. *Ranidæ.*

Sacral diapophyses cylindrical; simple coccyx, attached by two cotyloid cavities. Manubrium with a strong bony style; the xiphisternum similar (with one exception *). Fronto-parietal bones never embracing a fontanelle. Tongue extensively free, more or less deeply notched †. Ear perfectly developed, no parotoids.

a. *Cassina, Arthroleptis, Hemimantis, Hylambates, Halophila, Cornufer.*

b. *Leptopelis.*

c. *Hyperolius, Crumenifera, Ixalus, Theloderma, Rhacophorus, Chiromantis, Polypedates.*

d. *Amolops* (g. n., for *Polypedates afghana*), *Heteroglossa, Staurois* (g. n., for *Ixalus natator, guttatus*, and *plicatus*), *Hylorana, Rana, Dicroglossus, Oxyglossus, Hoplobatrachus, Pyxicephalus.*

Mr. Hogg states that the family *Dactylethridæ* was proposed by him in the year 1839. Ann. & Mag. Nat. Hist. 1865, xvi. p. 120.

Rana. Prince Max has described the following species in Nov. Act. Leopold. Carol. xxxii.:—*R. mugiens*, p. 106; *R. palustris*, p. 112; *R. silvatica*, p. 114; and *R. missuriensis* (Wied, Reise, N. Amer. i. pp. 520, 548), p. 115.

Rana bragantina, sp. n., Bocage, Rev. et Mag. Zool. xvi. p. 253, from Angola.

Rana spinidactyla, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1865, p. 197, from Natal = *R. mascariensis*, Cope, *ibid.* 1862, p. 340 (not auct.).

Rana aditrita, sp. n., Troschel in Müller, Wirbelth. Mex. p. 82, from Mexico.

Hylorhina silvatica. Mr. Cope supposes that *Cystignathus æneus* (Gay) is identical with this species. Nat. Hist. Rev. 1865, p. 113.

Megalophrys chysii (Edeling), mentioned in our Record of last year (p. 128), is described for the second time in Natuurk. Tydschr. Nederl. Ind. 1864, xxvii. p. 265, where a figure has been added. It is evidently nothing but an old male of the common *Megalophrys montana.*

Alytes obstetricans. Bruch states that both sexes are provided with a large gland on the lower leg. Fünft. Bericht d. Offenbach. Vereins, 1864, p. 51.

Bufo americanus described by Prince Max, *l. c.* p. 121.

Elosia. Dr. Steindachner, having found a great similarity between his *Hylodes truncatus* and *Elosia nasus*, thinks that both these genera should be united. Verh. zool.-bot. Gesellsch. Wien, 1865, p. 499.

Crossodactylus should be united with *Phyllobates*, according to Steindachner, *l. c.* p. 500.

* We give a synopsis of the genera below (p. 100), as it appears in a modified form in a later paper of the author.

* *Hylambates*, where it is shorter and more disciform.

† Except in *Theloderma* and *Dicroglossus*, where there is a median instead of lateral production.

Mr. Cope has given a synopsis of the genera of his family *Hylidæ*, which, according to him, comprises, besides *Hyla* and the genera allied to it, also *Acris* (Proc. Acad. Nat. Sc. Philad. 1865, p. 194) :—

I. No fronto-parietal fontanelle.
  a. Cranium above connate with a dermo-ossification; prefrontals in contact.
A series of parasphenoid teeth; no dorsal pouch .... *Pharyngodon.*
No parasphenoid teeth; no dorsal pouch ..... *Trachycephalus.*
No parasphenoids; a dorsal dermal pouch ..... *Opisthodelphys.*
  β. No cranial dermo-ossification.
    a. A dorsal dermal pouch.
Toes slightly webbed ..... *Nototrema.*
    b. No dorsal pouch.
      aa. Prefrontals united by suture.
Two longitudinal cranial carinæ; no gland ..... *Osteocephalus.*
No carinæ; a parotoid covering head and back .... *Scytopis.*
No carinæ or parotoid; prefrontals large ..... *Acrodytes.*
      bb. Prefrontals small, separated by ethmoid.
No keels or glands; ? a coccygeal diapophysis ..... *Dryomelictes*, g. n.*

II. A fronto-parietal fontanelle.
  a. Posterior digits free, opposable, two and three.
Parotoid glands present; tongue elongate, free..... *Phyllomedusa.*
  β. Posterior digits on same plane, not opposable.
    a. Posterior digits webbed, prefrontals separated by the large ethmoid plate.
      aa. Brain-case and fontanelle broad; superior ethmoid plate broad; inner finger not opposite to the others.
        αα. An elongate acuminate flat postorbital process of the fronto-parietal bone.
Form stout..... *Smilisca.*
      ββ. No postorbital process.
Tongue elongate, extensively free; inferior palpebra reticulate with white fibres; vomerine teeth ..... *Agalychnis.*
Tongue short, attached or little free; palpebra usually transparent; vomerine teeth ..... *Hyla.*
Tongue short; palpebra transparent; no vomerine teeth. *Hylella.*
Tongue extensively free; dilatations minute, palmation extensive behind; vomerine teeth ..... *Acris.*
      bb. Brain-case and ethmoid elongate, fontanelle narrow; inner finger opposed to the others.
Tongue slightly free ..... *Litoria.*
    b. Posterior digits free.
Superior ethmoid plate osseous; prefrontal bones separated.? *Chorophilus.*
Superior ethmoid plate cartilaginous, the prefrontals developed, in contact medially ..... *Thoropa.*

* Type *Hyla aurantiaca.*

Hyla. Two species are described by Prince Max, Nov. Act. Leopold. Carol. xxxii.:—*H. versicolor*, p. 116, and *H. triseriata* (Wied, Reise N. Amer. i. p. 249), p. 118.

Hyla aurantiaca. Mr. Cope regards it as the type of a distinct genus, *Dryomelictes.* See above, p. 160.

Hyla gracilipes, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1865, p. 194, from the Tableland of Mexico. *Hyla staufferi*, sp. n., Cope, *ibid.* p. 195, from Orizava.

Smilisca daulinia is a new generic and specific name given to a skeleton in Prof. Hyrtl's Collection by Mr. Cope. See above, p. 160.

Pharyngodon, g. n., Cope, Proc. Ac. Nat. Sc. Philad. 1865, p. 193; for characters see p. 160. *Ph. petasatus*, sp. n., Cope, *l. c.*, from Yucatan.

Lysapsus. Dr. Steindachner has recognized the error in identifying this genus with *Pseudis minuta*, already pointed out by us in Record, vol. i. p. 131. Verh. zool.-bot. Gesellsch. Wien, 1865, p. 500.

BATRACHIA GRADIENTIA.

Amblystoma and *Siredon.* M. Aug. Duméril, in a memoir read before the French Academy of Sciences (Compt. Rend. 1865, lx. p. 765) has announced the important fact that Axolotls bred in the tanks of the Reptile-house of the Jardin des Plantes. The ova, their attachment to water-plants, and the earlier phases of their development are as in the common Newts. The spawn was deposited on the 19th and 20th of January, and again on the 6th of March; and the larvæ were hatched twenty-eight or thirty days after. They are, at this stage, 0·014 or 0·016 millim. long, and their branchiæ consist of three very short cylindrical appendages, with comparatively few ramifications. The development of the limbs is slow: in examples more than two months old no traces of posterior limbs were observed, and the anterior had not perceptibly increased in length since the tadpoles left the egg-membranes.

Thus the question whether the Axolotl is a tadpole or a perfectly developed animal was seemingly set at rest, when M. Duméril communicated the startling fact, that nine of the numerous young Axolotls bred in Paris had undergone a complete metamorphosis (Compt. Rend. 1865, lxi. 1865, p. 775; and Bull. Soc. d'Acclim. 1866, February). In September they had attained to a size surpassed by that of the parents by 0·040 or 0·050 millim. only, when the external gills commenced to disappear, the form of the head changed a little, and the skin became covered with numerous white spots. Simultaneously modifications of internal organs took place: 1. The hyoid apparatus is simplified, three of the internal branchial arches disappear, and the outermost only persists. 2. The anterior surface of the centre of the vertebræ is more flattened than before the metamorphosis. 3. The vome-

rine teeth, which were disposed in two separate oblique bands, form now a continuous, nearly transverse series. 4. A narrow band of small posterior teeth in the lower jaw disappears.

After the metamorphosis, those examples presented all the characters of *Amblystoma*, and there is no doubt that this form represents the developed state of the larval Axolotl.

[The following questions remain to be solved :—

1. What are the conditions under which an individual Axolotl either passes through a metamorphosis or remains in the tadpole state through life?

2. Do all the species of *Amblystoma* present a full-grown Axolotl-form, capable of reproduction, besides the fully developed form?

3. In what relation do the species of Axolotl distinguished by zoologists stand severally to the several species of *Amblystoma*?]

Mr. Hogg has published some notes on the position assigned by him to the Axolotl in the year 1841, and corrects two errors in Agassiz's 'Index Universalis.' Ann. & Mag. Nat. Hist. 1865, xvi. p. 122.

A paper by E. de Betta on the tailed Batrachians of Venetia is known to us from the title only (see p. 140).

Prince Max describes the following species in Nov. Act. Leopold. Carol. xxxii. :—*Salamandra symmetrica*, p. 125; *S. erythronota*, p. 126; *S. brevicauda*, sp. n., p. 127; *S. maculata*, p. 129; *S. melanoleuca*, p. 130; *S. dorsalis*, p. 131; *Menopoma alleghaniensis*, p. 133, taf. 6; *Menobranchus lateralis*, p. 138, taf. 7. fig. 1.

Triton cristatus. L. Reichenbach describes and figures a yellow variety (var. *icterica*). Nov. Act. Acad. Leopold. Carol. Nat. Curios. xxxii. 1865 (pp. 8, with a plate).

Triton alpestris. Prof. de Filippi has observed, near Andermatten, that larvæ of this species not only attained to the full size, but had the organs of reproduction fully developed, before they lost their branchiæ. The final metamorphosis of these newts is rapidly completed in autumn. Mem. R. Accad. Sc. Torin. xxi. 1864–65, p. lxv.

Hemidactylium pacificum, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1865, p. 195, from Southern California.

Spelerpes. Mr. Cope describes three new species from the Tableland of Mexico, Proc. Ac. Nat. Sc. Philad. 1865, viz. *Sp. cephalicus* and *Sp. oculus*, p. 196, and *Sp. lineolus*, p. 197. He mentions seven species known to inhabit Tropical America.

Cryptobranchus japonicus. Prof. Hyrtl has published a monograph of this Salamander; his researches are based on a female example, 2½ feet long. He gives the history of our knowledge of this species, a description of the external characters of the specimen examined, and an account of its mode of life, and proceeds then to the chief object of the work, viz. the anatomical part. Detailed accounts of the osteology, splanchnology, and angiology are given. The work is written in Latin and illustrated by fourteen plates. (See p. 139.)

PISCES

BY

ALBERT GÜNTHER, M.A., M.D., Ph.D.

A. *Works in Progress.*

BLEEKER, P. Atlas Ichthyologique des Indes Orientales Néerlandaises. See Zoolog. Record, i. p. 134.

Beside livraison 17, a portion of the fifth volume was published in 1865, viz. livr. 18, 19, & 20. The part first named contains, beside the *Muræni*, which we have mentioned in our last Record, the *Symbranchi* and *Leptocephali*; the parts of the fifth volume contain the *Antennarii*, *Plectognathi*, and *Pleuronectidæ*. The plates belonging to this volume are nearly complete, but the text proceeds to *Balistes* only. We deeply regret to hear from the author that the publication of the 21st part, which would conclude the fifth volume, has been delayed, in consequence of the unwillingness of the Dutch government * to advance the necessary funds. We can hardly believe that the government of a nation justly proud of the flourishing state of its Indian possessions, and which may boast of lasting monuments like *Seba's* '*Thesaurus*' or the '*Fauna Japonica*,' should leave half-finished a work worthy of the present state of science, an object of pride to the author's countrymen, admired by all. A work like this cannot and is not expected to pay its expenses; but if the Dutch government are anxious to recover a part of the outlay, why should not the number of copies be doubled, and sold at such a price that the purchase of the work would not be limited to rich institutions or wealthy individuals only?

DUMÉRIL, A. Histoire naturelle des Poissons ou Ichthyologie générale. Tome I. Elasmobranches Plagiostomes et Holocéphales ou Chimères. Paris, 1865, 8vo (pp. 720; with an Atlas in 8vo, containing 14 plates).

The author intends publishing a complete history of all the species of fishes known. He commences his work with the

* The minister whom science has to thank for this interruption is M. J D. Fransen van de Putte.

Plagiostomates and Chimæres, first giving a detailed account of their anatomy and history (pp. 1–308). He gives the synonymy and a description or diagnosis of every well-established species, mentioning the names only of doubtful ones. 318 species of Plagiostomates are described, against 212 of Müller & Henle's standard work; six are described as new, and fifteen mentioned as doubtful. The systematic arrangement is identical with that of the German ichthyologists. The plates represent details of the skeleton, brain, dentition and integuments, ova, &c.

Kner, R. Reise der österreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859, unter den Befehlen des Commodore B. von Wüllerstorf-Urbair. Zoologischer Theil. Fische. 1. und 2. Abtheilung. Wien, 1865, 4to (pp. 272, with 11 plates).

[Voyage of the Austrian Frigate 'Novara' round the Globe, during the years 1857 to 1859, under the command of Commodore B. von W.-U. Zoological Part. Fishes, parts 1 & 2.]

Prof. R. Kner has undertaken to examine and to describe the ichthyological portion of the collections made by the naturalists attached to the Novara expedition. As regards the systematic arrangement he follows that adopted in the 'Catalogue of Fishes:' he gives characteristic diagnoses of the families and genera, and adds to each species partial or entire descriptions and numerous remarks on anatomical details; into the synonymy he enters exceptionally only. The two parts published contain 316 Acanthopterygians and 34 Pharyngognaths, the number of new species being very small. The species described from the island of St. Paul are of particular interest; however, we shall refer to nearly all the species severally in the special part of this 'Record,' as works of this kind do not give the fauna of some district or a certain part of the system in a complete form, and consequently species on which important information is given may be easily overlooked by the student. As regards the external appearance of the work, it is exceedingly well got up, as, indeed, are all the publications of the Vienna Academy.

Having been frequently challenged throughout this work, we cannot leave it without offering some remarks on one or two points. We have mentioned that the author follows the arrangement proposed in the 'Catalogue of Fishes;' and we regret to see that, after having once resolved upon adopting the families of the 'Catalogue,' the author did not use their arrangement given in the systematic synopsis at the end of the third volume, which, whatever its alleged or real shortcomings may be, is a system and not merely a series of families. Now, although Prof. Kner adopts the families of the 'Catalogue,' he does so

under repeated protest. He objects to the order of Acanthopterygians, which, according to his views, ought to be much more limited; fishes in which the spines are flexible ought to be excluded therefrom, &c. He objects to the several families as being much too wide, as, he says, is shown by the frequent occurrence of the word "generally" in their diagnoses, and by the fact that Dr. Günther is frequently obliged to "dissolve" his families into groups or subfamilies. He designates such groups as unnatural, if they contain forms which (as is so often the case) show some deviation from the family-type, although otherwise evidently most nearly related to it. He criticises all the instances where different values have been attached to one and the same character in different parts of the system.

From these and similar remarks of Prof. Kner it appears to us evident that we shall hardly ever agree as regards a natural system of Fishes. The principle which we follow is this: we compare the individual forms, weighing their points of affinity against those of diversity, and until the latter are found to predominate we are always averse to drawing a line of separation. Nobody can deny that the anterior tentacles of *Antennarius*, even of *Malthe*, the cephalic disk of *Echeneis*, are *homologous* to the spinous dorsal fin of a Perch; and as these fishes have also the other chief characteristics of *Acanthopterygians*, we leave them united in the same group. We know also from experience that a principal character of a group may remain undeveloped in some of its members. Thus, although it appears a contradiction that a fish like *Gobiesox*, without spinous dorsal, should be referred to an order one of the chief characters of which is a spinous dorsal, yet, on further comparison, a greater affinity will be discovered with Acanthopterygians than with any of the other orders; but we are obliged to characterize Acanthopterygians as fishes provided "generally" or "normally" with a spinous dorsal. So also we find the amount of identical characters in *Loricaria* and other Siluroids far exceeding that of the differences; at all events, no one will deny that they are more nearly allied to Siluroids than to any other family of fish; and to raise them into a distinct family, equivalent to *Siluridæ*, *Cyprinidæ*, &c., is a proceeding acceptable, perhaps, on the ground of the general appearance of those fishes, but certainly to be rejected in a natural system.

Prof. Kner's assertion, that the subdivision of the families of the 'Catalogue' into groups is a proof of their want of definition, needs scarcely a reply. We might just as well talk of the too great latitude of *his* families, because they are subdivided into genera. Practically speaking, a system of Acanthopterygians (whether they be taken according to the definition of J. Müller or in the restricted sense hinted at by Prof. Kner) will be a better system if built up of a certain number of divisions, each division being subdivided into families, each family composed of several groups,

than a system representing merely a great number of equivalent groups.

The task of a systematist is to build up, and not to tear asunder. But nothing leads more to unnatural separations than the principle of regarding a character as indicative of a family or genus because it has been thus used in other cases, and of using technical characters in a uniform manner. We fully admit that the *Pristipomatidæ* are separated from the *Percidæ* (as this family stands at present) by a merely technical character; also that the *Percidæ* comprise heterogeneous forms, soldered together by technical characters, as we have stated in the introductory remarks to this family (Catal. i. p. 56). But we have, at present, not heard any objection sufficient to induce us to alter our opinion as regards the natural union of the Pristipomatoid genera (with the exception of those eliminated by ourselves), although they may be still more approximated to *a part* of the Percoids when the problem of a natural arrangement of the latter shall be solved. We do confess that we are not quite so sanguine as regards the advantage derived from the character of the structure of the fin-rays as Prof. Kner, and would rather trust to the osteological characters to which we have pointed on various occasions; but it will require much material and laborious study before such an attempt can be successfully made. Meanwhile we must, like Prof. Kner, be contented with the present system, however unwieldy its divisions may be.

Finally, we beg to draw the attention of Prof. Kner to the "Rules of Zoological Nomenclature" laid before the meetings of the British Association in 1842 and 1865, which contain certainly some excellent suggestions as regards the references to authors and the claims of priority. It would also be well not to introduce terms like "Pseudokieme" (pseudo-gill), as pseudo-ichthyologists might be induced to adopt them.

Couch, J. The History of the Fishes of the British Islands. London, 8vo. See Zoolog. Record, i. p. 135.

Of this work the fourth and concluding volume was published in 1865 (pp. 439, with 73 plates). It contains the Malacopterygians, Lophobranchians, Plectognaths, and an Appendix.

B. *Separate Publications.*

Day, F. The Fishes of Malabar. London, 1865, 4to (pp. 293, with 20 plates).

This book contains the descriptions of 294 species, four-fifths of which were collected by the author in the course of five years. Thirty are new to science. The book will be of great service to the local naturalist, the author having diligently collected what is known of that part of the Indian peninsula. The author has

omitted to make any generalizations as regards the character of this fish-fauna compared with other parts of the Indian Ocean, although, if his account be tolerably complete, some very curious facts would be apparent at once, as no Apogon or Scaroid and one Blennioid only are mentioned. The real absence or scarcity of such common Indian forms, numerous even in the Red Sea, would be a highly interesting fact. When we deduct the 64 species not observed by the author and described from other sources and compare the number of the remaining 230 species with the 380 collected by Cantor at Penang and on the Malayan peninsula in the course of three years and a half, the difference appears so great that it should have been explained, particularly when we see families like the Cyprinoids so unequally represented that Cantor includes two species only in his fauna, whilst Mr. Day describes not less than twenty.

The author has borrowed the generic diagnoses from other works, and gives only a part of the synonymy, which, however, is judiciously selected. The plates are executed by the author, who has bestowed much labour on them, and are certainly very accurate. As a part of the copies are sold with plain figures, we recommend particularly the choice of one with coloured plates.

Filippi, F. de. Viaggio in Persia. See pp. 3, 63, 141.

The author (pp. 357–360) enumerates twenty-two species of fishes, a part of which will be mentioned below.

He treats at some length of the physical characters of the Caspian Sea (pp. 307–325). Its fauna is so essentially composed of freshwater forms that we may arrive at the certain conclusion that no direct communication ever existed between it and the Black Sea. But this freshwater creation is menaced with extinction at a more or less remote period. There is a continuous import of saline substances going on through the agency of rivers which flow over saline strata, and the water of which is perfectly salted. This, combined with the evaporation of the Caspian Sea, must finally result in such a concentrated condition of its water as is incompatible with the existence of organic life—a state of things which, according to Prof. Baer, is too remote to justify the fears of the present generation. The author enumerates some forty-five species of fishes known chiefly through the researches of Eichwald, adding a new species of *Capoeta*. None of them belong to a marine type; 28 are found in the Danube, 5 in the Black Sea, 7 are peculiar to the Caspian Sea, and 5 are of Asiatic origin, being found in Persian rivers.

Müller, J. W. Reisen in den Vereinigten Staaten. See p. 3.

The list of Mexican Vertebrata contains the names of some 130* freshwater and marine species (pp. 89–109). Several new species are described.

* Prof. Troschel cannot have seen a proof-sheet; names which evidently were placed as synonyms of one species in the manuscript, received after-

Walecki, A. Materyaly do Fauny ichthyologiczej Polski. II. Systematyczny przeglad ryb Krajowych. Warszawa, 1864, 8vo (pp. 115)*.

C. *Papers published in Journals.*

Agassiz, L. Observations sur les métamorphoses des Poissons. Ann. Sc. Nat. 1865, iii. pp. 55–58.

The author states that *Argyropelecus hemigymnus* is the young of *Zeus faber*. This statement has not been confirmed; see Kner, R. p. 172.

Andrews, W. On the occurrence of *Merlangus albus*, new to Irish Ichthyology. Proc. Nat. Hist. Soc. Dubl. vol. iv. pp. 9–11.

——. Remarks on the *Salmonidæ*. Ibid. pp. 53–57.

The author treats in this paper chiefly on the appearance of kelted individuals.

Beneden, P. J. van. Sur quelques poissons rares des côtes de Belgique. Bull. Acad. Sc., Lettres etc. de Belg. 1865, xx. pp. 45–53.

These notes refer to *Petromyzon omalii* (van Ben.), p. 46; *Raja circularis* (Couch), p. 48; *Scombresox saurus*, p. 51; and *Merlangus albus*, p. 52.

Bleeker, P. Description de quelques espèces de Murènes de Suriname. Nederl. Tydschr. Dierk. ii. 1865, pp. 233–249.

——. Description de quelques espèces de Poissons du Japon, du Cap de Bonne Espérance et de Suriname, conservés au Musée de Leide. Ibid. pp. 250–269.

The species described are: *Pseudolabrus rubiginosus*=*Labrus rubiginosus* (Schleg.), p. 250; *Halichæres pœcilopterus*=*Julis pœcilopterus* (Schleg.), p. 251; *Hal. pyrrhogramma*=*J. pyrrhogramma* (Schleg.), p. 253; *Isopisthus parvipinnis*=*Ancylodon parvipinnis* (C. & V.), p. 254; *Ancylodon jaculidens* (C. & V.), p. 255; *Otolithus* (*Johnius*) *amazonicus* (Casteln.), p. 257; *Otol.* (*Lutjanus*) *cayennensis* (Lacép.), p. 258; *Corvina adusta* (Jen.), p. 260; *Nebris microps* (C. & V.), p. 261; *Sphyræna vulgaris*, p. 263; *Sph. commersonii*, p. 265; *Synodontis schall*, p. 266; *Silurus japonicus* (Schleg.), p. 268.

wards (from another hand) separate numbers, as if they belonged to distinct species. *Heros fenestratus* occurs thrice in the list. *Myxus* is a Mugiloid, not a Herring.

* We have ordered this work for some time, but, up to the present, not received a copy of it.

Bleeker, P. Enumération des espèces de Poissons actuellement connues de l'île d'Amboine. Ibid. pp. 270–293.

A list of names of 935 species. This is perhaps the largest number of species ever made known from so limited a district.

——. Notice sur les Ostracions confondus sous le nom d'*Ostracion quadricornis* (L.) et description des *Ostracion notacanthus* et *guineensis*. Ibid. pp. 298–305, with a plate.

——. Systema Balistidorum, Ostracionidorum Gymnodontidorumque revisum. Ibid. iii. 1865, pp. 8–19.

This paper will be republished in the author's 'Atlas Ichthyologique;' and we intend to report on it as the latter more perfect work progresses.

——. Synonyma Balistidorum, Ostracionidorum Gymnodontidorumque Indo-Archipelagicorum hucusque observatorum revisa, adjectis habitationibus citationibusque, ubi descriptiones figuræque eorum recentiores reperiuntur. Ibid. pp. 20–40.

——. Deuxième notice sur la Faune Ichthyologique de l'île de Harouko. Ibid. pp. 41–42.

A list of names of 36 species.

——. Description de quelques espèces inédites des genres *Pseudorhombus* et *Platophrys* de l'Inde Archipélagique. Ibid. pp. 43–53.

——. Sur les espèces d'Exocet de l'Inde Archipélagique. Ibid. pp. 105–129.

——. Revision des Hémirhamphes de l'Inde Archipélagique. Ibid. pp. 136–170.

Brandt, J. F. Bericht über eine Abhandlung: Bemerkungen über die Classification der Kaltblütigen Rückenmarkthiere zur Beantwortung der Frage: Was ist ein Fisch? Bull. Acad. Sc. St. Pétersb. viii. May 4th (pp. 535 & 536).

[Abstract of a treatise entitled 'Remarks on the Classification of Cold-blooded Vertebrates pertinent to the question, what is a fish?']

——. Bericht über den ersten Theil meiner Beiträge zur Kenntniss der Entwicklungsstufen der ganoiden Fischformen. Ibid. May 18th (pp. 536–538).

[Abstract of the first part of Contributions to the Knowledge of the stages of development of Ganoid forms of fishes.]

Canestrini, G. Sopra alcuni pesci poco noti o nuovi del Mediterraneo Nota. Mem. Accad. Sc. Torin. ser. ii. Tom. xxi. 1864–65, pp. 359–367, with two plates.

Champion, P. Note sur trois espèces de Poissons chinois, et sur leur emploi dans l'industrie et l'alimentation. Bull. Soc. d'Acclim. 1865, pp. 474–477.

The three species have been determined by M. Duméril as *Collichthys lucidus*, *Otolithus maculatus*, and *Muræna pekinensis* (Basilewsky); they are used by the Chinese for the preparation of isinglass.

Cope, E. D. Partial Catalogue of the Cold-blooded Vertebrata of Michigan. Part II. Proc. Ac. Nat. Sc. Philad. 1865, May (pp. 78–88).

Day, F. On the Fishes of Cochin, on the Malabar Coast of India. Proc. Zool. Soc. 1865, January 10 (pp. 2–40), and March 14 (pp. 216–318).

The substance of this paper is embodied in the author's 'Fishes of Malabar.'

Duméril, A. Des Poissons vénéneux. Ann. Soc. Linn. Maine et Loire, 1865, pp. 1–17.

The author treats of the causes which may impart poisonous qualities to the flesh of fishes, enumerates the species said or known to have caused accidents, and finally describes the symptoms of such cases of poisoning and the treatment to be adopted*.

——. Des animaux utiles à l'homme. See p. 18.

Filippi, F. de. Riassunto del Catalogo degli Animali vertebrati delle Provincie caucasiche e della Persia occidentale. Att. Soc. Ital. Sc. Nat. vii. Riun. straord. a Biella, 1864, September, pp. 184–186.

The contents of this paper are embodied and more fully treated of in the author's 'Viaggio in Persia.'

Gerbe, Z. Observations sur la nidification des Crénilabres. Rev. et Mag. Zool. xvi. pp. 255–258, 273–279, 337–340.

Gill, Th. Synopsis of the genus *Pomoxys* (Raf.). Proc. Acad. Nat. Sc. Philad. 1865, April (pp. 64–66).

——. On the genus *Caulolatilus*. Ibid. (pp. 66–68).

* In a footnote on p. 1 the author denies the presence of venomous organs in the class of fishes—a statement which, according to recent investigations, should not be repeated.

Gill, Th. Note on the family of *Myliobatoids*, and on a new species of *Ætobatis*. Ann. Lyc. Nat. Hist. New York, viii. 1865, May (pp. 135–138).

——. On a remarkable new type of Fishes allied to *Nemophis* [*Plagiotremus*]. Ibid. (pp. 138–141).

——. On a new family type of Fishes related to the Blennioids [*Chænopsis*]. Ibid. (pp. 141–143).

——. Synopsis of the Fishes of the Gulf of St. Lawrence and Bay of Fundy. Canad. Nat. & Geol. 1865, August*.

The author enumerates names of ninety-one species. The list is based on the observations of Richardson, Storer, and other naturalists, verified in most cases by an examination of specimens either from the district referred to or from closely contiguous portions of the same faunal region. The genera are shortly characterized, and systematic tables of the families are added to facilitate the determination of species.

Gilpin, J. B. On the Gaspereaux [*Alosa tyrannus*]. Proc. & Trans. Nov. Scot. Inst. Nat. Sc. Halif. vol. ii. part 3, 1865 (pp. 107–114).

Guichenot, —. Catalogue des Scaridés de la Collection du Musée de Paris. Mém. Soc. Sc. Nat. Cherbourg, xi. 1865, pp. 1–75.

——. Catalogue des Vomers de la Collection du Musée de Paris. Ann. Soc. Linn. du Départem. de Maine et Loire, viii. 1865, pp. 32–44.

Günther, A. On the Pipe-fishes belonging to the genus *Phyllopteryx*. Proc. Zool. Soc. 1865, March 28 (pp. 327 & 328, with two plates).

——. Description of a new Characinoid genus of Fish from West Africa. [*Phago.*] Ann. & Mag. Nat. Hist. 1865, xv. March (pp. 209 & 210, with a plate).

——. A contribution to the Ichthyology of West Africa. Ibid. xv. June (pp. 452 & 453).

The author adds some other instances of the identity of the fish-faunas of the Upper Nile and of the West African rivers to those previously known, viz. *Lates niloticus*, *Clarotes laticeps*, and *Citharinus latus*, which fishes had been known hitherto from the Nile only. Two new species are described.

* The part of this periodical which contains this paper has not yet been received in this country; so that we are unable to refer to the pages. We are indebted to the author for the early communication of a separate copy (pp. 24).

Jäckel, A. J. Ichthyologisches aus meinem Tagebuche von 1864. Corr.-Bl. zool.-min. Ver. Regensb. 1865, pp. 33–51.

[Ichthyological Notes from my Diary of 1864.]

These notes are additional to the author's "Fishes of Bavaria" (see 'Zool. Record,' vol. i. p. 139). He continues to pay particular attention to fishes which are supposed to be hybrids between different species of Cyprinoids.

Johnson, J. Y. Description of a new genus of Trichiuroid Fishes obtained at Madeira, with remarks on the genus *Dicrotus* (Gthr.), and on some allied genera of *Trichiuridæ*. Proc. Zool. Soc. 1865, May 9 (pp. 434–437). [*Nealotus.*]

Jones, J. M. Notes on certain species of Nova-Scotian Fishes. Canad. Nat. & Geol. 1865, pp. 128–135.

These notes refer chiefly to the habits and occurrence on the Nova-Scotian coasts of the following species:—*Perca flavescens, Cottus grœnlandicus, Sebastes norwegicus, Cryptacanthodes maculatus, Scomber scomber, Thynnus vulgaris, Xiphias gladius, Gunnellus vulgaris, Anarrhichas lupus, Lophius piscatorius, Ctenolabrus burgall, Fistularia,* sp.?

Jouan, H. Notes sur quelques espèces de Poissons de la Basse-Cochinchine. Mém. Soc. Impér. Sc. nat. Cherbourg, xi. 1865, pp. 257–328.

The author treats of 78 species; he appears to have taken great interest in making ichthyological observations in Cochinchina, and gives very exact descriptions; but, unfortunately, he had not the literary means of determining the species observed by him, and consequently they are designated merely by generic and by the vernacular Annamite names.

Kirschbaum, C. L. Die Reptilien und Fische des Herzogthums Nassau. Nass. naturwiss. Jahrb. 1865, pp. 77–122 (also separately printed).

This is a paper of local interest. The author enumerates forty-two species, and adds a tabular synopsis to facilitate their determination.

Kner, R. Vergleichung eines jungen *Zeus faber* mit *Argyropelecus hemigymnus*. Verhandl. zool.-bot. Gesellsch. Wien, 1865, May (pp. 287 290). See Agassiz, L.

——. Ueber Salmoniden-Bastarde. Ibid. pp. 199–202.

——. Fische aus dem naturhistorischen Museum der Herren J. C. Godeffroy und Sohn in Hamburg. Denkschr. Akad. Wiss. Wien, xxiv. 1865 (pp. 12, with four plates).

Seven species are described and figured, five of them new.

Kner, R., und Steindachner, F. Neue Gattungen und Arten von Fischen aus Central-America; gesammelt von Prof. M. Wagner. Abhandl. Bayr. Ak. Wiss. x. 1, 1864*, pp. 1–61, with six plates.

This memoir contains descriptions of, or notes on, 26 fresh-water species collected by Prof. M. Wagner on the Isthmus of Panama. Seventeen had been characterized as new in the 'Sitzgungsberichten' of the same Academy for 1863 (pp. 220–230) and are now described and figured. The memoir is followed by another from the pen of Prof. Wagner (see below p. 176).

Krauss, F. Das Zahlenverhältniss der im Neckar vorkommenden Fischarten. Württ. ntrw. Jahresh. 1865, pp. 165–167.

A notice of merely local interest. Of the fishes caught on one occasion, 99 per cent. were *Aspius alburnus*.

Lunel, G. Revision du genre Castagnole (*Brama*) et description d'une espèce nouvelle, *Brama saussurii*. Mém. Soc. Phys. et d'Hist. Nat. Genève, xviii. 1865 (pp. 32, with two plates).

Malmgren, A. J. Om Spetsbergens Fiskfauna. Œfvers. Svens. Vet. Akad. Förhandl. (1864) 1865, pp. 489–539.

The number of fishes known to inhabit the coasts and fresh waters of Spitzbergen is twenty-three, twelve of which are found in Northern Europe, and nearly all occur in Greenland. The author shows that the fish-fauna of the western and south-western coasts differs considerably from that of the northern and eastern, the former bearing a Boreal Atlantic and the latter a truly Arctic character. The fish-fauna of Arctic North America is composed of fourteen species, ten or eleven of which are found also in Spitzbergen. *Gadus carbonarius, Lota molva,* and *Salmo salar,* said to belong to this fauna, have not been found by the author, and probably do not occur in Spitzbergen.

The author has added to most of the species detailed accounts of their synonymy, specific characters, and geographical distribution, based on original researches; and therefore we shall refer to them severally in the systematic part of this Record.

Martens, E. von. Ueber Süsswasserfische von Borneo. Sitzgsber. Ges. ntrf. Freund. Berlin, 1864, pp. 9 & 10.

M'Coy, F. Notes on the Australian Species of *Arripis*. Trans.

* Although this memoir is dated 1864, its publication appears to have been delayed to 1865, and it could not be obtained through booksellers before 1866.

& Proc. R. Soc. Victoria, vi. 1865, pp. 158 & 159; or Ann. & Mag. Nat. Hist. 1865, xvi. September (pp. 187 & 188).

PETERS, W. Ueber einige Bloch'sche Arten der Fischgattung *Serranus*. Monatsber. Ak. Wiss. Berlin, 1865, February 13 (pp. 97–111).

The author remarks that Bloch had named a part only of the specimens of his collection, whilst others had been determined at a later period by persons but little acquainted with the subject. Such specimens have frequently been designated as types, and were, especially by Valenciennes, examined and described as such, whereby great confusion has been caused. The author has commenced to reexamine the Blochian collection, and the present paper contains the results of the examination of some of the *Serrani*.

——. Ueber lebendig gebärende Arten der Fischgattung *Hemiramphus*. Ibid. March 16 (pp. 132 & 133): translated in Ann. & Mag. Nat. Hist. 1865, xv. p. 500.

[On viviparous species of *Hemirhamphus*.]

PHILIPPI, R. A. Ueber die chilenische Anguilla. [*Petromyzon acutidens*.] Wiegm. Arch. 1865, pp. 107–109.

POEY, F. Peces nuevos de la Isla Cuba. Repertor. Fisico-natural de la Isla de Cuba, 1865, September (pp. 181–192).

Eight species are described as new; they will be mentioned below.

We beg to direct the attention of naturalists particularly to this journal, which has just been started by M. Poey as editor. The author of the 'Memorias sobre la Historia natural de la Isla de Cuba' is so well known through his careful and original researches, and the natural history of the West Indies is so rich a field, that the 'Repertorio' cannot fail to contain a number of most important articles, and the parts published are already a proof of it.

——. Revista de los tipos Cuvierianos y Valenciennianos correspondientes á los Peces de la Isla de Cuba. Ibid. (pp. 193–203).

The author revises critically the Cuban species described by Cuvier and Valenciennes, rectifying the synonymy. The present number of the periodical mentioned contains the *Serrani*; the paper will be continued.

——. Peces ciegos. Ibid. (pp. 113–116).

The author treats of the blind fishes found in wells and caves, at a depth of from 20 to 30 metres below ground. They are well known to the negroes, who eat them. The author described two of them (*Lucifuga*); but the species from the caves of Cajio has not yet been examined.

POLUTA, G. Recherches sur la durée de la vie des Poissons hors de l'eau. Ann. Sc. Nat. 1865, iv. pp. 62–64.

The circumstances which contribute to prolong the life of fishes out of the water, are:—

1. The cylindrical form of the body of a fish.
2. The presence of water in the gill-cavities.
3. The absence of scales;

and those diminishing this faculty are the following:—

1. The compressed form of the body.
2. The arrangement of the gills in a mass.
3. The presence of scales.

SCOTT, W. R. On the occurrence of *Orcynus alalonga* on the coast of Devon. Ann. & Mag. Nat. Hist. 1865, xvi. October (pp. 268–270).

STEENSTRUP, J. Om Flynderslägten *Zeugopterus* og Bygningen af dens Gjällehule. Overs. Dansk. Vid. Selsk. 1865, pp. 95–112, with woodcuts.

STEINDACHNER, F. Catalogue préliminaire des Poissons d'eau douce de Portugal (Suite). (pp. 5).

This is a continuation of the publication mentioned in the 'Zool. Record,' vol. i. p. 139; it will be published in the forthcoming volume of Mem. Acad. Sc. Lisboa. The separate pamphlet is dated 1865.

——. Ichthyologischer Bericht über eine nach Spanien und Portugal unternommene Reise. I. Zur Fisch-fauna des Albufera-Sees bei Valencia in Spanien. Sitzgsber. Akad. Wiss. Wien, 1865, lii. November 3 (with a plate)*.

[Ichthyological report on a tour to Spain and Portugal. I. Contributions to the Fish-fauna of the Lake Albufera near Valencia.]

The author enumerates *Cyprinodon ibericus*, *Fundulus hispanicus*, *Barbus bocagei*, *Cobitis tænia*, *Gasterosteus aculeatus*, *Mugil cephalus* and *capito*, *Atherina mochon* and *hepsetus*, *Carassius vulgaris*, *Labrax lupus*, *Anguilla vulgaris*.

——. Vorläufiger Bericht über die an der Ostküste Teneriffes bei Santa Cruz gesammelten Fische. Ibid. li. May (pp. 398–404).

[Preliminary account of a collection of fishes made on the eastern coast of Teneriffe, at Santa Cruz.]

* We are unable to indicate the pages, as the November part of this periodical does not appear to have been published; we are indebted to the author for a separate copy of the paper.

The author has collected about 87 species during a sojourn of seventeen days.

STEINDACHNER, F. Ichthyologische Notizen (II). Zur Flussfisch-Fauna von Croatien. Ibid. lii. 1865, November 30 *.

[Contributions to the knowledge of Croatian freshwater fishes.]

The author has examined a collection of fishes from Southern Croatia; it consisted of thirteen species; those to which he has added notes will be mentioned below; one is new.

THOMSON, W. Notes on Prof. Steenstrup's views on the obliquity of Flounders. Ann. & Mag. Nat. Hist. 1865, xv. May (pp. 361–371, with a plate).

The greater part of this paper is a translation of Prof. Steenstrup's memoir (see Zool. Record, i. p. 139), with critical notes added by Prof. Thomson.

TRAQUAIR, R. W. Observations on the development of the *Pleuronectidæ*. Proc. R. Phys. Soc. Edinburgh, 1865, January 25 (pp. 215–222).

The substance of this paper is embodied in the following.

——. On the Asymmetry of the *Pleuronectidæ*, as elucidated by an examination of the skeleton in the Turbot, Halibut, and Plaice. Trans. Linn. Soc. xxv. 1865, pp. 263–296, with four plates.

WAGNER, M. Ueber die hydrographischen Verhältnisse und das Vorkommen der Süsswasserfische in den Staaten Panama und Ecuador. Ein Beitrag zur Zoogeographie Ammerika's. Abhandl. Bayr. Ak. Wiss. x. 1, 1864, pp. 63–113.

[On the hydrography and freshwater fish-fauna of Panama and Ecuador. A contribution to the zoogeography of America.]

In the first portion of this memoir the author treats of the hydrographical peculiarities and freshwater fishes of the Isthmus of Panama between 7° and 9° lat. N., and 77° and 83° long. W. He obtained about thirty species, which were described by Messrs. Kner and Steindachner in the memoir mentioned above; and defines the characteristics of this part of the Central American fauna thus:—

1. The generic types are exclusively tropical.

2. Chromides, Characines, and Siluroids are the predominant forms; Esoces, Cyprinoids, and Percoids entirely absent.

* We are unable to indicate the pages, as the November part of this periodical does not appear to have been published; we are indebted to the author for a separate copy of the paper.

3. Although the number of species is small, the diversity of forms is comparatively great.

4. The genera are identical with those of South America, with the exception of *Chalcinopsis*, which is peculiar to the isthmus [and neighbouring parts].

6. All the species are carnivorous; herbivorous fishes are entirely absent. [This is not correct; *Pœcilia* (*Xiphophorus*) *gillii* (from the author's own collection) is an herbivorous or at least mud-eating fish; and more such will be discovered by further researches.]

8. Most of the species have not been found elsewhere.

9. The number of individuals is small.

10. The greater number of the species are found on the Atlantic and Pacific sides of the watershed, viz.: *Acanthias vulgaris*, *Agonostoma elongatum*, *monticola* et *nasutum*, *Macrodon microlepis*, *Acara cæruleopunctata*, *Heros sieboldii*, *Pœcilia gillii*, *Chalcinopsis striatulus*, *Tetragonopterus æneus* et *gronovii*, *Pimelodus* [*cinerascens*?], *Loricaria uracantha* et *lima*, *Hypostomus plecostomus*.

The author justly regards the last point as the most interesting result of his researches, but he is mistaken in believing that no instance has been known, before Prof. Kner's examination of his collection, of the occurrence of one and the same species on both sides of the isthmus (p. 76). Such instances have been repeatedly mentioned by the Recorder and Mr. Gill; and the fact has been most distinctly stated in a paper on Central American fishes, published in 1861 in Proc. Zool. Soc. Lond. Nov. 26. Prof. Wagner explains the fact by the great constriction of the isthmus, the depression of its surface, the prevalent north-eastern monsoon, the flood tide penetrating high up the rivers, and the daily passage of aquatic birds from one shore to the other. He says that the altitude of the hills between 79° 29′ and 79° 51′ long. W. is 206 metres, and that of the passes 139 metres only, and that the width of the watershed between the Rio Obispo (a tributary of the Rio Chagres) and the Rio Grande is but one-third of a geographical mile.

In the second part the author treats of the hydrographical peculiarities of Ecuador and of the characteristics of the fish-fauna of the western slope of the Andes *. He says that the alpine forms (*Brontes prenadilla*) reach here to an altitude of 13,400 feet. *Arges cyclopum* and *Brontes prenadilla* descend to an altitude of 7000 feet; *Trichomycterus laticeps* et *tænia*, *Pseudochalceus lineatus*, and *Saccodon* are limited to the region between 1000 and 7000 feet of altitude.

D. *Anatomical Publications.*

GEGENBAUR, C. Untersuchungen zur vergleichenden Anatomie der Wirbelthiere. Heft 2. Schultergürtel der Wirbel-

* The author is evidently not completely acquainted with this part of the fish-fauna.

thiere. Brustflosse der Fische. Leipzig, 1865, 4to (pp. 176, with nine plates).

[Humeral arch of Vertebrates. Pectoral fin of fishes.]

Hollard, H. Recherches sur la structure de l'encéphale des Poissons et sur la signification homologique de ses différentes parties. Compt. Rend. 1865, April (pp. 768–770, abstract).

Langhans, Th. Untersuchungen über die Sclerotica der Fische. Zeitschr. wiss. Zool. 1865, pp. 243–306, with two plates.

[Researches on the *Sclerotica* of fishes.]

Mayer —. Ueber die *Chorda dorsalis* bei den Fischen. Wiegm. Arch. 1865, pp. 342–344.

Owsjannikow, Ph. Ueber das Gehörorgan von *Petromyzon fluviatilis*. Mém. Ac. Sc. St. Pétersb. viii. 1864, pp. 19, with two plates.

[On the organ of hearing of *Petromyzon fluviatilis*.]

Paulson, O. Die Epidermis von *Protopterus annectens*. Bull. Ac. Sc. St. Pétersb. 1865, viii. January (pp. 141–145, with a plate).

Robin, Ch. Mémoire sur les phénomènes et la direction de la décharge par l'appareil électrique des Raies. Ann. Sc. Nat. 1865, iv. pp. 342–346.

Voit, C. Ueber die in den Schuppen und der Schwimmblase von Fischen vorkommenden irisirenden Krystalle. Zeitschr. wiss. Zool. 1865, pp. 515–521.

[On the iridescent crystals in the scales and air-bladder of fishes.]

Prof. Brandt has read before the Academy of Sciences of St. Petersburg a treatise on the classification of Cold-blooded Vertebrates, with particular regard to the question, What is a fish? The treatise will appear in the Mémoires of the Academy, but an abstract is published in Bull. Ac. Sc. St. Pét. 1865, p. 535. The author, commencing from Aristotle, discusses the various ideas entertained by authors of a fish and the definitions given by those who regarded it as the type of a distinct class of the animal kingdom, and passes to the objections raised by Pallas and Owen against the separation of fishes as a distinct class. To prove that the reasons brought forward by these two authors are not of sufficient strength to unite the fishes with reptiles and amphibians, he gives the characteristics of warm- and cold-blooded vertebrates generally, and of those three classes specially. In conclusion he admits the possibility that future discoveries may prove a more intimate relation between the three types of cold-blooded vertebrates than is apparent at present.

DIPNOI.

Lepidosiren annectens. M. Paulson has examined the structure of its epidermis. Bull. Ac. Sc. St. Pétersb. 1865, viii. pp. 141–145, with a plate.

ACANTHOPTERYGII.

Prof. Kner observes that the term "ctenoid scales" is too indefinite, and proposes the name *squamæ ctenoideæ monostichæ* for those the margin of which only is serrated, and that of *squamæ cten. pleiostichæ* for the scales the spines of which form several series covering a part of the surface of the scales. Novara, Fisch. p. 4.

Percidæ.

Percichthys laevis described by Kner, Novara, Fisch. p. 11.

Labrax. Prof. Peters describes a new species, *L. schauinslandii*, from Celebes, and confirms Dr. Steindachner's opinion that *Labrax elongatus* (gen. *Dicentrarchus*, Gill) is identical with *L. diacanthus*. Monatsber. Akad. Wiss. Berl. 1865, p. 95; translated in Ann. & Mag. Nat. Hist. 1865, xv. p. 503.

Lates is provided with pseudobranchiæ. Günther, Ann. & Mag. Nat. Hist. 1865, xv. p. 452.

Percalabrax japonicus described by Kner, Novara, Fisch. p. 13.

Siniperca chuatsi (Basil.) is described and figured by Kner, *l. c.* p. 15, taf. i. fig. 3.

Centropomus. The Cuban species mentioned by Cuvier and Valenciennes is not *C. undecimalis*, but *C. appendiculatus*. Poey, Repert. Fisico-nat. Cub. 1865, p. 194.

Anthias (*Holocentrus*) *virescens* (Bl.) described by Peters, Monatsber. Ak. Wiss. Berl. 1865, p. 100.

Serranus. Prof. Peters has examined a part of the Blochian types of *Serranus*, and rectified the synonymy of the following species (Monatsber. Ak. Wiss. Berl. 1865, pp. 99–111):—

1. *Holocentrus maroccanus* (Bl. Schn.) is a good species, and afterwards described by Valenciennes as *Serr. papilionaceus* (p. 99).
2. *Holocentrus virescens* (Bl.) is not identical with *S. cabrilla*, but some species of *Anthias*; it is described (p. 100).
3. *Holocentrus argentinus* (Bl.) = *S. cabrilla*, which has as frequently seven as eight anal rays (p. 101).
4. *Holocentrus ongus* (Bl.), not = *S. dichropterus* (Cuv. & Val.), from Brazil, but = *S. bataviensis* (Blkr.) (p. 102).
5. *Holocentrus auratus* (Bl.) = *S. auratus* (Cuv.). Prof. Peters is inclined to regard this species, *S. ouatalibi*, *S. punctatus* (Poey), and *S. guativere* as varieties of colour (p. 103).

6. *Bodianus guttatus* (Bl.) = *Cephalopholis argus* (Bl. Schn.), not = *S. argus* (Gthr.) (p. 103).

7. *Bodianus bœnak* (Bl.) = *Serranus bœnak* et *formosus* (Val.), not = *S. bœnak* (Blkr.), which is identical with *S. nigrofasciatus* (Hombr. & Jacq.) (p. 105).

8. *Epinephelus* (*Serranus*) *ruber* (Bl.) (p. 107).

9. *Holocentrus cæruleopunctatus* (Bl.) = *S. leucostigma* (Ehrenbg.) = *S. albo-guttatus* (Val.) (p. 108).

10. *Epinephelus marginalis* (Bl.) = *Perca fasciata* (Forsk.) = *S. oceanicus* (Val.) (p. 109).

11. *Perca maculata* (Bl.) = *S. catus* (Val.) = *S. impetiginosus* (Müll. & Trosch.) = *S. trimaculatus* (Val.) = *S. ura* (Val.) (p. 109).

12. *Serranus galeus* (Müll. & Trosch.) = *S. itaiara* (Licht.) (p. 110).

13. *Serranus trimaculatus* (Blkr., not Val.) = *S. fasciatomaculatus* (Ptrs.) (p. 111).

M. Poey has revised the synonymy of the Cuban species of *Serranus* described by Cuvier and Valenciennes (Repertor. Fisico-nat. Cub. 1865, pp. 195-203). His remarks refer to the following species :—

S. creolus ; *S. morio* = *S. erythrogaster* (De Kay) ; *S. striatus* ; *S. tigrinus* ? = *S. præstigiator* (Poey) ; *S. inermis* ; *S. coronatus* * ; *S. arara* ; *S. cardinalis* = *S. rupestris* = *S. petrosus* (Poey) ; *S. lunulatus* = *S. catus* ; (*S. impetiginosus*, M. & Trosch.) ; *S. niveatus* = *S. conspersus* (Poey) ; *S. ouatalibi* ; *S. guativere* ; *S. pixanga*.

M. Poey describes the following Cuban species of *Serranus* as new (Repert. Fisico-nat. Cub. 1865) :—*Mycteroperca calliura*, p. 181 ; D. $\frac{11}{17}$. A. $\frac{3}{11}$. *Epinephelus flavolimbatus*, p. 183 ; D. $\frac{11}{14}$. A. $\frac{3}{9}$.

Prof. Kner (Novara, Fisch.) has described the following species :—Serranus novemcinctus, sp. n., p. 17, taf. 2. fig. 1, from the Cape of Good Hope and St. Paul ; *S. brunneus*, p. 18 ; *S. trimaculatus*, p. 18 ; *S. diacanthus*, p. 20 ; *S. bœnak*, p. 21 ; *S. guttatus* (Bl.), p. 22 ; *S. fuscoguttatus*, p. 22 ; *S. altivelioides*, p. 23 ; *S. moara*, p. 23 ; *S. marginalis*, p. 24 ; *S. undulosus*, p. 24 ; *S. hexagonatus*, p. 25 ; *S. awoara*, p. 26 ; *S. formosus*, p. 26 ; S. longispinis, sp. n., p. 27, taf. 2. fig. 2, from Madras.

Mr. Gill proposes the generic name *Trisotropis* for *Serranus guttatus* (Bl.), *cardinalis*, *undulosus*, *dimidiatus*, &c., to which group a new species, *Trisotropis reticulatus*, from Barbadoes, would belong. He also proposes to make *S. ouatalibi* the type of a genus, *Enneacentrus*, and *S. guttatus* (Poey) the type of a genus, *Petrometopon*. Proc. Ac. Nat. Sc. Philad. 1865, p. 104.

Serranus altivelis, described and figured by Kner, Denkschr. Ak. Wiss. Wien, xxiv. taf. 1. fig. 1.

[*Serranus*] *Cerna macrogenys* (Sassi) is described and figured by Canestrini, Mem. Accad. Sc. Torin. ser. ii. tom. xxi. p. 359, tav. 1. fig. 1.

Serranus lanceolatus. Mr. Day maintains that this fish loses the black cross bands with age, and that, in its adult state, it has been described as *S. horridus* ; Fish. Malabar, p. 4, pl. 1, where both fishes are figured. Such a change of colours is quite possible, but Mr. Day has omitted to notice the remarkable difference in the length of the dorsal spines, so conspicuous in the figures given. We may add that already Mr. Blyth has expressed it as his opinion that this fish represents the young state only of another *Serranus*, which, however, he has identified with *S. coioides* or *suillus* (Journ. As. Soc. Beng. xxix. p. 111).

* We are not aware that the number of fin-rays has ever been stated by Cuvier and Valenciennes, as mentioned by M. Poey.

Plectropoma. Prof. Peters (Monatsber. Ak. Wiss. Berl. 1865, p. 105) has recognized the identity of *Alphestes afer* (Bl. Schn.) = *Epinephelus afer* (Bl.) with *Plectropoma chloropterum* (Val.) = *P. monacanthus* (Müll. & Trosch.). He demurs to the generic separation of *Plectropoma* from *Serranus*, and says that, at all events, the name *Alphestes* would have the priority before *Plectropoma*.

Diploprion bifasciatum. Prof. Kner has found nine pyloric appendages. Novara, Fisch. p. 29.

Myriodon waigiensis described by Kner, *l. c.* p. 38.

Mesoprion. Prof. Kner describes the following species :—α. with the tongue smooth : *M. annularis*, *l. c.* p. 33 ; *M. enneacanthus*, p. 34 ; *M. decussatus*, p. 34. β. with the tongue toothed : *M. chrysotænia*, p. 34 ; *M. rangus*, p. 34 ; *M. johnii*, p. 35 ; *M. fulviflamma*, p. 35 ; *M. lineolatus*, p. 36 ; *M. vitta*, p. 37 ; *M. lutjanus*, p. 37.

Mesoprion aurolineatus, fig. by Day, Fish. Malabar, pl. 3 ; *M. sillaoo*, ibid. pl. 2. fig. 1 ; *M. rubellus*, pl. 2. fig. 2.

Mesoprion albostriatus (Bl. Schn.). On its synonymy see Peters, Monatsber. Ak. Wiss. Berl. 1865, p. 111.

Genyoroge. Prof. Kner unites this genus with *Mesoprion*, and regards also the character of a smooth or toothed tongue as not being of generic value (Novara, Fisch.). He describes *G. sebæ* (p. 30), *G. bengalensis* (p. 31), *G. marginata* (p. 31), *G. bottonensis* (p. 32, taf. 2. fig. 3). All these species have a smooth tongue.

Priacanthus macrophthalmus. Some remarks on this species by Kner, *l. c.* p. 39.

Ambassis commersonii and *A. dussumieri* are described by Kner, *l. c.* p. 41.

Apogon. Prof. Kner has made remarks on *A. hyalosoma*, *A. bifasciatus*, *A. quadrifasciatus*, and *A. fasciatus*. *L. c.* pp. 42 & 43.

Arripis. Prof. M'Coy states that he has satisfied himself, from an examination of a great number of fresh specimens, that *Centropristes georgianus* (Cuv.), *C. salar* (Richards.), *C. truttaceus* (Cuv.), *Perca trutta* (Cuv.), and probably *Perca marginata* (Cuv.) are the same species, and that this species, called Salmon or Salmon Trout in Melbourne, has about 160 pyloric appendages, and from 16 to 19 soft dorsal rays. Ann. & Mag. Nat. Hist. 1865, xvi. p. 187.

The Recorder cannot agree with this opinion. Valenciennes* describes in such a manner the 17 pyloric appendages of *C.*

* Prof. M'Coy attributes this statement to Günther, but he might have observed that skins only are in the British Museum of this species, and that that statement is taken from Valenciennes's original account.

georgianus, that we can hardly doubt the correctness of this number; and as this species has 14 soft dorsal rays only, Prof. M'Coy must have examined a different species. For the same reason, the Recorder does not think that the fish examined by Prof. M'Coy is *C. salar*, which has only 50 pyloric appendages. Therefore it remains to be seen whether the Melbourne "Salmon" is the *Centropristis truttacea*, Cuv. & Val., or whether it is a distinct species altogether, which, like its congeners, is subject to certain changes dependent on age. But the Recorder fully agrees with Prof. M'Coy that the *Perca marginata* of Cuvier also belongs to this genus, and that it is probably merely a nominal species.

Centrarchus. For species with six dorsal spines the name *Pomoxys* is adopted by Mr. Gill. He is acquainted with four species, three of which are described as new, viz. *P. brevicauda*, *P. intermedius*, and *P. protacanthus*; for the fourth (*P. nitidus*, Girard) the name *P. storerius* is adopted. Proc. Ac. Nat. Sc. 1865, pp. 64–66.

Bryttus oculatus, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1865, p. 83, from Lake Whittlesey, Minn.; *B. mineopas*, sp. n., Cope, ibid. p. 84, from the same State.

[*Pomotis*] *Lepomis longispinis*, sp. n., Cope, *l. c.*, obtained between St. Louis and Southern California.

Odontonectes (Gthr.) is reunited with *Cæsio* by Kner, Novara, Fisch. p. 63.

Dules tæniurus. A young example from Tahiti is described by Kner, *l. c.* p. 47.

Pristipomatidæ.

Therapon. Prof. Kner (Novara, Fisch.) describes: *T. trivittatus*, p. 45; *T. quadrilineatus*, p. 46; *Datnia plumbea*, sp. n., p. 48, taf. 3. fig. 1, from the Cape of Good Hope and St. Paul. The author states the reasons by which he is induced to retain *Datnia* as a distinct genus.

Helotes sexlineatus has only seven pyloric appendages, according to Kner, *l. c.* p. 46; this species is figured, taf. 3. fig. 1, from an example from Manilla.

Pristipoma. Prof. Kner has made remarks on *P. nageb*, *l. c.* p. 51; *P. lineatum*, p. 52; and *P. guoraca*, p. 53.

Pristipoma humile (Kner & Steind.), fig. in Abhandl. Bayr. Ak. Wiss. x. 1, tab. 1. fig. 1.

Pristipoma coro. Prof. Troschel thinks it possible that this is a nominal species and identical with *Conodon plumieri*,—in Müller, Wirbelth. Mex. p. 91.

Conodon plumieri. Prof. Troschel, *l. c.*, has found distinct pseudobranchiæ in this fish.

Digramma affine. Mr. Day's statement (Fish. Malab. p. 23) that *Pristipoma nigrum* of Cantor is this species, is correct; but he was not justified, without further proof, in identifying it with the fish described by Cuvier and Valenciennes.

Datnioides polota described by Kner, Novara, Fisch. p. 50.

Dentex rupestris and *D. argyrozona* are described by Kner, *l. c.* pp. 61 & 63.

Synagris tæniopterus described by Kner, *l. c.* p. 269.

Synagris grammicus, sp. n., Day, Proc. Zool. Soc. 1865, p. 14, or Fish. Malabar, p. 26, pl. 4, from Cochin.

Pentapus. Prof. Kner unites *Heterognathodon* (Blkr.) with this genus (Novara, Fisch. p. 59), and makes remarks on *Pentapus setosus* and *Heterognath. xanthopleura* (p. 61).

Cæsio cærulaureus. Prof. Kner regards *C. striatus* (Rüpp.) as identical with this species, *l. c.* p. 65.

Scolopsis. Prof. Kner has made remarks on *S. margaritifer* and *S. torquatus.* Novara, Fische, pp. 58 & 59. He says, that "the second anal spine of the former species is by no means thicker and shorter than the third, as asserted by Günther; probably he (Dr. G.) has examined from one side only, if he had done it from the other also he would have designated the third as the stronger spine." The Recorder begs to reply, that he does not remember whether he examined the specimen from one or both sides in the year 1859, but that it would have been quite an exception to his usual method of examination, if he had not looked at both sides in this case, especially as he was well aware of the different appearance of the two sides of the spines, and finally, that in the specimen examined (10 inches long) the second spine is absolutely stronger and shorter than the third.

Squamipinnes.

Chætodon. Prof. Kner has made remarks on the following species:—*Ch. setifer* [which he confounds with *Ch. auriga*], *Ch. ornatissimus*, *Ch. octofasciatus*, *Ch. collaris*, *Ch. vittatus*, *Ch. decussatus*, *Ch. chrysozonus.* Novara, Fisch. pp. 97–102. On *Ch. reticulatus*, ibid. p. 271.

Heniochus varius. Notes on the coloration by Kner, *l. c.* p. 103.

Holacanthus. Prof. Kner has made some remarks on *H. sexstriatus* and *H. mesoleucus*, *l. c.* pp. 104 & 105.

Scatophagus ornatus (C. & V.) is regarded as a distinct species and described by Kner, *l. c.* p. 272.

Scorpis æquipinnis is described by Kner as *Scorpis lineolatus*, sp. n., *l. c.* p. 108, taf. 5. fig. 3.

Nandidæ.

Plesiops corallicola described by Kner, Novara, Fisch. p. 214.

Trachinops tæniatus described by Kner, *l. c.* p. 215, taf. 8. fig. 7.

Mullidæ.

The Recorder regrets to have formerly adopted the genera proposed in this family by Bleeker, and founded upon slight modifications of the dentition. The great number of similar species, so easily confounded after a part of the markings have disappeared from the action of spirits in which they are preserved, renders it most desirable to have some character of structure which may be relied upon for the distinction of spe-

cies, but which, therefore, does not necessarily become a generic character. The Recorder is rather surprised to see those genera adopted by Prof. Kner (Novara, Fische, p. 66), who only a few pages back expresses himself strongly against the genus *Odontonectes*, distinguished on the same grounds as *Upeneoides*, &c. The Recorder regards the *Mullidæ* as one natural genus; and if the use of those generic names is here continued, it is done merely to assimilate our abstract from the work mentioned to the original account.

Upeneoides. Prof. Kner has made remarks on *U. tragula*, *U. sulphureus*, *U. dubius* (Schleg.) (is not an *Upeneus*), *U. tæniopterus* (C. & V.). *L. c.* pp. 66–68.

Mulloides flavolineatus described by Kner, *l. c.* p. 69.

Upeneus. Prof. Kner has made remarks on *U. barberinus*, *U. barberinoides* (? Blkr.), pl. 3. fig. 4, from Hongkong, *U. trifasciatus*, *U. punctatus*. *L. c.* pp. 70–72.

Sparidæ.

Cantharus emarginatus described by Kner, Novara, Fisch. p. 73.

Girella simplex. Notes on this fish by Kner, *l. c.* p. 75.

Sargus unimaculatus and *S. cervinus* (*hottentottus*) are described by Kner, *l. c.* pp. 77 & 78.

Sargus arenosus (Dekay), *S. ambassis* (Gthr.), and *Pagrus argyrops* (Cuv.) should be united and referred to a new genus, *Stenotomus*; and the *Sargus probatocephalus* may be called *Archosargus*, according to Gill, Fish. of the Bay of Fundy.

Lethrinus. Prof. Kner has made remarks on the following species:—*L. amboinensis* (Blkr. ?), *L. hæmatopterus* [not to be confounded with *L. richardsonii*, as done by Prof. Kner], *L. harak* (Rüpp. ?), *L. fasciatus*, ? = *L. cocosensis* (Blkr.), *L. lutjanus*. Novara, Fisch. pp. 80–83. He describes *L. mashena*, ibid. p. 270.

Sphærodon. Lethrinus latidens (C & V.) has been identified with *Pagrus heterodon* (Blkr.) by Prof. Kner, who describes and figures the species; *l. c.* p. 83, taf. 4.

Hoplognathidæ.

Hoplognathus. M. Guichenot states that *Ichthyorhamphus* (Casteln.) from the Cape of Good Hope is identical with this genus. Mém. Soc. Sc. Nat. Cherbourg, xi. p. 5. The same author refers it to the Scaroid fishes; but its pharyngeal bones are entirely separate, rather feeble, and armed with villiform teeth.

Cirrhitidæ.

Chilodactylus carmichaëlis. Prof. Kner (Novara, Fisch. p. 90) unjustly charges the Recorder with having confounded the fish described by Carmichael * with the Chilian species. If he had

* We take this opportunity of correcting a misprint in 'Fish.' ii. p. 81, where the reference to Carmichael's paper ought to be p. 500, pl. 24.

not very superficially consulted the works containing descriptions of the fish, and particularly Valenciennes's account, he would have found that this amalgamation, be it correct or erroneous, was not made by the Recorder, but by the ichthyologist just mentioned; and indeed, from the material then in his possession, Valenciennes could hardly have done otherwise. We also are inclined to think that the fish figured in the 'Règne Anim. Ill.' pl. 31. fig. 2, ought to be eliminated from the synonymy of *C. carmichaëlis*; but, anyhow, it cannot be identified with the Chilian fish described by Valenciennes (ix. p. 490), or by Gay (who copies the account given by Valenciennes), this fish having as short a pectoral fin as the true *C. carmichaëlis*. It is uncertain what fish is represented by that figure, and improbable that it is the same mentioned by Valenciennes as having been received from Gay. Prof. Kner has described and figured a specimen from the island of St. Paul; and *now*, as Carmichael's fish has been really rediscovered, it is possible to give a decided opinion about it. It is most closely allied to the Chilian species described by Valenciennes, and appears to differ from it, not in the length of the pectoral (as stated by Prof. Kner), but in the number of scales of the lateral line, having 55–58 scales, instead of 45. The synonymy, therefore, will stand thus:—

1. *Chætodon monodactylus* (Carmich.) = *Chilodact. carmichaëlis* (C. &. V. v. p. 360; Kner, *l. c.* taf. 5. fig. 1).
2. *Chilodactylus knerii*, sp. n. = *Ch. carmichaëlis* (C. & V. ix. p. 490; cop. by Gay).
3. *Chil. gayi* (Kner, *l. c.* p. 92; sp. incerta) = *Ch. carmichaëlis* (Cuv. Règne An. Poiss. pl. 31. fig. 2).

Mendosoma elongatum (Kner) is fully described in Novar. Fisch. p. 92, taf. 5. fig. 2.

Nematodactylus concinnus is described by Kner, *l. c.* p. 94.

Latris hecateia, ibid. p. 95.

Cirrhites punctatus (C. & V.) is described by Dr. Bleeker, Nederl. Tydschr. Dierk. iii. 1865, pp. 174–176; it is found in the sea off the island of Réunion and has palatine teeth, consequently it is a *Cirrhitichthys*. However, Dr. Bleeker calls now, with Mr. Gill, a part of the species of his former genus *Cirrhitichthys Cirrhites*, and a part of his former *Cirrhites Amblycirrhitus*.

Scorpænidæ.

Sebastes norvegicus occurs on the south-western coast of Spitzbergen. Malmgren, Œfvers. Svensk. Vet.-Akad. Förh. 1865, p. 508.

Sebastes marmoratus. Some remarks by Kner, Novar. Fisch. p. 114.

Scorpæna. Prof. Kner has made remarks on the following species:—*Sc. brasiliensis*, *Sc. plumieri*, *Sc. cruenta*, *Sc. bandanensis* (? Blkr.), *Sc. oxycephalus* (Blkr.), *Sc. diabolus* (? C. & V.). *L. c.* pp. 114–118.

Teuthididæ.

Prof. Kner has made remarks on the following species:—*Teuthis javus*, *T. albopunctata*, *T. margaritifera*, *T. mertensii* (C. & V.?), *T. hexagonata*, *T. guttata*, *T. lurida*, *T. marmorata*, *T. doliata*, *T. virgata*. Novara, Fisch. pp. 205–209.

Berycidæ.

Holocentrum. Prof. Kner (Novara, Fische) has made remarks on *H. spiniferum* (Forsk.), p. 7; *H. caudimaculatum* (Rüpp.); *H. tahiticum* (sp. n.?), p. 9, taf. 1. fig. 2. [The last species is identical with *H. sammara*.]

Holocentrus brachypterus, sp. n., Poey, Repert. Fisico-natur. Cub. 1865, p. 184, from Cuba.

Myripristis. Prof. Kner (Novara, Fische) has made remarks on *M. murdjan* (p. 4) and *M. botche* (p. 5), which is figured taf. 1. fig. 1.

Kurtidæ.

Pempheris. Prof. Kner has made remarks on *P. otaitensis* and *P. mangula*, and treats of their synonymy. Novara, Fisch. p. 171.

Polynemidæ.

Polynemus. Prof. Kner has made remarks on *P. hexanemus*, *P. indicus*, *P. lineatus*, and *P. tetradactylus*. Novara, Fisch. pp. 136–138.

Sciænidæ.

Umbrina. Prof. Kner has made some remarks on *U. russellii* and *U. arenata*. Novar. Fisch. pp. 131 & 132.

Corvina. Prof. Kner (Novar. Fisch.) regards *C. lobata* (C. & V.), *Johnius* et *Corvina kuhlii* (C. & V.) and *C. belangeri* (C. & V.) as one species, p. 133, and makes some remarks on *C. semiluctuosa*, p. 134.

Corvina neilli, sp. n., Day, Fish. Malabar, p. 55.

Corvina moorii, sp. n., Günther, Ann. & Mag. Nat. Hist. 1865, xvi. p. 48, from the Gambia.

Corvina nigrita. *Corvina clavigera* (Cuv. & Val.) is identical with this species, the osseous tumours of the spines being anomalous productions. Günther, *l. c.* p. 49.

Corvina adusta (Jenyns) is described by Bleeker, Nederl. Tydschr. Dierk. ii. 1865, p. 260.

Otolithus. Dr. Bleeker describes a fish from Surinam as *O. amazonicus*, regarding it as possibly identical with *Johnius amazonicus* (Castel.). *L. c.* p. 257.

Otolithus argenteus. Prof. Kner figures the air-bladder. Novara, Fisch. p. 135, taf. 6. fig. 4.

Trichiuridæ.

Nealotus, g. n., Johnson, Proc. Zool. Soc. 1865, p. 434. Each ventral fin reduced to a single spine; a dagger-shaped spine behind the vent. *N. tripes*, sp. n., Johnson, *l. c.*, from Madeira. D. 21 | 19. A. 18.

Dicrotus (Gthr.). Mr. Johnson shares Dr. Günther's opinion, that this is merely the undeveloped state of some species of *Thyrsites* or *Gempylus*. Proc. Zool. Soc. 1865, p. 436.

Thyrsites, *Ruvettus*, and *Prometheus*. Mr. Johnson is inclined to keep these genera distinct, instead of uniting them into one, as has been done by Günther. In fresh specimens of *Ruvettus* the lateral line may be distinctly seen. Proc. Zool. Soc. 1865, p. 437.

Trichiurus malabaricus, sp. n., Day, Proc. Zool. Soc. 1865, p. 20, or Fish. Malab. p. 65, pl. 5, from Malabar.

Trichiurus haumela. Some remarks by Kner, Novara, Fisch. p. 140.

Acronuridæ.

Acanthurus. Prof. Kner (Novara, Fische) has made remarks on the following species:—*A. matoides*, *A. lineatus*, *A. celebicus*, and *A. strigosus*, pp. 210–212. He proposes the generic name of *Scopas* for the species with 3 or 5 dorsal spines. As regards his remarks on *Acronurus*, we can only believe that he does not know this genus from autopsy.

Naseus lituratus described by Kner, *l. c.* p. 213.

Keris [better *Ceris*] *maculatus*, sp. n., Kner, Denkschr. Ak. Wiss. Wien, xxiv. taf. 2. fig. 2, from the Pacific.

Carangidæ.

Trachurus trachurus is described from Chinese and Australian examples by Kner, who, however, unites *Trachurus* with *Caranx*. Novara, Fisch. p. 150.

Caranx. Prof. Kner gives descriptions of, or makes remarks on, the following species (Novara, Fisch.):—*C. rottleri*, p. 150; *C. muroadsi*, p. 151; *C. affinis*, p. 151; *C. torvus*, p. 152; *C. para* (C. & V.), p. 153; *C. gymnostethoides*, p. 153; *C. xanthurus*, p. 154; *C. malam*, p. 154; *C. malabaricus*, p. 155; *C. chrysophrys*, p. 155; *C. armatus* (Forsk.), p. 156; *C. lioglossus*, ?= *C. dinema*, p. 156; *C. carangus*, p. 157; *C. forsteri*, p. 158; *C. cynodon*, p. 158.

Caranx melanostethos, sp. n., Day, Proc. Zool. Soc. 1865, p. 23, and Fish. Malab. p. 83, pl. 6, from Malabar.

Argyriosus setipinnis. M. Guichenot states that a number of species have been confounded under this name, and that the Paris Museum alone possesses fourteen (Ann. Soc. Linn. Maine et Loire, 1865, pp. 32–44). He maintains the genera *Scyris*, *Blepharis*, *Gallichthys*, *Argyriosus*, *Vomer*, and *Hymnis*, uniting them in a family, *Vomeridæ*. The new specific names are:—*V. senegalensis*, p. 35; *V. goreensis*, p. 37; *V. sanctæ marthæ*, p. 38; *V. columbiensis*, p. 39; *V. martinicensis*, p. 39; *V. dominicensis*, p. 40; *V. novæ-boracensis*, p. 41; *V. sancti petri*, p. 41, from Martinique; *V. gabonensis*, p. 42; *V. brasiliensis*, p. 43; *V. cayennensis*, p. 43; and *V. cubæ*, p. 44.

Argyriosus vomer. Prof. Kner figures the pyloric appendages. Novara, Fisch. p. 160, taf. 7. fig. 2.

Chorinemus tol and *C. lysan* are described by Kner, *l. c.* pp. 162 & 163.

Psettus. Prof. Kner's statement (*l. c.* p. 164) that *P. argenteus* has teeth on the palate is perfectly correct, and also *P. falciformis* and *P. sebæ* are provided with such teeth.

Platax arthriticus (*batavianus*) described by Kner, *l. c.* p. 165.

Equula. Prof. Kner describes the following species:—*E. ensifera*, *l. c.* p. 166; *E. dussumieri*, p. 167; *E. bindoides*, p. 168; *E. splendens*, p. 169; *E. insidiatrix*, p. 169; *E. interrupta*, p. 169.

Gazza. This genus is rejected by Prof. Kner, who describes *G. minuta*, *l. c.* p. 170.

Cyttidæ.

Zeus faber. Prof. Agassiz, misled by the external similarity of form of the Dory with *Argyropelecus hemigymnus*, or by some badly determined examples, communicated to the Paris Academy his discovery, that the latter is neither more nor less than the young state of the former (Ann. Sc. Nat. 1865, iii. p. 56; Compt. Rend. 1865, p. 152; and Ann. & Mag. Nat. Hist. 1865, xvi. p. 69). Prof. Kner has replied to this (Verhandl. zool.-bot. Gesellsch. Wien, 1865, p. 288), and demonstrated the impossibility of such a metamorphosis, the gill-rakers of an *Argyropelecus* being long and those of *Zeus* (young and old) mere tubercles, not to mention the other differences. To this the Recorder may add that there is in the collection of the College of Surgeons an *Argyropelecus*, nearly four inches long, without any sign of a metamorphosis into a *Zeus*.

Coryphænidæ.

M. G. Lunel has published a monograph of *Brama* (Mém. Soc. Phys. et d'Hist. Nat. Genève, xviii. 1865). He gives a most complete history of our knowledge of this genus and of the species separately, each of which is fully described, either from specimens or from the original descriptions. The number of species belonging to *Brama* proper is eight *, one of which is new, viz. *Brama saussurii*, discovered by M. H. de Saussure at Cuba. It is distinguished by the form of its scales, each having a spine directed forwards. D. $\frac{3}{30}$ A. $\frac{2}{29}$ L. lat. 50. The author directs also attention to the great affinity between *Brama* and *Taractes*, and is evidently inclined to reunite them.

Centrolophus porosissimus, sp. n., Canestrini, Mem. Accad. Sc. Torin. xxi. p. 365, tab. 2. fig. 5.—*Centrolophus crassus* (? C. & V.) is described and figured, ibid. p. 262, tab. 2. fig. 1.—We may mention on this occasion that *Crius berthelotii* (Valenc.) is identical with *Centrolophus ovalis* (C. & V.).

Stromateus. Prof. Kner has made remarks on *S. gardenii*, *S. atous*, and *S. cinereus*. Novara, Fisch. pp. 147 & 148.

Scombridæ.

Cybium. Prof. Kner has made remarks on *C. guttatum*, *C. konam*, and *C. regale*. Novara, Fisch. pp. 143 & 144.

Thynnus alalonga. An instance of the occurrence of this species on the coast of Devonshire is recorded by Dr. Scott. Ann. & Mag. Nat. Hist. 1865, xvi. p. 268.

* *Brama princeps* (Johns. Proc. Zool. Soc. 1863) is not included in this number.

Trachinidæ.

Sillago. Prof. Kner has made remarks on *S. maculata* and *S. ciliata*. Novara, Fisch. p. 127.

Bovichthys psychrolutes. An adult specimen from the island of St. Paul is described by Kner. Novara, Fisch. p. 128, taf. 6. fig. 3.

Latilus. Mr. Gill unites *L. chrysops*, *L. princeps* (with which *Dekaya anomala*, Cooper, is evidently identical; see also Zool. Record, i. p. 155), and a very doubtful new species, *C. affinis*, into a genus *Caulolatilus*, which he characterizes. He also proposes the generic name *Prolatilus* for *L. jugularis*. Proc. Ac. Nat. Sc. Philad. 1865, p. 66.

Latilus jugularis, described by Kner, *l. c.* p. 130.

Batrachidæ.

Batrachus trispinosus. Remarks by Prof. Kner on the porus axillaris and other anatomical points. Novara, Fisch. p. 189.

Porichthys porosissimus described by Kner, *l. c.* p. 190, taf. 8. fig. 1.

Thalassophryne. Capt. Dow remarks on this fish, "The natives seemed quite familiar with the existence of the spines and of the emission from them of a poison which, when introduced into a wound, caused fever; but in no case was a wound caused by one of them known to result seriously. The slightest pressure of the finger at the base of the spine caused the poison to jet a foot or more from the opening of the spine." Proc. Zool. Soc. 1865, p. 677.

Pediculati.

Dr. Bleeker has given an account of the species occurring in the East-Indian Archipelago (Atl. Ichthyol. v. pp. 1–24, pls. 194–200); they are, one *Halicutæa* and twenty-four *Antennarius*. As regards the latter, the author has laid too much value on the coloration, and consequently unduly increased the number of species, as we have maintained on a former occasion. No new species is described, but the name of *Antennarius leprosus* (Blkr., not Eyd. and Soul.) is changed into *A. güntheri*.

Antennarius marmoratus. Prof. Steenstrup confirms the Recorder's opinion (Fish. iii. p. 186) that *Chironectes arcticus* (Düb. & Kor.) is founded merely on a specimen of this species; he adds the very curious fact, that the "appendices cutaneæ raræ," which formed the specific character of *Ch. arcticus*, are nothing but the prominent parts of the parasitic *Pennella sagitta*. Vidensk. Meddel. naturh. Foren. Kjöbnh. for 1863, 1864, pp. 208–212.

Antennarius corallinus, sp. n., Poey, Repert. Fisico-nat. Cub. 1865, p. 188, from Cuba.

[*Antennarius*] *Chironectes rubrofuscus*, sp. n., Garrett, Proc. Calif. Acad. Nat. Sc. iii. p. 64.—D. 3 | 13. A. 9. P. 11. Oblong-oval. The whole surface covered with minute asperities and very small cutaneous appendages. Dark-red, with irregular cloud-like markings and spots, dusky-grey. Everywhere

maculated with small, irregular, dusky spots, which are the most numerous on the belly. A few deep-black maculations on the vertical fins and body. Sandwich Islands.

Chironectes sontagii, sp. n. [?], von Müller, Reise in Mexico, i. p. 180, from the Gulf of Mexico.

Cottidæ.

Cottus scorpius, *C. grönlandicus*, *C. labradoricus* (Girard), *Acanthocottus ocellatus* (Storer), and *C. glacialis* (Richards.) are regarded by Hr. Malmgren as one species. [From his account, it would appear that the number of dorsal rays in Scandinavian specimens is generally larger by two than in those from the western coasts of Europe; and a reexamination of series of examples is desirable]. This species occurs in Spitzbergen. Œfvers. Svensk. Vet. Akad. Förhandl. 1865, p. 495.

Cottus decastrensis, sp. n., Kner, Denkschr. Ak. Wiss. Wien, xxiv. taf. 2. fig. 1, from Decastris Bay.

Cottus tricuspis. Hr. Malmgren has identified *Acanthocottus patris* (Storer) and *C. ventralis* (C. & V.) with this species. Spetsberg. Fiskfauna, p. 504.

[*Cottus*] *Uranidea spilota*, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1865, p. 82, from Michigan.

Centridermichthys. Prof. Cope makes some remarks on *Cottus alvordii* (Gir.), *l. c.* p. 81.

Icelus hamatus. Some remarks by Malmgren, *l. c.* p. 507.

Triglops pingelii occurs also in Spitzbergen, Malmgren, *l. c.* p. 508. *Triglops pleurostictus*, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1865, p. 81, from Greenland.

Platycephalus. Prof. Kner has made remarks on *P. insidiator*, *P. malabaricus*, *P. tentaculatus*, *P. neglectus*, *P. scaber*. Novara, Fisch. pp. 121–123.

Trigla. Prof. Kner has made remarks on *T. capensis* and *T. kumu*, *l. c.* p. 124. The air-bladder of the latter is figured, taf. 6. fig. 2.

Discoboli.

Liparis vulgaris. Hr. Malmgren states that the dorsal rays of this fish vary from 32 to 43, and the anal from 28 to 37. Spetsberg. Fiskfauna, p. 510.

Gobiidæ.

Gobius. Prof. Kner (Novara, Fisch.) has described the following species:—*G. ornatus*, p. 173; *G. frenatus*, p. 174; *G. gymnocephalus*, p. 175; *G. ommaturus*, p. 176; *G. nudiceps* (Bikr.?) from the Cape of Good Hope, p. 177; *G. bifrenatus*, sp. n., from Sydney, p. 177, taf. 7. fig. 3; *G. nicobaricus*, sp. n., p. 179.

Gobius nasalis, sp. n., De Filippi (Arch. per la Zool. 1863), Viaggio in Persia, p. 312, from the Caspian Sea.—*G. macropus*, sp. n., De Filippi, Viaggio in Persia, p. 357; Lake Palestom, near Poti.—*G. malabaricus*, sp. n., Day, Proc. Zool. Soc. 1865, p. 27, and Fish. Malabar, p. 111, pl. 7. fig. 2.

Gobiodon quinquestrigatus and *G. histrio* are described by Kner, Novara, Fisch. pp. 180 & 181.

Sicydium lagocephalum described by Kner, *l. c.* p. 181.

Electris. Prof. Kner has made remarks on the following species:—*E. aporos*, *E. gobioides*, *E. obscura*, *E. oxycephala*, *E. fusca*, *Bostrichthys sinensis*, *l. c.* pp. 183–187.

Electris pictus, figured by Kner and Steindachner, Abhandl. Bayr. Ak. Wiss. x. 1, taf. 3. fig. 1.

Callionymus goramensis is regarded as the type of a distinct genus, *Diplogrammus*, by Gill, Ann. Lyc. Nat. Hist. New York, viii. 1865, p. 143.

Callionymus pauciradiatus, sp. n., Gill, *l. c.* p. 144, from Matanzas. D. 3 | 6. A. 4. The first species of the genus found in American waters.

Blenniidæ.

Blennius. Prof. Kner (Novara, Fisch.) has described three species, adding that he is uncertain about their determination:—*B. fissicornis* (C. & V.?), p. 193, taf. 8. fig. 2, from Rio Janeiro; *B. paucidens*, sp. n.?, p. 194, taf. 7. fig. 5, from Rio Janeiro; *B. maoricus*, sp. n.?, p. 125, taf. 8. fig. 3, from Auckland.

Petroscirtes solorensis. Specimens from Sydney have been thus determined by Kner, *l. c.* p. 196.

Salarias. Prof. Kner describes *S. quadricornis*, *l. c.* p. 197; *S. biseriatus* (C. & V.?), p. 197, taf. 8. fig. 4, from Taiti; *S. rubropunctatus* (C. & V.?), p. 198, taf. 8. fig. 5, from Valparaiso.

Cristiceps argyropleura, sp. n., Kner, *l. c.* p. 199, taf. 7. fig. 4, from Sydney.

Clinus. Prof. Kner describes *C. superciliosus*, *l. c.* p. 200; *C. acuminatus* and *C. cottoides*, p. 202, taf. 8. fig. 6. They are viviparous.

Clinus nuchipinnis. Notes on this species by Troschel, in Müller, Wirbelth. Mexico's, p. 97.

Stichæus. Hr. Malmgren describes as Spitzbergen species *S. medius* (Reinh.), *S. lumpenus* (Fabr.), *S. nubilus* (Richards.), and *S. islandicus* (Gthr.). Œfvers. Svensk. Vet.-Akad. Förh. 1865, pp. 517–525.

Cryptacanthodes maculatus. A specimen from the Nova Scotian coast is described by Mr. J. M. Jones, Canad. Nat. & Geol. 1865, p. 129.

Zoarces viviparus appears to inhabit the coasts of Decastris Bay. Kner, Denkschr. Ak. Wiss. Wien, xxiv.

Plagiotremus, g. n., Gill, Ann. Lyc. Nat. Hist. New York, viii. 1865, p. 138. Allied to *Nemophis*. Body elongate, naked; anus near the end of the anterior fourth of the length. Eyes moderate. Mouth inferior, with the anterior margin of the jaws transverse and perfectly straight; gape very wide, the lower jaw, which, when closed, shuts obliquely upwards, being capable of retraction, even behind the vertical. Teeth in a single series, compressed transversely to the jaws and forming a continuous incisorial edge; in the lower jaw, on each side of the series of small teeth, a very large curved canine is developed, which is received in a preocular fossa of the palate. Gill-openings minute, placed high up. Dorsal fin continuous from nape nearly to caudal; anal similar; caudal well developed. Ventral fins obsolete. *P. spilistius*, sp. n., p. 140, from China. Mr. Gill thinks that this remarkable fish should be united with *Nemophis* into a family, *Nemophidæ*; but it would appear to the Recorder that it shows sufficient affinities to *Xiphogadus*, with

which it should be compared. The absence of ventral fins and of a separate caudal is not always a character on which distinct families may be founded.

Chænopsis, g. n. (Poey), Gill, Ann. Lyc. Nat. Hist. New York, viii. 1865, p. 141. Body naked, eel-like; anus submedian. Head much elongate, quadrate behind at the opercular region, conic in front, with the profile rectilinear and the snout acute. Eyes moderate. Mouth large, with the cleft wide and nearly horizontal. Teeth subcylindrical, in a uniform row, behind which, in front, there is a broad band of villiform teeth on the palatine bones, uniserial and obtusely subcylindrical like those of the jaws*; the palatine rows are parallel; vomer edentulous. Gill-membranes confluent below, free from the isthmus. Dorsal and anal long, confluent with caudal. Ventrals slightly in advance of pectorals, with two or three rays.—*Chænopsis ocellatus*, sp. n., p. 143, from Matanzas. D. $\frac{18}{38}$. A. $\frac{2}{38}$. C. 15. Mr. Gill considers this fish to be the type of a distinct family, related to the Blennioids.

Acanthoclinidæ.

This family is rejected by Kner, Novara, Fisch. p. 203.

Mastacembelidæ.

Mastacembelus güntheri, sp. n., Day, Proc. Zool. Soc. 1865, p. 37, or Fish. Malabar, p. 154, pl. 11, from Trichoor.

Sphyrænidæ.

Sphyræna brachygnathus described by Kner, Novara, Fisch. p. 139.

Atherinidæ.

Atherina mochon. Notes on specimens obtained in Spain, by Steindachner, Sitzgsber. Ak. Wiss. Wien, 1865, Nov. 3.

Atherinichthys. Prof. Kner (Novara, Fisch.) describes *A. microlepidota*, p. 222; *A. brasiliensis*, p. 222; *A. incisa* (Jenyns?), p. 223, taf. 9. fig. 1.

Chirostoma sieculum, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1865, p. 81, from Michigan. The Recorder does not recollect having ever heard of the generic name *Chirostoma*; but the number of fin-rays (D. 5 | 12. A. 25) leads him to suppose that the name is intended for some fish of this family.

Mugilidæ.

Agonostoma. Dajaus elongatus (Kner), fig. in Adhandl. Bayr. Ak. Wiss. x. 1, taf. 1. fig. 2, is perhaps identical with *Agonostoma nasutum*. Prof. Kner and Dr. Steindachner theorize on, and object to, the union of *Cestræus*, *Nestis*, and *Dajaus* (=*Agonostoma*) in one genus, without, however, being able to add one character to those on which these so-called genera were based by Valenciennes, which characters must appear insignificant in comparison with the points of affinity, to one who knows these fishes from autopsy and not from descriptions only. We object most

* This passage is unintelligible; probably by a printer's error, a semicolon has been omitted behind villiform teeth.

decidedly to the practice of regarding a character which is generic in one group as being of the same value in another, and unless the naturalists mentioned point out more important characters than those given by Valenciennes, those genera are of no greater value than his *Salmo*, *Fario*, &c. At all events, the authors are very wrong in rejecting the prior name* *Agonostoma*, given with a very good diagnosis by one of the best zoologists.

Myxus. Prof. Kner (Novara, Fish.) describes *M. elongatus* (Gthr.?) p. 230, and *M. analis*, sp. n., p. 231, taf. 10. fig. 1, from Shanghai.

Mugil. Some notes on the teeth by Troschel, in Verhandl. ntrhist. Vereins Preuss. Rheinl. & Westph. 1865, 2. Sitzgsber. p. 130.

Prof. Kner (Novara, Fisch.) has given descriptions of, or made remarks on, the following species:—*Mugil cephalotus*, p. 224; *M. planiceps*, p. 225; *M. cantoris* (Blkr.?), from Madras, p. 225; *M. ophuysenii* (Blkr.?), from Java, p. 226, taf. 9. fig. 2; *M. waigiensis*, p. 226; *M. richardsonii*, p. 227; *M. axillaris* (Gthr.?), p. 227, taf. 9. fig. 3, from Shanghai; *M. borneensis*, p. 228; *M. crenilabris*, p. 228; *M. crenidens*, sp. n., p. 229, taf. 9. fig. 4, from Australia.

Mugil poicilus, sp. n., Day, Proc. Zool. Soc. 1865, p. 33, or Fish. Malabar, p. 140, pl. 9, from Malabar.—*M. cunnumboo*, sp. n., ibid. p. 141, with figure of head.

Gasterosteidæ.

Gasterosteus aculeatus, var. *gymnurus*, is found in Spain. Steindachner, Sitzgsber. Ak. Wiss. Wien, 1865, Nov. 3.

Gasterosteus brachycentrus is found in Portugal. Steindachner, Catal. Prél. Poiss. Port. Suite, p. 1.

Gasterosteus pungitius. Dr. Ransom has carefully watched the nest-building of this species, and describes it in (Trans. Midland Scient. Assoc.) Ann. & Mag. Nat. Hist. 1865, xvi. pp. 449–451.

Gasterosteus micropus, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1865, p. 81, from Kansas.

Fistulariidæ.

Fistularia serrata and *F. tabaccaria* are described by Kner, Novar. Fisch. pp. 238 & 239.

Ophiocephalidæ.

Ophiocephalus. Prof. Kner (Novara, Fisch.) has described the following species:—*O. punctatus*, p. 233; *O. gachua*, p. 233; *O. striatus* and *O. maculatus*, p. 234; *O. argus*, p. 235.

Ophiocephalus diplogramme, sp. n., Day, Proc. Zool. Soc. 1865, p. 36, and Fish. Malabar, p. 147, pl. 10, from Malabar.

* We cannot help directing attention to the circumstance that the same authors, a few pages further on, expressly claim priority for the genus *Xiphophorus*, proposed by the Viennese ichthyologist Heckel, before *Limia* (Poey), although the latter is better and more naturally defined than the former.

Ophiocephalus kelaartii is not the young of *O. gachua*, as suggested by Mr. Day, Fish. Malabar, p. 150, as he might have easily convinced himself by comparing the diagnoses of the two species or by examining the specimens in the British Museum.

Labyrinthici.

Polyacanthus cupanus described by Kner, Novara, Fisch. p. 218.

ACANTHOPTERYGII PHARYNGOGNATHI.

Pomacentrus. Prof. Kner (Novara, Fisch.) describes *P. perspicillatus*, p. 241, and *P. punctatus*, which he considers to be identical with *P. cyanospilus*, p. 242.

Pomacentrus adustus and *Pomacentrus flaviventer* are described as new species by Troschel, in Müller, Wirbelth. Mex. p. 99, from Mexico.

Glyphidodon cochinensis, sp. n., Proc. Zool. Soc. 1865, p. 38, or Fish. Malabar, p. 156, pl. 12, from Cochin. D. $\frac{13}{11}$. A. $\frac{2}{10}$.

Crenilabrus. M. Gerbe has made the interesting observation that species of this genus build a nest of seaweed, shells, &c., in which the ova are deposited; both sexes are engaged in the construction. The species observed are determined as *C. massa* [*griseus*] and *C. melops*. Rev. et Mag. Zool. xvi. pp. 255–258, 273–279, 337–340.

Chærops macrodon described by Kner, Novar. Fisch. p. 248.

Trochocopus. Some remarks on *Labrus pulcher* (Ayres) by Dr. Günther are published in Proc. Ac. Nat. Sc. Philad. 1865, p. 77.

Luymæria aurigaria. Remarks on this fish by Kner, Novara, Fisch. p. 249.

Cheilinus melanopleura, sp. n., Bleeker, Nederl. Tydschr. Dierk. iii. 1865, p. 134, from Amboina.

Platyglossus. Prof. Kner has made remarks on *P. dussumieri*, *P. trimaculatus*, and *P. solorensis*. Novara, Fisch. pp. 254 & 255.

[*Platyglossus*?] *Julis ornatissimus*, sp. n., Garrett, Proc. Calif. Acad. Nat. Sc. iii. p. 63. D. $\frac{9}{13}$. A. $\frac{2}{13}$. Rich green, which gradually passes into light blue on the breast and belly. The scales on the green ground are margined with vermilion red, and there is a slight tinge of the latter colour on the abdominal scales. Four alternate oblique light red and blue vittæ pass from the middle of the gill-opening, and gradually fade away beneath the anterior portion of the abdomen. The head, which is emarald green, is ornamented with vermilion-red stripes, which have their margins shaded off with brilliant blue. The stripes are disposed as follows: one traverses the upper line of profile, two extend from the upper lip to the eye, one follows the lower line of the head, passing up the hinder margin of the gill-covers; two horizontal ones on the cheek, and, posteriorly to the eye, they assume reticulations. The dorsal, anal, and caudal fins are carmine red, margined with pale blue. The former with a basal row of large spots and an intramarginal band dark green. Two similar bands mark the outer half of the anal fin, and spots of the same colour may be observed on the caudal. The ventrals are pale straw-yellow, with blue anterior margins. Pectorals have a pale yellow tinge at their base. The greatest depth of the body, as compared to the entire length of the fish, is about one to four. The scales are rather large. The head constitutes a little less than a fourth of the total length. The caudal fin is posteriorly rounded off, and the ventrals are long and pointed.—Sandwich Islands.

Thysanocheilus, g. n., Kner, Denkschr. Ak. Wiss. Wien, xxiv. Ambo labia margine fimbriato, dentes acuti uniseriales supra et infra, in ossis intermaxillaris medio 4, inframaxillaris 2 dentes canini, 2 quoque supra ad oris angulum; caput totum, labiis exceptis, squamis minutis tectum, necnon guttur penitus clausum ad isthmum usque; trunci squamæ magnæ, oblongæ, linea lateralis continua simplex, pin. ventrales in filum prolongatæ, caudalis rotundata.—*Th. ornatus*, sp. n., Kner, *l. c.* taf. 3. fig. 1. D. $\frac{7}{12}$. A. $\frac{3}{10}$. L. lat. 28. From the Navigator Islands.

Coris lineolata is described by Kner, who adopts it as the type of *Ophthalmolepis*. Novara, Fisch. p. 258, taf. 11. fig. 1.

M. Guichenot has published a descriptive catalogue of the Scaroid fishes contained in the Paris Museum. The reexamination of the specimens which served as types for the descriptions of Valenciennes was a great desideratum, and M. Guichenot deserves much credit for having undertaken this task. In the *Scaridæ*, which he adopts as a distinct family from the *Labridæ*, he distinguishes two groups, Scaroids proper and Odacoids. He adopts the four genera of the former group established by Bleeker, but adds *Hoplognathus* (Richards.), which is not a Pharyngognath. The Odacoid genera are the same as those distinguished by the Recorder, except *Siphonognathus*, with which the author is apparently unacquainted. He describes 13 species of *Scarus*, 4 of *Scarichthys*, 47 of *Pseudoscarus*, 7 of *Callyodon*, 1 of *Pseudodax*, 3 of *Odax*, 1 of *Coridodax*. He adheres strictly to the species as distinguished by Valenciennes; and although these species are now much better known through M. Guichenot's descriptions than through the original ones given by Valenciennes, the better acquaintance with their characters contributes still more to the conviction that many of those formerly considered dubious on account of their insufficient descriptions are, in fact, merely nominal species. We have lately had opportunities for determining a number of Scaroid fishes, in which task we have been much assisted by M. Guichenot's memoir, and we have met with the most satisfactory evidence that the coloration of these fishes varies according to sex, age, and season, and that even the colour of the jaws cannot always be depended upon. Thus, although we demur to adopt all the species of the Paris Museum as such, we are much indebted to M. Guichenot for having supplied us with descriptions of the typical specimens in which due regard is paid to those characters of structure which had been entirely neglected by Valenciennes. Two new species are described in this memoir.

Scarus. M. Guichenot describes two new species, Mém. Soc. Sc. Nat. Cherbourg, xi. :—*Sc. erythrinoides*, p. 10, from San Domingo, and *Sc. spinidens*, p. 15, from Brazil. *Sc. virens* (Cuv. & Val.) proves to be a true *Scarus*, and not a *Pseudoscarus* (Guichen. *l. c.* p. 14); but whether *Sc. chloris* (Bl. Schn.) is also a *Scarus* (and in this case identical with *Sc. virens*) or a *Pseudoscarus* (as stated by Günther) can be finally decided only by an examination of the typical specimen.

Pseudoscarus. Prof. Kner has made remarks on *P. pyrrhostethus*, *P. æruginosus*, and *P. octodon*, Novara, Fisch. pp. 260–262; and describes *P. flavomarginatus*, said to be from Java, as a new species, p. 262, taf. 10. fig. 2.

Pseudoscarus simplex, sp. n., Poey, Repert. Fisico-nat. Cub. 1865, p. 185, from Cuba.

Gerres. Prof. Kner describes *G. poëti*, *abbreviatus*, *filamentosus*, *punctatus*, and *aprion*, Novara, Fisch. pp. 55–58. The lower pharyngeals and the air-bladder of the species named first are figured on taf. 3.

Etroplus. Prof. Kner has made remarks on *E. maculatus* and *E. suratensis*, *l. c.* pp. 263 & 264.

Hemichromis angolensis, sp. n., Steindachner, Mem. Ac. Sc. Lisb. 1865, from Angola.

Acara cæruleopunctata, fig. by Kner and Steindachner, Abhandl. Bayr. Ak. Wiss. x. 1, taf. 2. fig. 3.

Heros altifrons and *H. sieboldii* have been figured by Kner and Steindachner, *l. c.* taf. 2. figs. 1 & 2.

Heros autochthon. Remarks by Kner, Novara, Fisch. p. 265.

[*Satanoperca*?] *Geophagus brasiliensis*, sp. n., Kner, *l. c.* p. 266, taf. 10. fig. 3, from Rio Janeiro. Prof. Kner considers it probable that this is the fish figured by Castelnau as *Chromis unipunctata*. [?]

ANACANTHINI.

Lycodes polaris (Ross) is probably not identical with *L. polaris* (Sabine), and is therefore distinguished by Hr. Malmgren as *Lycodes rossii*. Spetsberg. Fiskfauna, p. 516.

Gymnelis viridis occurs on the northern coasts of Spitzbergen: Malmgren, *l. c.* p. 514. This author refers *Gymnelis pictus* (Gthr.) and *Ophidium stigma* (Richards.) to this species, which opinion we hesitate to adopt.

Gadus morrhua and *G. æglefinus* extend to the south-western coast of Spitzbergen. Malmgren, *l. c.* pp. 528 & 529.

Gadus proximus (Girard) is regarded by Mr. Gill as the type of a distinct genus, *Microgadus*, on account of differences in the bones of the skull; the author hints at *G. tomcodus* belonging to the same genus. Proc. Ac. Nat. Sc. Philad. 1865, p. 69.

Boreogadus fabricii extends to the northern coasts of Spitzbergen. Malmgren, *l. c.* p. 531.

Merlangus albus. On its occurrence on the coast of Belgium, see Van Beneden, Bull. Acad. Sc. Belg. 1865, xx. p. 52. Mr. W. Andrews has identified this fish as an occasional visitor to the Irish coast (*Gadus pontassou*). Proc. Nat. Hist. Soc. Dublin, 1864, p. 9.

Physiculus kaupi, sp. n., Poey, Repert. Fisico-nat. Cub. 1865, p. 186, from Cuba. D. 10 | 60. A. 60. V. 8.

Bregmaceros macclellandii has received a third name by Lieut.-Col. Tickell, viz. *Asthenurus atripinnis*. Journ. As. Soc. Beng. 1865, p. 32, pl. 1.

Lucifuga. Prof. Poey treats of the Blind Fishes of Cuba generally, and mentions that Mr. Gill has proposed the generic name of *Stygicola* for the species of *Lucifuga* without palatine teeth. Repert. Fisico-nat. Cub. 1865, pp. 113–116.

In the 'Record,' last year (p. 161), we gave the results of Prof. Steenstrup's researches on the obliquity of *Flounders*. The greater part of this memoir has been translated by Prof. W. Thomson, who, however, comes to a different conclusion as regards the way taken by the eye on its migration from one side to the other. The eye, he says, passes not through the vault of the head but under its integument, displacing in its progress the frontal bone of its own side—the space through which its nervous and vascular connexions passed being indicated in the mature skull by the unsymmetrical posterior half of the articulating process of the right prefrontal, the eye having maintained its normal relation to its associated bone throughout. The eye changes little in *actual* position. With the growth of the fish the associated parts are, as it were, *developed past it*. Ann. & Mag. Nat. Hist. 1865, xv. pp. 361–371, with a plate (figures taken from the original memoir).

Dr. R. H. Traquair has published his researches into the osteology of the common British species of Pleuronectoids in Trans. Linn. Soc. xxv. 1865, pp. 263–296 (with four plates). He describes in detail the bones of the skull, comparing each bone of the eye side with its fellow on the blind side. He adopts the opinion that the interocular bar is the homologue of the frontal arch of other fishes; the osseous ridge above the upper eye, which he calls "pseudomesial" bar, he regards as "a secondary formation destined to supply the place of the displaced frontal arch, in forming a strong and efficient bridge of connexion between the anterior and posterior parts of the cranium, and also to support the cephalic continuation of the dorsal fin." The interocular bar is formed by two closely apposed processes, one from each frontal; in the Plaice and Flounder, however, it is formed for the greater part of its extent by the process from the frontal of the eye side only, that of the other frontal being reduced to a very small size. The osseous bar bounding the orbit on the inner side is formed by a process developed from the frontal of the blind side, which proceeds forwards to join a corresponding process of the præfrontal of the same side. The præfrontal of the eye side has an interocular process which joins the corresponding long process of the frontal of the same side. This process is entirely absent in the præfrontal of the blind side,

which, on the other hand, is furnished with that process which proceeds backwards on the inner side of the orbit. Neither this latter process nor that of the frontal with which it unites has any homologue on the other side of the skull, or in the skull of any other fish. The arrangement of the mucous canals on the head is essentially the same as in other fishes. The suborbital branch, however, of the blind side remains behind, while its eye has passed to the other side of the head. The author describes and figures the ampullated condition of these canals on the eyeless side of the head of *Pleuronectes cynoglossus* (*Platessa pola*).

The author then proceeds to point out that the vertebral column participates, in several respects, in the asymmetry of these fishes; and, finally, as regards the change of position of the upper eye of young Pleuronectoids, he comes to nearly the same conclusion as Prof. Thomson, viz. that Prof. Steenstrup's views are not confirmed by the anatomical examination of the skull of the adult, that the upper eye preserves its morphological relations to the frontal bones and the neighbouring structures quite intact, and that the dorsal fin advances on the head with the growth of the young fish, as stated by Van Beneden. He concludes that Prof. Steenstrup's specimens* certainly open up the question whether there be any group of flat fishes in which, in the normal course of development, the dorsal fin extends forwards and bridges over the upper eye before it has completed or even commenced its turn: which remark, in the Recorder's opinion, contains the explanation of the apparently contradictory observations of the zoologists mentioned. The author remarks that he had arrived at these conclusions before he became acquainted with Prof. Thomson's paper.

Hippoglossus vulgaris extends to the south-western coast of Spitzbergen. Malmgren, Œfvers. Svensk. Vet.-Akad. Förh. 1865, p. 527.

Hippoglossoides platessoides. Two young examples, probably belonging to this species, were found in Spitzbergen by Hr. Malmgren, Œfvers. Svensk. Vet.-Akad. Förh. 1865, p. 525.

Zeugopterus. Prof. Steenstrup has discovered a large opening in the median septum between the gills of both sides in *Rhombus megastoma*, *R. cardina* (Fries), *R. punctatus* (Bl.), and *R. unimaculatus*; and regarding it as a generic character, he unites them into one genus, for which he adopts the name *Zeugopterus* (Gottsche). He criticises the Recorder's arrangement of these fishes, correcting the erroneous statement that *R. unimaculatus* has five branchiostegals (instead of seven), and comes to the conclusion that the characters on which *Phrynorhombus* and *Lepidorhombus* have been

* The Recorder has lately examined young examples of Pleuronectoids, collected by Col. Playfair in the African parts of the Indian Ocean, which show structurally great affinity to those examined by Prof. Steenstrup. He considers them to be the young of *Rhomboidichthys*.

founded are of subgeneric value only. The gill-cavities of several of the species are figured. Overs. Dansk. Vid. Selsk. 1865, pp. 95–112.

Pseudorhombus malayanus, sp. n., and *P. neglectus*, sp. n., Bleeker, Nederl. Tydschr. Dierk. iii. 1865, pp. 43 & 44, from the East-Indian Archipelago.

Rhomboidichthys. Dr. Bleeker describes three new species from the East-Indian Archipelago: *Platophrys polyopthalmus*, *l. c.* p. 46; *P. intermedius*, p. 47; and *P. tapeinosoma*, p. 49.

Solea heterorhina, var., is described and figured by Kner, Denkschr. Ak. Wiss. Wien, xxiv. taf. 3. fig. 2.

Soleotalpa unicolor. Dr. Bleeker describes and figures, under the name of *Apionichthys dumerilii* (Kaup), a specimen which evidently belongs to *Soleotalpa*. Nederl. Tydschr. Dierk. ii. 1865, pp. 306–308. Whether the species is identical with *S. unicolor* remains uncertain without examination of more materials. The eyes of Dr. Bleeker's specimen are much more approximate to each other than in *S. unicolor*; and a connecting membrane extends from dorsal and anal to caudal, entirely absent in *S. unicolor*; yet the number of the fin-rays is nearly identical in both fishes. Dr. Bleeker believes that *Soleotalpa* is identical with *Apionichthys* (described as having the vertical fins united like *Synaptura*): if this opinion should prove to be correct, the species would stand, at all events, as *Apionichthys unicolor*, and not as *A. dumerilii*, a name never accompanied by a diagnosis, and therefore not acceptable to zoologists who care about justice in scientific work.

PHYSOSTOMI.

Siluridæ.

Pseudeutropius mitchelli. Although Mr. Day states (Fish. Malabar, p. 192) that he has no doubt Mr. Jerdon described his *Schilbe sykesii* from an example without adipose fin, it must, even in that case, appear doubtful whether the fish is identical with *P. mitchelli*. If he cannot verify his assertion by the examination of the typical specimen, he has no right to exchange the name of a well-determined species for that of a doubtful one.

Macrones (*Hypselobagrus*) *armatus*, sp. n., Day, Proc. Zool. Soc. 1865, p. 289, or Fish. Malabar, p. 187, from Malabar.

Pseudobagrus chryseus, sp. n., Day, Proc. Zool. Soc. 1865, p. 290, or Fish. Malabar, p. 185, pl. 13. fig. 2, from Malabar.—A. 27.

Pimelodus cinerascens. The species described by Kner and Steindachner (Verhandl. Bayr. Ak. Wiss. x. 1, p. 49) is probably not identical with *P. cinerascens* (Gthr.). The original description of the latter (designated as "too short" by those writers), accompanied by an excellent figure, points out sufficiently all the characters by which allied species may be distinguished.

Pimelodus baronis mülleri is described as a new species by Troschel, in Müller, Wirbelth. Mex. p. 102, from the Pacific coast of Mexico.

Arius multiradiatus (Gthr.) = *Bagrus*(?) *arioides* is described by Kner and Steindachner, Abhandl. Bayr. Ak. Wiss. x. 1, p. 47.

Hara malabarica, sp. n., Day, Fish. Malabar, p. 184, pl. 13. fig. 3.

Synodontis schall is described by Bleeker from specimens from the Cape. Nederl. Tydschr. Dierk. ii. 1865, p. 266.

Synodontis guttatus, sp. n., and *Synodontis labeo*, sp. n., Günther, Ann. & Mag. Nat. Hist. 1865, xv. pp. 452 & 453, from West Africa.

Stygogenes cyclopum and *Brontes prenadilla*. Prof. Wagner's account of these fishes renders it almost certain that the tales of their being ejected by volcanic action are fabulous, that they inhabit Alpine pools of the Andes at an altitude of from 7000 to 13,400 feet, and that, if pools or lakes formed in old craters are emptied in consequence of volcanic eruptions, the fishes inhabiting them are naturally carried off with the descending waters. Abhandl. Bayr. Ak. Wiss. x. 1, p. 34 *et seq.*

Plecostomus bicirrhosus. A species from Panama has been determined as *Hypostomus plecostomus* by Kner and Steindachner, Abhandl. Bayr. Ak. Wiss. x. 1, p. 60.

Chætostomus cirrhosus is found in the Rio Chagres, according to Kner and Steindachner, *l. c.* p. 61.

Loricaria uracantha is described and figured by Kner and Steindachner, *l. c.* p. 56, taf. 6. fig. 3.—*Loricaria lima* (?), ibid. p. 58.

Trichomycterus tænia is described and figured by Kner and Steindachner, *l. c.* p. 52, taf. 6. fig 1.—*T. laticeps*, ibid. p. 54, taf. 6. fig. 2.

Scopelidæ.

Chlorophthalmus. Prof. Agassiz is inclined to regard this fish as the young of *Aulopus*, and, moreover, the greater part of the Mediterranean Scopeloid genera as the young of large Scombroides. Ann. Sc. Nat. 1865, iii. p. 57.

Sternoptychidæ.

Argyropelecus. On its metamorphosis into *Zeus*, see p. 188.

Cyprinidæ.

Hr. Jäckel has published his observations on Cyprinoids which are supposed to be hybrids, viz. on the so-called *Abramidopsis leuckartii*, *Bliccopsis erythrophthalmoides*, *Bliccopsis abramo-rutilus*, and *Scardiniopsis anceps*. Corr.-Bl. zool.-miner. Ver. Regensb. 1865, pp. 36–41, 44–49.

Mr. Gill has made the following statement with regard to genera of American Cyprinoids proposed by Girard (Proc. Ac. Nat. Sc. Philad. 1865, p. 70) :—

The genera *Lavinia*, *Siboma*, *Algansea*, *Tigoma*, *Cheonda*, *Gila*, *Ptychochilus*, and *Mylochilus* are closely related to each other, and cannot be distributed among different subfamilies, as has been attempted. Indeed some of the genera so separated are so intimately allied that their claims to generic distinction are extremely doubtful. *Siboma* appears to be nearly allied to *Lavinia*, and includes only the *S. crassicauda*, the *S. atraria* belonging rather to *Algansea*. *Algansea* itself and *Tigoma* are scarcely distinguishable, they differing only in the pharyngeal teeth—*Algansea* having teeth 5.5, increasing upwards, while *Tigoma* has, normally, 2 | 5.5 | 2: both groups have narrow suborbitals. *Cheonda* should be restricted to *C. cooperi*. The differences between *C. cærulea* and species of *Tigoma* are not evident. *Gila* and *Ptychochilus* both require revision. *Mylochilus* and *Mylopharodon* do not differ generically, wherefore the former name alone can be retained. The genus *Acrochilus* of Agassiz, referred to *Lavinia* by Girard, has no affinity to that group, being nearly related to *Chondrostoma*, as shown by Agassiz, who has well described its peculiarities, while *Lavinia*, as well as *Tigoma*, *Algansea*, &c. are closely related to the European *Leucisci*.

Garra malabarica, sp. n., Day, Proc. Zool. Soc. 1865, p. 297, or Fish. Malabar, p. 205, pl. 15. fig. 1, from Malabar.

Barbus bocagei (Steind.) is redescribed by Steindachner, Sitzgsber. Ak. Wiss. Wien, 1865, Nov. 3. On a supposed hybrid between this species and *Chondrostoma polylepis*, see Steindachner, Catal. Prélim. Poiss. Port. Suite, p. 2.

Barbus cyri, sp. n., De Filippi, Viaggio in Persia, p. 358 (= *B. lacerta*, De Fil. Arch. di Zool. ii.). Intermediate between *B. lacerta* and *B. scincus* (Heck.); distinguished from the former by a smaller eye, less fleshy lip, third dorsal ray much thicker for two-thirds of its length, with soft tip; from the latter by smaller scales. D. 10. A. 7. L. lat. 66. L. transv. 13/13. From the Kur near Tiflis.

Barbus miliaris, sp. n., De Filippi, *l. c.*, from Teheran.

[*Barbodes*] *Puntius* (*Cyclocheilichthys*) *pinnauratus*, sp. n., Day, Proc. Zool. Soc. 1865, p. 300, or Fish. Malabar, p. 209, pl. 15. fig. 2, from Cochin. *Puntius* (*Labeo*) *melanampyx*, sp. n., Day, Proc. Zool. Soc. 1865, p. 298, or Fish. Malabar, p. 210, pl. 16. fig. 1, from the Travancore Hills.

[*Capoeta*] *Puntius parrah*, sp. n., Day, Proc. Zool. Soc. 1865, p. 301, or Fish. Malabar, p. 211, pl. 7. fig. 3; *P. perlee*, sp. n., Day, *l. c.* p. 211; *P.* (*Labeo*) *denisonii*, sp. n., Day, Proc. Zool. Soc. 1865, p. 299, or Fish. Malabar, p. 212, pl. 16. fig. 2; *P. hamiltonii*, Day, *l. c.* p. 213.

Capoeta sevangi, sp. n., De Filippi, Viaggio in Persia, p. 312, Lake Goktscha.

Puntius punctatus, sp. n., Day, Proc. Zool. Soc. 1865, p. 302, or Fish. Malabar, p. 214, pl. 7. fig. 1; *P. vittatus*, *l. c.* p. 303, or Fish. Malabar, p. 215, pl. 13. fig. 1. *Systomus filamentosus*, *assimilis*, et *maderaspatensis* of Mr. Jerdon are said to be identical with *Leuciscus filamentosus* (C. & V.) = *L. mahecola* (C. & V.) = *Puntius filamentosus*, Day, *l. c.* p. 215.

Amblypharyngodon (= *Brachygramma*, g. n. Dayi) *jerdoni*, sp. n., Day, Proc. Zool. Soc. 1865, p. 304, or Fish. Malabar, p. 217, pl. 17. fig. 1, from Malabar.

Barilius bakeri, sp. n., Day, Proc. Zool. Soc. 1865, p. 305, or Fish. Malabar, p. 218, pl. 18, from the Travancore Hills.

Parodanio (g. n. Bleekeri) *aurolineatus*, sp. n., Day, Fish. Malabar, p. 219, pl. 17. fig. 2; = *Perilampus aurolineatus*, Day, Proc. Zool. Soc. 1865, p. 306, from Malabar.

Rasbora. *Leuciscus malabaricus* (Jerd.) is referred to this genus by Day, Fish. Malabar, p. 220.

Ericymba, g. n., Cope, Proc. Ac. Nat. Sc. Philad. 1865, p. 87. Similar in

appearance to a small *Gobio*; barbels absent; suborbital and interopercular bones, with the rami of the mandible, are greatly dilated, and bear septary laminæ, which separate mucous cavities, relatively as large as those of *Acerina* or *Percopsis*. They extend in two series; seven from the postorbital bone to the side of the end of the muzzle, and eight from the same point to the symphysis mandibuli. The muzzle overlaps the mandible; no cartilage on the latter. Scales large, the usual surface exposed. Anal, short, originating opposite end of depressed dorsal. Origin of ventrals opposite first dorsal ray. Pharyngeal bones slender; teeth acutely uncinate-raptatory, without masticatory surface, 4.1+0.4. *E. buccata*, sp. n., p. 88, from Western Pennsylvania.

Phoxinellus croaticus, sp. n., Steindachner, Sitzgsber. Akad. Wiss. Wien, lii. 1865, Nov. 30, with a plate, from Croatia.

Abramis microlepis, sp. n., De Filippi, Viaggio in Persia, p. 358, from the river Kur.

Systomus albus, var. *alpina* (Heck.), has been raised to the rank of a species, under the name of *S. alpinus*, by De Filippi, Viaggio in Persia, p. 358.

Alburnus dolabratus. Hr. Jäckel, who adopts the opinion that this fish is a hybrid, has published some notes on specimens obtained in Bavaria. Corr.-Bl. zool.-min. Ver. Regensb. 1865, p. 41.

Alburnus doriæ, sp. n., De Filippi, Viaggio in Persia, p. 360. Resembling *A. iblis* (Heck.), but with larger scales. D. 10. A. 12. L. lat. 53. L. transv. 8 | 4. From Schiraz.—*A. eichwaldii*, sp. n., De Filippi, *l. c.* p. 359, from the river Kur.

Alburnus rubrifrons, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1865, p. 85, from tributaries of the Alleghany.

Squalius cavedanus (Bonap.) is identical with *S. dobula*. Steindachner, Sitzgsber. Ak. Wiss. Wien, lii. 1865, Nov. 30.

Squalius turcicus, sp. n., De Filippi, Viaggio in Persia, p. 359. Allied to *S. cavedanus*. Diameter of eye one-fifth of length of head, which is equal to height of body. Forehead flat, broad, width of the interorbital space being once and three-quarters the diameter of eye. The first dorsal ray corresponds to the sixteenth scale of the lateral line. D. 10. A. 11. L. lat. 41. L. transv. 7 | 3. From Erzerum.

Telestes leucoides, sp. n., De Filippi, Viaggio in Persia, p. 359, from Batum.

Chondrostoma polylepis (Steind.). Dr. Steindachner asserts that he has found a hybrid between this species and *Barbus bocagei*. Catal. Prélim. Poiss. Port. Suite, p. 2.

Cobitis tænia. Notes on specimens obtained in Spain, by Steindachner, Sitzgsb. Ak. Wiss. Wien, 1865, Nov. 3.

Cobitis elongata (Heck. and Kner) is identical with *C. tænia*, according to Steindachner, *l. c.* lii. 1865, Nov. 30.

Acanthopsis aurata, sp. n., De Filippi, Viaggio in Persia, p. 360, from Sartschem.

Nemacheilus triangularis, sp. n., Day, Proc. Zool. Soc. 1865, p. 295, or Fish. Malabar, p. 203, pl. 14. fig. 1, from the Travancore Hills.—*Cobitis rubripinnis* (Jerd.) is referred to this genus, ibid.

Platacanthus, g. n., Day, Proc. Zool. Soc. 1865, p. 296. Body elongate and moderately compressed; back low; a fleshy keel midway between termination of the dorsal and commencement of the caudal fin, on to which it is continued for a short distance. Eyes veiled. A free bifurcated suborbital spine situated close to the lower margin of the orbit; snout obtuse, no tubercle on end of lower jaw. Eight cirri, two on snout, four on superior maxillaries, and two on lower jaw. Nostrils simple. Dorsal fin arises opposite the ventral, in the centre of the body. The internal ray of the pectoral forming a large flattened spine, half the length of the soft rays. Caudal emarginate. Scales over opercular and suborbital region. *Pl. agrensis*, sp. n., Day, *l. c.*, or Fish. Malabar, p. 204, pl. 14. fig. 2, from Cochin.

Characinidæ.

Macrodon microlepis. It is probably this species which has been described by Kner and Steindachner under the name of *M. brasiliensis* (Spix). Abhandl. Bayr. Ak. Wiss. x. 1, p. 28.

Saccodon wagneri is described by Kner and Steindachner, *l. c.* p. 31, taf. 4. fig. 2.

Tetragonopterus æneus has been found in the Chagres river. Kner and Steindachner, *l. c.* p. 46.—*T. maculatus* [?] is mentioned (ibid.) as inhabiting the Rio Bayano.

Pseudochalceus lineatus is described by Kner and Steindachner, *l. c.* p. 35, taf. 5. fig. 1.

Brycon atrocaudatus described by Kner and Steindachner, *l. c.* p. 44, taf. 4. fig. 3.

Chalcinopsis striatulus is described by Kner and Steindachner, *l. c.* p. 38, taf. 5. fig. 2; *C. chagrensis*, ibid. p. 42, taf. 5. fig. 3.

Phago, g. n., Günther, Ann. & Mag. Nat. Hist. 1865, xv. p. 209; the type of a distinct group, see Record Zool. Liter. i. p. 175. *P. loricatus*, sp. n., *l. c.* p. 210, pl. 5, from West Africa.

Cyprinodontidæ.

Cyprinodon ibericus and *Fundulus hispanicus* are described and figured by Steindachner, Sitzgsber. Ak. Wiss. Wien, 1865, Nov. 3.

Haplochilus. Prof. Cope describes two new species, Proc. Ac. Nat. Sc. Philad. 1865, p. 78, viz. *Fundulus aureus* from Michigan, and *Fundulus sciadicus* from the Nebraska.

Haplochilus. The generic name *Micristius* has been proposed for *H. zonatus*, *cingulatus*, and *luciæ* by Mr. Gill (Fish. of the Bay of Fundy). He adds that these species probably represent sexual conditions.

Pseudoxiphophorus reticulatus is described as a new species by Troschel, in Müller, Wirbelth. Mex. p. 104, from Mexico.

Rivulus. Prof. Troschel has described two small Mexican Cyprinodonts under the names of *Gambusia senilis* (Girard) and *Gambusia gracilis* (Girard); Müller, Wirbelth. Mex. pp. 106 & 107. He informs us that, on reexamining them, he thinks it probable that they belong either to *Rivulus* or *Haplochilus*. The specimens are not in a good state of preservation.

Poecilia thermalis (Steindachner) appears to have been described by Prof.

Troschel as a new species, *Gambusia* (?) *modesta*; Müller, Wirbelth. Mex. p. 105. *Gambusia* (?) *plumbea*, sp. n., Troschel, *l. c.* p. 106, ought to be referred to *Pœcilia*, and is, perhaps, identical with *P. dovii* (Gthr.).

[*Pœcilia*] *Xiphophorus gillii*, figured by Kner and Steindachner, Abhandl. Bayr. Ak. Wiss. x. 1, taf. 4. fig. 1.

Scombresocidæ.

Hemirhamphus. Dr. Bleeker has revised the species found in the East-Indian Archipelago (Nederl. Tydschr. Dierk. iii. 1865, pp. 136–170). He describes nineteen species, adopting the generic divisions proposed by Mr. Gill, and defining another, *Hemirhamphodon*, for *H. phæosoma* and *H. pogonognathus*. We notice the following species described as new, or because we cannot quite agree with the author with regard to their synonymy:—*H. cantoris*, sp. n., p. 145 [is not = *H. georgii* (Cant.) as stated by the author]; *H. balinensis* (Blkr.) is stated to be identical with *H. intermedius* (Cant.), p. 154 [this does not prove to be the case]; *H. melanurus* (Blkr.) is certainly not the species described by Valenciennes, but, in our opinion, identical with *H. gaimardi* (Blkr.; an C. & V.?); *H. neglectus* described as a new species, p. 157 [is identical with the Atlantic *H. unifasciatus* = *H. richardi*].

Hemirhamphus fluviatilis and *Hemirhamphus viviparus*, sp. n. [?], from the island of Samar, are viviparous. Peters, Monatsber. Akad. Wiss. Berl. 1865, p. 132.

Exocœtus. Dr. Bleeker has reexamined the species of his collection and gives comparative descriptions of them, distinguishing several new forms (Nederl. Tydschr. Dierk. iii. 1865, pp. 105-129):—*E. oligolepis*, p. 109; *E. brachysoma*, p. 111; *E. neglectus*, p. 112; *E. spilonotopterus*, p. 113 [is identical with *E. bahiensis* from the Atlantic]; *E. katoptron*, p. 115; and *E. opisthopus*, p. 121. He proposes the generic name *Parexocœtus* for *E. mento* and allied species, p. 126.

Exocœtus polleni is described as a new species by Bleeker, *l. c.* p. 130, from the Atlantic. He describes also *E. bicolor*, p. 132.

Exocœtus californicus, sp. n., Cooper, Proc. Calif. Ac. Nat. Sc. iii. p. 93, fig. 20. We notice this species again, because it was misplaced by an oversight in our last Record, where it should stand on p. 177, and not on p. 183.

Esocidæ.

Prof. Cope has given a descriptive synopsis of the American Pikes, adding a new species, *Esox cypho* from Michigan. Proc. Ac. Nat. Sc. Philad. 1865, p. 78.

Salmonidæ.

Salmo lacustris (*schiffermülleri*). Prof. Kner states it as the opinion of a fisherman, that this fish (Mai-Forelle) is a hybrid between *Salmo marsilii* and *Salmo salvelinus* (Verh. zool.-bot. Gesell. Wien, 1865, pp. 199–202). He is inclined to concur in this opinion, as artificial attempts to cross these two fishes have been successful, the hybrids being a year old at the time of the publication of Prof. Kner's most interesting paper. However, we must remind the author that, if the "Mai-Forelle" be a hybrid, *S. lacustris* of the Lake of Constance must be regarded in the same light, both having been considered identical by all writers. The Lake of Constance fish, then, would be a hybrid between *S. trutta* (Rapp) or *S. rappii* (m.) and *S. umbla*. But these two fish have the pyloric appendages considerably fewer than *S. lacustris* *, which circumstance renders the hybrid nature of the latter a very doubtful point.

Salmo salar. A specimen caught in the Neckar. Krauss, Würt. ntrw. Jahresh. 1865, p. 276.

Salmo dentex (Heck.) is identified with *S. fario* by Steindachner, Sitzgsber. Ak. Wiss. Wien, lii. 1865, Nov. 30. The Recorder has come to a different conclusion from an examination of Dalmatian specimens.

Salmo alpinus. A young example, 76 millim. long, found in a river of northern Spitzbergen, has been determined by Hr. Malmgren as *S. alpinus*; it proves, at all events, the existence of Charr in so high a latitude. Œfvers. Svensk. Vet.-Akad. Förh. 1865, p. 534.

Salmo killinensis, sp. n., Günther, Proc. Zool. Soc. 1865, p. 698, pl. 40, from Loch Killin, Inverness-shire.

Hypomesus olidus (Pall.) is described as a new species (*Osmerus oligodon*) by Kner, Denkschr. Ak. Wiss. Wien, xxiv. taf. 4. fig. 1.

Mallotus villosus appears to extend to the coasts of north-eastern Asia. Kner, *l. c.*

Thymallus tricolor, sp. n., Cope, Proc. Ac. Nat. Sc. Philad. 1865, p. 80, from Michigan.

Clupeidæ.

Mr. Gill can only recognize with certainty seven species of *Clupeinæ* as inhabitants of the eastern coast of North America. The species are enumerated, with a part of their synonymy. Fish, Bay of Fundy.

Clupea harengus extends to the south-western coast of Spitzbergen. Malmgren, Œfvers. Svensk. Vet.-Akad. Förh. p. 535.

Alosa pilchardus. M. Délidon describes the Sardine-fishery on the coast of La Vendée. Ann. Soc. Linn. Maine et Loire, 1865, pp. 79–82.

Alosa tyrannus. Dr. Gilpin gives a graphic description of the habits of this fish; also its specific characters are added. Proc. & Trans. Nov. Scot. Inst. Nat. Sc. Halif. ii. pp. 107–114.

Harengula jaguana, sp. n., Poey, Repert. Fisico-nat. Cub. 1865, p. 189, from Cuba.

---

* See Catal. of Fish, vol. vi. pp. 80, 126.

Engraulis macrolepidotus and *E. poeyi* are figured by Kner and Steindachner. Abhandl. Bayr. Ak. Wiss. x. 1, taf. 3. figs. 2 & 3.

Engraulis auratus, sp. n., Day, Proc. Zool. Soc. 1865, p. 312, or Fish. Malabar, p. 238, pl. 19. fig. 2, from Cochin.

Stolephorus surinamensis, sp. n., Bleeker, Nederl. Tydschr. Dierk. iii. 1865, p. 178.

Muræniдæ.

Brachyconger. Dr. Bleeker refers *Conger savanna* (Cuv.) to this genus, and *C. brasiliensis* (Ranz.) and *C. limbatus* (Castel.) to the same species. Nederl. Tydsch. Dierk. ii. 1865, p. 233.

Ophisurus intertinctus (Richards.) is described as *Ophichthys intertinctus* by Bleeker, *l. c.* p. 234. The same author describes *Ophichthys (Scytalophis) magnioculis* (Kaup), p. 237; *Ophichthys (Ophis.) parilis* (Rich.), p. 238; *Ophisurus (Pisoodonophis) guttulatus* (Kaup), p. 239; *Ophisurus (Pisood.) oculatus* (Kaup), p. 240.

Callechelys melanotænia, sp. n., Bleeker, *l. c.* p. 213, from Amboina.

Echidna. Dr. Bleeker describes *Gymnothorax catenatus* (Bl.), and adds notes on its synonymy, *l. c.* p. 242.

Gymnothorax. Dr. Bleeker describes *Thyrsoidea aterrima* (Kaup) and *Gymnothorax funebris* (Ranz.), *l. c.* pp. 244 & 245.

Synbranchidæ.

Dr. Bleeker adopts three genera of *Synbranches* (Atl. Ichthyol. iv. p. 117), each being represented by a single species in the East-Indian Archipelago:—

1. *Amphipnous* (Müll.) = *Pneumabranchus* (M'Cl.).

2. *Monopterus* (Lacép.) = *Iluta* (Bl. Schn.) = *Ophicardia* (M'Cl.) = *Apterigia* (Basil.).

3. *Synbranchus* (Bl.) = *Unibranchapertura* (Lac.) = *Unipertura* (Kaup) = *Ophisternon* (M'Cl.) = *Tetrabranchus* (Blkr.).

Synbranchus marmoratus (Bl.) described by Bleeker, Nederl. Tydschr. Dierk. ii. 1865, p. 247.

Leptocephali.

Dr. Bleeker retains for the present this as a separate group of fishes, and describes six East-Indian species (Atl. Ichthyol. iv. p. 121), one of which is new: *Leptocephalus ceramensis*, p. 123, tab. 193. fig. 3.

Leptocephalus malabaricus is described as a new species by Day, Proc. Zool. Soc. 1865, p. 308, or Fish. Malabar, p. 252, pl. 19. fig. 1.

PLECTOGNATHI.

Dr. Bleeker has published, as a preliminary to the complete appearance of the fifth volume of his 'Atlas Ichthyologique,'

the synonymy of the species of the East-Indian Archipelago, adding the names of other localities whence the species are said to have been obtained (Nederl. Tydschr. Dierk. iii. 1865, pp. 20–40). For the details we must, of course, refer to the paper itself.

Dr. Bleeker has given an account of the species occurring in the East-Indian Archipelago (Atl. Ichthyol. v.). He describes and figures thirteen species of *Ostracion* (pp. 25–42, pls. 201–204). The *Tetrodontes* (pp. 45–83, pls. 205–215) are arranged thus *:—

I. Diodontiformes.

Phalanx A. *Trirhizacanthini*, with the genera *Chylomycterus* (Bibr.) = *Dicotylichthys* (Kaup); *Diodon* (L.) = *Cyclichthys*, *Cyanichthys*, and *Chylomycterus* (Kaup).

Phalanx B. *Dirhizacanthini*, with the genera *Atopomycterus* (Verr.); *Paradiodon* (Blkr.) = *Diodon* (Kaup); *Trichodiodon* (Blkr., type *D. pilosus*, Mitch.).

II. Tetraodontiformes.

Phalanx A. *Tetraodontini*, with the genera *Tetraodon* (L.) = *Physogaster*, *Gastrophysus* et *Cheilichthys* (Müll.), &c.; *Crayracion* (Klein) = *Arothron* (Müll.), &c.; *Leiodon* (Swains.) = *Chelonodon* (Müll.), &c.; *Chonerhinus* (Blkr.) = *Xenopterus* (Bibr.); *Ephippion* (Bibr.).

Phalanx B. *Canthogastrini*, with the genus *Canthogaster* (Swains.) = *Psilonotus* (Swains.) = *Anosmius* (Ptrs.) = *Tropidichthys* (Blkr.) = *Rhynchotus* (Bibr.).

Of *Triodon* one species is described (p. 84, pl. 214. fig. 1), of *Triacanthus* six (pp. 88–92), one of which is new, *Tricanthus macrurus* (p. 91, pl. 232. fig. 3, or Nederl. Tydschr. Dierk. iii. 1865, p. 51), from Java and New Guinea.

Ostracion. Dr. Bleeker (Nederl. Tydschr. Dierk. ii. 1865, pp. 298–305) shows that several species have been confounded under the names of *O. quadricornis* (L.) and *O. tricornis* (L.): not only are these two distinct species, the latter being identical with *O. maculatus* (Holl.), but also three others may be distinguished, viz. *O. gronovii* (Blkr.) = *O. quadricornis* (Bl.), *O. guineensis* (Blkr.) = *O. quadricornis* (Blkr. Mém. Poiss. Guin. p. 20), and *O. notacanthus* (Blkr.). The last is figured.

[*Arothron*] *Crayracion cochinensis*, sp. n., Day, Proc. Zool. Soc. 1865, p. 314, or Fish. Malabar, p. 258, pl. 20. fig. 1, from Cochin.

[*Chelonodon*] *Leiodon viridipunctatus*, sp. n., Day, Proc. Zool. Soc. 1865, p. 315, or Fish. Malabar, p. 258, pl. 20. fig. 2, from Cochin.

---

* We have to mention that Dr. Bleeker has published, as a preliminary to the appearance of the 'Atlas Ichthyologique,' the whole of the system of Plectognaths, in Nederl. Tydschr. Dierk. iii. 1865, pp. 8–19.

LOPHOBRANCHII.

Phyllopteryx. Dr. Günther has given a short account of the fishes of this genus, Proc. Zool. Soc. 1865, p. 327. He refers to it three species: 1. *Syngnathus foliatus* (Shaw), of which a coloured figure is given on pl. 14. 2. *Haliichthys tæniophorus* (Gray). 3. *Phyllopteryx eques*, sp. n., from South Australia, pl. 15, in which the spines and seaweed-like appendages are developed in an extraordinary degree.

Microphis bleekeri, sp. n., Day, Fish. Malabar, p. 265, from Cochin.

GANOIDEI.

Prof. Brandt is engaged in a monograph of the Sturgeons of Russia, and has read before the Academy of Sciences of St. Petersburgh a paper on the stages of development and classification of Ganoids generally, with particular regard to the "type of the sturionoid *Antacæi*" (from *ἀντακαῖος*, *Acipenser* in Herodot.), an abstract of which is published in Bull. Ac. Sc. St. Pét. 1865, pp. 536–538. The results of the researches of the author are merely indicated, so that we defer an account of them until the actual publication of the memoir.

Acipenser sturio. Dr. Boll has recorded two instances of the occurrence of the Sturgeon in inland waters of Northern Germany, at a considerable distance from the sea. Arch. Ver. Freund. Ntrgesch. Mecklenb. 1864, p. 188.

Lepidosteus. Young specimens have the caudal fin placed entirely below the extremity of the vertebral column (genus *Sarchirus* of Rafinesque). Agassiz, in Ann. Sc. Nat. 1865, iii. p. 57.

Prof. Cope gives a descriptive synopsis of eight species in the Museum of the Academy of Philadelphia, of which *Lepidosteus otarius*, *L. crassus*, and *L. productus* are new to science. Proc. Ac. Nat. Sc. Philad. 1865, p. 86.

Dr. Alex. Smith has read before the R. Phys. Soc. Edinburgh an account of a new genus from Old Calabar, *Herpetoichthys calabaricus*, distinguished from *Polypterus* by the absence of ventral fins. Although this account has not yet been published, we mention it, because it has been reported in several non-scientific papers.

ELASMOBRANCHII.

Prof. Duméril's work on this order has been mentioned above. The systematic arrangement being absolutely the same as that of Müller and Henle, we need not enter into it. The number of specific forms has been considerably increased since the year 1841, as the author is enabled to enumerate some 320 species against 212 of Müller and Henle; besides, he describes eight Chimæras. However, the number of species described for the first time in this work amounts to six only, which will be mentioned below.

Plagiostomata.

Carcharias (*Prionodon*) *bleekeri*, sp. n., Duméril, Elasmobr. p. 367, from Pondicherry; *Carcharias* (*Prion.*) *remotus*, sp. n., Duméril, *l. c.* p. 374, from the West Indies.

[*Carcharias*] *Isogomphodon maculipinnis*, sp. n., Poey, Repert. Fisico-nat. Cub. 1865, p. 191, from Cuba.

Micristodus punctatus, g. & sp. n., related to *Rhinodon*, from California, Gill, Proc. Ac. Nat. Sc. Philad. 1865, p. 177.

Scymnus microcephalus, observed in Spitzbergen by Malmgren, Œfvers. Svensk. Vet.-Akad. Förh. p. 536.

Læmargus rostratus (M. & H.) is described and figured by Canestrini, Mem. Accad. Sc. Torin. xxi. p. 364, tav. 2. figs. 2–4.

Leius, g. n., Kner, Denkschr. Ak. Wiss. Wien, xxiv. Rostrum obtusum, modice productum, dentes supramaxillares parvi acuti pluriseriales et mobiles, inframaxillares numero 26 maximi uniseriales basi lata, apice medio prælongo, in laminam immobilem coaliti, antrorsum spectantes; foramina temporalia semilunaria; pinnæ parvæ inermes, 1ma dorsalis anali opposita et 2da vicina, analis nulla; cutis læviuscula; fissuræ branchiales 5 parvæ. *L. ferox*, sp. n., Kner, *l. c.* taf. 4. fig. 2, from Australia.

Pristis megalodon, sp. n., Duméril, Elasmobr. p. 476, pl. 9. fig. 4, hab. —? The jaws of other species of this genus are figured on the same plate.

[*Torpedo*] *Narcacion polleni*, sp. n., Bleeker, Nederl. Tydschr. Dierk. iii. 1865, p. 171, from the island of Réunion.

Torpedo. M. Ch. Matteucci reports on physiological experiments. Compt. Rend. 1865, lxi. pp. 627–629.

Raja circularis (Couch). Some notes on this species, which has been found also on the coast of Belgium, by Van Beneden. Bull. Acad. Sc. Belg. 1865, xx. p. 48.

Læviraja bramanta (Sassi) is described and figured by Canestrini. Mem. Accad. Sc. Torin. xxi. p. 361, tab. 1. figs. 2–5.

Pteroplatea valencienni, sp. n., Duméril, Elasmobr. p. 612, from Brazil.

Tæniura magdalenæ, sp. n., Duméril, *l. c.* p. 625, from the Rio Magdalena.

Mr. Gill (Ann. Lyc. Nat. Hist. New York, viii. 1865, pp. 135–138) proposes to divide the *Myliobatides* thus:—

I. *Myliobatinæ* (Agass.).

A. Snout entire or convex in front: 1. *Myliobatis* (including *Holorhinus*, Gill).

B. Snout emarginate in front.

a. Teeth gradually diminishing in width towards the sides: 2. *Rhinoptera* (including *Zygobatis*, Agass.).

b. Teeth like those of *Myliobatis*; the middle very wide; the lateral little or not wider than long: 3. *Mylorhina* (g. n., type *Rh. lalandii*, M. & H.).

c. Teeth of the middle in the *upper* jaw *narrower than the internal*

lateral; lateral graduated towards sides: 4. *Micromesus* (g. n., type *Rh. adspersa*, M. & H.).

II. *Ætobatinæ* (Agass.): 5. *Ætobatis*, with which *Goniobatis* (Agass.) should be united.

Myliobatis californicus. This name is proposed by Mr. Gill (*l. c.* p. 136) for *Rhinoptera vespertilio* (Girard), this latter specific denomination being preoccupied.

Ætobatis laticeps, sp. n., Gill, *l. c.* p. 137, from California.

Holocephala.

Callorhynchus capensis, sp. n., Duméril, Elasmobr. p. 605, pl. 13. figs. 5 & 5*a*, from the Cape of Good Hope.—*Callorhynchus peronii*, and *C. antarcticus* are figured in the same work on pls. 13 & 14.

CYCLOSTOMATA.

Petromyzon fluviatilis. M. Owsjannikow has examined its organ of hearing. Mém. Ac. Sc. St. Pétersb. viii. 1864, pp. 19, with two plates.

Petromyzon omalii (Van Ben.). Some additional notes on its occurrence on the coasts of Belgium, by Van Beneden. Bull. Acad. Sc. Belg. xx. 1865, p. 46.

Petromyzon acutidens, sp. n., Philippi, Wiegm. Arch. 1864, p. 107 (translated in Ann. & Mag. Nat. Hist. 1865, xvi. 221), the "Anguilla" of Chili.

MOLLUSCA

BY

EDUARD VON MARTENS, M.D., C.M.Z.S.

A. The General Subject.

1. *General Works in Progress.*

REEVE, L. Conchologia Iconica. Nos. 244 & 245. [*Ovulum*, *Erato*, continuation of *Marginella* and *Unio*].

See Zool. Record, i. p. 189. This work has been unfortunately interrupted by the death of the author.

SOWERBY, G. B. Thesaurus Conchyliorum. Part xxiii. London, 1864, 8vo.

Contains monographs of the genera *Cyclostrema*, *Adeorbis*, and *Teinostoma* by A. Adams, *Argonauta* and *Pomatias* by G. B. Sowerby, *Voluta*, *Cymba*, and *Melo* completed from part v., and three plates to illustrate a monograph of the family of *Pupinidæ*, which is promised to appear in the next part.

BRONN, H. G. Klassen und Ordnungen des Thierreichs, wissenschaftlich dargestellt in Wort und Bild. Fortgesetzt von W. KEFERSTEIN. Leipzig und Heidelberg, 8vo.

The second division of the third volume, treating of the *Malacozoa Cephalophora*, was completed in the year 1865; it contains 1484 pages and 92 plates, copied from the best authors and representing all the chief peculiarities of organization, external form, and development. The parts containing the remainder of the *Pulmonata* and the *Cephalopoda* have also been issued. The work has gone far beyond the limits originally assigned to it, gradually lapsing into the most detailed accounts comprising everything except species. The classification of Mollusca generally (encumbered with many new superfluous names) is the following:—

Second subregion CEPHALOMALACIA.

Class I. *Prosopocephala* (n.) s. *Scaphopoda* (n.) [*Dentalium*].
Class II. *Gastropoda* (Cuv.) s. *Pselaphocephala* (n.).
Order 1. *Pteropoda* (Cuv.) s. *Coponautæ* (n.).
Order 2. *Opisthobranchia* (M. E.) = *Nudibranchia*, *Inferobranchia* et *Tectibranchia* (Cuv.).

Order 3. *Heteropoda* (Lam.). [Here begins Dr. Keferstein's work.]
Order 4. *Prosobranchia* (M. E.).
Suborders: 1. *Chitonidæ*. 2. *Cyclobranchia*. 3. *Aspidobranchia* = *Rhipidoglossa*. 4. *Ctenobranchia*. 5. *Neurobranchia* = *Pulmonata operculata*.
Order 5. *Pulmonata* (Cuv.).
Class III. *Cephalopoda* (Cuv).
Order 1. *Tetrabranchiata* (Owen).
Order 2. *Dibranchiata* (Owen).

Bourguignat, J. R. Mollusques nouveaux, litigieux ou peu connus. Cinquième fascicule. Paris, 1865, 8vo, pp. 133–170, pls. 20–28.

Contains nine *Unio* and one *Anodonta* from Spain and Palestine, and an enumeration of all the species of *Najadea* known from Spain and Algeria.

Tryon, G. W. American Journal of Conchology. Vol. i. (parts 1–4). Philadelphia, 1865, 8vo, pp. 1–387, with 27 plates and the portraits of four American conchologists, Thomas Say, Isaac Lea, C. B. Adams, and Augustus Gould.

This journal was started in 1865. The contents of the first volume are chiefly papers on North-American land- and freshwater shells; also palæontological articles are received in it.

2. *Works of a Popular character.*

Frédol, A. Le monde de la mer. Paris, 1865, 8vo, pp. 632, with 21 plates.

A popular treatise on marine animals generally, containing much information on various questions of the day in science and scientific industry—for instance, the breeding of oysters and mussels (*Mytilus*). The coloured plates, representing living animals, are highly creditable; some of the Mollusca Nudibranchiata are stated to have been figured here from unpublished drawings of M. Deshayes and Quatrefages.

A similar work in German, much like an abridged translation of the French one, has been published by Prof. Schleiden with the title 'Das Leben des Meers.'

3. *Classification and Morphology of Mollusca in general.*

Mörch, O. A. L. On the limits of the subkingdom *Mollusca*. Ann. & Mag. Nat. Hist. xvi. pp. 411–414.

The author is inclined to introduce into this subkingdom the *Platyelmia* [*Plathelminthes*], including *Trematoda*, *Cestoda*, and *Turbellaria*, as the nervous system and the generative organs do not essentially differ from those of the Androgynous Mollusca; on the other hand, he excludes from the Mollusca the *Tunicata*, *Bryozoa*, and *Brachiopoda*.

Mörch, O. A. L. On the systematic value of the Organs which have been employed as Fundamental Characters in the Classification of Mollusca. Ann. & Mag. Nat. Hist. xvi. pp. 385–396. Also in Journ. Conch. xiii. pp. 396–401.

The heart and the generative organs, principally the intromittent male organ, seem to the author to offer characters of the highest systematic value, the development of the young, on the contrary, to be of less systematic value than is generally believed. The *Cephalopoda* are said to have no more just claims to be considered a distinct class in relation to the other Mollusca than the *Pteropoda* or the *Cetacea* among the Vertebrata. The classification of the author is the following:—

Subkingdom III. MOLLUSCA.

Series I. Monotocardia.

Class 1. Androgyna.

Pulmonata: *Geophila*, *Hygrophila* (*Auriculacea* and *Limnæacea*).
Tectibranchia, including the *Pyramidellidæ*.
Pteropoda.
Gymnobranchia.

Class 2. Exophallia.

Tænioglossata: A. *Rostrifera*, including as separate subdivisions the terrestrial or *Cyclostomacea*, the fluviatile (*Melania*, *Paludina*, &c.), the marine (*Cerithium* and *Turritella*), differing by the metamorphosis of the young from the former, the parasitic (*Vermetus*, *Crepidula*, *Hipponyx*, and *Capulus*), the pelagic (*Heteropoda*), and finally the *Strombi*. B. *Proboscidifera*.
Rhachiglossata s. *Melicertigena* (*Rhachiglossa*, *Hamiglossa*, and *Odontoglossa* of Gray, greater part of the Canalifères, Purpurifères, and Columellaires of Lamarck).
Toxoglossata (*Cancellaria*, *Terebra*, *Clionella*, *Pleurotoma*, *Conus*).

Series II. Diotocardia.

Class 3. Pseudophallia.

Rhipidoglossata, including as terrestrial subdivision the *Helicinæ*, as fluviatile the *Neritinæ*, and as marine the *Trochidæ* and the *Fissurellidæ*.
Heteroglossata: *Cyclobranchia* = *Patella*, *Polyplaxiphora* = *Chiton*, *Cirrobranchia* = *Dentalium*.
Cephalopoda.

Class 4. Acephala s. Dithyra.

Dimyaria, *Heteromyaria* (*Mytilus*), *Monomyaria*.

The Recorder cannot help thinking it no great advancement in the natural classification to exchange the chief divisions of *Cephalopods*, *Gastropods*, and *Bivalves* for others which, being founded on the single character of the heart, must be artificial.

Mörch, O. A. L. On the homology of the buccal organs of the Mollusca. Ann. & Mag. Nat. Hist. xvi. pp. 73–79, with pl. vi.

As this interesting paper is within reach of most scientific men, and its contents do not admit of further condensation without losing their perspicuity, we may be allowed to remark here only that the author identifies the infundibulum of the Cephalopods with the foot of the Gastropods, the eight tentacles of the former with the velum or formerly so-called proboscis of *Conus* and the labial palps of the bivalves, the two longer arms or tentacles, armed in *Onychoteuthis* with numerous hooks, with the cheek-hooks or evertile tubes of some *Pteropods* and the arrow-bearing organ of *Conus*.

Mörch, O. A. L. On the Operculum and its Mantle. Ibid. p. 117.

The operculigerous lobe of the Gastropods is not homologous with one of the halves of the shell and mantle in bivalves; but a division of the mantle into two halves, both corresponding to the univalve spiral shell, is to be traced in some genera, as *Emarginula, Monoceros, Akera, Carinaria,* and *Onustus*. The operculigerous lobe is not homologous with the byssus, as a byssus exists in some operculated univalves beside this, for example in *Cyclostoma suspensum* (Guilding) and *Cerithidea obtusa* (Sow.).

Morse, Edw. S. A classification of Mollusca, based on the Principle of Cephalization. Proc. Essex Instit. Salem, Mass. iv. No. 6, 1865, July.

The author proposes to name the mollusks *Saccata* (a term corresponding to those of *Vertebrata, Articulata,* and *Radiata*), the sac-feature, essential to all animals, being presented most completely by them. In the *Polyzoa* the mouth and anus are situated at the posterior pole of the sac, in the *Brachiopoda* the sac is permanently invaginated, in the *Tunicata* the mouth placed at the bottom of the sac, whilst the situation of the anus varies; but in all these three classes (=*Molluscoidea* of Milne-Edwards or *Anthoid Mollusca* of Dana) the sac is essentially closed at the anterior end, and consequently the mouth opens towards the posterior end, and, with few exceptions, all are attached by the anterior end or on the dorsal side. In the higher classes, on the contrary, the sac opens anteriorly, the mouth permanently occupying the anterior region, and the attachment, where existing, is ventral or posterior. The cephalic power manifests itself very feebly in the *Lamellibranchia,* their mouth being partially inclined backwards, receiving its food from that end without seizing or triturating it, and their foot being simply an organ of locomotion or even not capable of that. In the *Gastropoda,* the mouth has a biting and triturating apparatus, and the foot is more specialized, in some instances (*Natica*) even seizing and retaining the prey. In the *Cephalopoda* the cephalic power is manifested not only by locomotion and prehension, but

also by aggression, the foot being differentiated into prehensile arms, and the locomotion partially delegated to other organs.

The following synopsis of the classes is given :—

Saccata.

A. Holozoic or typic. Mouth opens anteriorly.	Sac open at anterior end	1. *Cephalopoda.* 2. *Gastropoda.*
	Sac open at both ends	3. *Lamellibranchia.*
B. Phytozoic or hemitypic. Mouth opens posteriorly.	Sac open at the posterior end	4. *Tunicata.*
	Sac closed	5. *Brachiopoda.* 6. *Polyzoa.*

4. *Physiological Publications.*

Aucapitaine, H. Note sur la suspension de la vie chez l'*Helix lactea* du Sahara Algérien. Lue à la Société de Climatologie Algérienne le 4 Novembre 1864. Gaz. Med. Algér. 1865, Jan. 5, p. 9. Reported by Letourneux in Rev. Zool. 1865, July, pp. 212–214.

This snail revived after having been enclosed almost without air in a bottle for three years and a half; the snail had been found on calcinated ground heated to 50° C. in a part of the desert where it was said not to have rained for five years.

Fischer, P. Production artificielle des Perles. Journ. Conch. xiii. pp. 64 & 65.

Some remarks about the well-known art of the Chinese, of having little figures covered with nacreous substance by living *Dipsas* [*Barbala*] *plicata*, Sol.

E. Morse, in his 'Observations on the Terrestrial Pulmonifera of Maine' (see p. 230), states that *Physa heterostropha* (Say) and *Limnæus desidiosus* (Say) were not quite dead, but showed still slight motion after having been excluded from the air for respectively seventeen and seven hours (pp. 41 & 43).

5. *Historical changes of Faunas. Importation and Acclimatization.*

Mr. Morse has noticed the difference in the observations made by Dr. J. W. Mighels in 1843 and by himself, as regards the occurrence of the same species in the same locality; some, then abundant, were scarce now, and *vice versâ* (Terr. Pulmonif. Maine, pp. 56–58). [The freshwater shells offer the most striking instances in this respect; in Europe every practical collector knows that a species may be abundant in one year, and very scarce or entirely absent in the next, in the same locality].

Dr. Mörch informs us, with regard to the statement noticed in Zool. Record, i. p. 193, that many live specimens of *Cyclostoma elegans* have been in the meantime found on the south-western coast of Jutland. The nearest locality where it is found is in Hessen, in the neighbourhood of Cassel.

He adds that *Helix* (*Cochlicella*) *acuta* (Müll.) has been found near Nykjöbing on the north-western coast of Jutland, with *Cyclostoma elegans*, and is probably introduced. He says that the peasants are in the habit of fumigating the stables with ginever-shrubs, which they buy from apothecaries. One of the latter, a conchologist, has found among his stock of that plant some Saxon shells not yet observed in Denmark, as *Buliminus detritus* (Müll.), *Helix ericetorum* (Müll.), *Pupa avena* (Drap.). This may be one way of introducing foreign shells into a country.

Martens, E. v. Eine eingewanderte Muschel. Zoolog. Gart. Frankf. 1865, pp. 50–59, 89–97. [An instance of the migration of a Bivalve. See Zool. Record, i. p. 191].

Dreissena polymorpha was not known in the northern and western halves of Europe some forty years ago. The numerous treatises on the mollusk-faunas of these countries published at the close of the past and in the first two decads of the present century do not mention it. All at once it was observed for the first time in tributaries of the Baltic, the Niemen and Weichsel, in the year 1825, in tributaries of the Elbe in 1828, in the terminal branches of the Rhine in 1826, and in England in 1824. Several direct observations, and the comparison of the localities and times in which it has been observed for the first time in the several countries, establish the fact that it has been introduced into all those parts of Europe, along artificial, navigable canals, by means of ships or timber, and even across the channel to England. The belief that it was observed already towards the close of the past century in south-western Germany is founded on a very superficial description of a shell by Sander, and contradicted by the negative evidence given by Prof. Alex. Braun for the years 1824–1846 and by Hr. Gysser for the present time, both agreeing in never having met with *Dreissena* in that part of Germany. As regards the rivers near to the Black and Caspian Seas, no reliable or sufficiently complete record of their faunas has been preserved from the commencement of this century; and there is consequently no reason to think that a recent migration has taken place into the Danube and the rivers of southern Russia. At present it inhabits nearly all the tributaries of the Baltic, the Elbe upwards to Halle, the Rhine upwards to Huningue, the rivers of northern France, including the Loire, the British Islands, Hungary, a part of European Turkey, and almost the whole of Russia. It is very desirable that the attention of conchologists should be directed to the further advance of this shell, and that accurate statements should be made as regards the time at which it first appears in the lists of local faunas, not having been mentioned by previous accurate observers.

This species is really a freshwater shell; it does not live in the Baltic itself, but only in the brackish water near the mouths of the rivers. The breakwater leading to the lighthouse at Swinemünde, for instance, is occupied on the river side by *Dreissena*, on the sea side by *Mytilus edulis*.

Hr. Jäckel, Hr. C. Staude, and Dr. Fr. Buchenau have contributed further observations on this subject in the same journal, pp. 196, 228, and 278, in which they state that this shell is found at present in the Weser and in the Bavarian tributaries of the Main, even in the canal by which the Main has been connected with a confluent of the Danube; so that *Dreissena* will shortly be an inhabitant of the upper and lower portions of the Danube without being found in the middle part of its course.

Prof. E. A. Rossmässler, in his popular journal 'Aus der Heimath,' pp. 71–78 and 347–350, alludes to the same subject, principally its first appearance in Northern Germany, and states that the animal is able to detach the filaments by which it fixes itself to other objects, and that it is frequently found attached to the tail of crayfishes.

Dr. Mörch (Ueber *Pinna fluviatilis* (Sander), Malak. Blätt. xii. pp. 110–117) defends his opinion (alluded to in the preceding note), viz. that a shell described by Sander in the year 1780 from a rivulet near Carlsruhe, is *Dreissena*, by an analysis of Sander's account, and by the analogous fact that the occurrence of the genus *Unio* in Denmark remained unknown to so careful an observer as O. F. Müller (1773). But we cannot accept this as a very convincing argument, inasmuch as *Unio* has been included in all the faunas of the surrounding countries published at that time (of the Baltic provinces, Russia, North Germany, and England), whilst *Dreissena* is not mentioned in any of them.

Hr. A. Gysser (Mal. Blätt. 1865, Literatur-blatt, p. 38) also discusses this question. He lives at the place indicated by Sander, and expresses it as his opinion that the rivulet is a locality unfit for *Dreissena*, that Sander's shell is a *Unio batavus*, his description entirely agreeing with specimens from that locality, with regard to size (two inches) as well as to coloration. A *Dreissena* of two inches would be a great rarity.

Fischer, P. Acclimatation, en France, de Mollusques exotiques. Journ. Conch. xiii. pp. 65 & 66.

Venus mercenaria and *Ostrea virginiana*, var. *canadensis*, have been brought alive to Bordeaux, and, having been placed in localities prepared for them in the years 1861 and 1863, the specimens have grown, but not propagated.

Helix yucatanea, from the island of Carmen, Central America, has bred in France (Dép. Gironde), and the young ones were still alive at the beginning of the winter. Ibid. p. 69.

Aucapitaine, H. Note sur l'*Helix caræ*. Ann. Sc. Nat. 1865, i. p. 30.

Helix caræ (Cantraine), a native of Sardinia, has been found in the southern part of Corsica, which had been explored some time previously by Payraudeau and Requien without finding any trace of it; on the other hand, the Corsican species *Helix raspailii* (Payr.) has been found in Sardinia. The author thinks that both have migrated within the most recent time; but the evidence brought forward appears to us insufficient to warrant such a supposition.

6. *Palæontology of Recent Species.*

M'Coy, F. On the occurrence of *Limopsis belcheri, Corbula sulcata*, and some other recent shells in the fossil state in Miocene Tertiary Beds near Melbourne. Ann. & Mag. Nat. Hist. xvi. pp. 113 & 114.

The species ascertained to be identical with recent ones by actual comparison of the shells are the following:—*Limopsis belcheri* (Adams and Reeve), dredged from 120 fathoms off the Cape of Good Hope; *L. aurita* (Sars), also in many Miocene localities of Europe, lately dredged from 85 fathoms off Unst by Mr. Jeffreys; *Pectunculus laticostatus* (Quoy & Gaimard), from New Zealand; *Corbula sulcata* (Lam.), now living on the west coast of Africa.

Bithinia meneghiana, Limnæa lessonæ, and *Monodacna lessonæ* are new species, found in a fossil state on the shores of the Caspian Sea and described by Issel (Dei molluschi raccolti in Persia; see p. 224). We think it right to mention them here, as there is a most intimate connexion between the fossil and living species found on the shores of that sea.

B. Contributions to Faunas.

a. *Land- and Freshwater Mollusca.*

1. *Europe.*

Jeffreys, J. G. British Conchology. See p. 232.

Westerlund, C. A. Sveriges Land- och Sötvatten-Mollusker. [Sweden's land- and freshwater mollusca.] Lund, 1865, 8vo, pp. 142.

The author enumerates 113 species, one of which is new, *Planorbis riparius*. The most interesting in a geographical point of view is *Helix harpa* (Say), first found in North America (Maine), which proves now to be a circumpolar species, having been discovered successively in Lapland, the Aland Islands, Norway, and the province Jemtland in Sweden. The Swedish species of *Clausilia* are: *laminata, ventricosa, plicatula, biplicata, plicata, pumila, nigricans*; the species of *Vertigo*—*costulata*, Nilss., *columella*=*edentula, minuta*=*minutissima, antivertigo, substriata, pygmæa, alpestris, arctica* (Wallenberg), *pusilla*, and *venetzii*=*angustior*. The species of *Pisidium* hitherto found and distinguished are: *amnicum, pulchellum, subtruncatum* (Malm), *henslowianum, obtusale, pusillum, arcæforme* (Malm), *personatum* (Malm), and *nitidum*. The varieties in the genus *Limnæus* are treated with peculiar care, those of *L. limosus* are enumerated as follows:—

α. auricularia: *normalis, acutior* (Gras), and *pumila*.

β. ovata: *burnetti* (Alder), *succinea* (Nilss.), *balthica* (L., Nilss.), *ovata* (Drap.), and *vulgaris* (Pfeiff.).

γ. peregra: *major, labiata*, and *atrata*.

Generally the land- and freshwater shells of Sweden are very nearly the same as those of the northern and middle parts of Germany; but the German *Helix ericetorum, obvoluta*, and *personata* have not yet been found in Sweden; *Helix pomatia* has been introduced and naturalized in several parts. *H. nemoralis* is found only in the southern and middle parts of the kingdom; *H. hortensis* extends further northwards, to Nerike; *H. arbustorum* occurs throughout the country to Lapland. The existence of *Pupa umbilicata* (Drap.) on the island of Gothland is confirmed; *Clausilia papillaris*, on the contrary, is judiciously rejected as a Swedish species. There are known at present many more land- and freshwater shells from Sweden (113) than either from Norway (63) or from Finland (71). The Recorder may be allowed to point out on this occasion two slight inaccuracies in the author's remarks on the Norwegian species (p. 17). 1. *Helix ericetorum* was never found by the Recorder near Christiania, but only seen in the collection of Prof. Sars among other Norwegian shells, and he was told by this celebrated naturalist that this was the only specimen ever found near Christiania or in Norway generally, and this one was not fresh. 2. *Helix hammonis* (Ström) is quoted as a species not found in Norway; but Ström himself was a Norwegian, and observed the species he described as *H. hammonis* from living examples from the district Söndmör in Norway. Either this specific name has been misapplied by Mörch, whom Westerlund generally follows in nomenclature and specific distinction, or the species is really Norwegian.

Gysser, A. Vergleichende Zusammenstellung der Molluskenfaunen der beiden äussersten nordöstlichen und südwestlichen Grenzländer des politischen Deutschlands. Mal. Blätt. xii. pp. 78–91.

[Comparison of the malacological faunas of the two extreme provinces in the North-East and South-West, within the political boundaries of Germany].

The *Helicea* of the province of Prussia were enumerated some years ago by Dr. Hensche (Mal. Blätt. 1860); those of the Grand Duchy of Baden were explored by the author himself, and a list of them is inserted in the present paper, containing some corrections to the enumeration published in the preceding

year. As regards the land-snails, Baden is inhabited by 92 species, Prussia by 52 only; the *Cyclostomacea* (*Cyclostoma elegans* and *Pomatias maculatus*) are found in Baden, but not in Prussia. With regard to the freshwater shells, the province of Prussia probably possesses some interesting species more than Baden, as *Amphipeplea, Paludina fasciata, Bythinia leachii*.

[These differences are evidently the same which may be observed everywhere between mountainous inland countries and large plains near the sea.]

Peck, R. Nachtrag zu dem Verzeichniss der in der preussichen Oberlausitz vorkommenden Land- und Wassermollusken. [Addition to the list of land- and freshwater mollusca of the Prussian part of Upper Lusatia. See vol. ix. 1859, pp. 196–202.] Abhandl. Naturg. Gesellsch. Görlitz. xii. 1865, p. 206.

A list of fifty-four land- and thirty-six freshwater shells, the most remarkable being *Helix umbrosa, H. strigella* on chalky soil, *H. bidens* and *Clausilia filograna* on the ground, between roots of Gramineæ, never ascending the trunks of trees.

Lehmann. Zur Molluskenfauna von Carlsbad und Franzensbad in Böhmen. Mal. Blätt. xii. pp. 91–100.

The author, well known to malacologists by careful descriptions of various *Limacidæ*, has collected eighty species at the two watering-places mentioned; fourteen others are included in a list published in 1862. The species found are generally common throughout the middle and southern parts of Germany. Six species of *Clausilia* are named. One of the rarer species is *Zonites* [*Hyalina*] *glaber* (Stud.), found at Liebenstein, near Franzensbad, by the author. The Recorder observed the same shell some ten years ago on basaltic rocks at Aussig, not far from Teplitz in Northern Bohemia.

It is strange that *Helix austriaca* is not mentioned in this list, as this species is common in Austria proper, Moravia, Upper Silesia, Saxony, and Bavaria on the borders of Bohemia—that is, in all the countries round Bohemia; it was found some years ago near Prag, by Dr. Rud. Gmelin.

Schleicher, W. Die Land- und Süsswasser-Conchylien des Oetschergebietes. [The land- and freshwater shells of the Oetscher district.] Verhandl. zool.-bot. Gesellsch. Wien, 1865, pp. 81–86.

Sixty-five land-shells and twenty freshwater species are enumerated, the most remarkable being *Helix margaritacea* (Ad. Schmidt), *H. austriaca, Paludina* [*Hydrobia*] *viridis* (Drap. ?), *austriaca* (Frauenf.), *opaca* (Ziegl.), *pellucida* (Hauf.), and *Pisidium planum* (Pfr.).

Mabille, J. Etudes sur la faune malacologique de Saint-Jean-de-Luz, de Dinan et de quelques autres points du littoral océanien de la France. Journ. Conch. xiii. pp. 248–265.

Fifty-three species are mentioned, with exact indication of the localities. The most interesting are: *Zonites olivetorum* (Gmr.), at Bayonne; *Z. alliarius* (Miller), only on the sea-coast of France from Bayonne to Boulogne-sur-Mer; *Helix megerlei* (Jan) = *H. solaria* (Mhlfld.), at St.-Jean-de-Luz, not found before in France; and a new species of *Clausilia*.

Brébisson, R. de. Liste des mollusques terrestres recueillis en Dauphiné, Savoie et Provence. Bull. Soc. Linn. de Normandie, ix. Années 1863 & 1864 (published 1865), pp. 122–124.

A list of thirty-four species, in which the most common are purposely omitted. One is, at first sight, struck to find some species characteristic of the warmest parts of Europe (*Zonites candidissimus* and *algirus*) side by side with others more peculiar to the northern half of Europe (*Helix arbustorum, Bulimus montanus*); but this is explained by the fact that the first are found in the low countries near the sea, the others within the Alps.

Schröckinger, J. von Nordenberg. Oesterreichs gehäusetragende Bauchfüsser und Muschelthiere. Verh. zool.-bot. Ges. Wien, 1865, pp. 303–324.

[The shell-bearing Gastropods and Bivalves of Austria.]

A list of 410 land-, 172 freshwater, and 380 marine shells. It includes 165 species of *Clausilia*, 10 of *Valvata*, 22 of *Neritina*, and 27 of *Hydrobia*, which are very artificially distributed into three families. Sixty-six land- and 43 freshwater shells are considered to be common throughout the greater portion of the provinces of the Austrian empire. The Brachiopods and the shelless mollusks are omitted, although (as far back as 1777) Fortis mentions a *Terebratula* in his travels in Dalmatia.

Pirona, A. Prospetto dei molluschi terrestri e fluviatili finora raccolti nel Friuli. Att. Istit. Venet. di sc. lett. ed art. x. 1865, pp. 676–708.

Ninety-six species of land-snails, thirty-nine of freshwater shells, and one of brackishwater, viz. *Auricula myosotis*. The rather large number of land-shells in this province is due to the circumstance that it contains both alpine districts and a sea-shore, so that the species living on the Mediterranean sea-shores (as *Helix pisana, variabilis, Bulimus acutus, decollatus*) are included. *Helix vermiculata* is wanting [as it is in the whole of Venetia, except the botanical garden of Padua, as far as the Recorder knows]. On the other hand, we find a rather consider-

able number of true German species peculiar to the mountains—for instance, *H. obvoluta*, *personata*, and *incarnata*. Four species of the section *Campylæa*—*Helix planospira* (auct.), *phalerata* (Ziegler), *preslii* (Schmidt), and *intermedia* (Fér.); thirteen species of *Clausilia*, seventeen of *Pupa*, two of *Pomatias*. *Helix pomatia*, common in Upper and Middle Friuli, becomes rather scarce in the low country; and on the sea-coast *H. aspersa* and *H. cincta* take its place. For *Helix nemoralis*, common in the other parts, *H. austriaca* is substituted in the hilly regions of eastern Friuli; *H. hortensis* is not mentioned.

Pfeiffer, L. Die Mollusken der Dobrudscha. Mal. Blätter, xii. pp. 100–104.

A list of fourteen species only of land- and freshwater shells, found by Joh. Zelebor. Some of them are described as new. The occurrence of *Helix corcyrensis* (Partsch), *Bulimus detritus* (Müll.), and *Tichogonia chemnitzii* [*Dreissena polymorpha*] may be noticed here.

M. Bourguignat, in his 'Malacologie de l'Algérie' (see below), pp. 365–370, devotes a separate chapter to the "Principes Malaco-stratigraphiques du Système Européen," written in a rather laconic style. The principal theses are, that there are centres of creation, not only for each species separately, but for what may be called peculiar faunas; that these centres are situated in the mountainous regions, never in the lowlands; and that there are only three of them for Europe and Western Asia,—the *Spanish* centre continuous with Algeria, but without any influence northwards; the *Alpine*, from which the malacological fauna of the whole of Northern Europe has radiated; and the *Tauric*, the branches of which have spread over Asia Minor, Syria, and Egypt. The author goes so far as to maintain that between the 35th and the 46th degrees of northern latitude there is a zone of creation which coincides with a row of mountain-chains extending from the Atlantic to the Caspian Sea, and that this zone is separated from the Asiatic and African centres of creation by vast regions "having no fauna" or "being void of special species," as the Sahara, Tripolis, Arabia Petræa, Mesopotamia, and Persia.

2. *Northern Africa and Western Asia.*

Bourguignat, J. R. Malacologie de l'Algérie. (See Zool. Record, i. p. 195.)

The second and last volume of this luxurious work has been finished, it contains 380 pages and 26 plates in folio. The new or dubious species not mentioned in our former Record will be mentioned subsequently. Although the author inclines to rather minute specific distinctions, he recognizes the following

common European freshwater shells as occurring also in Algeria:—*Neritina fluviatilis*; *Pisidium amnicum*, *casertanum*, *pusillum*, *nitidum*; *Unio litoralis*, *batavus*, *pictorum*. Most Algerian species of land- as well as of freshwater shells are either identical with or nearly allied to those of Spain. Lists of the species of Tunis, Morocco, Canary Islands, Madeira, Sicily, and Spain are given to prove the near relation of the North African to the Spanish fauna and its differences from that of the neighbouring islands mentioned. The littoral Mediterranean land-shells are found in Algeria, not only on the sea-coast, but also on the northern borders of the great desert, south of the second mountainous mass of the Atlas, and in the vicinity of some former salt lakes. In the same manner the fauna of the mountainous region, which consists chiefly of flattened carinated land-shells, occurs again on the southern slope of the central-elevated plains, which are distinguished by a peculiar fauna, the shells being very thick and most of the terrestrial species having a toothed aperture. The author comes to the conclusion that Morocco, Algeria, and Tunis were, at the beginning of the present geological period, a peninsula connected with Spain at Gibraltar, separated by a sea (now the desert of Sahara) from the rest of Africa, by the Mediterranean from Sicily and Italy, and by the Atlantic from the Canary Islands and Madeira.

The geographical configuration of that period is represented on a map.

Martens, E. v. Uebersicht der Land- und Süsswasser-Mollusken des Nil-Gebietes. [Synopsis of the land- and freshwater shells of the Nile countries.] Mal. Blätt. xii. pp. 177–207. Contains the land-shells and the Ctenobranchiates, the continuation being published in the following volume (1866, pp. 1 *et seq.*).

A small collection made by the author at Kairo and Alexandria, another by Dr. Robert Hartmann during his travels in the Sennaar, Nubia, and Egypt, and that made some forty years ago by Ehrenberg are the materials for this paper. A short history is given of our knowledge of this fauna, from Hasselquist and Forskål to the present time, and special attention has been paid to the synonymy, as even some of the most common and best-known Nilotic species have been repeatedly described as new—for instance, *Paludina bulimoides* (Olivier) as *Melania ægyptiaca* (Reeve). Eight species of *Helix* are pointed out as erroneously enumerated in the Egyptian fauna by various authors. Lower Egypt (the land-shell fauna of which does not differ from that of the coasts of the Mediterranean), Middle and Upper Egypt, the desert parts of Nubia, Abyssinia, and the wooded countries of the White and Blue Nile are indicated as principal divisions of this fauna. With regard to land-shells, there are very striking dif-

ferences between these divisions, especially if Middle Egypt, Upper Egypt, and Nubia are combined into one: characteristic of these parts is *Helix desertorum* (Forsk.); of the wooded regions the group *Limicolaria*, which is regarded as a part of the truly African genus *Achatina*. As regards the freshwater shells, the true African form of *Lanistes* and the tropical *Ampullaria* and *Melania* are common along the whole course of the river from Lake Victoria to Alexandria, having been carried down by the current.

Some additions to this paper, containing descriptions of new Abyssinian species, are in preparation, and will be published in the following volume of the Mal. Blätter (1866).

Tristram, H. B. Report on the terrestrial and fluviatile Mollusca of Palestine. Proc. Zool. Soc. pp. 530–545.

The author points out in introductory remarks the chief characteristic features of the Molluscan fauna of Palestine; they are, identity with the circum-mediterranean fauna on the coast and maritime plains, eight *Clausiliæ* in the Lebanon, peculiar or Arabic land-shells (*Helix* and *Bulimus*) in the Jordan valley and in the southern wilderness, the fluviatile mollusks more agreeing with tropical forms than the terrestrial.

After mentioning the labours of his predecessors, the author enumerates 119 species collected by himself, adding remarks to nearly all of them; he describes 12 as new, and finally gives a list of those said to belong to this fauna, but not found by himself.

Issel, A. Dei molluschi raccolti dalla missione italiana in Persia. Torino, 1865, 4to, pp. 55, with three plates. (Mem. Accad. Torin. Sc. fis. matem. serie ii. tom. xxiii.)

Marquis G. Doria, M. Lessona, Director of the Royal Museum at Genova, and Professor De Filippi accompanied the Italian embassy to the capital of Persia. Parts of Armenia and Russian Transcaucasia were also visited, and Marquis Doria proceeded to the Persian Sea. The memoir contains 21 land- and freshwater shells from Armenia and Imoratia, 22 from Persia, 17 marine shells from the island of Ormus and from Bender Abbas, 7 Caspian shells, with a few land-shells from Asia Minor, and some marine forms from the Sea of Marmora; finally, 13 fossil ones, collected near the shore of the Caspian Sea at Baku. Sixteen are described as new species; and figured.

3. *British India and Burmah.*

Benson, W. H. New land-shells from Travancore, Western and Northern India. Ann. & Mag. Nat. Hist. xv. pp. 11–15.

Blanford, W. T. Contributions to Indian Malacology. Descriptions of some land-shells from Arakan, Pegu, and Ava, with notes on distribution of described species. Journ. As. Soc. of Bengal, 1865, pp. 66–105.

Contains twenty-eight new species, besides many interesting particulars about the living animals, systematic affinities, and geographical distribution of others. Two very distinct zoological provinces are stated to exist in Burmah, exclusive of Martaban and Tennasserim, which form a third, characterized by the appearance of Malayan types, such as *Rhaphaulus, Hybocystis*, and *Rhiostoma* [rather Siamese than Malayan]. The first province is Arakan and the southern part of Pegu with a very wet climate; the second Upper Burmah, which is very dry. The first has many species in common with the Khasi hills (*Helix delibrata, castra*), and possesses peculiar forms in *H. plectostoma, Cyclophorus aurantiacus* and *speciosus*; the second has some forms in common with the plains of Cis-gangetic India, as *Bulimus* [*Buliminus*] *putus*, sp. n., nearly allied to *B. cœnopictus* (Bens.), and is particularly rich in species of the group *Plectopylis* [*Corilla*].

The author defends (on pp. 101–104) the theory of specific centres.

Mr. W. Theobald, in a paper, "Observations on some Strictures by Mr. H. Blandford on my paper on the Distribution of Indian Gastropods," advocates the view of the sporadic origin of species, chiefly by quotations from L. Agassiz. Ibid. pp. 60–63.

Anthony, J. G. Descriptions of two new species of *Monocondylæa* and description of a new exotic *Melania*. Am. Journ. Conch. i. pp. 205–207, pl. 18. [Pegu.]

4. *Japan, Indo-China, and Malayan Archipelago.*

Martens, E. v. Neue Landschnecken aus Ostasien. Monatsb. Ak. Wiss. Berl. 1865, pp. 51–55.

Seventeen new species of *Cyclostomacea, Helicea*, and *Auriculacea*, from Japan, Siam, and the Indian Archipelago.

——. Ueber ostasiatische und neuholländische Paludinen. Mal. Blätt. xii. pp. 144–151.

The author gives a list of the species known to him of *Paludina* (s. str., = *Vivipara*) from Japan, China, Siam, the Philippine Islands, Celebes, Borneo, Sumatra, Java, and Australia, and makes remarks on their synonymy, particularly with regard to the recent publications of Reeve and Von Frauenfeld.

Morelet, A. Rectifications et additions à la faune malacologique de l'Indo-Chine. Journ. Conch. xiii. pp. 19–23, 225–228.

Eleven new species of land- and freshwater shells from Siam, Cambodja, and Cochinchina. Remarks on some species of *Unio*.

Wallace, A. R. List of the land-shells collected by Mr. Wallace in the Malay Archipelago, with descriptions of the new species by Mr. Henry Adams. Proc. Zool. Soc. 1865, pp. 405–416, with one plate.

One hundred and twenty-five species. A great number of them were entirely new, and others very imperfectly known to science, at the time of their discovery by Mr. Wallace; but most were previously described by Hr. Pfeiffer in former volumes of the same journal, so that eight species only remained for description in this paper. The localities of many species of land-shells of the Indian Archipelago were, until the most recent time, very imperfectly or erroneously given by European writers; therefore exact statements, such as made by Mr. Wallace, are of great value to science. The Recorder, who visited most of the same islands a short time after Mr. Wallace, is able to confirm a great number of these statements by personal observation. It is most interesting that the very singular *Bulimus crystallinus* (Reeve), the locality of which was hitherto unknown, has been found alive in the island of Waigiou.

5. *Polynesia.*

Gassies, J. B. Diagnoses d'espèces provenant de la Nouvelle Calédonie. Journ. Conch. xiii. pp. 210–212.

Mousson, A. Coquilles terrestres et fluviatiles de quelques îles de l'océan Pacifique, recueillies par M. le Dr. Graeffe. Journ. Conch. xiii. pp. 164–209.

Forty-five species inhabiting the groups of the Samoa or Navigator Islands, and fifty-three from the Feejee Islands, are enumerated, many of them being new. Valuable remarks on the natural affinities of many species are added, the author being one of those who first pointed out and thoroughly understands the intimate connexion between natural groups and geographical distribution of land-shells. Small species of *Nanina* [*Trochomorpha*] and *Helix*, some of *Partula*, *Omphalotropis*, and *Helicina*, form the prominent features among the land-shells of those two groups of Polynesian islands. The Feejee group, besides, has certainly one, perhaps several, large species of *Bulimus* (*B. fulguratus*) allied to those of New Caledonia; the Samoa group some small *Cyclophorus* and *Pupa*. Among the freshwater shells the *Melaniæ*, *Neritinæ*, and *Navicellæ* prevail (that is to say, those inhabiting running water), just as in the Moluccas. *Limnæacea*, *Paludinæ*, or *Ampullariæ* have not been found hitherto. The Feejee group agrees further with New Caledonia, New Guinea, and the Moluccas in having large species of *Cyrena* (*Batissa*).

Crosse, H. Description d'espèces nouvelles, provenant des îles Gambier. Journ. Conch. xiii. pp. 217–224.

M. Paz collected in these islands, some years ago, seven species of land-shells:—2 *Cyclophorus*, 1 *Helicina*, 1 *Hydrocena* [*Assiminea*?], 1 *Helix*, 1 *Pupa*, 1 *Tornatellina*. Four of them proved to be new.

Pease, W. H. Descriptions of new species of *Phaneropneumona* inhabiting Polynesia. Am. Journ. Conch. i. pp. 287–291.

6. *Australia.*

Cox, J. C. Descriptions of seven new species of Australian land-shells. Proc. Zool. Soc. pp. 695–697.

Martens, E. v. On the Australian species of *Paludina*. Ann. & Mag. Nat. Hist. xvi. pp. 255 & 256, and Mal. Blätt. xii. pp. 150 & 151.

7. *Tropical Africa.*

Dohrn, H. List of the land- and freshwater shells of the Zambesi and Lake Nyassa, Eastern Tropical Africa, collected by Dr. J. Kirk. Proc. Zool. Soc. 1865, pp. 231–234.

Nine land- and eleven freshwater shells, most being identical with species from Mozambique: six are described as new. *Paludina bulimoides* (Olivier) from the River Rovuma is the only exclusively Nilotic species. *Melania tuberculata* (Müll.) also in Lake Nyassa.

Lea, F. Descriptions of six new species of *Unionidæ* from Lake Nyassa, Central Africa. Proc. Acad. Nat. Sc. Philad. 1864, pp. 108 & 109.

——. Descriptions of two new species of *Unionidæ* of South Africa. Ibid. p. 113.

8. *Tropical America.*

Bland, T. Notes on certain Terrestrial Mollusca, with descriptions of new species. Ann. Lyc. Nat. Hist. New York, viii. 1865, pp. 155–170.

Contains conchological and anatomical observations on some *Proserpinidæ*, a new *Stenopus*, the genus *Cylindrella*, some species of *Helix*, *Pupa*, and *Succinea* from North America, Mexico, and Venezuela.

Arango, R. Catalogo de los moluscos terrestres y fluviales de la isla de Cuba. Poey, Repert. Fisico-nat. de la Isla de Cuba*, 1865, July, pp. 81–112; August, pp. 123–144; September, pp. 145–149.

This Catalogue contains not only names but also the synonymy, carefully compiled, and some valuable notes on specific distinctions. The author enumerates :—

121 *Cyclostomacea*, 10 *Truncatellæ*, 78 *Helicinæ*, 2 *Proserpinæ*, 10 *Auriculacea*, 79 *Helix*, only 3 *Bulimus*, but 27 *Macroceramus*, 2 *Pineria*, 1 *Pupoides*, 5 *Melaniella*, 1 *Balea*, 1 *Pseudobalea*, 14 *Stenogyra*, 2 *Spiraxis*, 2 *Achatina* [*Liguus*], 13 *Oleacina* [*Glandina*], 3 *Streptostyla*, 6 *Subulina*, 1 *Euspiraxis*, 2 *Cæcilianella*, 17 *Pupa*, 3 *Vertigo*, 83 *Cylindrella*, 7 *Succinea*, 2 *Vaginulus*, 2 *Limnæus*, 3 *Physa*, 7 *Planorbis*, 4 *Ancylus*, 3 *Gundlachia*, 1 *Poeya*, 3 *Ampullaria*, 1 *Paludina*, 2 *Paludinella*, 2 *Amnicola*, 5 *Melania*, 3 *Neritina*, 2 *Unio*, and various not yet determined species of *Pisidium*.

Poey, F. Descripcion de tres moluscos terrestres de la isla de Cuba. Ibid., June, pp. 69–71.

Presas, M. Descripcion de una espécie nueva de molusco terrestre. Ibid. Nov. p. 220. [*Cylindrella garciana.*]

——. Moluscos terrestres y fluviales encontrados per Gundlach y Presas en una excursion de Ceiba Mocha al Pan y al Palenque. Ibid.

Thirty-eight species are named, five of them new, but no description of them is added.

Pfeiffer, L. Zur Molluskenfauna von Cuba. Mal. Blätt. xii. pp. 118–121.

Descriptions of eight new land-shells collected by Wright.

Martens, E. v. Ueber die mexikanischen Binnen-Conchylien aus den Sammlungen von Deppe und Uhde im Berliner Museum. [On the Mexican land- and freshwater shells, collected by Deppe and Uhde, in the Zoological Museum of Berlin.] Malak. Blätter, xii. pp. 1–78, with a plate. Additional remarks, ibid. pp. 151–152.

The author commences with historical remarks on collectors and others who have contributed to the knowledge of Mexican land- and freshwater shells. He enumerates fifty-one species of land-shells, thirteen from fresh water, and five from brackish water. Most of them are described. The terrestrial and freshwater species are generally peculiar to Mexico, with a few exceptions, those from brackish water common to all the shores of the Caribbean sea, with exception of one *Cyrena*, which is *probably* an inhabitant of brackish water, like the large eastern

* On this Journal which has just been started, see p. 174.

species (*Batissa*). A probably incomplete list of 100 species of land-shells and thirty-three from freshwater, known from other more recent collections, is added, with some general remarks on the Mexican fauna and its resemblance partly to that of North America, partly to that of the tropical parts of America. The southern provinces Chiapa, Tabasco, and Yucatan are excluded from this list, as belonging rather to Central America proper. Much attention has been paid to some older synonyms of Mexican species in the works of Valenciennes, Beck, and others.

Gabb, W. M. Description of three new species of Mexican land-shells. Am. Journ. Conch. i. pp. 208 & 209.

9. *North America.*

(Particular faunas.)

Newcomb, W. Descriptions of nine new species of *Helix* inhabiting California. Proc. Californ. Acad. Nat. Sc. iii. 1864, pp. 115–119.

This paper contains also a list of eighteen other Californian species of *Helix*, contained in the State Collection [one of which only, *H. chersina* (Say), occurs also in the eastern provinces of the United States].

——. Catalogue of *Helices* inhabiting the west coast of America, north of Cape St. Lucas and west of the Rocky Mountains, together with remarks upon some of the animals and their special distribution. Am. Journ. Conch. i. pp. 342–350.

Forty-three species, one admitted to be identical with the European *Hyalina fulva* (Drap.). [Most of them belong to one natural group of the genus *Helix*, *Arionta* (Leach), type *H. arbustorum*]. The variations of size in the same species are given by measurements of the maximum and minimum in seven species, p. 350.

Tryon, G. W. Catalogue of Mollusca collected by Prof. D. S. Sheldon at Davenport, Iowa. Am. Journ. Conch. i. pp. 68–70.

One hundred and two species, of which more than one half (52) are *Unionidæ*. These latter exhibit frequently warm pink or purple nacres and a bright yellow or green polished and splendidly rayed epidermis. *Melantho subsolida* (Anthony) attains here to 2 inches in length. *Vivipara intertexta* (Say) has not been reported before from north of Louisiana. *Unio higginsii* and *Somatogyra* [*Amnicola*] *depressa* have not been discovered elsewhere.

Currier, A. O. Catalogue of the Mollusca of Grand Rapidan, Michigan. Am. Journ. Conch. i. pp. 292–296.

A list of 125 species, containing 43 *Unionidæ*, 39 land-shells (*Helicidæ* and *Pupidæ*, 1 *Carychium*, no *Cyclostomidæ*), 24 *Limnæidæ*, 10 *Corbiculidæ* (*Pisidium* and *Sphærium*), and 9 operculated Gastropods. Five species are admitted to be identical with European ones: *Hyalina viridula* (Menke), *H. fulva* (Drap.), *Zua subcylindracea* (Chemnitz) [*lubrica*, Müll.; *Helix subcylindrica* of Linné is either this species or a *Truncatella*; *Turbo cylindraceus* (Chemnitz) is a *Megalomastoma*, but a species called *subcylindracea* does not exist in the work of Chemnitz], *Limnæa stagnalis*, and *Bulimus hypnorum*.

Morse, E. S. Observations on the terrestrial Pulmonifera of Maine, including a catalogue of all the species of terrestrial and fluviatile Mollusca known to inhabit the State. Journ. Portland Soc. Nat. Hist. vol. i. no. 1. Portland, Maine, 1864, 8vo, pp. 63, with ten plates illustrating the teeth of the Radula, and numerous woodcuts representing the buccal plates.

Since the publication of the 'Record' for the preceding year, we have obtained a copy of this valuable paper, which seems to have been also published separately, and which contains much original information concerning the jaws (buccal plates) and teeth of the inoperculated land-shells, the most interesting of which will be mentioned subsequently in the special part. The author goes rather far in establishing new genera and distinguishing the North American species from the European, *Helix hortensis* and *Hyalina cellaria* being the only two which he acknowledges as common to both.

(Pulmonata.)

Binney, W. G. Descriptions of new species of North American land- and freshwater shells. Am. Journ. Conch. i. pp. 49–51, plate 7. [*Paludina, Cylindrella, Planorbis, Physa.*]

Lea, F. Description of six new species of *Succinea* of the United States. Proc. Acad. Nat. Sc. Philad. 1864, April, pp. 109–111.

——. Description of five new species of *Lymnæa* of North America. Ibid. p. 113.

Tryon, G. W. Descriptions of new species of North American *Limnæidæ*. Am. Journ. Conch. i. pp. 223–231.

Nineteen species, most from California; all are figured.

——. Catalogue of the species of *Limnæa* inhabiting the United States. Ibid. pp. 247–258.

Fifty species, those from Greenland and Mexico included. Two are identified with European species: *L. stagnalis* (L.) = *appressa* and *jugularis* (Say) and *L. palustris* (Müll.) = *fragilis* (Haldeman), both occurring in the Atlantic, Middle, and Pacific States of the Union.

Lea, F. Descriptions of twenty-four new species of *Physa* of the United States and Canada. Proc. Acad. Nat. Sc. Philadelphia, 1864, April, pp. 114–116.

Tryon, G. W. Catalogue of the species of *Physa* inhabiting the United States. Am. Journ. Conch. i. pp. 165–173. Sixty species.

(Melanidæ = Strepomatidæ.)

Tryon, G. W. Observations on the family of *Strepomatidæ*. Am. Journ. Conch. ii. pp. 97–135.

Four hundred and sixty-four species, all North-American. About two-thirds are inhabitants of the upper Tennessee river and its branches in East Tennessee and North Alabama, and of the Coosa river in the latter State, "the great centre of this kind of animal life." Very few species have been found so far north as the Ohio river, and they are nowhere numerous within a hundred miles of the sea-coast. The species of the North Atlantic States, the very few forms of the great northern lakes, and the species of the Pacific States belong all to the *Goniobasic* section, which occupies also the entire southern country, with one or two species in Mexico and Cuba. The *Trypanostomoid* section is much more restricted, being confined principally to the streams tributary to the Mississippi and the Gulf of Mexico: the Mississippi appears to form the western boundary. The *Trypanostomoid* forms attain their maximum development in size and number in the Tennessee river, the *Goniobasic* forms in the Coosa river: the most striking genus of the former, *Io*, inhabits the Tennessee only, *Schizostoma* the Coosa river only; and neither of them is found elsewhere. One species only, *Goniobasis sordida* (Lea), is common to both sides of the Mississippi. No species inhabits the New England States; those of the great lakes, few in number and small in size, but very numerous in individuals, fade out as completely on approaching the Ohio as do the southern species, a fact which favours the theory of a separate creation.

An abstract on the systematic contents will be given subsequently, in the special part.

Anthony, J. G. Descriptions of two new species of *Goniobasis*. Am. Journ. Conch. i. p. 36, pl. 1. figs. 1–3.

Haldeman, S. S. Description of two new species of *Goniobasis*. Ibid. p. 37, pl. 1. figs. 4–7.

Tryon, G. W. Description of new species of *Strepomatidæ*. Ibid. p. 38, pl. 1. figs. 8 & 9.

(Unionidæ.)

Lea, F. Descriptions of eight new species of *Unio* of the United States. Proc. Acad. Nat. Sc. Philad. 1865, pp. 88 & 89.

Anthony, J. G. Descriptions of new species of North American *Unionidæ*. Am. Journ. Conch. i. pp. 155–164, pls. 12–16.

b. *Marine Mollusca.*

1. *Europe.*

Jeffreys, John Gwyn. British Conchology, or an account of the Mollusca which now inhabit the British Isles and the surrounding seas. London: J. van Voorst, 8vo.

Vol. I. Land and freshwater shells. 1862, pp. 341.

Vol. II. Marine shells, comprising the Brachiopoda, and Conchifera from the family of Anomiidæ to that of Mactridæ. 1863 (1864)*, pp. 466.

Vol. III. Marine shells, comprising the remaining Conchifera, the Solenoconchia, and Gasteropoda as far as Littorina. 1865, pp. 394.

The object of this work is identical with Forbes and Hanley's celebrated History of British Mollusca; but the high price of the latter and the mass of additional information gathered by Mr. Jeffreys were reasons sufficient to induce him to enrich our literature with a work which also in many other respects is distinguished from that of his predecessors. The work is illustrated by twenty-seven plates, the author having been obliged to limit the illustrations to representatives of each genus, in order to diminish the cost of the work: the greater part are taken from drawings published in the works of Forbes & Hanley and of H. & A. Adams. The references are generally limited to the first author of the specific name and to Forbes and Hanley's work, the remainder of the synonymy being reduced to occasional remarks. The descriptions are short, but quite sufficient. The author is guided by very sound principles as regards the nomenclature, the adoption or rejection of the older names, and

* The second volume was not mentioned in the preceding Record, because it is dated 1863 on the titlepage; however, we have since been informed that it was really issued in 1864.

the distinction of species and varieties. The great merit of the work is not only the actual increase of the number of British species (many being due to the personal researches of the author), but *the large amount of information regarding the habits and geographical distribution of the several species, the result of long study and indefatigable energy*, which extended beyond the United Kingdom to parts of Germany and Italy.

The first volume contains a copious introduction, giving detailed information on the general objects of conchology, and treating in separate chapters of classification, organization, and habits, growth and composition of the shells, relations to mankind and animals, geographical distribution and habitat. The numerous poetical quotations form the only portion of the work which might be missed without inconvenience.

The British species not contained in the work of Forbes and Hanley are the following:—

Vol. I. *Sphærium ovale* (Fér.), *Pisidium roseum* (Scholtz), *Vertigo moulinsiana* (Dupuy).

Vol. II. *Argiope decollata* (Chemn.), *A. capsula* (Jeffr.), *Pecten testæ* (Bivona), *Lima sarsii* (Lovén), *L. elliptica* (Jeffr.), *Limopsis aurita* (Brocchi), a genus not previously known as British, *Arca obliqua* (Phil.), *Lepton sulcatulum* (Jeffr.) and *L. clarkiæ* (Clark), *Axinus croulinensis* (Jeffr.), *Cardium papillosum* (Poli).

Vol. III. *Neæra rostrata* (Spengler), *Panopæa plicata* (Montagu), *Teredo pedicellata* (Quatref.), *Lepeta cæca* (Müll.), *Trochus amabilis* (Jeffr.), *T. duminyi* (Récluz).

The synonymy contains much new information as far as British authors are concerned, and is frequently founded on inspection of the typical specimens. But we cannot always agree with the author in his references to foreign works; for instance, in the following cases:—

Vol. i. pp. 132–135. *Limax marginatus* (Müller) is *L. arborum* (Bouchard), common in Norway, as we have shown in Malakozool. Blätt. iii. 1856, p. 77. *L. marginatus* (Drap.) is different from it and identical with *L. sowerbii*. *L. marginatus* (Drap.) is different from it and identical with *L. sowerbii*. *L. arborum* more frequently than *L. sowerbyi*.

Vol. i. p. 214. *Helix caperata* does not "range through Germany," but is foreign to it. The nearest approach it makes to Germany is in the botanical garden at Brussels, as far as we know (Malak. Bl. vi. 1859, p. 217). *Helix nilssoniana* is by no means synonymous with *H. ericetorum*, but identical with *H. striata* of Ad. Schmidt = *costulata* (Ziegl.), as we have shown from Swedish specimens, *ibid.* p. 122. This and *H. candidula* (Stud.) are the only true German species which can be confounded with *H. caperata* on superficial examination.

Vol. iii. pp. 311 & 312. *Trochus cinerarius* (L.) does not occur in the Mediterranean or in the Black Sea; Mediterranean authors, misled by their desire of recognizing the Linnean species, have applied that name to species

widely different from the well-known *cinerarius* of Northern Europe, especially to *T. adriaticus* (Phil.). *T. cinerarius* of Born is very probably the *Trochus biasoletti* (Phil.) from the Adriatic; it has been registered under the new name *T. albidus* by Gmelin. *T. cinerarius* of Olivi cannot be made out; perhaps it is *T. adriaticus* (Phil.), a common species at Venice, which otherwise would have been omitted altogether in Olivi's list. It cannot be *T. varius*,—first, because a *T. varius* is enumerated by Olivi; and secondly, because this species is not at all frequent in the Adriatic. *Monodonta ægyptiaca* (Payraudeau) has nothing to do with *Trochus varius*, but is a very distinct species peculiar to the Mediterranean=*T. fanulum* (Gmel.).

Jeffreys, J. G. Report of the Committee for exploring the coasts of Shetland by means of the dredge. Report of the British Association for the Advancement of Science for 1863: 1864, pp. 70–81. (Abstract, Journ. Conch. xiii. pp. 362–364.)

The number of species of shells obtained by dredging on those coasts has been considerably increased; some have never been found in a living state in any other locality, but were known from fossils only; one, *Jeffreysia globularis*, has never been found elsewhere. Some striking exceptions to the general rule that the inhabitants of considerable depths have dull and pale colours, are mentioned.

——. Further Report on Shetland Dredgings. Ibid. (1864) 1865, pp. 327–342.

Kellia cycladea, *Trochus amabilis*, *Rissoa sarsi* and *jeffreysi*, *Eulima stenostoma*, *Cerithiopsis costulata*, *Nassa haliaëti*, *Mangelia nivalis*, *Cylichna alba*, a new species of *Amphisphyra*, *Clio retusa*, and *Cl. infundibulum* are the most interesting species of Mollusca obtained. *Isocardia cor*, *Natica monilifera*, *N. sordida*, and *Defrancia gracilis* occurred in a living state. The eastern coasts of Shetland are quite beyond the limits of the Gulf-stream, nevertheless its marine fauna has undoubtedly also a southern character, which is to be traced in some other way, and perhaps to a former geological period. *Lepeta cæca* has been found for the first time in this district, dead, but apparently fresh. Living Mollusca taken from considerable depths did not appear to be affected by the sudden change of bathymetrical conditions; on the contrary, they tried to escape from the bottom of the vessel, and quickly found their way up the sides to the open air; some floated with the sole of the foot uppermost. The amount of air held in solution by the water increases with the depth, on account of the increase of pressure; and therefore those mollusks do not find in the surface-water the same supply of atmospherical air as they have been accustomed to.

Brady, G. S. Report on Deep-Sea Dredging on the coasts of Northumberland and Durham. Report on the Mollusca, by J. Alder. Nat. Hist. Transactions of Northumberland and Durham, vol. i. pp. 5–11.

During three years' dredging one beautiful Nudibranch, the *Hero formosa* of Lovén, has been added to the British fauna; and four testaceous Gastropods, *Eulima nitida*, *E. gracilis*, *Rissoa cimicoides*, and *Chiton albus*, have been found for the first time on the north-east coast; but a few fine and rare species, including *Fusus turtoni*, *F. norvegicus*, *F. berviciensis*, and *Buccinopus dalei*, for which this locality has obtained some celebrity, were not met with, probably because they inhabit rocky ground. There have been obtained 2 species of Cephalopods (*Sepiola*), 84 of Gastropods, and 65 of Lamellibranchiates, the list of which is given.

Of 135 *Testacea* 30 are now living in the Arctic seas, 120 are found on the shores of Norway and Sweden; about 20, which are not likely to be overlooked, are absent on the south coast of England; upwards of 50 are met with in the glacial and post-pliocene beds of this country, and 82 are found fossil in the Crag.

Meyer, H. A., and Möbius, K. Fauna der Kieler Bucht. Vol. I. Die Hinterkiemer oder Opisthobranchia. Leipzig, 1865, fol. pp. xxx and 88, with twenty-six plates.

A very fine work. The introduction contains geographical, physical, and meteorological descriptions of the harbour of Kiel; the more common seaweeds, Zostera and Fuci, are mentioned: the various kinds grow on different spots of the harbour, and offer a home to certain groups of the smaller animals. The authors enumerate a good many species of all classes observed hitherto in the harbour, and indicate the circumstances under which they make their appearance. Five regions can be distinguished,—1, the sand of the beach; 2, the region of the green Zostera full of life, depth 3–4 fathoms; 3, that of the decayed and dissolving Zostera, depth 3–6 fathoms; 4, the region of the red Florideæ, depth 5–10 fathoms; and, finally, 5, that of the black mud. Only one of the species observed has hitherto not yet been found in the German Ocean, on the coasts of England or Norway. The article on the methods of fishing and collecting deserves the attention of all practical naturalists and collectors.

Taslé. Supplément au Catalogue des Mollusques observés dans le département de Morbihan. Vannes, 1864, 8vo, pp. 10. Extrait du Bull. Soc. Polymath. (1864). See Zool. Record, i. p. 201.

Forty-six species are enumerated, the most remarkable of which is *Cassidaria rugosa=tyrrhena*, Gmel. It is difficult to conceive how the author can persist in maintaining that *Tel-*

lina radiata and *Monoceros crassilabrum* are living on the coast of the Channel.

Cailliaud, F. Catalogue des Radiaires, des Annélides, des Cirrhipèdes et des Mollusques marins, terrestres et fluviatiles recueillis dans le département de la Loire-inférieure. Nantes, 1865, 8vo, pp. 323, with five plates.

Particular attention is paid to the boring mollusks. *Fissurella græca* is said to exhibit, when very young, the characters of the genus *Rimula*. As Mediterranean species still living on this part of the west coast of France, but not extending to Great Britain, may be named *Cerithium vulgatum, Triton nodifer, T. cutaceus,* and *Cassidaria tyrrhena*.

Fischer, P. Faune conchyliologique marine du département de la Gironde et des côtes du sud-ouest de la France. Paris, 1865, 8vo, pp. 88. (Originally published in 'Actes de la Société Linnéenne de Bordeaux,' vol. xxv.)

One hundred and seventy-seven species have been observed by the author, among which we find *Cassis saburon, Ranella gigantea, Triton corrugatus,* and *Purpura hæmastoma*. *Nassa gallandiana* (Fischer, Journ. Conch. 1863) is new to the French fauna. This fauna may be said to be a mixture of Mediterranean and Celtic species. Much attention is paid to the experiments of oyster-breeding.

Brusina, Spiridione. Conchiglie dalmate inedite. Verhandl. zool.-bot. Gesellsch. Wien, 1865, pp. 3–42.

One hundred and eleven species are mentioned, forty-five of which are considered to be entirely new, the others are said to have been hitherto known from the Tyrrhenian part of the Mediterranean only, but not from the Adriatic. As the author establishes some species from differences of colour only, and himself confesses to have a short time ago regarded as new species the young specimens of the well-known *Trochus fermonii* (Payr.), no great reliance is to be placed on his opinion as regards the real distinctness of some of his new species.

Schröckinger. List of Austrian Mollusca. See above, p. 221.

2. *Subtropical and Tropical parts of the Atlantic.*

Reibisch, Th. Uebersicht der Mollusken, welche bis jetzt an und auf den Capverdischen Inseln gefunden worden sind. Mal. Blätt. xii. pp. 125–133.

A list of the species of land- and sea-shells hitherto found on the Cape Verde Islands, including a collection made there by Dr. Alfons Stübel of Dresden. The author enumerates 21 marine Bivalves, 76 marine Gastropods, 3 freshwater and 8 land-snails, 1 Cephalopod. The freshwater shells are *Melania* and *Limnæus*, the land-snails 1 *Pupa*, and the others *Helix*; no species of *Cyclostomacea* has been found.

Jones, J. M. Contributions to the Natural History of the Bermudas. Part I. Mollusca. Trans. Nov. Scot. Inst. Nat. Sc. Halifax, vol. ii. part 1, 1864.

We regret that we have not had an opportunity of examining this memoir; it is said to contain 120 species, probably most of them being sea-shells.

Crosse, H. Description d'espèces nouvelles de la Guadeloupe. Journ. Conch. xiii. pp. 27–38.

3. *Red Sea and Indian Ocean.*

Vaillant, L. Recherches sur la faune malacologique de la baie de Suez. Journ. Conch. xiii. pp. 97–127.

This memoir contains a list of eighty-seven species, four of which are new, and general remarks on the depths and nature of the bottom near Suez. Accurate observations on the present mollusk-fauna of the Red Sea are of the greater interest, as it is not improbable that within a few years a communication will be opened between it and the Mediterranean. The Recorder is obliged to remark on this occasion that very erroneous ideas are commonly accepted with regard to this fauna. The 'Description de l'Egypte' contains valuable figures of shells, but it does not give any information as to which of them belong to the Red Sea fauna and which to the Mediterranean, as the letterpress was written long afterwards, and by persons who had no access to the original notes. A similar misfortune happened with regard to the collections made by Ehrenberg: the shells from both seas were mixed when brought home, during the absence of the collector; consequently the list of species common to the Red Sea and the Mediterranean, given by R. A. Philippi in his otherwise very praiseworthy work on the shells of Sicily and based upon these materials, does not deserve credit.

Fischer, P. Note sur les faunes conchyliologiques des deux rivages de l'isthme de Suez. Journ. Conch. xiii. pp. 241–248.

The author gives lists of shells collected at Port Said and at Suez, and shows that the two faunas are quite distinct at present.

Frauenfeld, G. von. Ueber zwei Meeresschnecken von St. Paul. Verhandl. zool.-bot. Ges. Wien, xv. pp. 893–895.

[*Ranella* and *Terebratula*, from the island of St. Paul.]

Issel (*op. cit.* see p. 224) enumerates seventeen species from the southern part of the Persian Gulf; most of them are identical with Red-Sea species; two are new.

4. *Seas of Japan and China.*

Adams, A. On some new genera of Mollusca from the Seas of Japan. Ann. & Mag. Nat. Hist. xv. pp. 322–324.

Fraser, L. List of species of Mollusks recently collected by Mr. R. Swinhoe in Formosa. Proc. Zool. Soc. 1865, p. 196.

Ninety-six species.

5. *Tropical Polynesia.*

Pease, W. H. Descriptions of new genera and species of Marine Shells from the islands of the Central Pacific. Proc. Zool. Soc. 1865, pp. 512–517.

Carpenter, P. P. Description of two species of *Chitonidæ* from the collection of W. Harper Pease. Ibid. p. 511.

Souverbie, S. M., et Montrouzier, R. T. Descriptions d'espèces nouvelles de l'Archipel Calédonien. Journ. Conch. xiii. pp. 150–161.

6. *Southern Australia.*

Angas, G. F. On the Marine Molluscan Fauna of the province of South Australia: with a list of the species known up to the present; together with remarks on their habitats and distribution, &c. Proc. Zool. Soc. 1865, pp. 155–190 and 643–657.

Two hundred and thirty-one species of Cephalopods and Gastropods, ninety-six species of Conchifers, and one Brachiopod (*Waldheimia flavescens*).

——. Descriptions of ten new species of Shells, chiefly from the Australian seas. Ibid. pp. 55–58.

——. Descriptions of four new species of Marine Shells from South Australia. Ibid. pp. 154 & 155.

——. Descriptions of two new species of Marine Bivalve Shells from South Australia. Ibid. p. 697.

Crosse, H., and Fischer, P. Description d'espèces nouvelles de l'Australie méridionale. Journ. Conch. xiii. pp. 38–55.

——. Descriptions d'espèces nouvelles d'Australie, provenant de la collection de M. Geo. French Angas. Ibid. pp. 422–429.

7. *Pacific Coast of America.*

Carpenter, P. P. Supplementary Report on the present state of our knowledge with regard to the Mollusca of the west coast of North America. Report of the British Association for the Advancement of Science for 1863 (1864).

——. Diagnoses of new species and a new genus of Mollusks from the Reigen Mazatlan Collection: with an account of additional specimens presented to the British Museum. Proc. Zool. Soc. 1865, pp. 268–273.

——. Descriptions of new Marine Shells from the coast of California. Proc. Calif. Ac. Nat. Sc. vol. iii. 1864, pp. 155–159, 175, 176.

——. Diagnoses of new forms of Mollusca from the Vancouver District. Proc. Zool. Soc. 1865, pp. 201–204; Ann. & Mag. Nat. Hist. xv. pp. 28–32.

——. Diagnoses of new forms of Mollusca from the west coast of North America, first collected by Col. E. Jewett. Ibid. pp. 177–182, 394–400.

——. Descriptions of new species and varieties of *Chitonidæ* and *Acmæidæ* from the Panama collection of the late Prof. C. B. Adams. Ibid. pp. 274–277.

——. Diagnoses of new species of Mollusks, from the west tropical region of North America, principally collected by the Rev. J. Rowell. Ibid. pp. 278–282.

——. Diagnoses de Mollusques nouveaux provenant de Californie et faisant partie du Musée de l'Institution Smithsonienne. Journ. Conch. xiii. pp. 129–148.

——. Diagnoses Specierum et Varietatum novarum Molluscorum, prope Sinum Pugetianum a Kennerlio Doctore, nuper decesso, collectorum. Proc. Ac. Nat. Sc. Philad. 1865, pp. 54–64.

C. Families, Genera, and Species.

CEPHALOPODA.

Seeley, H. On the significance of the septa and siphuncle of Cephalopod Shells. Report of Brit. Assoc. Advanc. Sc. 1864, Trans. Sect. p. 100; also in full in Quart. Journ. of Science, 1864.

From a discussion of analogous structures in mollusks generally, and from the anatomy of the Nautilus and other Cephalopods,

the author concludes that the chambered and siphonated character of some cephalopod shells is entirely due to the periodic development of the organs for reproduction,—the formation of the spaces for chambers being the result of enlargement of the ovaries and testes, and the formation of the siphuncles a necessary result of their collapse after the contents of those organs are extruded.

Hensen, Von. Ueber das Auge einiger Cephalopoden. [On the eye of some Cephalopods.] Zeitschr. Wiss. Zool. xv. pp. 155–242, pl. 12–21. (Abstract in Ann. Sc. Nat. iv. pp. 374–381.)

Keferstein, W. Beiträge zur Anatomie des *Nautilus pompilius*. [Contributions to the anatomy of *Nautilus pompilius*.] Nachricht. K. Gesellsch. Wiss. Göttingen, 1865, August, pp. 355–375, with six plates.

A careful description of the external and internal parts of a female specimen.

Argonauta. Mr. G. B. Sowerby (Thesaurus, part xxiii. pp. 263 & 264, pls. 257 & 258) admits and figures six species:—*A. argo* (L.), *tuberculosa* (Lam.), *nodosa* (Solander), *gondola* (Dillw.), *hians* (Dillw.), *owenii* (Adams & Reeve), and *gruneri* (Dunker). The Recorder does not think that the ear-like prolongations at the sides of the mouth are of specific value, having observed them more or less developed and entirely wanting in specimens of *A. argo*, which in other respects were quite identical; the same variation occurs in specimens of *A. tuberculosa*; therefore this character does not appear to be sufficient for the specific distinction of *A. gondola* and *A. hians*.

PTEROPODA.

Spirialis recurvirostra, sp. n., Costa, Rendic. Accad. Sc. fisiche e Matemat. Napoli, 1865, pp. 125 & 126. Allied to *S. clathrata* (Rang), being sculptured with the same fine network, but the pillar-lip more produced beneath and bent to the right. Operculum with a raised spiral line. Gulf of Naples. No measurements are given.

HETEROPODA.

Lacaze-Duthiers, H. Comment les Ianthines font leur flotteur. Ann. Sc. Nat. iv. pp. 329–341, pl. 15 (Ann. & Mag. Nat. Hist. xvii. pp. 278–285).

The author has observed that the float suspending the Ianthina on the surface of the water is increased by complicated movements of the anterior part of the foot, which result in forming an air-bubble inclosed in a glutinous matter; the Ianthina never swims, as many other Mollusca, by alternately dilating and contracting the foot, nor is it able to produce a float as long as it is below the surface of the water. These interesting observations were made on specimens in the aquarium of the author.

GASTROPODA.

Troschel, F. H. Das Gebiss der Schnecken zur Begründung einer natürlichen Classification. [The dentition of the Gastropoda as a base for a natural classification.] Vol. ii. part 1. Berlin, 1866 (Decemb. 1865), 4to, pp. 48, with four plates.

We announce with great pleasure the continuation of this highly valuable work, which contains the most extensive researches into the buccal characters of the cephalophorous mollusks. The first volume, containing the *Cephalopoda*, *Pteropoda*, *Heteropoda*, and *Gastropoda tænioglossa*, was published in the years 1856–1863. The introduction to the second volume contains, beside a short review of similar essays on classification by former authors, a recapitulation of the chief results gained by the special investigations recorded in the first volume. The author adopts two primary divisions of Gastropods,—the *monœcian* or hermaphroditic, and the *diœcian* Gastropods, or those in which the sexes are separate, on different individuals. There are some few exceptions, as *Valvata*, which is really hermaphroditic, but according to all other characters its systematic place is among the *G. diœcia tænioglossa*, as has been admitted by all authors. The *Gastropoda diœcia* are divided, according to the division of the radula (the so-called tongue), into six divisions, viz.:—1. *Tænioglossa*. 2. *Toxoglossa*. 3. *Rhachiglossa*. 4. *Ptenoglossa*. 5. *Rhipidoglossa*. 6. *Docoglossa*.

The *Tænioglossa*, characterized by seven (very rarely three or nine) plates in each transverse row of the radula, elevated and cutting by their elevated edge, are subdivided thus:—

I. Rostrum non-retractile.
  1. Lungs: (*Aciculacea*), *Pomatiacea*, *Cyclotacea*, *Cyclostomacea*.
  2. Lungs and gills: *Ampullariacea*, ? *Truncatellacea*.
  3. Gills only.
    a. Lateral plates of the radula ribbon-shaped, larger at the outer end: *Valvatæ*, *Paludinæ*, *Bythiniæ*, *Lithoglyphi*, *Hydrobiæ*, *Ancyloti*, *Thiaræ*, *Pachychili*, *Melaniæ*, *Rissoæ*, *Littorinæ*, *Cerithiacea*, *Potamides*, *Planaxes*, *Turritellæ*, *Fossari*, *Hipponycidæ*.
    b. Lateral plates flat, with long pectinate denticulations: *Pediculariacea*, *Amphiperasidæ* [*Ovula*].
    c. Lateral plates hook-shaped, more or less distinctly triangulated: *Vermetacea*, *Capulacea*, *Trichotropidæ*.
    d. Lateral plates very long and narrow, rather filiform, frequently grooved: *Onustidæ* [*Phorus*], *Alata* [*Strombus*], *Aporrhaidæ*.

II. Proboscis retractile and inverted from the point.
  a. Lateral plates hook-shaped: *Velutinidæ, Naticacea, Cypræacea, Triviacea.*
  b. No lateral plates: *Marseniadæ* [*Coriocella*].
III. Proboscis retractile and inverted from the base: *Cassidea, Doliacea, Ranellacea, Tritoniacea, Sycotypidæ* [*Ficula*].

The author gives the rank of families to all the groups enumerated; but we think that most of them may be conveniently regarded simply as genera, and that the greater part of the sections distinguished by *a*, *b*, &c. may form natural families.

The present part of the work treats of the *Toxoglossa*, containing the families *Conoidea*, *Terebracea*, and *Cancellariacea*, or the Lamarckian genera of the same name. *Halia priamus* is, with some doubts, inserted as a distinct family between the *Terebracea* and *Cancellariacea*, the author referring to the investigations of M. Fischer (Journ. Conchyl. 1858). *Admete* is separated as a fifth family, *Admetacea*. The characters common to them are: two rows of long subulate plates in the interior of the mouth, mostly convoluted and therefore hollow, acting as a conducting apparatus for a venomous fluid secreted by a peculiar gland, their base attached to a long filament which resists the action of caustic potash. No jaws. The dentition of thirty-five species has been examined and figured.

Stimpson, W. On certain genera and families of Zoophagous Gastropods. Am. Journ. Conch. i. pp. 55–64, with two plates.

Contains very valuable information, chiefly on the lingua dentition of some *Muricidæ* and *Buccinidæ*, and a new genus of *Dentalidæ*.

Order PECTINIBRANCHIATA.

Suborder Proboscidifera.

Muricidæ.

Mr. W. Stimpson proposes to limit this family to the genera with a thick, solid rhachidian [median] tooth and only a single dentiform lobe on the lateral tooth, namely to *Murex*, *Typhis*, and *Trophon*, and to exclude *Neptunea*, *Strombella*, *Clavella*, *Pisania*, *Pollia*, *Tritonidea*, and *Engina*, which may form a subfamily, *Neptuniinæ*, in the family *Buccinidæ*. The examination of the teeth shows that *Colus* belongs to the *Fasciolariidæ*. *Ranella caudata* (Say) and *R. muriciformis* (Brod.) are to be transferred to the *Muricidæ* as a distinct genus, *Eupleura*, which name had been given by H. and A. Adams, who regarded them as a subgenus of *Bursa* (*Ranella*). Also *Fusus cinereus* (Say) proves, by its dentition, to belong to the *Muricidæ*; Mr. Stimpson proposes

for it the new genus *Urosalpinx*. The ovicapsulæ of the true *Muricidæ* are more or less pedunculated and erect, those of the *Buccinidæ*, including *Neptunea*, flattened, adhering by a broad basis, and generally piled one upon another. (Am. Journ. Conch. i. pp. 56–59.) The lingual dentitions of *Trophon gunneri*, *Tritonidea tincta*, *Eupleura caudata*, and *Urosalpinx cinereus* are figured on pl. 8. figs. 3–6; the ovicapsulæ of the last fig. 7.

Murex erinaceus is very destructive to oysters, boring with its proboscis a round hole in the oyster-shell, between the muscular impressions and the apex, in order to feed upon the flesh of the oyster. Fischer, Journ. Conchyl. xiii. pp. 5–8.

New species:—

Murex abyssicola, Crosse, Journ. Conch. xiii. p. 30, pl. 1. fig. 45, Guadeloupe; *M. fricki*, Crosse, ibid. p. 57, California; *M. inglorius*, Crosse, ibid. p. 213, pl. 6. fig. 4, locality unknown.

Ocinebra interfossa, Carpenter, Proc. Acad. Nat. Sc. Philad. 1865, p. 64, Puget Sound; *Ocinebra poulsoni*, Carpenter, Journ. Conch. xiii. p. 148, California.

Muricidea barbarensis, Gabb, Proc. Calif. Acad. Nat. Sc. 1865, California; *Muricidea dubia*, var. *squamulata*, Carpenter, Proc. Zool. Soc. 1865, p. 281, Cape St. Lucas, California.

Typhis yatesi, Crosse, Journ. Conch. xiii. p. 54, pl. 2. fig. 5, South Australia.

Fusus (*Pisania*) *crosseanus*, Souverbie (formerly regarded as an extreme variety of *P. billehcusti*), Journ. Conch. xiii. pp. 159–161, New Caledonia.—*Fusus helleri*, Brusina, Verhandl. zool.-bot. Ges. Wien, p. 8, Dalmatia; near *F. corallinus*.—*F. schrammi*, Crosse, Journ. Conch. xiii. p. 31, pl. 6. fig. 9, Guadeloupe; *F. lincolnensis*, Crosse, ibid. p. 53, pl. 2. f. 4, South Australia.

Chrysodomus rectirostris, Carpenter, Proc. Acad. Nat. Sc. Philad. 1865, p. 64, Puget Sound.

Siphonalia fuscozonata, Angas, Proc. Zool. Soc. 1865, p. 56, pl. 2. f. 7, 8, South Australia; *S. fuscotincta*, Carpenter, Ann. & Mag. Nat. Hist. xv. p. 399, Sta. Barbara, California.

Buccinidæ.

Mr. W. Stimpson regards as chief characters of this family the flat lamelliform rhachidian [median] tooth, and the lateral tooth armed with at least two strong dentiform lobes; he excludes thereby the *Nassidæ*, which would form a distinct family on account of the arched form and very numerous denticles of the rhachidian tooth, but establishes a new subfamily, *Neptuniinæ* (see above, p. 242), characterized by a more or less beaked shell and an ovate operculum with apical nucleus. Also the genera *Peristernia* (Mörch), formerly among the *Turbinellæ*, and *Busycon* (Bolten) = *Fulgur* (Montf., type *Pyrula canaliculata*, Lam.) are

to be referred to this subfamily. (Am. Journ. Conch. i. pp. 57, 59, 61.) The lingual dentition of *Peristernia*, sp., and *Busycon pyrum* are figured, pl. 9. figs. 9 & 10.

STIMPSON, W. Review of northern *Buccinums*. Canad. Natural. & Geol. 1865, pp. 364–390*.

[*Buccinum*] *Tritonium undatum*, L. Analogous varieties of this species and the nearly allied *T. grönlandicum* are pointed out by Mörch, Proc. Zool. Soc. 1865, p. 97.

Buccinum filiceum (Crosse et Fischer), fig. in Journ. Conch. xiii. pl. 3. figs. 15 & 16, South Australia.

Nassa semicostata. Brusina (Verh. zool.-bot. Ges. Wien, 1865, p. 12) has determined a living Dalmatian species as the *Buccinum semicostatum* (Brocchi), a subapennine fossil shell; it appears to us to be one of the numerous varieties of *N. cuvieri* (Payr.).

Sistrum cancellatum = *Purpura cancellata* of Quoy and Gaimard = *P. fenestrata* of Blainville = *P. elongata* of Reeve. Harper Pease, Proc. Zool. Soc. 1865, p. 52.

New species :—

Eburna borneensis, G. B. Sowerby, Description of three new shells. London, 1864, with figure.

Nassa compacta, Angas, Proc. Zool. Soc. 1865, p. 154, South Australia; *N. obliqua*, Pease, ibid. p. 513, Central Pacific; *N. deshayesiana*, Issel, Mem. Accad. Torin. xxiii. p. 9, pl. 1. figs. 1 & 2, Island of Ormus.

Ilyanassa, g. n., proposed by Mr. Stimpson for *Nassa obsoleta* (Say), differing from *Nassa* by the absence of caudal cirri, and by having the margin of the operculum entire, not serrated. Littoral, in muddy flats, Atlantic coast of North America. Am. Journ. Conch. i. pp. 61 & 62. Lingual dentition and ovicapsulæ, pl. 2. figs. 11 & 12. [The Recorder may observe that in the European *N. reticulata* (L.), which lives in the mud-flats of the lagoons of Venice, the foot is but very slightly nicked behind, and the margin of the operculum quite straight on one side, and very slightly crenated on the other.]

Purpura marmorata, Pease, Proc. Zool. Soc. p. 515, Central Pacific, allied to *P. mancinella*; *P. humilis*, Crosse, Journ. Conch. xiii. p. 51, pl. 2. fig. 2, South Australia.

Ricinula adelaidensis, Crosse, *l. c.* p. 50, pl. 2. fig. 1, South Australia.

Macron wrightii, H. Adams, Proc. Zool. Soc. p. 753, Patagonia. *Macron* must be generically separated from *Pseudoliva* on account of its unguiculate operculum: ibid.

Coralliobia sculptilis, Pease, Proc. Zool. Soc. p. 513, Central Pacific.

FASCIOLARIIDÆ.

Ptychatractus, g. n., Stimpson, forming, according to the author, a new family, *Ptychatractidæ*. Dentition resembling that of the *Purpuridæ*, form of the shell like *Fasciolaria*, operculum like that of *Neptunea*. Type *Fasciolaria ligata* (Mighels and Adams). Coasts of Maine and Nova Scotia, in deep water. Am. Journ. Conch. i. p. 59; lingual dentition pl. 8. fig. 8.

Latirus prismaticus (Martyn), *gemmatus* (Reeve), *violaceus* (Reeve), and *gibbus*, sp. n., all from the Sandwich Islands, described by Harper Pease, Proc. Zool. Soc. 1865, pp. 53 & 54.

Turbinella hidalga, Crosse, Journ. Conch. xiii. p. 317, pl. 14. fig. 1. This species has the general appearance of the genus *Latirus* (Montfort, Adams), but no umbilicus; consequently it shows that the separation of *Latirus* from the other *Turbinellæ* is not natural. Crosse, *l. c.* pp. 415–417.

* We regret much not to have been able to obtain this paper before we were obliged to send our MS. to press.

VOLUTIDÆ.

Voluta and *Melo*. Sixteen species of the former and four of the latter genus are figured in Sowerby's 'Thesaurus,' part xxiii. pl. 260–262. Pages 269–273 contain their descriptions and other supplementary remarks to the monograph given in former parts of the same work by the father of the present author. All the species have been previously described in other works or periodicals by Reeve, Gray, and Sowerby.

Voluta ellioti, Sowerby, Description of three new shells (London, 1864). Dr. Gray regards it as a variety of *V. turneri*, but nevertheless names it *T. jamrachi*. See Zool. Record, i. p. 206.

Voluta (*Alcithoë*) *kreuslerœ*, sp. n., Angas, Proc. Zool. Soc. 1865, p. 55, pl. 2. fig. 3, South Australia; *V.* (*Lyria*) *archeri*, sp. n., Angas, *l. c.* figs. 4 & 5, West Indies.

Voluta pumilio, Brusina, Verhandl. zool.-bot. Gesellsch. Wien, p. 13, described as a new Dalmatian species, only 16 millim. long, and with one plait only on the pillar; it is therefore very probable that this shell is something else than a *Voluta* in the sense of Lamarck and all modern authors.

MITRIDÆ.

New species :—

Mitra infrafasciata, Souverbie, Journ. Conch. xiii. p. 155, pl. 5. fig. 7, New Caledonia; *M. rosettæ*, Angas, Proc. Zool. Soc. p. 55, pl. 2. fig. 6, South Australia; *M. saltata* and *nigricans*, Pease, ibid. pp. 512, 514, Central Pacific; *M. striata* and *columbulæ*, Brusina, Verhandl. zool.-bot. Gesellsch. Wien, 1865, p. 14, Dalmatja. *M. picta* (Danilo et Sandri), described by Brusina, *l. c.* p. 15, Dalmatia, appears to be scarcely different from *M. tricolor* (Gmel.) = *savignyi* (Payr.), smooth.

Turricula pulillus, Pease, Proc. Zool. Soc. 1865, p. 514, Central Pacific.

Mitroidea, g. n., Pease, *l. c.* p. 514. Ten plaits on the pillar-lip; base truncate in a manner somewhat approaching *Terebellum*. *M. multiplicata* (Pease), Central Pacific.

Mitromorpha, g. n., A. Adams, is like the *Cancilla* form of *Mitra*, but without any trace of plaits on the columella; *M. lirata*, A. Adams, Ann. & Mag. Nat. Hist. xv. p. 322, from Japan.—*M. filosa*, Carpenter, ibid. p. 177, from California.—*Columbella dormitor* (Sow.) may also belong to this genus: ibid.

Columbella marmorea, Brusina, Verhandl. zool.-bot. Ges. Wien, p. 9, Meleda, Dalmatia, allied to *C. rustica*, L., sp.—*C. decollata*, Brusina, *l. c.* p. 10,

Dalmatia, appears to be one of the varieties or doubtful species united by most authors under the name of *C. linnæi* (Payr.) or *C. scripta* (L.). Brusina distinguishes a third as *C. nasuta*=*Voluta nasuta* (Gm.)=*Buccinum scriptum*, var. *coccineum* (Philippi).

Columbella yorkensis, Crosse, Journ. Conch. xiii. p. 55, pl. 2. fig. 6, South Australia; *C. funiculata* and *souverbiei*, Crosse, ibid. pp. 157–161, pl. 5. figs. 8 & 9, New Caledonia; *C. interrupta*, Angas, Proc. Zool. Soc. 1865, p. 56, pl. 2. figs. 9 & 10, South Australia.—*C. humerosa*, Carpenter, *l. c.* p. 281, Acapulco.—*C. doriæ*, Issel, Mem. Accad. Torin. xxiii. p. 11, pl. 1. figs. 3 & 4, Persian Gulf.

Anachis tæniata=*Columbella tæniata*, Philippi, Zeitschr. für Malakozool. 1846=*A. gaskoini*, Carpenter, Mazatlan Catalogue: Carpenter, Proc. Zool. Soc. 1865, p. 273.—*A. serrata*, the diagnosis revised by Carpenter, ibid.—*A. penicillata*, Carpenter, Ann. & Mag. Nat. Hist. xv. p. 398, California: sculpture Metuloid.

Amycla tuberosa, Carpenter, Ann. & Mag. Nat. Hist. xv. p. 398, California; *A. undata*, Carpenter, Proc. Californ. Acad. Nat. Sc. iii. 1864, p. 139, California.

Engina fusiformis and *ovata*, Pease, Proc. Zool. Soc. p. 513, Central Pacific.

Marginellidæ.

Erato. Eighteen species are figured in Reeve's 'Conchologia Iconica.' New appear to be *E. hæmatina* (Menke, MS.), fig. 8, Porto Rico [probably identical with *Marginella hæmatitea* of Sowerby's 'Thesaurus,' figs. 60 & 61]; *pellucida*, fig. 16, Bombay; *angulifera* (Sowerby, MS. in Cuming's collection), fig. 6, Borneo; *gallinacea* (Gould, MS.), fig. 7; *corrugata* (Hinds, MS.), fig. 12, and *minuta*, fig. 11, Philippines; *nana* (Duclos), fig. 18, locality unknown.

Marginella. Not less than 150 species of this genus are figured in Reeve's 'Conchologia Iconica,' many of them figured for the first time; entirely new are the following, besides those mentioned already in the 'Record' for 1864: *M. epigrus*, fig. 151, Mogadore; *vexillum* (Redfield, MS. in coll. Cuming), fig. 98, Cape Palmas; *bibalteata*, fig. 99, *effulgens*, fig. 104, *pyrulum*, fig. 117, and *affinis*, fig. 136, from the West Indies; *hondurascensis*, fig. 97, *jewetti* (Carpenter in coll. Cuming), fig. 146, New California; *bensoni*, fig. 158, Green Point, Cape of Good Hope; *encaustica*, fig. 148, Ceylon; *traillii*, fig. 114, Malacca; *corusca*, fig. 143, and *infans*, fig. 150, Singapore; *bellula*, fig. 139, *dens*, fig. 120, *bulbosa*, fig. 144, and *lachryma*, fig. 149, Borneo; *simplex*, fig. 115, *attenuata*, fig. 116, *olivella*, fig. 140, and *pisum*, fig. 156, Australia; *ovum*, fig. 89, *livida*, fig. 100, *guttula*, fig. 101, *tribalteata*, fig. 102, *navicella*, fig. 103, *alabaster*, fig. 107, *immersa*, fig. 109, *cantharus*, fig. 110, *rufescens*, fig. 112, *electrum*, fig. 118, *compressa*, fig. 130, *volutiformis*, fig. 131, *obscura*, fig. 132, *paxillus*, fig. 133, *sordida*, fig. 137, *semen*, fig. 145, *ros*, fig. 147, all those from unknown localities.

Marginella capensis, Dunker, noticed by Reeve as MS. name in Cuming's collection, has been published and figured long ago by Krauss, Südafrikanische Mollusken, 1848, p. 125, pl. 6. fig. 21. The same is the case with some species named by Gaskoin, noticed here as manuscript names, but published

several years ago in the 'Proceedings of the Zoological Society' and in the 'Annals and Magazine of Natural History.'

Marginella subtrigona and *M. regularis*, sp. n., Carpenter, Ann. & Mag. Nat. Hist. xv. pp. 397 & 398, California.

Volutella pyriformis, sp. n., Carpenter, Journ. Conch. xiii. p. 148, California.

Cysticus, g. n., Stimpson, proposed for a new *Marginella*-like shell, *C. capensis*, found on *Gorgoniæ* in False Bay, Cape of Good Hope; distinguished by its slender elongate foot and its short, flattened, triangular tentacles, the eyes being situated a little behind their basis. In its lingual dentition it agrees with *Marginella*. Am. Journ. Conch. i. p. 55, pl. 8. fig. 2.

Doliidæ.

Ringicula australis, sp. n., Crosse, Journ. Conch. xiii. p. 44, pl. 2. fig. 5, South Australia.

Ranellidæ (Tritoniidæ).

[*Ranella*] *Bursa* (*Apollon*) *proditor*, sp. n., v. Frauenfeld, Verhandl, zool.-bot. Gesellsch. Wien, xv. p. 894, Island St. Paul. Allied to *R. argus*.

Velutinidæ.

Velutina prolongata, sp. n., Carpenter, Ann. & Mag. Nat. Hist. xv. p. 32, Neeah Bay, Vancouver district.

Naticidæ.

Natica sanguinolenta, Brusina, Verhandl. zool.-bot. Gesellsch. Wien, p. 19, Zara, Dalmatia; evidently a variety of the well-known *N. millepunctata* (Lam.), the red dots being united into continuous undulated lines.

Scalaridæ.

Scalaria delicatula and *consors*, sp. n., Crosse et Fischer, figured in Journ. Conch. xiii. pl. 3. figs. 9, 10, 11, & 12, South Australia.—*S. indianorum* and *S.* (? *indianorum*, var.) *tincta*, sp. n., Carpenter, Ann. & Mag. Nat. Hist. xv. p. 31, Vancouver district and Lower California; the former used as ornament by the children of the natives.

Opalia (A. Adams), subgenus of *Scalaria*. Varices obtuse, irregular; sculpture interrupted near the basis. *Opalia borealis*=*Scalaria borealis* (Gould), Carpenter, Ann. & Mag. Nat. Hist. xv. p. 31; *O. bullata*, Carpenter, *l. c.* p. 397, Sta. Barbara, California.

Crossea, g. n., A. Adams. Testa turbinata, umbilicata, alba. Anfractus convexi, cancellati, simplices aut varicibus instructi. Apertura orbiculata, antice in *angulum canaliculatum producta*; umbilico callo funiformi coarctato et circumcincto. Most closely allied, perhaps, to *Cirsotrema*, but also similar in other respects to *Torinia* and *Conradia*. *C. miranda* et *bellula*, sp. n., A. Adams, Ann. & Mag. Nat. Hist. xv. p. 323, Gotto Islands, near Japan.

Pyramidellidæ.

New species :—

Pyramidella pupæformis, Souverbie, Journ. Conch. xiii. p. 152, pl. 5. fig. 4, New Caledonia.

Turbonilla pygmæa, Brusina, Verhandl. zool.-bot. Gesellsch. Wien, 1865, p. 22, Meleda, Dalmatia; *T. gracillima*, Gabb, Proceed. Calif. Acad. Nat. Sc. 1865, California.

Chemnitzia tridentata and *C. aurantia*, Carpenter, Journ. Conch. xiii. p. 147, California; *C. crebrifilata*, *C.* (? *torquata*, var.) *stylina*, *C. virgo*, Carpenter, Ann. & Mag. Nat. Hist. xv. pp. 395 & 396, Sta. Barbara, California; *C. cælata*, Carpenter, *l. c.* p. 400, west coast of America, probably Panama.

Dunkeria laminata, Carpenter, *l. c.* p. 396, California.

Odostomia nagli, *novegradensis*, and *vitrea*, Brusina, Verhandl. zool.-bot. Gesellsch. Wien, xv. pp. 20 & 21, Dalmatia.—*O. moulinsiana* (Fischer), fig. in Journ. Conch. xiii. pl. 6. fig. 9, described in the preceding year.—*O. aciculina*, Souverbie, ibid. p. 150, pl. 5. figs. 2 & 3, New Caledonia.—*O. straminea*, Carpenter, ibid. p. 146, and *O. inflata*, Carpenter, Ann. & Mag. Nat. Hist. xv. p. 395, California; *O. satura*, *gouldii*, *nuciformis*, *avellana*, and *tenuisculpta*, Carpenter, *l. c.* p. 30, Necah Bay, Vancouver district.

Diala paupercula = *Cingula paupercula* (C. B. Adams, Panama Shells) = *Odostomia mammillata* (Carpenter, Mazatlan Catalogue), Proc. Zool. Soc. 1865, p. 272.

Eulimidæ.

New species :—

Eulima augur, Angas, Proc. Zool. Soc. p. 56, South Australia; *E. subpellucida*, Pease, ibid. p. 515, Central Pacific; *E. falcata*, Carpenter, ibid. p. 280, Acapulco; *E. thersites*, Carpenter, Ann. & Mag. Nat. Hist. xv. p. 396, Sta. Barbara, California; *E. micans*, Carpenter, Proc. Acad. Nat. Sc. Philad. 1865, p. 63, Puget Sound.

Leiostraca producta, Carpenter, Proc. Zool. Soc. 1865, p. 273, Mazatlan.

Mucronalia involuta, Carpenter, *l. c.* p. 272, Mazatlan.

Styliferidæ.

Stylifer apiculatus. Operculum described by Souverbie and Montrouzier, Journ. Conch. xiii. p. 159.

Mr. Jeffreys's observations on *Stylifer*, mentioned in Zool. Record, i. p. 208, are also included in Report Brit. Assoc. Advanc. Sc. for 1864, pp. 332–342.

Entoconcha. P. Fischer makes some remarks about this interesting creature, Journ. Conch. xiii. pp. 9 & 10, by which, however, our knowledge is not advanced. The suggestion of H. Freyer, that it is the young of some *Natica*, must be rejected, as it is incompatible with the existence of generative organs in the "shell-bearing bag;" that the shells are embryonic has been recognized and maintained by Joh. Müller. Contrary to a statement of M. Fischer, *Entoconcha* has again been found by other naturalists, viz. by Dr. A. Baur (see 'Record' for 1864, p. 208), and his memoir shows clearly that it is by no means so easy to follow up the development of this curious animal.

Cerithiopsidæ.

Cerithiopsis munita and *columna*, sp. n., Carpenter, Ann. & Mag. Nat. Hist. xv. p. 32, Necah Bay, Vancouver district; *C. purpurea* and *C. fortior*, sp. n., Carpenter, *l. c.* p. 397, California; *C. intercalaris*, sp. n., Carpenter, Proc. Zool. Soc. 1865, p. 281, Guacomayo, Western Central America.

Solariidæ (Architectonicidæ).

Torinia conica, sp. n., Pease, Proc. Zool. Soc. 1865, p. 514, Central Pacific.

Suborder Toxifera.

Conidæ.

Conus. The dentition of the following eleven species has been described and figured by Troschel :—*C. marmoreus*, *nicobaricus*, *mus*, *pulicarius*, *hebræus*, *mediterraneus*, *planorbis*, *lignarius*, *geographus*, *canonicus*, *textilis*. The genera proposed by H. & A. Adams do not prove to be natural according to these investigations; especially the distinction of the species with coronated whorls from those with smooth ones does not coincide with their dentition. The distinction of those with inflated ventricose whorls from those of perfectly conical shape proves to be of higher systematic value. [It is well known that some coronated species are distinguishable by this character only from smooth ones, so that it seems scarcely to be of specific value in all cases. The Recorder is inclined to consider the lineaments of colours to be more reliable for systematic distinction.]

New species :—

Conus subcarinatus, from the Nicobar Islands; *straturatus*, from Borneo; *sagittatus* and *multicatenatus*, from unknown localities. Sowerby, Proc. Zool. Soc. 1865, pp. 518 & 519, pl. 32. figs. 8–14.

Conus nodulosus, Sowerby, Description of Three New Shells (London, 1864), with figure; Swan River.

Conus rubescens, Bonnet, Revue Zool. 1864, p. 282, pl. 22. fig. 6, "Ile d'Anam." M. Guérin-Méneville states this new species to be a variety a little worn off of the well-known *C. canonicus*, Br.

Conus moussoni, *mirmillo*, *carpenteri*, *secutor*, *anabathrum*, *lizardensis*, *frauenfeldi*, *signifer*, *macei*, *circumsignatus*, *tribunus*, *archetypus*, *anaglypticus*, Crosse, Journ. Conch. xiii. pp. 290-315, all figured on plates 9, 10, & 11. The localities of most of them are unknown; the first is from the Seychelles, *C. frauenfeldi* from Madagascar, *macei* from the East Indies, *carpenteri* from New Guinea, *tribunus* from California, *anaglypticus* from the West Indies.

Pleurotomidæ.

The dentition of the following species has been described and figured by Troschel, *l. c.* :—*Turris babylonia* and *nodifera*, most similar to each other; *Bela violacea*, *viridula*, *vahlii*, *nobilis*, *exarata*,

rugulata, scalaris, turricula, somewhat different from one another; *Defrancia cancellata,* agreeing with Lovén's figure taken from *Mangelia costata.*

Clionella, Gray (*Buccinum sinuatum,* Born, = *Pleurotoma buccinoides,* Lam.). The lingual dentition is described by Mr. Stimpson, and proves to be very peculiar. The rachidian [median] tooth is very small and delicate; the lateral teeth, one on each side, very large, shaped somewhat like a canine tooth of a mammal, obliquely pointing inward and backward, and hollow at the root. Stimpson proposes for this genus not only a new family, *Clionellidæ,* but a new division equivalent to the *Toxoglossata* and *Odontoglossata,* to be named *Tomoglossata.* Probably all the *Pleurotomidæ* having the nucleus situated on the inner edge of the operculum and also *Halia* will enter this division. Am. Journ. Conch. i. pp. 62 & 63, pl. 9. fig. 13.

New species:—

Pleurotoma jelskii and *P. antillarum,* Crosse, Journ. Conch. xiii. p. 33, pl. 6. figs. 6, 7, & 8, Guadeloupe.

Surcula perversa and *carpenteriana,* Gabb, Proceed. Calif. Acad. Nat. Sc. 1865, California.

Drillia torosa, D. (? *torosa,* var.) *aurantia,* and *D. penicillata,* Carpenter, Journ. Conch. xiii. pp. 145 &146, California; *D. eburnea,* Carpenter, Proc. Zool. Soc. 1865, p. 280, near the Gulf of California; *D. mœsta,* Carpenter, Ann. & Mag. Nat. Hist. xv. p. 181, Sta. Barbara, California; *D. incisa* and *cancellata,* Carpenter, Proc. Acad. Nat. Sc. Philad. 1865, pp. 62 & 63, Puget Sound.

Bela excurvata, Carpenter, *l. c.* p. 63, Puget Sound.

Rhaphitoma rosea, polita, and *sandrii,* Brusina, Verhandl. zool.-bot. Ges. Wien, 1865, pp. 4–6, Dalmatia. [*Rhaphitoma* is a new generic name proposed by Bellardi, Monograph of the fossil *Pleurotoma* of Piedmont, for the European species of *Pleurotoma,* distinguished long ago by Leach, MS. 1817, Risso, 1820, and Millet, 1826, as *Mangelia* and *Defrancia,* and by Carpenter some years ago as *Clathurella.*]

Clathurella constricta and *crystallina,* Gabb, Proc. Calif. Acad. Nat. Sc. 1865, California; *Pleurotoma* (*Clathurella*) *lallemantiana* and *letourneuxiana,* Crosse et Fischer, Journ. Conch. xiii. p. 423, pl. 11. figs. 5–7, South Australia.

Daphnella aspera, Carpenter, Journ. Conch. xiii. p. 146, California; *D. effusa,* Carpenter, Ann. & Mag. Nat. Hist. xv. p. 29, Neeah Bay, Vancouver district; *D. clathrata,* Gabb, Proc. Calif. Acad. Nat. Sc. 1865, California.

Cytharopsis [*Citharopsis*], g. n., A. Adams. Near *Cythara* [*Cithara*]; cancellated; aperture recurved and canaliculate. *C. cancellata,* A. Adams, Ann. & Mag. Nat. Hist. xv. p. 323, Japan.

Mangelia sulcata, Carpenter, Proc. Zool. Soc. 1865, p. 272, Mazatlan; *M. albolaqueata,* Carpenter, *l. c.* p. 280, Panama; *M. levidens,* Carpenter, Proc. Acad. Nat. Sc. Philadelphia, 1865, p. 63, Puget Sound; *M. crebricostata, interfossa,* and *tabulata,* Carpenter, Ann. & Mag. Nat. Hist. xv. pp. 28 & 29,

Vancouver district; *M. variegata, M.* (? *variegata,* var.) *nitens, M. angulata,* Carpenter, *l. c.* pp. 394 & 395, Sta. Barbara, California: *M. hamata* and *carina,* Carpenter, *l. c.* pp. 399 & 400, Panama; *M. hexagona,* Gabb, Proc. Calif. Acad. Nat. Sc. 1865, California.

Pleurotoma (*Mangelia*) *vincentina,* Crosse et Fischer, Journ. Conch. xiii. p. 422, pl. 11. fig. 6, South Australia.

Terebridæ.

Terebra. The dentition of *T. subulata, maculata, dimidiata, muscaria, cuspidata, concinna, cærulescens, cinerea, jamaicensis, duplicata,* and *lamarckii* has been described and figured by Troschel, *l. c.*; it proved to be of a very peculiar type. The species in which each whorl is divided into two portions by a spiral groove (disappearing sometimes on the last whorls) agree also in their dentition and are distinguished by the author by the generic name *Acus* (Humphrey). The divisions *Myurella* (Hinds) and *Hastula* (Adams) are adopted as genera.

Myurella simplex, sp. n., Carpenter, Ann. & Mag. Nat. Hist. xv. p. 395, California.

Cancellariidæ.

Cancellaria. The dentition of *C. crenifera* (Sow.), examined some years ago by Troschel, is redescribed and figured (Gebiss d. Schneck.); the author maintains that this genus belongs to the *Toxoglossa,* against M. Crosse's objections in Journ. Conchyl. 1863.

Admete. Troschel proposes to separate this genus as a distinct family from *Cancellaria,* on account of its dentition, which he describes and figures (*l. c.*). He distinguishes two species, differing in their dentition,—one with the spira more elevated, *A. crispa* (Möller), and another with the spira shorter and with the mouth larger, *A. viridula.*

Cancellaria modesta, sp. n., Carpenter, Ann. & Mag. Nat. Hist. xv. p. 32, Neeah Bay, Vancouver district.

Cancellaria (*Narona*) *cooperii,* sp. n., Gabb, Proc. Calif. Acad. Nat. Sc. 1865, California.

Suborder Rostrifera.

Cypræidæ.

Cypræa fuscopunctata and *candida,* sp. n., Pease, Proc. Zool. Soc. p. 515, Central Pacific; *C. rhinoceros,* sp. n., Souverbie, Journ. Conch. xiii. p. 158, pl. 5. f. 1. New Caledonia; *C. thomasi,* sp. n., Crosse, ibid. p. 57, pl. 6. f. 3.

Ovulidæ (Amphiperasidæ).

Ovulum. Thirty-nine species are figured in Reeve's Conchologia Iconica; two are new:—*O. fruticum* (Adams, MS.), fig. 16, Malacca; *O. alabaster,* fig. 23, Senegal.

Simnia (Risso), a genus adopted by H. & A. Adams, characterized by a simple acute outer lip, and comprising in the work of these authors the three species *aperta*, *patula*, and *implicata* (Sow.), is to be cancelled, the two first being young shells, and the third having a very conspicuously thickened lip. Tryon, Am. Journ. Conch. i. pp. 94 & 95. Tryon thinks that [*Bulla*] *patula* (Pennant) is the young of *Ovula adriatica* (Sow.), and that this latter name therefore ought to be placed in its synonymy. We are of opinion that the well-known name of *O. adriatica*, under which it was described for the first time in its mature state, and which has been adopted hitherto by all subsequent writers, ought to be retained. Moreover there is nothing in the adult which could be called patulous.

Pediculariidæ.

Pedicularia californica, sp. n., Newcomb, Proc. Calif. Acad. Nat. Sc. iii. 1864, p. 121, California; *P. pacifica*, sp. n., Pease, Proc. Zool. Soc. p. 516, Central Pacific.

Cerithiidæ.

Cerithium monachus, Crosse and Fischer, figured in Journ. Conch. xiii. pl. 3. figs. 17 & 18, South Australia.

New species :—

Bittium esuriens and *fastigiatum*, Carpenter, Ann. & Mag. Nat. Hist. xvi. p. 181, Sta. Barbara, California.—The same, *B. esuriens*, and two other species, *B. attenuatum* and *quadrifilatum*, Carpenter, Journ. Conch. xiii. pp. 142 & 143, California.

[*Bittium*]. *Cerithium jadertinum*, *subcylindricum*, *acicula*, and *minimum*, Brusina, Verhandl. zool.-bot. Gesellsch. Wien, 1865, p. 16, Dalmatia.

Triphoris angasi and *T. pfeifferi*, Crosse, Journ. Conch. xiii. pp. 46 & 47, pl. 1. figs. 11, 12, 13, 14, South Australia.—*Cerithium* (*Triphoris*) *connatum*, Montrouzier, founded on a young specimen, is redescribed and figured, ibid. p. 153, pl. 5. fig. 5, New Caledonia.

Melanidæ.

a. *Melanidæ of the Old World.*

Blanford, H. F. On the relations of *Tanalia*, *Philopotamis*, and *Paludomus*, with a review of the Cingalese species of the latter genera. Trans. Linn. Soc. xxiv. p. 165, with a plate.

The author inclines more to uniting than to splitting genera and species, and proposes to refer the genera mentioned as subgenera to *Melania*; he reduces the Ceylonese species of *Philopotamis* to five, and the numerous *Paludomi* to two species only, *P. tanjoriensis* (Gmel.) and *P. chilinoides* (Reeve). The opercles of many species and some series of variations in the shell are figured. It is certainly an advance in science if any group of animals is treated in a similar manner and the affinities between the various forms are pointed out; whether these forms be called species or varieties is of minor importance.

New species :—

Melanopsis ammonis, Tristram, Proc. Zool. Soc. 1865, p. 542, Heshbon and Ammon, east of the Jordan, allied to *M. prærosa*, L.; *M. eremita*, Tristram, ibid., Wady Um Bagkek, near the south-west corner of the Dead Sea, very glossy.—*M. doriæ*, Issel, Mem. Accad. Torin. xxiii. p. 16, pl. 1. figs. 7 & 8, from the hot springs of Kerman, Southern Persia.

Melania rubropunctata, Tristram, *l. c.* p. 541, fountains near the Dead Sea, allied to *tuberculata* (Müll.).—*M. retifera*, Tryon, Am. Journ. Conch. i. p. 216, pl. 22. fig. 4, Hakodadi, Japan.—*M. nodicincta* and *victoriæ*, Dohrn, Proc. Zool. Soc. 1865, p. 234, the first from lake Nyassa, the second from the Zambesi river.—*M. globosa*, Anthony, Am. Journ. Conch. i. p. 207, pl. 18. f. 3, Pegu, group of *M. herculea* (Gould).—*M. brunnescens*, Tryon, *l. c.* p. 216, pl. 22. f. 1, Philippines, near *M. decollata* (Lam.).—*M. circumsulcata*, Gassies, Journ. Conch. xiii. p. 212, New Caledonia.—*M. clavulus*, Mousson, Journ. Conch. xiii. p. 202, Fejee Islands; *M. unicolor*, Tryon, *l. c.* p. 217, pl. 22. f. 2, Tahiti.—*M. landaueri*, Brot, Mal. Blätt. xii. p. 176, near *M. recta* (Lea), locality unknown.

b. *American Melanidæ* (*Strepomatidæ*).

Stimpson, W. On the structural characters of the so-called Melanians of North America. Am. Journ. Sc. xxxviii. 1864, July, pp. 41–53.

Melania virginica (Say) and *M. dissimilis* (Say) have been examined. Intromittent male organ none. The female specimens have a conspicuous slit or sinus in the right side of the foot, about midway between the tentacle and the operculigerous lobe. The author proposes to separate the Melanians, "the American species at least," from the ordinary Ctenobranchiate Gastropods, and to unite them with the *Vermeti* into a distinct tribe, *Anandria*. Records of former descriptions of the soft parts of American Melanians are added.

Tryon, G. W. Observations on the family *Strepomatidæ*. I. Classification. Am. Journ. Conch. i. pp. 97–124, with a plate.

This paper is said to be the result of the author's investigations whilst engaged in the preparation of a monograph of this family, which will be published by the Smithsonian Institution. The author adopts ten generic names, divided into three sections :—

1. Trypanostomoid section; aperture produced into a more or less obvious canal: *Io*, *Pleurocera*, *Angitrema*, *Lithasia*, and *Strephobasis*.

2. Goniobasic section; aperture merely angulated in front, columella not twisted: *Eurycælon*, *Goniobasis*, *Schizostoma*, and *Meseschiza*; the last with a slit in the middle, the preceding genera with a similar one in the upper part of the aperture.

3. Aperture entire and rounded in front: *Anculosa* (Say).

One or two species of all the genera mentioned, except *Meseschiza*, are figured on plate 7.

Tryon, G. W. Synonymy of the species of *Strepomatidæ*, a family of fluviatile Mollusca inhabiting North America. Proc. Acad. Nat. Sc. Philad. 1865.

This paper completes the series of papers on the same subject, and contains a revision and correction of the preceding, published in the last two volumes of the same journal. The whole has been published as a separate work, 'Synonymy of the *Strepomatidæ*,' New York, 1865, 8vo, including several other papers on land- and freshwater shells of the same author previously published in the same Proceedings.

——. Synopsis of the species of *Strepomatidæ*, a family of fluviatile Mollusca inhabiting North America. Proc. Acad. Nat. Sc. Philad. 1865, pp. 19–36.

About five hundred species of North American *Melanidæ* are distinguished. The following genera are adopted:—*Io* 2 sp.; *Pleurocera* (Raf.)=*Megara* (Ad.) 83 sp.; *Angitrema* (Hald.) =*Lithasia* (Ad.) 12 sp.; *Goniobasis* (Lea) 274 sp.; *Eurycælon* (Lea, Proc. Nat. Sc. Philad. 1864, p. 3, type *G. umbonata*) 8 sp.; *Meseschiza* (Lea) 1 sp.; *Schizostoma* (Lea) 29 sp.; *Anculosa* (Say) 33 sp.

——. Monograph of the family *Strepomatidæ*. Am. Journ. Conch. i. pp. 299–342.

Contains condensed descriptions of the American species of *Melanidæ*, extracted from a much more detailed memoir prepared for the Smithsonian Institution, the present paper being published principally to facilitate the determination of species: —*Io* 5 sp.; *Pleurocera* 86 sp.; *Angitrema* 12 sp.; *Lithasia* 17 sp.; *Strephobasis* 8 sp.; *Meseschiza* 1 sp.; *Schizostoma* 26 sp.; *Eurycælon* 8 sp.; all figured in woodcuts.

——. Observations on the genus *Io*. Am. Journ. Conch. i. pp. 41–44, with pls. 3 & 4.

The author commences with some historical remarks. Shells of this genus have been found in the graves of the aborigines, and were erroneously supposed to testify that these aborigines "must have come over the sea," because they seemed to be marine shells. The eight species described in 1860 by Lea as forming a distinct group of this genus are excluded by the author as immature shells of other genera, and the twelve remaining species reduced to five—*Io fluvialis* (Say), *inermis* (Anthony), *spinosa* (Lea), *brevis* (Anthony), and *turrita* (Anthony). These and the principal varieties are figured, most of them drawn from the typical specimens.

Tryon, G. W. Review of the *Goniobases* of Oregon and California. Am. Journ. Conch. i. pp. 236–246, with a plate.

Eleven species of Californian *Melanidæ* are at present known, all belonging to the genus *Goniobasis*, and all being either from the Columbia river, Oregon, or the Sacramento and Klamath rivers and their tributaries. Southern California has, as yet, yielded no species, the species of Mexico proper belonging to the tropical division *Pachychilus*. Most bear a close analogy to some of the Pacific and Indian forms—thus, for example, *G. rudens* (Reeve) to *Melania boninensis* (Lee) and the Tahitian *M. unicolor* (Tryon). There is, moreover, a certain similarity of form, ornamentation, and texture pervading the whole group, which widely separates them from the eastern American species.

New species:—

Trypanostoma subrobustum, roanense, lesleyi, affine, cylindraceum, and *carinatum*, Lea, Proc. Acad. Nat. Sc. Philad. 1864, p. 16, Tennessee; *T. renustum, cinctum, univittatum, corneum,* and *napoideum*, Lea, ibid. p. 112, Alabama and Tennessee.

Pleurocera conradi, Tryon, Am. Journ. Conch. i. p. 38, pl. 1. fig. 9=*Melania pyrenella* of many collections, Tennessee and Alabama. The name *Pleurocera*, Rafinesque, is recommended by Tryon instead of *Trypanostoma* (Lea). Am. Journ. Conch. i. pp. 82 & 83.

Strephobasis lyonsii, Lea, Proc. Ac. Nat. Sc. Philad. 1864, p. 7, Holston River, Tennessee.

Goniobasis emeryensis, umbonata, albanyensis, and *viridostriata*, Lea, *l. c.* pp. 3, 5, & 6, Tennessee and Georgia. The same author changes several names given by him, but preoccupied, viz. *G. blanda* into *G. versa, vauxemii* into *prestoniana,* and *etowahensis* into *canbyi.—Goniobasis subrhombica, fraterna, romæ, quadricincta, smithsoniana, pulla, pupæformis*, Lea, *l. c.* pp. 111 & 112, United States.

Goniobasis translucens, Anthony, Am. Journ. Conch. i. p. 30, pl. 1. figs. 1 & 2, Canada; *G. interlineata*, idem, ibid. fig. 3, Indiana; *G. graminea*, Haldeman, ibid. p. 37, pl. 1. fig. 4; *G. catubæa*, Haldeman, ibid. figs. 5–7, Catawba River, North Carolina; *G. haldemani*, Tryon, ibid. p. 38, pl. 1. fig. 8=*Melania acuta* (Lea)=*M. exilis* of many collections, Lake Erie and Lake Champlain.

Schizostoma showalterii, Lea, Proc. Acad. Nat. Sc. Philad. 1864, p. 112, Alabama. Tryon, Am. Journ. Conch. i. p. 76, proposes to alter this name into *showalteriana*, as Lea used it formerly for another shell.

Meseschiza, g. n., Lea, with a *Pleurotoma*-like slit in the outer lip on the periphery; *M. grosvenorii*, Lea, Proc. Acad. Nat. Sc. Philad. 1864, p. 2, Wabash River. Tryon, Am. Journ. Conch. i. p. 74, thinks the specimens to be immature.

Leptoxis (Rafinesque). The restoration of this name instead of *Anculosa* or *Anculotus* is rejected by Tryon, Am. Journ. Conch. i. pp. 82 & 111, and defended by Haldeman, ibid. p. 208.

Melania (*Pachychilus*) *schiedeana* (Phil.) redescribed by Martens, Mal. Blätt. xii. p. 51, Mexico.

Melania millepunctata, Tryon, *l. c.* p. 217, pl. 22. fig. 3, Amazon River.

Clionella, see above, p. 250 (PLEUROTOMIDÆ).

LITORINIDÆ.

Litorina aurea, sp. n., Bonnet, Rev. Zool. 1864, p. 281, pl. 22. fig. 4, locality unknown.

PLANAXIDÆ.

Planaxis breviculus (Desh.), fig. by Issel, Mem. Accad. Torin. xxiii. pl. 1. figs. 5 & 6.

Planaxis abbreviata, sp. n., Pease, Proc. Zool. Soc. 1865, p. 515, Central Pacific.

RISSOIDÆ.

Rissoa cooperi, sp. n., Tryon, Am. Journ. Conch. i. p. 222, pl. 22. fig. 13, California; *R. compacta*, sp. n., Carpenter, Proc. Acad. Nat. Sc. Philad. 1865, p. 62, Puget Sound.

Rissoina expansa, sp. n., Carpenter, Ann. & Mag. Nat. Hist. xv. p. 399, Mazatlan.

Amphithalamus, g. n., Carpenter, *l. c.*, p. 181. Testa Rissoidea, nucleo magno; apertura labio producto, labro subpostice juncto, subito in adulta contracto. *A. inclusus*, sp. n., Sta. Barbara, California. "Bears the same relation to *Rissoa* as *Stoastoma* to *Helicina*."

A. obesus and *pupoideus*, sp. n., A. Adams, Proc. Zool. Soc. 1865, p. 754, Lord Hood's Island.

Barleeia subtenuis, *B.* (? *subtenuis* var.) *rimata*, and *B. haliotiphila*, sp. n., Carpenter, Journ. Conch. xiii. pp. 143 & 144, California.

Hydrobia. Besides the species mentioned already in our former Record, Bourguignat describes and figures, in the 'Malacologie de l'Algérie,' the following from Algeria; none of them are entirely new, but some figured for the first time, or were confounded by former authors with European species:—*Hydrobia elachista* (Bourg.), *nana* (Terver), *dolichia* (Bourg.), *Amnicola similis* (Drap.), *luteola* (Küst.), *desertorum* (Bourg. = *viridis*, Terver), *pycnocheilia* (Bourg.), *pycnolena* (Bourg.), *dupotetiana* (Forbes), *perforata* (Bourg.), *letourneuxiana* (Bourg.), and *seminium* (Morelet). In the "Addenda," p. 314, a new species, *H. challameliana* (Bourg.), is described but not figured.

Mr. W. Stimpson has published "Diagnoses of newly discovered genera of Gasteropods, belonging to the subfamily *Hydrobiinæ* of the family *Rissoidæ*." Am. Journ. Conch. i. pp. 52–54. These genera are: *Cochliopa* for *Amnicola rowelli* (Tryon), California, freshwater; *Fluminicola* for *Paludina nuttalliana* and *virens* (Lea), *P. seminalis* (Hinds), and *A. hindsii* (Baird), Oregon and California, freshwater; *Gillia* for *Melania altilis* (Lea), Pennsylvania to Georgia, freshwater; *Potamopyrgus* for *A. corolla* (Gould), New Zealand, freshwater; *Tryonia* for a new species, *T. clathrata* (Stimps. pl. 8. fig. 1), Colorado desert.—The lingual dentition of each of these so-called new genera is described, as well as the outer form of the foot, rostrum, tentacles, and verges.

The following species are figured by Von Frauenfeld in Verhandl. zool.-bot. Gesellsch. Wien, xv. pl. 8; they were named and described by him some years ago:—

Hydrobia seemani, Mexico; *consociella*, Dalmatia; *corrigata* [should be corrected to *correcta* or *corrigenda*], North America; *pleneri*, Real Llejos; *gunnii*, Tasmania; *declinata*, Dalmatia; *reevii* and *spelæa*, New Zealand.

Hydrobia californica, sp. n., Tryon, Am. Journ. Conch. i. p. 221, pl. 22. fig. 11, California, brackish water; *H. glabra*, sp. n., Tryon, *l. c.* p. 222, fig. 12, Bolivia.

Amnicola schrökingeri, Massachusetts; *exilis*, Greece; *floridana*, Florida; *kotschyi*, Persia; *orientalis*, Algeria; *dimense* [*-sis*], Tasmania; *montenegrina*, Montenegro; *tachoensis*, from the sources of the river Tajo in Spain [in Latin Tagus, therefore better *tagana*, like *rhenana*, *padana*]. Figured by Frauenfeld, Verhandl. zool.-bot. Gesellsch. Wien, xv. pl. 10.

Amnicola turbiniformis, sp. n., Tryon, Am. Journ. Conch. i. p. 219, pl. 22. fig. 5, California; *A. similis*, sp. n., Tryon, *l. c.* fig. 6, Manilla.

Amnicola lustrica (Say) is probably the immature form of *Valvata pupoidea* (Gould), Morse, Journ. Portl. Soc. Nat. Hist. 1864, p. 46.—Frauenfeld defends this name as belonging to a real shell against Hagen's supposition that it is founded on the tube of a *Helicopsyche* (Phryganid). Verhandl. zool.-bot. Gesellsch. Wien, xv. p. 204.

Lithoglyphus notatus, Dalmatia; *buschii*, La Plata; *crassiuscula*, Opara; *hinkleyi*, California; *affinis*, Kurdistan; *turbinatus*, Fiume; *deflexa*, Opara; *pannonicus*, Hungary; and *pygmæus*, Croatia. Figured by Frauenfeld, *l. c.* pls. 10 & 11.

Paludinella lata, figured by Frauenfeld, *l. c.* pl. 11, Hungary.

Paladilhia, g. n., Bourguignat (Monographie du nouveau genre Français *Paladilhia*, Paris, Janvier 1865, 8vo, with one plate; and also in Rev. Zool. 1865, pp. 120–123, pl. 13). Known only from the shell, which is similar to that of *Hydrobia*, but distinguished by a deep notch in the outer lip close to its upper insertion, very similar to that in *Mangelia*. Shell vitreous, thin. As neither the operculum nor the soft parts are known, the systematic position of this genus is far from being ascertained. Three species, found in the alluvial soil of the rivers Lez and Mosson, near Montpellier, are named by Bourguignat *P. pleurotoma*, *moitessieri*, and *gervaisiana*: figs. 1–8, 9–13, 14–18.

Gabbia, g. n., Tryon, Am. Journ. Conch. i. p. 220, pl. 22. fig. 7. Shell like *Amnicola*. Operculum paucispiral, calcareous. Station freshwater. This is the whole of the description of the new genus. *G. australis*, sp. n., Tryon, New South Wales.

Pomatiopsis intermedia, sp. n., Tryon, *l. c.* pl. 22. fig. 8, Oregon.

1781; *matogyrus aureus* and *parvulus*, sp. n., Tryon, *l. c.* pp. 220 & 221, pl. 22. observed by Tennessee.

sort of *Sipu*

PALUDINIDÆ.

Dr. von Frauenfeld describes the following new species in Proc. Zool. Soc. 1865, pp. 658 & 659:—*Vivipara sclateri* from Japan; *V. siamensis*, *V. heliciformis* from Central Africa; *V. jeffreysii*, *capillata*, and *robertsoni* from Lake Nyassa; *V. punctata* from West Africa. The same diagnoses are published in Verh. zool.-bot. Gesellsch. Wien, xv. pp. 531–533, pl. 22.

Paludina eyriesi, sp. n., Morelet, Journ. Conch. xiii. p. 227, from Cochinchina.

Dr. von Martens makes the following remarks on species of *Paludina*, Malak. Blätt. xii. pp. 144–151 :—

1. *Paludina ingallsiana* (Lea) is from Siam, as originally stated by Lea and very common there, not from Japan, as indicated by error in Cuming's collection, and hence in Reeve's Monograph.

2. *Paludina quadrata* (Bens.). To this Chinese species belongs the name *angularis* (O. Fr. Müll.), founded on specimens from Canton, and figured in Chemnitz, Conchylien-Cabinet, vol. ix. figs. 1222 & 1223, which has been generally misapplied to another species spread over the islands of the Indian archipelago, including the Philippines, and described by various authors as *P. carinata* (Valenciennes), *costata* (Quoy & Gaim.), *burroughiana* (Lea), *tricarinata* (Anton).

3. *Paludina lineolata* (Mousson in Reeve's Conchol. Iconica) is *P. polygramma* (Martens, Proceed. Zool. Soc. 1860) from Siam ; *P. lineolata* (Mousson), examined by myself in Mousson's collection, is from Sumatra and = *P. sumatrensis* (Dunker).

4. *Paludina carinata* in Reeve's works does not appear to be the true *carinata* of Swainson, which is an inhabitant of cis-Gangetic India and, as the Recorder may add from a specimen received from Hr. Mörch, identical with (*Nerita*) *dissimilis* (O. Fr. Müller).

5. *Paludina lineata* (Valenciennes) = *P. multilineata* (Say) = *bengalensis* (Lam.) acclimatized in North America ; this North American four-banded shell is not analogous to the European three-banded species, as has been generally supposed.

The Recorder regrets to be obliged to state here that some of the errors concerning the habitats of certain species, originated in Mr. Cuming's collection, in consequence of this deeply lamented conchyliologist's habit of exchanging less perfect specimens against others in a more beautiful condition, without always changing the original label.

Paludina (*Vivipara*) *purpurea*, sp. n., Martens, Mal. Blätt. xii. p. 150, and Ann. & Mag. Nat. Hist. xvi. p. 428, Murray River, Australia ; *P. australis* (Reeve), probably = *essingtonensis* (Shuttleworth), *affinis* and *polita*, sp. n., from Australia, Martens, Ann. & Mag. Nat. Hist. xvi. pp. 255 & 256.

Vivipara inornata, sp. n., Binney, Am. Journ. Conch. i. p. 49, pl. 7. f. 1, Chopatilo, Mexico.

Paludina (*Cleopatra*) *bulimoides* (Olivier) : on the synonymy of this common shell of the Nile, see Martens, Mal. Blätt. xii. p. 203.

Melantho decampi, sp. n., Binney, Am. Journ. Conch. i. p. 49, pl. 7 [illegible]*ciana* Oregon and Alabama.

Bithynia. The following species are figured by v. Frauenfeld in Verhandl. zool.-bot. Gesellsch. Wien, xv. pls. 8–10 :—*B. meridionalis*, Spain ; *schraderi*, locality unknown ; *umbratica*, Spain ; *tristis*, Persia ; *africana*, *vertiginosa*, Australia ; *perfecta*, North America ; *shuttleworthi*, China ; *proxima*, Tyrol ? ; *letochæ*, Spain ; *adamsii*, British India ; *waldenderffi*, Dalmatia ; *schwabii*, Macedonia. These species were described by the author several years ago.

Bithinia uzielliana, sp. n., Issel, Mem. Accad. Torin. xxiii. p. 19, pl. 1 figs. 9–11, from Kerman, Southern Persia.

Valvatidæ.

Valvata arenifera (Lea) = genus *Thelidomus*, Swains., and *V. agglutinans* (Lechmere Guppy, see Zool. Record, i. p. 213) are cases formed by larvæ of insects, very probably of *Helicopsyche*. Bland, Ann. Lyc. Nat. Hist. New York, viii. pp. 144–149.

Ampullariidæ.

Ampullaria pagoda, sp. n., Morelet, Journ. Conch. xiii. p. 227, from Gamboja.

Ampullaria violacea (Valenc.) = *malleata* (Jones) = *reflexa* (part. Phil.) = *veneta* (Reeve) from Mexico ; *A. pallens* (Phil.) is not from Mexico as formerly stated, but from Manilla. Martens Malak. Blätt. xii. pp. 52–54.

Lanistes nyassanus, sp. n., Dohrn, Proc. Zool. Soc. 1865, p. 233, from Lake Nyassa.

Turritellidæ.

Turritella spina, Crosse et Fischer, fig. in Journ. Conch. xiii. pl. 3. figs. 13 & 14, from South Australia.

Mesalia lacteola and *M. subplanata*, sp. n., Carpenter, Proc. Ac. Nat. Sc. Philad. 1865, p. 62, from Puget Sound.

Eglisia macandreæ, sp. n., H. Adams, Proc. Zool. Soc. 1865, p. 753, from Gibraltar.

Vermetidæ.

Mörch, O. A. L. Supplementary Notes on the Review of *Vermetidæ*. Proc. Zool. Soc. 1865, pp. 96–99.

Petaloconchus, *Bivonia*, and *Aletes*, formerly regarded as distinct genera, are only stages of growth occurring in the same species at different periods of its life. The names may be retained to indicate these stages. Several remarks are added concerning the synonymy of species.

Tenagodus möbii, sp. n., Mörch, *l. c.* p. 98, Philippines ?

Thylacodes melanostomus, sp. n., Mörch, *l. c.* p. 99, Zanzibar.

[*Siliquaria*] *Tenagodus bernardi* (Mörch) described and figured by Crosse, Journ. Conch. xiii. p. 23, pl. 4. fig. 3.

Cryptobia (Deshayes). This genus has been alluded to by Spengler in 1781, and named *Serpula madreporina* by Modeer in 1794. It was again observed by Macdonald (Nat. Hist. Review, 1862, p. 78), who always found a sort of *Siphunculus* in it ; Dr. Gray (Proc. Zool. Soc. 1849, p. 74) a *Pagurus*. It is probable that the animal belongs to the *Vermetidæ*, but is often destroyed and replaced by those intruders. Mörch, Journ. Conch. xiii. pp. 11–13.

Calyptræidæ.

Crepidula immersa, sp. n., Angas, Proc. Zool. Soc. 1865, p. 57, pl. 2. fig. 12, South Australia.

Capulidæ.

Hipponyx tumens, sp. n., Carpenter, Ann. & Mag. Nat. Hist. xv. p. 180, Sta. Barbara, California.

Naricidæ (Vanikoridæ).

Narica insculpta, sp. n., Carpenter, Proc. Zool. Soc. 1865, p. 280, Acapulco.

Order SCUTIBRANCHIATA.

Suborder Podophthalma.

Neritidæ.

Neritina africana (Parreyss)=*nilotica* (Parreyss) described by Martens, Mal. Blätt. xii. p. 206.—*N. humerosa*, sp. n., Mousson, Journ. Conch. xiii. p. 188, Samoa Islands; *N. vitiensis*, sp. n. Mousson, ibid. p. 204, Feejee Islands; *N. rubida*, sp. n., Pease, Proc. Zool. Soc. 1865, p. 514, islands of the Central Pacific.

Neritina punctulata (Encyclopédie méthodique, pl. 455. f. 2, Sow. Conch. Ill.) = *cassiculum* (Sow. Thesaurus), fresh waters of Mexico. Operculum with two apophyses; Martens, Mal. Blätt. xii. p. 54.—*Neritina reclivata* (Say, Sow.)=*lineolata* (Menke, non Lam.), var. *rotundata*, from Mexico, probably from brackish water. Operculum with two apophyses; ibid. p. 61.

Neritina virginea (L.). The following varieties are distinguished, all occurring on various parts of the coasts of tropical America, and probably all from brackish water:—a. *listeri* (Pfr.), b. *elongata*, c. *oblonga*, d. *parvula*, e. *mertoniana* (Récluz), and f. *meleagris* (Lam.). Martens, *l. c.* pp. 62–65.

[*Neritina*] *Theodoxus fluviatilis* (L.), var. *subthermalis* (Bourguignat in litteris), Issel, Mem. Accad. Torin. xxiii. p. 22, Lake of Paleaston, near Poti.—*T. doriæ*, Issel, *l. c.* p. 23, pl. 1. figs. 14–16, Kerman, Southern Persia, in hot springs; and *T. schirazensis*, var. *major* (Bourguignat, MS.), Issel, *l. c.* p. 24, Lake of Goktscha.

Navicella pala, sp. n., Mousson, Journ. Conch. xiii. p. 189, Samoa Islands; *N. undulata*, sp. n., Mousson, ibid. p. 206, Feejee Islands.

Trochidæ.

Phasianella crassa and *exigua*, sp. n., Brusina, Verhandl. zool.-bot. Gesellsch. Wien, pp. 23 & 24, Dalmatia.

Phasianella (*compta* var.?) *punctulata*, *elatior*, and *pulloides*, sp. n., Carpenter, Ann. & Mag. Nat. Hist. xv. pp. 179 & 180, California.

Collonia fricki and *C. eucharis*, sp. n., Crosse, Journ. Conch. xiii. pp. 55 & 56, the former from the Gulf of California.

Astralium guadeloupense, sp. n., Crosse, *l. c.* p. 36, pl. 1. figs. 10 & 11, Guadeloupe.

Leptonyx sanguineus. Under this name a shell is described by P. P. Carpenter, Proc. Calif. Acad. Nat. Sc. iii. 1864, p. 176, from Monterey; he regards it as the Linnean *Turbo sanguineus*; but this is a well-known Mediterranean species with a thick shelly operculum, and therefore different from the

Californian, which has a thin smooth operculum, and for which A. Adams and the author propose the name *Leptonyx*, leaving the name of *Collonia* (Gray) to tertiary shells, like *Delphinula marginata* (Lam.).—*L. (sanguineus*, var.) *purpureus*, sp. n., Carpenter, ibid., California.

Liotia fenestrata and *acuticostata*, sp. n., Carpenter, *l. c.* pp. 158 & 159, California.

Cyclostrema (Marryat). This genus is re-established by Mr. Jeffreys, Brit. Conchol. iii. p. 286, comprising the British species *Skenea cutleriana* (Clark), *Delphinula nitens* (Phil.) = *Trochus pusillus* (Forbes & Hanley), and the typical species *Helix serpuloides* (Montagu) = *Skenea divisa* (Fleming, Forbes & Hanley). The characters of the shell are: orbicular, white or of a uniform colour; spire more or less depressed, of few whorls; mouth nearly circular, with a free and continuous peristome; umbilicus distinct and deep. It corresponds to *Delphinoidea*, Brown, as proposed in A. & H. Adams's Gen. i. p. 406, but afterwards reunited by them with *Vitrinella*, ii. p. 629.

A monograph of this genus by A. Adams is contained in Sowerby's 'Thesaurus,' pp. 219–254, pl. 255. He describes and figures sixteen species, beside two of the subgenus *Daronia*, A. Ad. (*Serpularia*, Adams, Gen. p. 406), which somewhat resembles *Spirula* in its discoidal growth and rather disunited whorls; three of the subgenus *Tubiola* (A. Ad.), one of *Microtheca* (A. Ad.), and one of *Mörchia* (A. Ad.). The last three subgenera have the whorls rounded and not quite discoidal, the spire being somewhat elevated. *Tubiola* (type *Turbo niveus*, Chemnitz) is concentrically striated; *Microtheca* (*Isanda*, A. Adams, Ann. & Mag. Nat. Hist. 1862) radiately plicate, with channelled suture and a wide umbilicus; *Mörchia* almost smooth, the whorls rapidly increasing, the last ascending and embracing the other whorls as far as the apex. The subgenus *Tubiola* embraces the only European and British species, *Turbo divisus* (I. Adams). All the species are uniformly white and without pearly nacre. Nothing is known of the anatomical characters or even the outer features of the living animal, or of the operculum; most are known from dead specimens only picked up in the sand. The figures are not sufficiently magnified, and therefore cannot give a good idea of the particularities of sculpture, which is so important a character in this genus. New species are *Cyclostrema tornata* A. Ad., p. 251, figs. 19 & 20, and (*Daronia*) *cyclolina*, A. Ad., p. 253, fig. 34, both from Japan. For the first time figured, though previously described, are *Cyclostrema angulata*, A. Ad., figs. 1 & 2, *micans*, A. Ad., figs. 7, 8, & 27, *sulcata*, A. Ad., figs. 11 & 12, *anacingulifera*, A. Ad., figs. 13 & 14, *ammonoceras*, A. Ad., figs. 21 & 22, *spiglypta*, A. Ad., figs. 28 & 29, *biporcata*, A. Ad., figs. 30 & 31, (*Daronia*) *spiglypta*, A. Ad., figs. 28 & 29, *biporcata*, A. Ad., figs. 30 & 31, (*Tubiola*) *cornuella*, A. Ad., figs. 37 & 38, (*Mirula*, A. Ad., figs. 32 & 33, (*Tubiola*) *cornuella*, A. Ad., figs. 37 & 38, (*Mörchia*) *obvoluta*, A. Ad., (*Microtheca*) *crenellifera*, A. Ad., figs. 41 & 42, and (*Mörchia*) *obvoluta*, A. Ad., figs. 43 & 44, all from Japan or the Philippines, some from both localities; finally, *Cyclostrema excavata*, Carp., figs. 15 & 16, from the China seas.

Adeorbis (S. Wood). Mr. A. Adams's monograph in Sowerby's 'Thesaurus,' pp. 254–258, pl. 256, contains twenty-one species, one European and British, *A. subcarinatus* (Walker), two from the West Indies, one from Australia, the rest from the Philippines or Japan. The following appear to be figured for the first time:—*A. elegans*, A. Ad., figs. 1 & 2, St. Thomas; *plana*, A. Ad. figs. 3 & 4, *planorbula*, A. Ad., figs. 5 & 6, *nitida*, A. Ad., figs. 9 & 10, *trochula*, A. Ad., figs. 12 & 13, *depressa*, A. Ad., figs. 14 & 15, *orbella*, A. Ad.,

figs. 16 & 17, *carinata*, A. Ad., figs. 18 & 19, *japonica*, A. Ad., fig. 20, *sinensis*, A. Ad., figs. 21 & 22, *prominula*, A. Ad., figs. 23 & 24, *clausa*, A. Ad., figs. 25 & 26, *suturalis*, A. Ad., figs. 27 & 28, *corniculum*, A. Ad., figs. 29 & 30, *nanula*, A. Ad., figs. 31 & 32, *subangulata*, A. Ad., figs. 33 & 34, *patruelis*, A. Ad., figs. 35 & 36, *diaphana*, A. Ad., figs. 39 & 40, and *angasi*, A. Ad., figs. 39 & 40: the last from Australia.

Teinostoma (A. Ad.). The monograph of this genus in Sowerby's 'Thesaurus,' pp. 258–260, pl. 256, contains several species, besides one which forms a new subgenus, *Calceolina*, A. Ad., resembling *Neritina* in form. They are: *T. politum*, A. Ad., figs. 43 & 44, from the Philippines; *T. carpenteri*, A. Ad., figs. 41 & 42, Gulf of Pecheli; *concentricum*, *radiatum*, and *lucidum*, A. Ad., figs. 45, 46, 47, 48, 49, & 50, from Japan; *amplectans* and *substriatum*, Carpenter, figs. 51, 52, 53, & 54, from Mazatlan; finally, *Teinostoma (Calceolina) pusillum* = *Neritina pusilla* of the late C. B. Adams = *T. anomalum* in A. & H. Adams's Genera, figs. 55 & 56, Japan.

Zizyphinus candidus, Brusina, Verhandl. zool.-bot. Gesell. Wien, 1865, p. 25, from Zara, differs from *Trochus violaceus* (Riss.) only by its white colour.

Trochus occidentalis (Mighels) = *T. alabastrum* (Forbes & Hanley), Jeffreys, *l. c.*

Calliostoma formosum and *splendens*, sp. n., Carpenter, Proc. Californ. Acad. Nat. Sc. iii. 1864, p. 156, California; *C. variegatum*, Carpenter, Proc. Acad. Nat. Sc. Philad. 1865, p. 61, Puget Sound; *C. tricolor*, Gabb, Proc. Calif. Acad. Nat. Sc. 1865, California; *C.* (? *lima*, var.) *æquisculpta*, Carpenter, Proc. Zool. Soc. 1865, p. 279, Acapulco.

Gibbula purpurata, *elata*, *gibbosula*, *ivaniczi*, *linnei*, Brusina, Verhandl. zool.-bot. Gesellsch. Wien, 1865, pp. 26 & 27, Dalmatia.

Trochus millelineatus, sp. n., Bonnet, Revue Zool. 1864, p. 281, pl. 22. fig. 5, "Jorres Straits." [Torres Straits?]

Ptychostylis, g. n., Gabb, Proc. Calif. Acad. Nat. Sc. 1865, *Pt. coffea*, sp. n., Gabb, California.

Danilia, a generic name proposed by Brusina, *l. c.* p. 25, for *Monodonta limbata*, Phil. [which was raised eighteen years ago by Philippi himself to generic rank, *Craspedotus*, Zeitschr. Mal. ix. 1847, p. 23].

Trochiscus convexus, sp. n., Carpenter, Ann. & Mag. Nat. Hist. xv. p. 180, Monterey.

Margarita acuticostata and *salmonea*, sp. n., Carpenter, Proc. Californ. Acad. Nat. Sc. iii. 1864, pp. 157 & 158, California; *M. tenuisculpta*, *lirulata*, and *inflata*, sp. n., Carpenter, Proc. Acad. Nat. Sc. Philad. 1865, pp. 61 & 62, Puget Sound.

Trochus amabilis, sp. n., Jeffreys, Brit. Conchol. iii. p. 300, near Burra Firth, Unst, in 85–95 fathoms. Subgenus *Margarita*, allied to the Crag species *M. maculata* (S. Wood).—*T. grönlandicus* (Chemnitz) = *T. undulatus* (Forbes & Hanley), Jeffreys, *l. c.*

Trochus pullatus (Anton) found in the Sea of Marmora: Issel, Mem. Accad. Torin. xxiii. p. 25.

Mölleria. This new genus is proposed by Mr. Jeffreys, Brit. Conchol. iii. p. 292, for the arctic *Margarita costulata* (Möller) found in a probably fossil state in the northern British seas. Operculum calcareous, multispiral, with a central nucleus. Shell remarkably solid, with strong and partly dichotomous transverse ribs; peristome continuous; foot furnished with filaments.

Solariella (S. Wood) reintroduced by Mr. Carpenter, Proc. Calif. Ac. Nat. Sc. iii. 1864, p. 157, as a subgenus, in the author's sense, for *Margaritæ* with large crenated umbilicus, comprising the Crag species for which the genus was originally formed, and a new recent one from the North Pacific, but not the species enumerated under the same name in H. & A. Adams's 'Genera,' i. p. 431, for which A. Adams himself and Carpenter agree at present to use a new generic name, *Minolia*.—*S. amabilis*, sp. n., Carpenter, *l. c.*, California.

Vitrinella ornata and *tenuisculpta*, sp. n., Carpenter, Proc. Zool. Soc. 1865, p. 271, Mazatlan.

Stomatia kutschigi and *azonea*, Brusina, Verhandl. zool.-bot. Gesellsch. Wien, 1865, p. 29, Dalmatia. Both appear to belong to the genus *Fossarus*.

Scissurella kœneni and *S. hœrnesi*, sp. n., Semper, Journ. Conch. xiii. pp. 286–288, pl. 12. figs. 3 & 4, Philippines.—*Sc. rimuloides* sp. n., Carpenter, Proc. Zool. Soc. 1865, p. 271, Mazatlan.

Suborder Edriophthalma.

Fissurellidæ.

Fissurella tasmaniensis, Bonnet, Revue Zool. 1864, p. 67, pl. 6. fig. 5, Tasmania [= *F. scutella*, Reeve, Conchol. Iconica, fig. 33, 1849, subgen. *Clypidella*].

Fissurella concatenata and *omicron*, Crosse et Fischer, figured in Journ. Conch. xiii. 1865, pl. 3. figs. 1 & 2, and figs. 4–6, South Australia.

Emarginula bella, sp. n., Gabb, Proc. Calif. Acad. Nat. Sc. 1865, California.

Tecturidæ.

Lottia (Gray). This name is used by Mr. Carpenter for a new generic division, taken from the former genus *Lottia* (Gray) = *Acmæa* (Eschscholtz) = *Tectura* (M.-E.), and containing the *L. gigantea*, Gray. Its characters are intermediate between those of *Acmæa* (*sensu strictiore*) and *Scurria*; cloak papilliferous on the sides, but without papillæ near the head; gill very small. Journ. Conch. xiii. p. 140.

Acmæa scabrilirata and *subundulata*, sp. n., Angas, Proc. Zool. Soc. 1865, pp. 154 & 155, South Australia; *A.* (? *floccata*, var.) *filosa*, *subrotundata*, and *vernicosa*, sp. n., Carpenter, Proc. Zool. Soc. 1865, p. 277, Panama.

Lepeta cæcoides, sp. n., Carpenter, Proc. Acad. Nat. Sc. Philad. 1865, p. 60, Puget Sound.

Gadiniidæ.

Gadinia. *Roncellia*, subg. n. for *G. radiata* from California, Cooper & Gabb, Proc. Calif. Acad. Nat. Sc. 1865, California.

Patellidæ.

Patella albicostata and *gealei*, sp. n., Angas, Proc. Zool. Soc. 1865, pp. 56 & 57 (the former figured, pl. 2. fig. 11), South Australia; *P. lateristrigata*,

sp. n., Angas, *l. c.* p. 154, South Australia.—*Patella calamus*, Crosse et Fischer, figured in Journ. Conch. xiii. pl. 3. figs. 7 & 8, South Australia.

Patella compressa (Gm.), *miniata* (Born), and *rustica* (L.) are varieties of one species. Mörch, Proc. Zool. Soc. 1865, p. 97.

Chitonidæ.

Chiton (*Lophyrus*) *perviridis*, sp. n., Carpenter, Proc. Zool. Soc. 1865, p. 511, Central Pacific.

Callochiton pulchellus, diagnosis completed, Carpenter, *l. c.* p. 276, Panama.

Lepidopleurus adamsii and *tenuisculptus*, sp. n., Carpenter, *l. c.* pp. 274 & 275, Panama; both previously confounded under the name of *Chiton dispar*.

Mopalia kennerlyi, *sinuata*, and *imporcata*, sp. n., Carpenter, Proc. Acad. Nat. Sc. Philad. 1865, p. 59, Puget Sound.

Ischnochiton (*Trachydermon*) *retiporosus*, *trifidus*, *pseudodentiens*, and *flectens*, sp. n., Carpenter, *l. c.* pp. 59 & 60, Puget Sound.

Ischnochiton elenensis, diagnosis completed, and *I. expressus*, sp. n., Carpenter, Proc. Zool. Soc. 1865, p. 275, Panama.

Stenochiton juloides, *Microplax grayi*, described in the previous year, are now figured, Angas, Proc. Zool. Soc. 1865, pl. 2. figs. 15 & 16.

Acanthopleura nigropunctata, sp. n., Carpenter, Proc. Zool. Soc. 1865, p. 511, Society Islands.

Chiton californicus, Prescott, Am. Journ. of Science and Arts, 1864, Sept. p. 185, afterwards (p. 431) recognized as *Cryptochiton stelleri* (Middendorff).

Order OPISTHOBRANCHIATA.

Hancock, A. On the structure and homologies of the renal organ in the Nudibranchiate Mollusca. Trans. Linn. Soc. xxiv. pp. 511–530, pls. 54–59.

The renal organ of various British and foreign species is described. There are to be distinguished three chief parts—the pericardial chamber, the renal chamber proper, and the pyriform vesicle, the renal chamber proper being diversified to some extent in the different genera, the other parts nearly similar throughout all the animals examined. There is a very striking resemblance between this organ in the Nudibranchiates and the renal organ of the bivalve Acephala and that of the Cephalopods, but a chief difference is that it is single in the Nudibranchiates, paired in the Acephala as well as Cepholopoda, and more extensively developed in the Cephalopods than in the others.

Meyer, H. K., und Möbius, K. Die Hinterkiemer der Kieler Bucht. See above p. 235.

A separate article of the introduction, pp. xxiii–xxx, is an abridged treatise on the structure and life of the Mollusca

Opisthobranchiata, followed by detailed descriptions of the nineteen species observed by the authors. All are figured in natural size, magnified, and with addition of the details of the buccal organs. The plates are beautiful and equal to those in the British Nudibranchiate Mollusca by Alder and Hancock. All the species will be mentioned subsequently, although one only is a new species. The plates are not numbered, but placed between the letterpress, so that they must be referred to by the pages.

Stuart, A. Ueber die Entwickelung einiger Opisthobranchier. [On the development of some Opisthobranchia.] Zeitschr. für wiss. Zool. xv. pp. 94–103, pl. 7. figs. 1–13; also in Canestrini's Archivio per la Zoologia, l'Anatomia e la Fisiologia, Modena, vol. iii. April, pp. 328–334.

Contains some observations on the ova of *Aplysia* and *Eolis* (*Cavolina*) *peregrina*, the advancement of their development in a higher temperature, the formation of the central spot (central vesicle of other authors) in the egg, the cilia and muscles of the larvæ; the author has no doubt that the cilia and muscles are morphologically identical.

Suborder Tectibranchiata.

Tornatellidæ.

Tornatella punctocœlata, sp. n., Carpenter, Journ. Conch. xiii. p. 139, California.

Cylichnidæ.

Cylichna (*cylindracea*, var. ?) *attonsa*, sp. n., Carpenter, Proc. Acad. Nat. Sc. Philad. 1865, p. 58, Puget Sound; *C. planata*, sp. n., Carpenter, Journ. Conch. xiii. p. 139, S. Diego, California.

Cylichna truncata (Montagu), Meyer and Möbius, *l. c.* p. 87. The living animal is described and figured. No radula; the stomach armed with three oval tuberculiferous plates.

Amphiphyra expansa, sp. n., Jeffreys, Report Brit. Assoc. Adv. Sc. for 1864, p. 330, from the Shetland Islands.

Volvula cylindrica, sp. n., Carpenter, Ann. & Mag. Nat. Hist. xv. p. 179, Sta. Barbara, California.

Bullidæ.

Bulla cumiera, Crosse, sp. n., Journ. Conch. xiii. p. 40, pl. 2. fig. 7, South Australia.

Acera bullata (Müller), Meyer & Möbius, *l. c.* p. 81. The swimming or rather flying of this animal through the water is described.

Philinidæ.

Philine aperta (L.), Meyer & Möbius, *l. c.* p. 77.

Bullæa angasi, sp. n., Crosse, Journ. Conch. xiii. p. 38, pl. 2. fig. 8, South Australia.

Laona, g. n., A. Adams. Shell semiovate, thin, with wide aperture; *surface decussate*. The British *Bulla pruinosa* (Clark) and a new species from Japan, *L. zonata*, A. Adams, Ann. & Mag. Nat. Hist. xv. p. 324, constitute this new genus.

Leuconyx (H. & A. Adams), a supposed new genus of *Bullidæ*, is recognized by those authors to be the internal spatulate appendage of *Pholas costata*. Proc. Zool. Soc. 1865, p. 755.

Pleurobranchidæ.

Tylodina fungina, sp. n., Gabb, Proc. Calif. Acad. Nat. Sc. 1865, California.

Suborder Anthobranchiata.

Doris pilosa, proxima, and *muricata*, Meyer & Möbius, *l. c.* pp. 63–76.

Polycera ocellata and *quadrilineata*, Meyer & Möbius, *l. c.* pp. 49–55.

Ancula cristata, Meyer & Möbius, *l. c.* p. 59.

Suborder Æolobranchiata.

Dendronotus arborescens, Meyer & Möbius, *l. c.* 43.

Æolis drummondi, alba, papillosa, exigua, and *rufibranchialis* described and figured by Meyer and Möbius, *l. c.* pp. 21–42.

Embletonia mariæ, sp. n., and *E. pallida* (A. H.), Meyer & Möbius, *l. c.* p. 13–17.

Suborder Dermobranchiata.

Elysia viridis, Meyer & Möbius, *l. c.* p. 7.

Pontolimax capitatus, Meyer & Möbius, *l. c.* p. 3.

Order PULMONATA.

Suborder Geophila, Férussac (Stylommatophora, A. Schmidt).

Morse, E. Observations on the Terrestrial Pulmonifera of Maine. Journ. Portl. Soc. Nat. Hist. Portland, Maine, 1864, 8vo, pp. 63, with numerous woodcuts and several plates.

Contains numerous important observations on the buccal plate (jaw) and radula (teeth); the most interesting will be mentioned subsequently.

Leydig, F. Zur Anatomie und Physiologie der Lungenschnecken [*Pulmonata*]. Archiv für mikroskopische Anatomie und Physiologie von M. Schultze, i. 1865, pp. 43–67.

The ring of ganglions surrounding the œsophagus contains, in the Pulmonata, two lateral portions, each being subdivided into

an upper transverse commissure, a lower similar one, and a lower portion of ganglia, the anterior of which has been named *ganglion pedale*, the posterior *g. viscerale*; none can be referred to the sympathetic system. The microscopical structure of the nerves and neurilemma is examined, as well as the structure of the eyes. The vesiculæ containing the otoliths are stated to be connected by a peduncle with the upper ganglion, but there is no communication with the outer surface of the animal. It would appear that the Pulmonata take quantities of water into their body by the mouth.

Keferstein, W. Ueber den feineren Bau der Augen der Lungenschnecken. (Nachricht. Gesellsch. Wiss. und Univers. Göttingen, 1865, pp. 237–247.)

Anatomical description of the eyes of the pulmoniferous mollusca, with a short review of the accounts of former authors, confirming in a remarkable manner that of Swammerdam, and identifying the eyes of these mollusks (as regards their general structure) with the simple eyes of the Articulata, especially the spiders. Their chief constituents are the sclerotica, cornea, a globiform lens, and a retina, formed by fibrous elements intermixed with cellulæ or granules, and consisting of three strata, the middle of which is distinguished by a dark pigment, the anterior by bacilliform elements.

Sanders, A. On the anatomy of the generative organs in certain Pulmogasteropoda. Quart. Journ. of Microscop. Sc. 1865, v. pp. 89–96, with pl. 7.

After an historical introduction the author describes the generative glands of *Planorbis corneus*, *Limnæus stagnalis*, and *Helix adspersa*. He confirms the opinion that one and the same gland, at the same period of time, secretes both zoosperms and ova, but that the zoosperms are not formed, as in the Mammals, in the interior of cells, viz. the "vesicles of evolution," but are those vesicles of evolution themselves, simply altered in shape and attenuated. Following the suggestion of G. H. Lewes, he adopts the term *dichogamic* instead of hermaphroditic, in order to distinguish this normal occurrence of bisexualism from the abnormal hermaphroditism of arrested development.

Binney, W. G. Note on the jaws of *Helix*. Am. Journ. Conch. i. p. 47, with pl. 1.

The number and disposition of the ribs on the anterior surface of the jaw varies in different individuals of the same species, which is proved by the jaws of nine full-grown specimens of *Helix tryoni*.

Keferstein, W. Ueber die geographische Verbreitung der

Pulmonaten. [On the geographical distribution of the Pulmonata.] Nachrich. Gesellsch. Wiss. und Univers. Göttingen, 1865, January, pp. 9–18.

A short treatise, enumerating thirty-four malacological provinces, illustrated by the same map which is also inserted in the continuation of Bronn's 'Klassen und Ordnungen des Thierreichs.'

Mörch, O. A. L. Quelques mots sur un arrangement des Mollusques pulmonés terrestres (*Géophiles*, Fér.) basé sur le système naturel. Journ. Conch. xiii. pp. 265–283, 376–396.

Contains very judicious remarks on the systematic value of several characters, anatomical as well as zoological, used by various authors for the classification of this family. Several natural groups or (according to the views of the author) genera are exemplified by lists of their species, and the arrangement based upon the differences in the jaws (maxillæ), proposed by the author several years ago and mentioned in the 'Record' of last year, p. 220, is again given in a somewhat modified form and with the addition of a greater number of exotic groups:—

I. Oxygnatha: jaw smooth, edge cutting, often with a median prominence. *Philomycus, Limax, Tennentia, Parmacella, Helicarion, Ariophanta, Nanina, Rhysota, Vitrina, Hyalinia, Zonites, Leucochroa, Rumina, Clausilia*; perhaps also *Phania, Planispira, Solaropsis, Otala, Caracolla, Labyrinthus.*

II. Aulacognatha: jaw finely and regularly grooved, edge crenulated. *Bulimulus, Ena, Pupa, Discus, Vallonia*; perhaps also *Sagda* and *Hygromia* [*Fruticola*].

III. Odontognatha: jaw strongly ribbed, edge toothed. *Veronicella, Arion, Ariolimax, Anadenus, Pellicula, Peltella, Moreletia?, Pfeifferia, Chlorœa, Axina, Pythohelix, Helicobulimus, Cochlicellus, Jacosta* (=*Herophila*), *Euparypha, Eulota, Tridopsis, Trigonostoma, Arionta* (including *Chilotrema* and *Campylæa*), *Iberus, Tachea, Pomatia, Pleurodonta, Thelidomus, Limicolarius, Achatina, Borus.*

IV. Goniognatha: jaw composed of several pieces jointed together in oblique lines. *Pseudostrombus* [=*Liguus*], *Orthalicus.*

V. Elasmognatha: jaw horseshoe-shaped, with a square plate behind; edge prominent in the middle. *Janella, Aneitea, Omalonyx, Succinea.*

VI. Agnatha: no jaw; generally no median tooth in the radula. *Onchis, Peronella, Testacella, Daudebardia, Streptaxis, Urocoptis* [=*Cylindrella*], *Glandina*; perhaps also *Ennea, Megaspira*, and *Polygyratia* (*Helix polygyra*); also *Ærope* (*Helix caffra*, Fér.).

A list of all the species, in which some anatomical character has been investigated, is appended to this paper.

Onchididæ.

Keferstein, W. Einige Bemerkungen über die Geschlechtsorgane von *Peronia verruculata* (Cuv.) = *Onchidium peronii* (auct.). Zeitschr. für wiss. Zool. xv. pp. 86–93, pl. 6. figs. 14–16.

The chief peculiarity of the sexual apparatus is, that the sperma, after having arrived in the spermatic furrow as in other Opisthobranchia and Prosobranchia, does not continue its way on the outside of the penis, but reenters at the end of the furrow into a channel conducting it to the penis. By this organization, as well as by the situation of the heart, *Peronia* approximates to the Opisthobranchia and is removed from *Vaginula*. The author demurs to the respiratory function of the dorsal processes. The synonymy of the species is as follows:—*Onchidium peronii* (Cuv.) = *Peronia mauritiana* (Blainv.), from Mauritius; *Onchidium verruculatum* (Cuv., Descript. Egypt.) = *Onch. peronii* (Audouin, Ehrenberg, Blainville), from the Red Sea, Java, Japan.

Vaginulidæ (Veronicellidæ).

Keferstein, W. Anatomische Untersuchung von *Veronicella* [*Vaginulus*] *bleekerii*, n. sp. Zeitschr. für wissensch. Zool. xv. pp. 118–126, pl. 9.

Vaginula bleekeri, sp. n., p. 125, from Java.—The lungs (respiratory cavity) are formed by a channel three-fourths as long as the body, and situated on the right side of the back near the intestine; the orifice of the hermaphroditic glandulæ and their annexa is situated on the lower surface of the body, near its hinder end; a vas deferens conducting the sperma from the hermaphroditic glandule to the penis (which is situated near the right tentacle) appears to exist, although the author could not follow its entire course. The whole organization proves a close affinity of this species to the *Limacidæ*.

Janellidæ.

Keferstein, W. Ueber die zweitentakeligen Landschnecken *Janella, Aneitea, Triboniophorus*. Zeitschr. für wiss. Zool. xv. pp. 76–85, tab. vi. figs. 1–13.

An historical and anatomical account of the family *Janellidæ* is followed by systematic diagnoses of the three genera mentioned: they have rudimentary shells and a median prominence on the maxilla, like *Limax* and *Vitrina*.

The species known are enumerated, and two described as new—*Triboniophorus schüttei* and *T. krefftii*, p. 85, from Sydney.

——. Ueber die Anatomie der *Janella bitentaculata* (Q. et G.) von Neuseeland. Ibid. pp. 447–450, pl. 34.

Limacidæ.

Pallifera, Morse, Journ. Portland Soc. Nat. Hist. i. p. 8, is a new genus founded upon *Tebennophorus dorsalis* (Binney), and distinguished from *Tebennophorus* [=*Philomycus*] by the buccal plate being strongly ribbed as

in *Arion* and the true *Helix*, whereas it is smooth with a middle prominence in the typical *Tebennophorus*, as in *Limax*.

Limax pectinatus, sp. n., Selenka, Malak. Blätt. xii. p. 105, pl. 2. figs. 1–9, from Sydney. The same author describes a *L. bicolor* as new (*l. c.* figs. 10–17), but recognizes its identity with *Limacus brockworthianus* (*l. c.* p. 173). He also describes the anatomy of these species.

Limax schwabi (v. Frauenf.). The zoological characters of this Transylvanian species, in comparison with those of *L. transilvanicus*, are pointed out by Heynemann, Verh. zool.-bot. Ges. Wien, 1865, pp. 533–535.

Limax arborum has been observed lowering itself from a tree some five or six feet, and *reascending* it by the same thread. Harte, Proc. Nat. Hist. Soc. Dublin, iv. 1865, pp. 182 & 183.

Ariolimax (Mörch). Mr. Binney gives a description of this genus. An internal shelly plate; respiratory organs situated rather far backwards, as in *Limax*; jaw dentate, as in *Arion*. Type *Arion columbianus* (Lea). The entire animal, jaw, and lingual dentition are figured. Am. Journ. Conch. i. p. 48, pl. 6. figs. 11–13.

Urocyclus, g. n., Gray. A deep pit in the posterior part of the mantle; caudal gland very large. *U. kirkii*, Gray, Ann. & Mag. Nat. Hist. 1865, pp. 331 & 332, c. fig., Central Africa. [The slug observed by Prof. Peters in Mozambique, which was alluded to by the Recorder in Mal. Blätt. 1859, appears to belong to this genus.]

Agnatha (Testacellea).

Physella (Pfr.). Mr. Berendt states that the living animal is of much larger size than the shell. Another person stated that he had seen it leaving the shell whilst it was held in the hand of the observer. Mal. Blät. xii. pp. 207 & 208.

Glandina uhdeana (Martens, 1863), figured Mal. Blätt. xii. pl. 1. fig. 1; *G. turris* (Pfr.) redescribed, ibid. p. 11; *G. amœna*, sp. n., Martens, ibid. p. 12, pl. 1. figs. 8 & 9; all from Mexico.

Cylindrella. Further observations on the peculiar structure of the columella in several species have been published by T. Bland, this character having first been pointed out by him in 1855. In *C. turris* (Pfr.) the columella is tubiform and ribbed, with a groove or sinus within each whorl; in *C. goldfussi* (Menke) there are four spiral lamellæ inside in the penultimate whorl. The absence of a buccal plate (jaw) in this genus is confirmed as a distinctive character from *Macroceramus*; the teeth of *C. scæva* (Gundlach) figured in a woodcut. Ann. Lyc. Nat. Hist. New York, viii. pp. 160 & 161.

Cylindrella truncata (*Bulimus truncatus*, Pfr.) referred to this genus, and redescribed from a specimen collected by Uhde in Mexico. Martens, Mal. Blätt. xii. p. 13. New Species:—*C. imbricata*, Martens, ibid. pl. 1. figs. 2 & 3, from Mexico; *C. clava*, Wright, *cristallina*, Wright, *heynemanni*, Pfr., *mixta*, Wright, *teneriensis*, Wright, Mal. Blätt. xii. pp. 119–121, from Cuba; *C. coahuilensis*, Binney, Am. Journ. Conch. i. p. 50, pl. 7. fig. 45, Cienga Grande, Coahuila; *C. remondii*, Gabb, Am. Journ. Conch. i. p. 208, pl. 19. figs. 10–13, Sonora, Mexico, near *C. pfeifferi*; *C. modesta*, Poey, Repert. fisico-nat. Cuba, i. p. 70, near *C. camoënsis*.

Oxygnatha (Vitrinea).

New genera and species:—

Vitrina letourneuxi, Bourguignat, Mal. Alg. ii. p. 303, Blidah, Algeria; *V. crusseola* and *V. unguiculus*, Morelet, Journ. Conch. xiii. p. 225, Cochinchina; *V. planilabris*, Cox, Proc. Zool. Soc. 1865, p. 697, New South Wales.

Stenopus? *guildingii*, Bland, Ann. Lyc. Nat. Hist. New York, viii. p. 157, with a woodcut representing the shell, the animal half contracted, buccal plate, and teeth. The foot terminates in a rather long tentacle-like process above the mucous pore. [This may be regarded as a modification of the abruptly truncated hinder end of the foot of *Nanina*, the buccal plate or jaw and the teeth agreeing also with that genus.]

Nanina (*Hemiplecta*) *undosa*, Blanford, Journ. As. Soc. Bengal, 1865, p. 68, Ava. *N. textrina* (Bens.): adult specimens have the edges of the aperture slightly thickened, Blanford, *l. c.* p. 87.

[*Nanina*] *Helix travancorica*, *pedina*, and *chloroplax*, Benson, Ann. & Mag. Nat. Hist. xv. pp. 13 & 14. Respectively from Travancore, Bombay, and Simla.

[*Nanina*] *Helix brotii*, Bonnet, Revue Zool. 1864, p. 67, pl. 5. fig. 1, Borneo; *H. sinistra*, ibid. fig. 2 [=*H. hugonis*, Pfr.]; *Helix liberiæ*, A. D. Brown, Am. Journ. Conch. i. p. 136, Cape Palmas.

Nanina (*Macrochlamys*) *compluvialis*, *nebulosa*, and *hypoleuca*, Blanford, Journ. As. Soc. Bengal, 1865, pp. 66 & 67, Arakan and Pegu.

Nanina samoënsis, *upolensis*, *firmostyla* (pl. 14. fig. 7), and *schmeltziana*, Mousson, Journ. Conch. xiii. pp. 165–167, Samoa Islands; *N. unisulcata* and *microconus*, Mousson, ibid. pp. 191 & 192, Feejee Islands.

Nanina (*Trochomorpha*) *attegia* (Bens.). The mucus-pore at the extremity of the foot, characteristic of *Nanina*, has been observed in this species by Blanford, *l. c.* p. 88. *N.* (*Troch.*) *confinis*, *culmen*, and *gratulator*, Blanford, *l. c.* pp. 71 & 72, Pegu; *Helix vitrea*, Bonnet, Revue Zool. 1864, p. 68, pl. 5. fig. 3, from South America [seems to be=*H. conicoides* (Metcalfe) from Borneo].

[*Trochomorpha*?] *Helix transarata*, Mousson, Journ. Conch. xiii. p. 194, Feejee Islands, allied to *T. nigritella* (Pfr.).

Nanina (*Kaliella*) *conula*, Blanford, *l. c.* p. 73, Arakan.

Nanina (*Sesara*) *helicifera*, *mamillaris*, and *basseinensis*, Blanford, *l. c.* pp. 68–70. The group *Sesara*, formerly placed in the genus *Helix*, is stated to belong to *Nanina*. The combination of *Helix castra* and *sanis* with *infrendens* by Theobald (Record for 1864, p. 197) is stated by the author himself to be a printer's error. Ibid. p. 104.

Sitala, new subgenus of the family *Stenopidæ*, proposed for *Helix infula* by H. Adams, Proc. Zool. Soc. 1865, p. 408.

Helix caduca and *bilineata*, Pfr., have the hinder end of the foot truncated and pierced by a hole, probably the opening of a gland [like *Nanina*]. Berendt, Mal. Blätt. xii. p. 208.

Zonyalina. This name has been proposed by Dr. von Martens to indicate a distinct group of *Hyalina*, the type of which would be *Helix bilineata*.

Malak. Blät. xii. p. 16.—This species has been observed alive by Berendt, ibid. p. 208; he states that this species, as well as *H. caduca* (Pfr.), has the hinder end of the foot truncated and provided with a cavity.

Hyalina malinowskii, Zelebor, Mal. Blätt. xii. p. 101, Dobrudscha, allied to *H. incerta* (Drap.); [*Hyalina*] *Helix kutschigii* (Parreyss), Pfr. Mal. Blätt. xii. p. 104, island of Lacroma, Dalmatia; [*Hyalina*] *Zonites subplicatulus*, Bourguignat, Mal. Alg. ii. p. 304, Philippeville, Algeria; *Hyalina sinulabris*, Martens, Monatsb. Akad. Wiss. Berl. 1864, p. 53, Siam; [*Hyalina*] *Zonites vitiensis*, Mousson, Journ. Conch. xiii. p. 193, Feejee Islands.

[*Hyalina*] *Helix morsii*. This name is to be substituted for *H. binneyana* (Morse), the latter being preoccupied: Tryon, Am. Journ. Conch. i. p. 188. [This change of name will be necessary only when *Hyalina* or even *Zonites* are not recognized as genera distinct from *Helix*.]

[*Hyalina*] *Conulus chersina* (Say). Some differences in the form of the shell between this American species and the European *H. fulva* (Drap.) are pointed out and figured by Morse, Journ. Portl. Soc. Nat. Hist. i.

[*Macrocyclis*] *Helix voyana*, Newcomb, Am. Journ. Conch. i. p. 235, pl. 25. fig. 4, California.

Pseudohyalina, Morse, *l. c.* The lateral aculeate uncini of the radula, agreeing in form with those of *Hyalina*, comprise about one-third (in *Hyalina* only one-sixth or one-seventh) of the whole number of plates in a row; moreover the buccal plate is more like that of *Vallonia*, and the shell is striated or ribbed, not polished. This new genus comprises *Helix exigua* (Stimps.) and *H. minuscula* (Binney).

Helicacea (Odontognatha).

Patula complementaria and *P. hystricelloides*, sp. n., Mousson, Journ. Conch. xiii. pp. 168 & 169, pl. 14. figs. 5 & 6, Samoa Islands.—[*Patula*] *Helix cerinoidea*, Anthony, Am. Journ. Conch. i. p. 351, pl. 25. fig. 3, North Carolina, allied to *H. elliotii* (Redfield).—*Helix duranti*, Newcomb, Proc. Calif. Acad. Nat. Sc. vol. iii. 1864, p. 115, California.

Planogyra asteriscus, Morse, Journ. Portl. Soc. Nat. Hist. i. p. 27, pls. 2 & 8. The differences in the sculpture of the shell and buccal plate, considered to be of generic importance by Morse, seem scarcely to justify a separation from *Patula*. Lives on wet boggy ground.

Striatura, g. n., Morse, *l. c.* Central plate of the radula enormous; buccal lamina almost smooth, with a median furrow and notch. *S. ferrea*, sp. n., and *S. milium*, sp. n., *l. c.* pp. 17–19, pl. 7.

Helicodiscus, g. n., Morse, *l. c.* Buccal plate with very strongly diverging striæ and smooth edge. Type *Helix lineata* (Say), p. 25, pls. 2 & 8.

Strobila, g. n., Morse, *l. c.* Buccal plate smooth, with the edge minutely crenate. Type *Helix labyrinthica* (Say), p. 26, pl. 8.

Helix conspecta, Bland, Ann. Lyc. Nat. Hist. New York, viii. p. 163, San Francisco, California. Allied to *H. asteriscus* (Morse) and *H. mazatlanica* (Pfr.); all three figured in woodcuts, pp. 163 & 164.

Anguispira, g. n., Morse, *l. c.* Type *Helix alternata*. Buccal plate strongly striate, longitudinally and transversely, with the lateral ends truncate, whereas in the true *Patula*, for example *P. striatella* (Anthony), it is only longitudinally (divergently) striate, its lateral ends being pointed and produced. Morse, *l. c.* pp. 11 & 21.

Punctum, g. n., Morse. Type *Helix minutissima* (Lea). Very remarkable by its buccal plate being composed of sixteen distinct oblong laminæ, figured [illegible] p. 28; the teeth of the radula are quadrangular plates with rather short denticles, strangely similar to those of *Carychium*, p. 39. The shell resembles that of the European *H. pygmæa* (Drap.), the jaw of which is represented by Moquin-Tandon as simple.

Helix. European species:—

Helix ignota is a new name proposed by Mabille, Journ. Conch. xiii. p. 255, for *H. intersecta* (Michaud). According to him, *Helix intersecta* of Poiret and Brard would be another species = *H. striata* (Drap.) = *fasciolata* (Moquin-Tandon), and *H. fasciolata* of Poiret a third = *candidula* (Stud.); he proposes, therefore, to change all these names. We think this would cause new confusion, and it would be better to retain the name of *candidula*, generally adopted for a species well known to every conchologist, instead of substituting for it a name which is interpreted by every author in a different manner.

Helix constricta (Boubée) has been found in several parts in the western half of the Pyrenees, on French as well as on Spanish territory. Crosse, Journ. Conch. xiii. pp. 369–376.

Helix caræ found in Corsica by M. Aucapitaine. See above, p. 218.

Species from Northern Africa and Western Asia:—

Helix challameliana, Bourguignat, Mal. Alg. ii. p. 306, near *H. fruticum*, Müll.; *H. bastidiana*, Bourguignat, *l. c.* p. 397, near the preceding; *H. ablennia*, Bourguignat, *l. c.* p. 311.

Helix desertorum and *H. melanostoma*. On their varieties and geographical range, Martens, Malak. Blätt. xii. pp. 188–193.

Helix stauropolitana (A. Schmidt), var. *elegans*, Issel, Mem. Accad. Torin. xxiii. p. 30, pl. 1. figs. 20–22, from Ghilan, Northern Persia; *H. langloisiana* (Bourg.) from Schiraz, figured by Issel, *l. c.* pl. 1. figs. 17–19.

Helix carmelita, sp. n., Tristram, Proc. Zool. Soc. 1865, p. 532, Mount Carmel. [As this specific name is already preoccupied by Férussac for a species, not from Mount Carmel, but supposed to resemble in its colours the dress of the Carmelite monks, we would propose the name *H. tristrami*.] *H. masadæ*, sp. n., Tristram, *l. c.* p. 535, Sebbeh to Jebel Usdum, Palestine, very near to *H. spiriplana* (Olivier).

Species from Eastern Asia:—

Helix blakeana and *declivis*, sp. n., Newcomb, Proceed. Calif. Acad. Nat. Sc. 1865, Japan; *H. myomphala*, sp. n., Martens, Monatsb. Akad. Wiss. Berl. 1864, p. 53, Yokohama, Japan; *H. vesta*, *shermani*, *granti*, *swinhoei*, *formosensis*, *bucca*, and *mellea*, sp. n., Pfeiffer, Proc. Zool. Soc. 1865, pp. 828–829, all from Formosa, figured on plate 46: *H. shermani*, *granti*, and *mellea* appear to belong to the group *Plectotropis*, *H. swinhoei* and *formosensis* to *Camena*—the latter sinistral, like *H. cicatricosa*.

Helix basilessa, sp. n., Benson, Ann. & Mag. Nat. Hist. xv. p. 11, Travancore; *H. polypleuris*, sp. n., Blanford, Journ. As. Soc. Bengal, 1865,

p. 76, Arakan (an *Nanina*?); *H. phayrei* (Theobald), from Ava, described by Blanford, *l. c.* p. 90.

[Group *Corilla*] *Helix anax*, sp. n., Benson, Ann. & Mag. Nat. Hist. xv. pp. 12 & 15, from Travancore, Southern India; *H. odontophora*, Benson, ibid. p. 175, Ceylon. Particulars on other species and the whole group [illegible] added.—*Helix* (*Plectostylis*) *karenorum*, *peraucta*, and *feddeni*, sp. n., Blanford, Journ. As. Soc. Bengal, 1865, pp. 74 & 75, Pegu and Ava.

Helix dicœla, sp. n., Morelet, Journ. Conch. xiii. p. 226, Siam.—*H. quadricolvis*, sp. n., Martens, Monatsb. Akad. Wiss. Berl. 1864, p. 53, Borneo.

Species from the Moluccas, New Guinea, and Australia:—

Helix zoæ, *gysseriana*, *lorquini*, sp. n., Pfr. Mal. Blätt. xii. pp. 121–123, Moluccas.

Helix (*Dorcasia*) *compta*, sp. n., H. Adams, Proc. Zool. Soc. 1865, p. 414, pl. 26. fig. 8, Batjan.

Helix (*Planispira*) *aspasia*, sp. n., H. Adams, *l. c.* p. 415, pl. 21. fig. 23, Batjan.

Albersia, subgen. nov. of *Helix*, type *Helix granulata* (Quoy et Gaimard) proposed, but not characterized, by H. Adams, *l. c.* p. 410.

Helix (*Geotrochus*) *waigiouensis*, sp. n., H. Adams, *l. c.* p. 415, pl. 21. figs. 6 & 7; and *H.* (*G.*) *turris*, sp. n., *l. c.* figs. 4 & 5, from Waigiou; *H.* (*G.*) *blanfordi*, sp. n., *l. c.* fig. 1, from New Guinea.

Helix villandrei, *occlusa*, and *rhizophorarum*, sp. n., Gassies, Journ. Conch. xiii. pp. 210 & 211, New Caledonia; *H. splendescens*, sp. n., Cox, Proc. Zool. Soc. 1865, p. 696, Salomon Islands; *H. aridorum* and *nautiloides*, sp. n., Cox, *l. c.* pp. 695 & 696, New South Wales; *H. urarensis*, id. ibid. p. 696, Urara, Clarence river, Australia; *G. greenhilli*, id. ibid. Queensland, Australia; *H. flosculus* sp. n., Cox, *l. c.* p. 695, Norfolk Island.

African species:—

Helix africæ, sp. n., A. D. Browne, Am. Journ. Conch. i. p. 136, Great Brakke, South Africa. Resembles *H. planti*, Pfr.

West-Indian species:—

Helix wrighti, sp. n., Gundlach, Mal. Blätt. xii. p. 118, Vignales, Cuba; *H. arctistria*, sp. n., Pfr. ibid., Cuba, near *H. bonplandi*; *H. gracilis*, sp. n., Poey, Repert. fisico-nat. de Cuba, i. p. 69, Cuba, near *H. boothiana*.

Helix marginelloides, *rostrata*, *mina*, *pazensis*, *arangiana*, *gutierrezi*, *transitoria*, *jactata*, *charpentieriana*, and *schwartziana* are all reunited with *H. sagemon* (Beck), this being in consequence the only Cuban species of the restricted group *Caracolla*. Arango, Catal. Mol. Cuba; see p. 228.

Mexican species:—

Helix griseola (Pfr.). Its affinities to, and differences from, *H. berlandieriana* (Moric.) are pointed out by Martens, Mal. Blätt. xii. pp. 18, 19 & 153.

Helix humboldtiana (Val.) and *baffoniana* (Pfr.) are regarded as varieties of one species by Martens, *l. c.* p. 16.

Helix (*Polygyra*) *implicata* (Beck) is described for the first time by Martens, *l. c.* p. 20, Vera Cruz.

Helix (*Polygyra*) *behrii* and *anilis*, sp. n., Gabb, Am. Journ. Conch. i. pp. 208 & 209, pl. 19. figs. 5–9 & 1–4, Guaymas, Mexico.

Californian species:—

The Californian species of *Helix* are enumerated by Newcomb, Am. Journ. Conch. i. pp. 342–350. As new species, have been described by him *Helix hillebrandi*, *tryoni*, *crebristriata*, *rufocincta*, *gabbii*, *facta*, *whitneyi*, *breweri*, in Proc. Calif. Acad. Nat. Sc. iii. 1864, pp. 115–118. The first three are allied to *H. dupetit-thouarsi* and *kelleti*. *H. tryoni* is figured in Am. Journ. Conch. i. pl. 6. fig. 1.

Helix sportella (Gould). Its specific differences from *H. vancouverensis* (Lea) are pointed out by Th. Bland, Ann. Lyc. Nat. Hist. N. York, viii. p. 165.

Helix cronkhitei and *roscelli*, sp. n., Newcomb, Proc. Calif. Acad. Nat. Sc. 1865, Oregon and Arizona.

Species from Western North America:—

Vallonia minuta (Say). The shell, buccal plate, and teeth are figured by Morse, *l. c.* pp. 21 & 22, and pl. 8, together with the shell and buccal plate of the European *Helix pulchella*. The specific differences pointed out by the author are so very minute that the Recorder must express his doubt as to whether they would be confirmed by a comparison of a series of European specimens with one of American ones, a certain amount of variability in form being observed in *all* species whenever a large number of specimens has been examined.

Xolotrema (Rafinesque) proposed by Tryon for a group of *Helix*, formerly included among *Triodopsis*, such as *Helix palliata*, *obstricta*, *appressa*. Am. Journ. Conch. i. p. 81. [The name is Greek in appearance only, and senseless in reality.]

Helix (*Tachea*) *nemoralis* and *hortensis*. "A tracing which Mr. Binney sends me of the buccal plate of the European *T. nemoralis* is nearly identical with the buccal plate of *H. hortensis* from Maine, while that of the European *hortensis* is quite different." Morse, *l. c.* p. 10. [This rather remarkable statement may be explained by the variability of the number of ribs in the buccal plate of the same species as found by other naturalists; indeed the differences between the buccal plate of the European *nemoralis* and *hortensis* are very small, if there be at all any constant difference between them.]

Bulimus swinhoei and *sphæroconus*, sp. n., Pfeiffer, Proc. Zool. Soc. 1865, p. 830, pl. 46. figs. 2 & 3, Formosa. The first belonging to the group *Amphidromus*, the last having the appearance of an incomplete shell.

Calycia, a new division, called group, but the name used like a generic one, proposed by H. Adams, without indication of the essential characters. Type *Bulimus crystallinus* (Reeve). The discovery of this interesting shell in Waigiou is due to Mr. Wallace. Proc. Zool. Soc. 1865, p. 412.

Achatina (*Limicolaria*) *cailliaudi* (Pfr.) and *sennaariensis* (Shuttl.), var. *hartmanni*, from the Sennaar, described by Martens, Mal. Blätt. xii. pp. 197–200.—*Achatina calabarica*, sp. n., Pfeiffer, Proc. Zool. Soc. 1865, p. 832, Old Calabar.

Achatina lorioli, sp. n., Bonnet, Revue Zool. 1864, p. 279, pl. 22. fig. 1, Brazil [The statements concerning the localities in this paper do not appear to be

exact, some being misspelt, as Wairgeir (Waigiou?), and Jorris (Torres?) Straits; others are probably wrong, as in *H. vitrea* and the *Achatina* just mentioned.]

Pseudachatina elongata, sp. n., Pfeiffer, Proc. Zool. Soc. 1865, p. 832, Gaboon.

Orthalicea (Goniognatha).

The genus *Punctum*, Morse (see above, page 273), has some analogy to this subdivision, its jaw being also composed of several pieces, but the pieces themselves are of a very different shape.

Bulimulus (*Otostomus*) *pieschelli*, Martens, Mal. Blätt. xii. pl. 1. fig. 10, West coast of Mexico.

Bulimulus (*Liostracus*) *mexicanus*. Lamarck's *Bulimus mexicanus*, collected by Humboldt, is not a Mexican species, but the *B. humboldti* (Reeve) from the Upper Maranhon. However, the name *mexicanus* may be applied to the truly Mexican species, described by Pfeiffer as *mexicanus* β *gracilior* and figured in Reeve's 'Conchologia Iconica,' fig. 244. Martens, *l. c.* pp. 23–25.

Bulimulus (*Mesembrinus*) *uhdeanus*, Martens, *l. c.* pl. 1. figs. 4 & 5, Mexico; *B.* (*M.*) *livescens* (Pfr.), *B.* (*Mormus*) *hegewischi* (Pfr.), *B.* (*Scutalus*) *schiedeanus* (Pfr.), *sulcosus* (Pfr.), a. *hyematus* (Reeve) and b. *fenestratus* (Pfr.), and *B. fenestrellus* (Martens) are described from a rather large number of specimens, Martens, *l. c.* pp. 27–35: all from Mexico.

[*Bulimulus*] *Bulimus auris*, *tenuilabris*, and *juarezi*, sp. n., Pfeiffer, Proc. Zool. Soc. 1865, pp. 831 & 832; the first two from Venezuela, the last from the Pacific side of Mexico; *Bulimus lehmanni* and *anguillensis*, sp. n., Pfr., Mal. Blätt. xii. pp. 123 & 124, Island of Anguilla in the West Indies.

Orthalicus lividus (Martens), *livens* (Shuttl.), *longus* (Pfr.), *princeps* (Sow.), and *ferussaci* (Martens) are Mexican species described from fresh specimens and compared with the allied species from the West Indies and South America; *O. melanochilus* (Valenc.) proved to be the proper name for the so-called *O. zebra* of Shuttleworth, which is not Müller's *zebra*. Martens, Mal. Blätt. xii. pp. 37–47.

Pupacea (Aulacognatha).

[*Buliminus*] *Bulimus interfuscus*, sp. n., Issel, Mem. Accad. Torin. xxiii. p. 31, pl. 2. figs. 23 & 24, from the Ararat, closely allied to *B. detritus* (Müller) and *B. hohenackeri* (Kryn.); *B. doriæ*, sp. n., Issel, *l. c.* p. 33, figs. 29–32, from Ispahan; *B. anatolicus*, sp. n., Issel, *l. c.* p. 34, figs. 33–36, from Trebizond; *B. tridens* (Müll.), var. *attenuatus*, Issel, *l. c.* p. 37, figs. 37–40, from Armenia; *B. ghilanensis*, sp. n., Issel, *l. c.* figs. 41–44, from Persia.

[*Buliminus*] *Bulimus smithei*, sp. n., Benson, Ann. & Mag. Nat. Hist. xv. p. 15, banks of the Sutlej river.—*Bulimus scrobiculatus* and *plicifer*, sp. n., Blanford, Journ. As. Soc. Bengal, 1865, p. 77, Pegu.—*Buliminus kirkii*, sp. n., Dohrn, Proc. Zool. Soc. 1865, p. 232, Cabaceira, Mozambique.

[*Buliminus*?] *Bulimus wairgeirensis*, Bonnet, Revue Zool. 1864, p. 279, pl. 22. fig. 2, Wairgeir [Waigiou?].

[*Chondrus*] *Bulimus uriæ*, sp. n., Tristram, Proc. Zool. Soc. 1865, p. 537, Wady of Amman, Palestine.

Partula leucothoë, *calypso*, and *thetis*, sp. n., Semper, Journ. Conch. xiii. pp. 417–422, pl. 12. figs. 5, 7, & 6, Pelew Islands; *P. canalis*, sp. n., Mousson, Journ. Conch. xiii. p. 172, Samoa Islands; *P. lirata*, sp. n., Mousson, ibid. p. 196, pl. 14. fig. 4, Feejee Islands.

Achatinella alexandri, sp. n., Newcomb, Proc. Calif. Acad. Nat. Sc. 1865, Maui, Sandwich Islands.

Tornatellina hidalgoi, sp. n., Crosse, Journ. Conch. xiii. p. 219, pl. 6. fig. 6, Gambier Islands.

[*Cionella*, group *Glessula*] *Achatina leptospira*, *fairbanki*, and *vadalica*, sp. n., Benson, Ann. & Mag. Nat. Hist. xv. pp. 14 & 15, from Soomeysur, Makabaleshwar, and Wadale near Ahmednugger, British India.—*Achatina peguensis*, sp. n., near *gemma*, *A. pertenuis*, sp. n., and *Spiraxis pusilla*, sp. n., Blanford, Journ. As. Soc. Bengal, 1865, pp. 78 & 79, from Pegu and Arakan.

[*Cionella*] *Zua lubricoides* (Stimp.). An attentive examination and comparison of many specimens from several different localities in Europe, and from Ohio, New York, Massachusetts, many places in Maine, &c., has not as yet brought to light any satisfactory characters by which to distinguish this species from its European representative [*lubrica*, Müll.]. A few differences which *seemed* to hold good in a *majority* of cases are mentioned. Morse, Journ. Portl. Soc. Nat. Hist. i. p. 30.

[*Stenogyra*] *Bulimus incertus*, sp. n., Pfeiffer, Proc. Zool. Soc. 1865, p. 830, Formosa.—*Stenogyra upolensis*, sp. n., Mousson, Journ. Conch. xiii. p. 175, Samoa Islands.

Achatina californica (Pfr.), from Bogota, New Granada, has been compared by Dr. Carpenter with the type in Cuming's collection; it appears to be viviparous [like some other *Stenogyræ*]. Bland, Ann. Lyc. Nat. Hist. N. York, viii. p. 166, with a woodcut.

Subulina (*Cœliaxis*) *layardi*, sp. n., H. Adams & Angas, Proc. Zool. Soc. 1865, p. 54, pl. 2. fig. 1, Cape of Good Hope.

Macroceramus. Buccal plate and teeth of *M. signatus* (Guilding) figured in a woodcut by Bland. Ann. Lyc. Nat. Hist. New York, viii. p. 162.

Macroceramus maculatus, sp. n., Wright, Mal. Blätt. xii. p. 119, Cuba.

Clausilia pauli, sp. n., Mabille, Journ. Conch. xiii. p. 259, pl. 14. fig. 9, Montagne de Larhune, Pyrenees: near *C. plicatula* (Drap.).—*C. genezerethana* and *medlycotti*, sp. n., Tristram, Proc. Zool. Soc. 1865, p. 830, Genezareth and Sarepta.—*C. erivanensis*, sp. n., Issel, Mem. Accad. Torin. xxiii. p. 41, pl. 3. figs. 52–54, Erivan; *C. lessonæ*, sp. n., Issel, *l. c.* p. 42, figs. 55–57, Northern Persia.—*C. duboisi* (Charp.), found at Trebizond, is figured by Issel, *l. c.* pl. 2. figs. 48–51.—*C. swinhoei*, sp. n., Pfeiffer, Proc. Zool. Soc. 1865, p. 830, pl. 46. fig. 11, and *C. sheridani*, sp. n., Pfeiffer, ibid., Formosa.—*C. fusiformis*, sp. n., Blanford, Journ. As. Soc. Bengal, 1865, p. 80, Arakan.

Pupa. The buccal plates of *Leucochila pentodon* and *corticaria* (Say), *Pupilla badia* (Adams), *Isthmia ovata* (Say) and *gouldii* (Binney) are described and figured by Morse, *l. c.* pp. 36–38. They are very dissimilar: in *L. corticaria* only with slight striæ in the middle and a middle projection, lateral ends pointed, like that of *Hyalina*; in *P. badia* with numerous longitudinal striæ on the upper half only; in *I. gouldii* with transverse and longitudinal striæ; in *I. ovata* strongly curved, with few striæ; in *L. pentodon* irregularly wrinkled longitudinally, the wrinkles forming slight projections in the cutting edge. The teeth of the radula in all these species are figured on plate 10, and much more similar. In hundreds of specimens of *Pupa badia*, col-

lected near Portland, Mr. Morse could never find a trace of the parietal tooth of the aperture, which is but rarely absent in the nearly allied European *P. muscorum*, and has been mentioned by Adams in the original description of *P. badia*.

Pupa armeniaca, sp. n., Issel, Mem. Accad. Torin. xxiii. p. 39, pl. 2. figs. 45–47, from Erivan, allied to *P. muscorum*; *P. libanotica*, sp. n., Tristram, Proc. Zool. Soc. 1865, p. 538, from Ainat in the Lebanon; *P. hebraica*, sp. n., Tristram, *l. c.* p. 539, from Jericho.—*P. pediculus* (Shuttl.), var., *samoensis*, and *P. problematica*, sp. n., Mousson, Journ. Conch. xiii. pp. 175 & 176, from the Samoa Islands.

Pupa paivæ, sp. n., Crosse, Journ. Conch. xiii. p. 218, pl. 6. fig. 5, from Gambier Islands.

Pupa rowellii (Newcomb) and *P. californica* (Rowell) are compared with each other and figured by Bland. Ann. Lyc. Nat. Hist. N. York, viii. p. 167.

Pupa varius [!], sp. n., Bonnet, Rev. et Mag. Zool. 1864, p. 71, pl. 6. figs. 3–4, said to be from Tasmania [but most probably from the West Indies, this shell being even very closely allied to *P. chrysalis*].

Vertigo briobia, sp. n., Bourguignat, Mal. Alg. ii. p. 313.

Pupoides. A new generic name, without any characters, proposed by Arango for *Pupa fallax* (Say), formerly *Cyclostoma marginatum* (Say), Repert. fisico-nat. Cub. i. p. 112.—Tryon distinguishes *C. marginatum* (Say) = *Bulimus fallax* (Binney) from *Pupa fallax* (Say), referring both to the genus *Bulimus*, section *Napæus*. Am. Journ. Conch. i. p. 286.

[*Cylindrus*] *Bulimus polygyratus* (Reeve) found in Persia. Issel, Mem. Accad. Torin. xxiii. p. 32, pl. 2. figs. 25–28.

Zoogenetes, g. n., Morse, pp. 32–36; type *Pupa harpa* (Say). The animal and shell, buccal plate and teeth, with several other anatomical details, are figured, *l. c.* pl. 1. Buccal plate transversely and longitudinally striate, its edge slightly indented, with a middle projection. This species is viviparous and contains embryos in various stages of development at the same time; it is very common in the vicinity of Portland, found in April in the frozen ground, just below the surface, glued to leaves or with epiphragma, alive, evidently more hardy than *Bulimus lubricus*, which was found at greater depths, attached to roots of weeds.

Ennea bicolor (Hutt.). This widely diffused species has been also observed in Pegu by Blanford. Journ. As. Soc. Beng. 1865, p. 95.

Ennea lævigata, sp. n., Dohrn, Proc. Zool. Soc. 1865, p. 232, Mumba Island, Lake Nyassa.

Streptaxis birmanica [*-us*], sp. n., Blanford, *l. c.* p. 81, Arakan.—*St. kirkii*, sp. n., Dohrn, *l. c.*, Mumba Island, Lake Nyassa.—*St. decipiens*, sp. n., Crosse, Journ. Conch. xiii. p. 228, Chile?

Succineæ (Elasmognatha).

New species:—

Succinea dunkeri, Zelebor, Mal. Blätt. xii. p. 101, Dobrudscha.—*S. globosa*, Tristram, Proc. Zool. Soc. 1865, p. 531, Huleh, Upper Jordan.—*S. japonica*, Newcomb, Proc. Calif. Acad. Nat. Sc. 1865, Japan.—*S. plicata*, Blanford, Journ. As. Soc. Bengal, p. 80, Arakan.—*S. tenuis*, Morelet, Journ. Conch. xiii. p. 225, Cochinchina.—*S. virgata*, Martens, Malak. Blätt. xii. p. 50, pl. 1. figs. 6 & 7, from Vera Cruz.—*S. sillimani* and *S. stretchiana* from Nevada, *S. verrillii* from the Gulf of St. Lawrence, Bland, Ann. Lyc. Nat. Hist. New York, viii. pp. 167–170, with woodcuts.

Succinea haydeni (Binney) and *S. hawkinsi* (Baird) figured by Bland, *l. c.*

Succinea haleana, grosvenori, moresiana, wilsonii, forsheyi, and *pellucida* are described as new species by Lea, Proc. Ac. Nat. Sc. Philad. 1864, pp. 109 & 110, from the United States. The same author defends the specific validity of several forms which appeared to Binney to be of a doubtful character.

Suborder Limnophila.

Auriculacea.

[*Scarabus*] *Pythia pantherina* (A. Adams), var. *uveana*, Mousson, Journ. Conch. xiii. p. 177, Samoa Islands.

Cassidula multiplicata, Martens, Monatsb. Ak. Wiss. Berlin, 1864, p. 54 = *C. nucleus*, auct., non Martyn, Banka; *C. flaveola*, sp. n., Martens, *l. c.*, Ceram.

Melampus siamensis, nucleolus, sulculosus, and *edentulus*, sp. n., Martens, *l. c.* pp. 54 & 55, the first from Siam, the two following from Amboina, and the last from Flores.—*M. albus*, sp. n., Gassies, Journ. Conch. xiii. p. 211, New Caledonia.

Limnæacea.

Limnæus. Tryon, Am. Journ. Conch. i. pp. 247–252, divides the North American species, fifty in number, thus:—

1. *Limnæa*: *L. stagnalis* (L.) and *L. lepida* (Gould).
2. *Neristoma*: *L. ampla* (Mighels), *columella*, and *macrostoma* (Say). [The type is, without doubt, *L. auricularius*, L.]
3. *Bulimnæa*: *L. megasoma* (Say). [This division might be properly united with the following.]
4. *Limnophysa*: type *L. palustris* (Müll.), contains the greater part of the species, with several from the arctic regions.
5. *Leptolimnæa*: *L. attenuata* (Say) and *kirtlandiana* (Lea). [Peculiar to North America, but scarcely distinct from the preceding division.]
6. *Acella*: *L. gracilis* (Jay) and *L. lanceata* (Gould). [Peculiar to North America.]

Limnæus ovatus (Drap.), var. *stübeli* and *L. auricularius*, var. *ribeirensis*, Reibisch, Malak. Blätt. xii. pp. 131 & 132, from S. Antao, Cape Verde Islands.

[*Limnæus*] *Lymnæa smithsoniana, traskii, jamesii, lecontii*, and *arctica*, sp. n., Lea, Proc. Ac. Nat. Sc. Philad. 1864, p. 113, the first four from the United States, the last from Moose River, British America.

Limnæa rowellii, gabbii, and *binneyi*, sp. n., Tryon, Am. Journ. Conch. i. pp. 228 & 229, pl. 23. figs. 1, 2 & 3, California and Oregon; *L. zebra*, sp. n., Tryon, *l. c.* fig. 4, Minnesota and Michigan; *L. browsii*, sp. n., Tryon, *l. c.* fig. 15, Ohio.

Limnæa defilippii, sp. n., Issel, Mem. Accad. Torin. xxiii. p. 45, pl. 3. figs. 62 & 63, Lake Goktscha in Armenia. [Almost too closely allied to *L. stagnalis*, L.]

Limnæa auricularia, var. *persica*, Bourguignat in litt., Issel, *l. c.* p. 47, Kerman.

Limnæus subulatus (Dunker) = *Omphiscola pugio* (Beck), very near to *L. attenuatus* (Say), Mexico. Martens, Mal. Blätt. xii. p. 58.

Physa. Tryon enumerates sixty species of this genus from the United States, and carefully compiles their synonymy. Am. Conch. i. pp. 165–173. He says (p. 223), "The specific characters in the *Physæ*, though not very marked, are really very constant; and, therefore, probably not only most of those species recently described by Lea and those herein described will stand, but we may reasonably conclude that many yet uncharacterized species inhabit our waters."

Physa niagarensis, altonensis, crocata, forsheyi, tenuissima, halei, febigerii, nicklinii, grosvenorii, whitei, saffordii, hawnii, anatina, parva, shawalterii, smithsoniana, warreniana, traskii, striata, blandii, nuttalii, venusta, hordacea, and *brevispira* are new species described by Lea, Proc. Ac. Nat. Sc. Philad. 1864, pp. 114–116, from the United States or Canada.

Physa propinqua, cooperi, sparsestriata, diaphana, malleata, distinguenda, politissima, occidentalis, primeana, lata are new species described by Tryon, Am. Journ. Conch. i. pp. 223–227, pl. 23. figs. 5–14, United States, most of them from California; *P. primeana*, from Long Island.

Physa fragilis (Mighels) = *ancillaria* (Say) var. The shell was found in a millstream charged with wood-dust from a neighbouring saw-mill. In the waters above the mill *P. ancillaria* occurred in abundance, with no trace of *P. fragilis*. This mill was afterwards destroyed, and nearly synchronous with this event was the entire obliteration of *P. fragilis* and the recurrence of the normal form *P. ancillaria*; nothing approaching this abnormal form has elsewhere been observed in the State of Maine. Morse, *l. c.* p. 44.

Physa mexicana (Phil.) with some smaller varieties and *P. osculans* (Haldeman) inhabit Mexico. Martens, Mal. Blätt. xii. p. 57.

[*Aplexa*] *Bulinus berlanderianus*, sp. n., Binney, Am. Journ. Conch. i. p. 51, pl. 7. fig. 8, Texas; *Physa nitens* (Philippi) = *Aplexa aurantia* (Carpenter), Mexico. Martens, Mal. Blätt. xii. p. 57.

Planorbis newberryi (Lea), from California, again described by Lea. The tentacula do not seem to be so long as is usual in *Planorbis*; therefore Lea proposes a new genus, *Megasystropha*, Proc. Ac. N. Sc. Philad. 1864, p. 5. For the same shell Binney proposed the generic name *Carinifex* in 1863; he describes and figures it in Am. Journ. Conch. i. p. 50, pl. 7. figs. 6 & 7.

Planorbis hornii, sp. n., Tryon, Am. Journ. Conch. i. p. 231, pl. 22. fig. 16, Fort Simpson, British America; *P. oregonensis*, sp. n., Tryon, *l. c.* fig. 17, Pueblo Valley, Oregon, from a thermal spring, water above blood-heat.

Planorbis tumidus (Pfr.), *tenuis* (Phil.) = *tumens* (Carpenter) ?, and *haldemani* (Dunker) are Mexican species redescribed by Martens, Mal. Blätt. xii. pp. 54–56.

Ancylus reticulatus, sp. n., Gassies, Journ. Conch. xiii. p. 212, New Caledonia; *A. altus* and *subrotundatus*, sp. n., Tryon, Am. Journ. Conch. i. p. 230, pl. 22. figs. 15 & 16, California.

Ancylus fani, var. *major*, Issel, Mem. Accad. Torin. xxiii. p. 44, pl. 3. figs. 58–61, from Erivan.

Suborder THALASSOPHILA.

AMPHIBOLIDÆ.

[*Amphibola*] *Ampullacera maculata*, sp. n., Mousson, Journ. Conch. xiii. p. 203, pl. 14. fig. 3, Feejee Islands.

Order PULMONATA OPERCULATA.

PFEIFFER, LUD. Monographia pneumopomorum viventium. Supplementum secundum. Cassel, 1865, 8vo, pp. 284.

This supplementary volume contains an enumeration of all the species of this order, 1587 in number, and descriptions of those discovered since the publication of the first Supplement in 1858, with numerous additional references to other species. The systematic arrangement is retained, but several new genera have been inserted, as *Chittya* (Livesay) among the *Aciculacea*, *Clostophis* (Bens.) among the *Diplommatinacea*, *Rhiostoma* (Bens.), *Opisthostoma* (Blanford), *Hybocystis* (Bens.) among the *Cyclotea*, *Arinia* (H. & A. Adams) among the *Pupinea*, *Cyclotopsis* (Blanford) and *Diplopoma* (Pfr.) among the *Licinea*, *Cecina* (A. Adams) among the *Realiea*. *Omphalotropis* (Pfr.), which had been made a subdivision of *Hydrocena* in the first supplement, forms now a distinct genus of *Realiea*. *Japonia* (Gould) is made a subdivision of *Hydrocena*. Dr. Pfeiffer persists in uniting in this subfamily of *Realiea*, and probably in each of the genera referred to it, animals essentially different in the conformation of the tentacles and radular teeth, as has been stated for *Hydrocena cattaroënsis* and *Omphalotropis maculata*. Other species of *Assiminea*, with entirely similar shells, have been excluded from his monograph, although they had been properly described under the name *Assiminea* or *Paludina*; for instance, *A. francisci* (Wood) and *A. carinata* (Lea), which latter is, in fact, the eldest name of a species described under three different names in Pfeiffer's Supplement—*Omphalotropis maculata, fulvida*, and *fasciolata*. Those *Assimineæ* the station of which is exactly known live on muddy places impregnated with brackish water; the true *Hydrocena* (*H. cattaroënsis*) on rocks on the sea-coast, like *Litorina*; the *Realiæ* with slender tentacles, as *R. rubens*, are true land-shells. As far as the shells are concerned, the distinction between those three genera does not offer more difficulty than that between the genera *Pupa*, *Carychium*, and *Diplommatina*, *Planorbis* and *Valvata*, *Succinea* and *Limnæus*. Single mistakes may occur, but generally the resemblance of an unknown species to another, the systematic place of which is already ascertained, will lead the careful student to a determination of its real affinity; and it is only owing to the confusion of those genera throughout Dr. Pfeiffer's and Messrs. Adams's works that the names *Realia* and *Hydrocena* continue to be used as frequently

for true *Assimineæ* as for true *Cyclostomidæ* with long tentacles; and from the descriptions alone it is sometimes impossible to decide to what genus a species belongs.

Further, Dr. Pfeiffer unfortunately persists in regarding the subfamilies *Cyclotea, Cyclophorea, Licinea, Cyclostomea, Cistulea* and *Pomatiatea* as divisions of equal coordinate value. The examination of the radula proves, and the geographical distribution confirms (see Zool. Record, i. p. 237), that the *Cyclotea* and *Cyclophorea* on the one hand, and the *Licinea, Cyclostomea,* and *Cistulea* on the other, ought to be grouped together. The difference between a thin horny and a thick shelly opercle is of little importance indeed, as may be seen in *Alycæus,* a most natural genus, some species of which have a thin and others a thick opercle; the same difference in the opercles occurs in the most natural genera *Ampullaria* and *Natica.* The subfamily *Pupinea* has the same radula and opercle as the *Cylophorea*; but nevertheless it may be kept distinct, the shape of the shell being very decidedly different and no intermediate form being known to exist; but then, also, *Pollicaria* ought to be retained among the *Pupinea,* although its opercle is shelly like that of the *Cyclotea.*

The family *Helicinacea* is subdivided into three subfamilies, *Stoastomea, Helicinea,* and *Georissea,* the last containing the new Indian genus *Georissa* (Blanford).

Bland, Th. Note on the buccal plate (jaw) in certain genera of the family *Cyclostomacea.* Am. Journ. Conch. i. pp. 45 & 46, with plate 5.

The buccal plate of *Cyclotus stramineus* (Reeve) and *Megalomastoma cylindraceum* (Chemn.) are figured, both generally agreeing with those of *Craspedopoma* and *Pomatias* described by Troschel. The [restricted] genus *Cyclostoma,* however, has no buccal plate.

Cyclophoridæ.

New species :—

Cyclotus longipilus and *fulminulatus,* Martens, Monatsb. Akad. Wiss. Berl. 1864, p. 51, Celebes; *C. campanulatus,* Martens, *l. c.,* Nagasaki.

Pterocyclos wilsoni, Pfeiffer, Proc. Zool. Soc. 1865, p. 831, pl. 46. fig. 12, Formosa; *P. feddeni,* Blanford, Journ. As. Soc. Bengal, 1865, p. 83, Pegu; *P. parva* [*-us*], Pease, Am. Journ. Conch. i. p. 290, Polynesia.

Cyclophorus (*Lagochilus*) *lepocinus,* Blanford, *l. c.* p. 82, Pegu.

Cyclophorus cruentus, Martens, Ann. & Mag. Nat. Hist. xvi. p. 429, Samar, Philippines; *C. bellulus,* Martens, Monatsb. Akad. Wiss. Berl. 1864, p. 52, Borneo; *C. ciliocinctus,* Martens, *l. c.,* Java; *C. upolensis,* Mousson, Journ. Conch. xiii. p. 180, Samoa Islands.

Cyclophorus? *scalariformis,* Pease, Am. Journ. Conch. i. p. 289, Polynesia. Operculum described, agreeing with that of *Cyclophorus,* but the shell resembling that of *Vertigo.* The author suggests the establishment for it of a

new genus, *Pupoidea.* [This name is already used in a scarcely different form, *Pupoides,* for another genus. See above, p. 278.]

Cyclophorus salleanus (Martens) = *mexicanus* (Pfr. Monogr.), distinguished from the true *C. mexicanus* (Menke) by Martens, Mal. Blätt. xii. p. 151.

Leptopoma achatinum, Crosse, Journ. Conch. xiii. p. 229, Philippine Islands (?); *L. moussoni,* Martens, *l. c.,* Timor; *L. scalare,* H. Adams, Proc. Zool. Soc. 1865, p. 416, pl. 21. figs. 9 & 10, Waigiou.

Alycæus japonicus, Martens, Monatsb. Akad. Wiss. Berl. 1864, p. 51, Yokohama, Japan; *A. politus* and *glaber,* Blanford, Journ. As. Soc. Bengal, 1865, pp. 83 & 84, Arakan.

Pupinea.

Megalomastoma and *Pollicaria.* Twenty-six species are figured in Sowerby's 'Thesaurus,' pl. 263. New are *M. lowei,* A. Ad. & Sow., from Labuan, and *M. serotinum,* A. Ad. & Sow., from Cuba.

Cataulus. Fifteen species are figured in Sowerby's 'Thesaurus,' pl. 264. New are *C. leucocheilus,* A. Ad. & Sow., fig. 14, from Ceylon, and *C. recurvatus,* A. Ad. & Sow., Anamallay forest, foot of the Nilgherries.

Pupina, Rhegistoma, and *Callia.* O. Semper shows that the differences between these three genera are by no means constant, but pass into one another; he proposes to unite them as sections into one genus. Journ. Conch. xiii. pp. 408–413.

Pupina (Vignard). Twenty-eight species (including *Pupinella*) are figured in Sowerby's 'Thesaurus,' pl. 265, several of them being figured for the first time, as *P. superba* (Pfr.) fig. 35, from Sumatra; *P. borneensis* (Pfr.), fig. 32; *P. bilinguis, strangei, meridionalis,* and *planilabris* (Pfr.), figs. 8–10, 24, 33 & 34, from Australia; *P. ventrosa* (Dohrn), figs. 21–23, from Australia; *P. ottonis* (Dohrn), fig. 25, from the Philippines; *P. difficilis* (Semper), fig. 28, from the Pelew Islands; and *P. rufa* (Pfr.), fig. 29, from Japan.

Pupina pfeifferi, sp. n., H. Adams, Proc. Zool. Soc. 1865, p. 416, Batchian. The figures 11 & 12 of plate 21, said to represent this new species, do not appear to me to agree with the description, but rather to represent *Callia wallacei* (Pfr. Proc. Zool. Soc. 1863, pl. 12. fig. 1); nor can the specific name stand, as there exists already a *Pupina pfeifferi,* named by Dohrn and described in the same journal, 1862, p. 183, from Northern Australia.

Pupina difficilis, Semper (see Zool. Record, i. p. 238), figured in Journ. Conch. xiii. pl. 12. fig. 8.

Rhegistoma (Hasselt). The five well-known species of Gray and Sowerby are figured in Sowerby's 'Thesaurus,' pl. 264.

Rhegistoma ambiguum, Semper (see Zool. Record, i. p. 239), figured in Journ. Conch. xiii. pl. 12. fig. 9.

Callia (Gray). Three species are figured in Sowerby's 'Thesaurus,' p. 265.

Callia amboinensis, sp. n., Martens, Monatsb. Akad. Wiss. Berl. 1864, p. 53, Amboina.

Diplommatinacea.

Semper, O. Note préliminaire sur la famille des Diplommatinacées. Journ. Conch. xiii. pp. 289–296.

Besides some historical remarks, a systematic list of forty-eight species hitherto known is given; they are referred to four genera; none of the genera and species are characterized.

Diplommatina nana, sp. n., Blanford, Journ. As. Soc. Bengal, 1865, p. 85, Pegu.

Plectostoma, g. n., H. Adams. Last whorl bent upwards and backwards; aperture without teeth. *P. de crespignii*, sp. n., H. Adams, Ann. & Mag. Nat. Hist. xv. p. 177, Labuan. This genus has been recognized by Mr. H. Adams himself to be identical with *Opisthostoma* (Blanford, 1861), Proc. Zool. Soc. 1865, p. 755; but its position is not yet ascertained, the operculum being unknown. Blanford places it between *Alyceus* and *Diplommatina*, Adams among the *Helicidæ* near *Boysia* and *Hypselostoma*, Pfeiffer among the *Cyclotea* behind *Alyceus*, and Semper among the *Diplommatinacea*.

Cyclostomidæ (?).

Pomatias (Stud.). Only eleven species are described and figured in Sowerby's monograph, forming part of the 'Thesaurus,' pp. 265–267, pl. 259, whilst in the same year (1864) Crosse enumerated twenty species in the French Journal of Conchology, and Pfeiffer fifteen some years ago in the first supplement of his monograph of the *Pneumopoma*; three others were added in 1864, see Zool. Record, i. p. 239. *P. himalayæ* (Bens.) is figured, figs. 19 & 20.

New species:—

Realia ochrostoma, variabilis, scalariformis, affinis, and *lævis*, Pease, Am. Journ. Conch. i. pp. 287–289, Polynesia.

[*Realia*] *Hydrocena parvula*, Mousson, Journ. Conch. xiii. p. 184, Upolu, Samoa Islands.

[*Realia?*] *Hydrocena marginata*, Morelet, Journ. Conch. xiii. p. 226, Siam.

Omphalotropis zebriolata (pl. 14. fig. 11), *perforata* (fig. 12), *conoidea, bifilaris bilirata* (fig. 13), Mousson, *l. c.* pp. 181–184, Samoa Islands; *Omph. ovata* (fig. 10) and *parva*, Mousson, *l. c.* pp. 198 & 199, Feejee Islands.

[*Omphalotropis?*] *Hydrocena turbinata*, Morelet, *l. c.* p. 226, Cochinchina.

Assimineæ.

[*Assiminea*] *Hydrocena insularis*, sp. n., Crosse, Journ. Conch. xiii. p. 223, pl. 6. fig. 7, Gambier Islands.

Assiminea subrotundata, sp. n., Carpenter, Ann. & Mag. Nat. Hist. xv. p. 28, Neeah Bay, Vancouver district. "May prove to be a large *Hydrobia*."

Paludinella castanea, sp. n., Carpenter, *l. c.*, Neeah bay, Vancouver district. "May be an aberrant *Assiminea*."

[*Assiminea*] *Paludinella helicoides*, sp. n., Gundlach. Umbilicated, diam. 1½, alt. 1 millim., whitish, somewhat glossy, four rounded whorls. Repert. fisico-nat. de Cuba, i.

Truncatellidæ.

Truncatella rustica, sp. n., Mousson, Journ. Conch. xiii. p. 186, pl. 14. fig. 8, Uvea Island, Samoa group.

Truncatella (Taheitia) clathrata, sp. n., H. Adams and Angas, Proc. Zool. Soc. 1865, p. 54, pl. 2. fig. 2, Salomon Islands; *T. wallacei*, H. Adams, ibid. p. 416, pl. 21. figs. 13 & 14, Waigiou.

Helicinidæ.

Helicina arakanensis, sp. n., Blanford, Journ. As. Soc. Bengal, 1865, p. 85, Arakan.—*H. zoæ* and *guttula*, sp. n., Pfr. Mal. Blätt. xii. p. 124, Moluccas.—*H. plicatilis*, sp. n., Mousson, Journ. Conch. xiii. p. 178, Upolu, Samoa Islands; *H. vitiensis*, sp. n., Mousson, ibid. p. 198, Feejee Islands; *H. pazi*, sp. n., Crosse, Journ. Conch. xiii. p. 221, pl. 6. fig. 8, Gambier Islands; *H. pacifica*, sp. n., Pease, Am. Journ. Conch. i. p. 291, Polynesia.

Helicina turbinata (Wiegmann), *deppeana* (Martens), and *zephyrina* (Duclos) are three Mexican species closely allied to each other; their affinities and differences are pointed out by Martens, Mal. Blätter, xii. pp. 6–9; *H. deppeana* figured, pl. 1. figs. 11 & 12.

Helicina viridis (Lam.). The shell figured by Delessert as this species is evidently = *H. versicolor* (Pfr.) from Hayti; the species described by Gray and Sowerby as *viridis* (Lam.) is distinct, and not known from autopsy to Dr. Pfeiffer, perhaps identical with one seen by the Recorder in Mousson's collection as a native of Java. Whether Delessert is right in using the Lamarckian name is not quite clear, as Lamarck's description does not fully agree with the figure given by Delessert. Martens and L. Pfeiffer, Mal. Blätt. xii. pp. 174–176.

Proserpinidæ.

Proserpinella, g. n., Bland. With one small parietal lamella, without columellar fold. *P. berendti*, sp. n., Bland, from Mirador, Mexico, 3000–4000 feet above the sea: Ann. Lyc. Nat. Hist. New York, viii. p. 157, with woodcut. *Proserpina swifti*, described by the same author two years ago, without parietal lamella, but with columella fold, is figured, *l. c.* p. 155.

Order SOLENOCONCHÆ.

Dentalium rectius, sp. n., Carpenter, Proc. Ac. Nat. Sc. Philad. 1865, p. 59, Puget Sound.

Helonyx, g. n., Stimpson. Shell small, subulate, polished, almost hyaline, arcuated, swollen before the middle and contracted at the mouth, posteriorly attenuated, with the margin of the anal aperture entire. Foot greatly elongated, cylindrical, obtuse at the extremity; collar apparently entire. Anal siphon longer than in *Dentalium*, not fissured. The shell resembles that of an Annelid, *Ditrupa*, by the contraction of the anterior extremity. The typical and only living species is *Dentalium clavatum*, Stimps., from Hongkong, on muddy bottom, at depths of from six to twenty fathoms. Some species described as from the Cretaceous, Eocene, and Miocene formations are referred to this genus:—*D. coarctatum* (Lam.), *thallus* (Conrad), *pusillum* (Gabb), and *Ditrupa subcoarctata* (Gabb). Am. Journ. Conch. i. p. 63, pl. 9. fig. 14.

Class CONCHIFERA.

Seeley, H. A help to the identification of fossil bivalve shells. The Geologist, 1864, Feb. pp. 44–50.

From a consideration of recent lamellibranch shells the author has devised a system of generic characters founded on the hinge-teeth, which are written in formulæ like those used for the teeth of Mammalia: Thus *Trigonia* is represented by the formula $\frac{\cdot 1 : 2 \cdot}{\cdot 2 \cdot}$.

Order INCLUSA, Cuv. (*Pholadacea*, Adams).

Pholadidæ.

Navea newcombii, sp. n., Tryon, Am. Journ. Conch. i. pp. 39 & 285, pl. 2. figs. 1–3, Lower California.

Penitella parva, sp. n., Tryon, *l. c.* figs. 4 & 5, Lower California; *P. curvata*, Tryon, *l. c.* p. 40, pl. 2. figs. 6–8, Straits of Fuca.

Nettastomella, g. n., Carpenter. Type *Pholas darwinii* (Sow.) = *Parapholas penita* (Tryon). Valvis postice in calycem testaceum planatum prolongatis; calyce coriaceo nullo. Proc. Zool. Soc. 1865, p. 202.

Teredo. This genus is treated by Jeffreys, Brit. Conch. iii. p. 123, in an almost monographic manner. As regards the rasping action of *Teredo*, the author states as his opinion that the valves, instead of the foot, serve as a fulcrum, and that they are pressed equally against both sides, while the tissue of the foot is employed in absorbing and detaching, slowly but gradually, minute particles of the moistened wood. In a former volume he compares the result of this action with the destruction of the toe of St. Peter's statue in St. Peter's church at Rome by the kisses of the religious visitors. The species of *Teredo* inhabiting fixed and submerged wood on the British coasts, and consequently to be considered indigenous, are *T. norvegica* (Spengl.) (including *divaricata*, Fischer), *T. navalis* (L.), *T. pedicellata* (Quatref.), and *T. megotara* (F. & H.). *T. malleolus* (Turt.), *T. bipinnata* (Turt.), and some other species approach the British shores in drift-wood only.

M. Crosse states that a mixture of the resinous matter of two trees from Cochinchina (one being named cay-dan) is used by the Annamites and recommended by M. A. Mariot as a preservative against the ravages of *Teredo*. Journ. Conch. xxii. pp. 67, 367, & 368.

Nausitora is a new genus proposed by E. P. Wright; it is described, but no distinctive generic characters are pointed out. *N. dunlopei*, sp. n., River Comor, Bengal. Trans. Linn. Soc. xxiv. 1864, p. 453, pl. 46.

Solenidæ.

Solen brevissimus, sp. n., Martens, Ann. & Mag. Nat. Hist. 1865, xvi. p. 432, Singapore.—*S.* (? *sicarius*, var.) *rosaceus*, sp. n., Carpenter, ibid. xv. p. 177, Sta. Barbara and S. Pedro, California.

Corbulidæ.

Sphenia ovoidea, sp. n., Carpenter, Proc. Acad. Nat. Sc. Philad. 1865, p. 54, Puget Sound.

Anatinidæ.

Neæra pectinata, sp. n., Carpenter, *l. c.* p. 54, Puget Sound.

Periploma angasi (Crosse et Fischer) is figured in Journ. Conch. xiii. pl. 11. fig. 1, South Australia.

Kennerlia filosa, sp. n., Carpenter, *l. c.* p. 54, Puget Sound.

Myodora convexa, sp. n., Angas, Proc. Zool. Soc. 1865, p. 57, pl. 2. figs. 13 & 14, New Caledonia.

Order CARDIACEA, Cuv. (*Veneracea*, Adams).

Mactridæ.

Mactra sericea, sp. n., Brusina, Verhandl. zool.-bot. Gesellsch. Wien, 1865, p. 33, Dalmatia: apparently very near to *M. stultorum* (L.).—*M. amygdala* and *pinguis* (Crosse et Fischer) figured in Journ. Conch. xiii. pl. 11. figs. 3 & 2, South Australia.

Spisula adelaidæ, sp. n., Angas, Proc. Zool. Soc. 1865, p. 697, South Australia.

Darina declivis, sp. n., Carpenter, ibid. p. 203, California.

Heterocardia dennisoni, sp. n., H. Adams, ibid. p. 754. Hab. —?.

Tellinidæ.

Psammobia rubroradiata, sp. n., Carpenter, Proc. Acad. Nat. Sc. Philad. 1865, p. 54, Puget Sound.

Psammobia (*Psammotæa*) *connectens*, sp. n., Martens, Ann. & Mag. Nat. Hist. xvi. p. 431, Island of Banka.

Tellina rostrata, Brusina, Verhandl. zool.-bot. Gesellsch. Wien, 1865, p. 32, Dalmatia. [= *T. depressa* (Gmel.) = *incarnata* (L.). The specific name *rostrata* has been given, by Linné, to another species.]

Tellina semilævis, sp. n., Martens, Ann. & Mag. Nat. Hist. xvi. p. 429, Mozambique and Red Sea; *T. prætexta*, *dissimilis*, *incongrua*, and *iridella*, sp. n., Martens, ibid. pp. 430 & 431, Japan; *T. depauperata*, sp. n., Martens, ibid. p. 429, Manila; *T. moluccensis*, sp. n., Martens, ibid. p. 430, Batjan.

Tellina (*Angulus*) *modestus* et *T.* (*A.*) *modestus*, var. *obtusus*, Carpenter, Proc. Acad. Nat. Sc. Philad. 1865, p. 56, Puget Sound.

(*Tellina*) *Angulus decumbens*, sp. n., Carpenter, Proc. Zool. Soc. 1865, p. 278, Panama; *Angulus gouldii* [Hanley], Carpenter, Journ. Conch. xiii. p. 132, S. Diego, California. Subgenus *Mæra*, Adams, Gen. ii. p. 396. [Mr. Carpenter, *l. c.*, says that this shell is named "*Mæra gouldii*, Hanl." in Cuming's collection, but that he was not able to find a published diagnosis of it. In the monograph of *Tellina* by Hanley, in Sowerby's 'Thesaurus,' he will find (no. 92) a diagnosis and (fig. 26) a figure of *Tellina gouldii*, Hanley; but there it is said to come from the West Indies.]

Tellina baltica (L.) = *solidula* (Lam.) is distinguished from the other *Tellinæ* by having only one blade of gills on each side. Récluz, Journ. Conch. xiii. pp. 401–406. [Fortunately enough M. Récluz does not propose a new generic name for this really new division, as there exists one, viz.

Macoma (Leach), the genus having been founded on the characters of the shell.]

Macoma yoldiformis and *expansa*, sp. n., Carpenter, Proc. Acad. Nat. Sc. Philad. 1865, pp. 54 & 55, Puget Sound.

Gastrana japonica, sp. n., Martens, Ann. & Mag. Nat. Hist. xvi. p. 427.

Œdalia, g. n., near *Cooperella*. Cardinal teeth 3 and 2, all bifid; pallial sinus like that of *Semele*; ligament like that of *Circe*. *Œ. subdiaphana*, sp. n., California. Carpenter, Journ. Conch. xiii. p. 134.

Lutricola (Blainville). Carpenter proposes to retain this name for the section of *Scrobicularia* to which H. & A. Adams have given the name *Capsa*. Species: *L. ephippium* (Solander), *L. alba* (Conrad), *L. dombeyi* (Lam.), &c. Ibid. p. 133.

Scrobicularia fabula, sp. n., Brusina, Verhandl. zool.-bot. Gesellsch. Wien, 1865, p. 34, Dalmatia.

Scrobicularia piperata (Gm.)=*Listera compressa* (Turt.)=*Lutraria compressa* (Boll) has been found in the river Warnow. Specimens from the Mediterranean are 32 millims. high and 44 millims. long [from the Adriatic, in the Berlin Museum, 37 millims. high and 50 millims. long], from Wangerow and Norderney 33–26 millims. high and 41–33 millims. long, from Warnemünde 26 millims. high and 31 millims. long, from Greifswald 29–27 millims. high, 37–31 millims long, the specimens from the Baltic being generally smaller than those from the German Ocean. Arch. Ver. Freund. Ntrgesch. Mecklenb. 1864, p. 195.

[*Syndosmya*] *Erycina tumida*, *bielzi*, and *trigona*, sp. n., Brusina, Verhandl. zool.-bot. Gesellsch. Wien, 1865, pp. 34 & 35, Dalmatia. [The last specific name preoccupied by Philippi.] *S. strigilloides*, sp. n., L. Vaillant, Journ. Conch. xiii. p. 125, pl. 6. fig. 1, Suez.

Thyella, g. n., near *Semele* [*Amphidesma*], but without lateral teeth; decussately sculptured. *T. pulchra*, sp. n., from Singapore. H. Adams, Proc. Zool. Soc. pp. 754 & 755.

Cumingia deshayesiana, sp. n., L. Vaillant, *l. c.* p. 126, pl. 2. fig. 2, Suez.

Mesodesma obtusa (Crosse et Fischer) figured in Journ. Conch. xiii. pl. 11. fig. 4.

Veneridæ.

Römer, Ed. Monographie der Mollusken-Gattung *Venus*. Cassel, 4to, with coloured plates.

Four parts have been published (pp. 1–49, pls. 1–12), each containing three beautiful coloured plates; all bear on the title-page the date 1864. They contain the sections *Tivela* and *Meretrix* of the subgenus *Cytherea*. All species known by the author from autopsy are figured and described; of those which he could not examine himself the original descriptions are copied. We mention the following species as new:—

Tivela natalensis (Dunker), pl. 4. fig. 3; *Tivela dunkeri*, pl. 5. fig. 1, hab.—? *Tivela levidensis*, pl. 7. fig. 6, hab.—? *Meretrix compressa*, pl. 10. fig. 2, China.

Römer, Ed. Kritische Uebersicht sämmtlicher Arten der zur Gattung Venus gehörenden Untergattungen *Mercenaria* und *Gemma*. [Critical synopsis of all the species belonging to *Mercenaria* and *Gemma*, subgenera of the genus *Venus*.] Mal. Blätt. xii. pp. 134–141. [Seven species of *Mercenaria*, one of *Gemma*.]

——. Kritische Uebersicht aller Arten der zur Gattung *Venus* gehörenden Untergattung *Gomphina*. Ibid. pp. 141–144. [Four species.]

——. Kritische Uebersicht aller Arten der zur Gattung *Venus* gehörenden Untergattung *Anaitis*. Ibid. pp. 153–173. [Twenty-six species].

These papers are preliminary to the continuation of the above-mentioned monograph of *Veneridæ*.

Venus kennerleyi, sp. n., Carpenter, Proc. Acad. Nat. Sc. Philad. 1865, p. 57, Puget Sound.

Mercenaria fulgurans, sp. n., Tryon, Am. Journ. Conch. i. p. 297, pl. 26, Tampa Bay, Florida.

[*Cytherea*] *Amiantis*, a new subgenus, proposed by Carpenter, Ann. & Mag. Nat. Hist. xv. p. 178. Hinder tooth of both valves wrinkled. Type *Cytherea callosa* (Conrad), not *Venus callosa* (Sow., Reeve, Desh.), California.

Psephis, g. n., Carpenter, type *Chione lordi* (Baird), Proc. Acad. Nat. Sc. Philad. 1865, p. 56, and Crosse, Journ. Conch. xiii. p. 135.—*Psephis tellimyalis*, sp. n., Carpenter, Journ. Conch. xiii. p. 135, California.

Circe (*Lioconcha*) *newcombiana*, sp. n., Gabb, Proc. Calif. Acad. Nat. Sc. 1865, p. , California.

Clementia subdiaphana, sp. n., Carpenter, Proc. Acad. Nat. Sc. Philad. 1865, p. 56, Puget Sound.

Tapes köberti, Brusina, Verhandl. zool.-bot. Gesellsch. Wien, p. 31, Dalmatia. Near *T. aurea*, perhaps identical with *T. pullastra*.

Tapes laciniata, sp. n., Carpenter, Journ. Conch. xiii. p. 136, S. Diego, California.

Saxidomus brevisiphonatus, sp. n., Carpenter, Proc. Zool. Soc. 1865, p. 203, ? Vancouver Island, ? Japan.

Glauconomidæ.

Glauconome oblonga, sp. n., Prime, Ann. Lyc. Nat. Hist. New York, viii. 1865, May, Singapore.

Cyrenidæ.

Cyrena proxima and *siamica*, sp. n., Prime, Ann. Lyc. Nat. Hist. viii. 1864, p. 57, Siam; *C. ponderosa*, sp. n., Prime, *l. c.*, Philippines; *C. bernardina*, sp. n., Prime, *l. c.*, New Caledonia; *C. cyprinæformis*, sp. n., Prime, *l. c.*, Australia; *C. regularis*, sp. n., Prime, *l. c.*, locality unknown.

Cyrena cordata (Wiegmann in Mus. Berolin.), Martens, Mal. Blätt. xii. p. 65, Mexico.

Corbicula. Mr. Prime, Ann. Lyc. Nat. Hist. New York, viii. 1864, p. 57, has described and figured the following species:—*C. pexata, müllerіana, chemnitziana,* from China; *C. leana* and *japonica,* from Japan; *C. leviuscula,* from Cochinchina; *C. lamarckiana, linneana, blandiana,* from Cambodia; *C. rhomboidea,* from Malacca; *C. sayana, crosseana, venustula,* from the Philippines; *C. subradiata, agrensis, parvula,* from British India; *C. purpurea,* from the River Tigris; *C. kirkii,* from Mozambique; *C. inæquilateralis,* from Africa; *C. minor,* from New Holland; *C. brunnea,* from Tasmania; *C. solidula,* locality unknown.

Cyrena (Corbicula) bocourti and *C. (C.) castanea,* sp. n., Morelet, Journ. Conch. xiii. p. 228, Cochinchina.

Batissa solidula, sp. n., Prime, *l. c.,* locality unknown.—*B. tenebrosa,* var. *parallela,* Mousson, Journ. Conch. xiii. p. 207, Feejee Islands.

Sphærium ddingoli (Prime) = *Cyclas calyculata* of some authors, and *S. ovale* (Férussac), both from Algeria, are described and figured in Bourguignat's Malacol. Algér. ii. pp. 274–276, pl. 17. figs 1–9 and 10–13.

Pisidium novozelandicum, sp. n., Prime, *l. c.,* New Zealand.

STEPANOFF, P. Ueber die Geschlechtsorgane und die Entwicklung von *Cyclas.* Wiegm. Arch. Ntrgesch. xxxi. pp. 1–32, with two plates.

[On the generative organs and development of *Cyclas* = *Sphærium.*]

These investigations have been made under the guidance of Prof. Leuckart, and confirm the hermaphroditism of this genus. Spermatozoa and ova are formed in the same gland during the whole summer, from May to August. The ova are developed in special generative sacs (Brut-taschen) situated on the inner wall of the branchia. The velum is less developed than in marine mollusks. The young very soon leave the ova, and remain for a long time between the branchiæ of the parent. The degrees of union of the lobes of the mantle and the formation of the siphons (characters used by Cuvier for the primary division of the bivalves) are shown to belong to the last stage of development in these mollusks, the siphons attaining to their relatively full length only after the young animal has entered upon the period of independent life.

CARDIIDÆ.

Cardium helleri, Brusina, Verhandl. zool.-bot. Gesellsch. Wien, 1865, p. 36, Zara, Dalmatia; closely allied to *C. parvum* (Phil.).

TRIDACNIDÆ (CHAMÆTRACHÆIDÆ.)

VAILLANT, LÉON. Recherches sur la famille des Tridacnides. Ann. Sc. Nat. 1865, iv. pp. 64–172, with plates 8–12.

This paper is full of important information. In the introduction the history of our knowledge of this family is given; a species of *Tridacna* seems to be alluded to by Pliny in a very indistinct manner, and the name mentioned by him was first given to these shells by Bélon. *Tridacna elongata* (Lam.) has been observed alive at Suez by the author; it is buried in the sand, with the lunula downwards, the scalloped ventral edges only being visible; the larger individuals are said to be found at greater depths. The gaping of the valves is continuous during life, as long as the animal is not disturbed, as individuals may be found in which a pathological incrustation of evidently slow growth renders the shutting of the valves impossible; the valves gape comparatively wider than in other bivalves, the author having measured a gaping of 2½ centimetres (about an inch) in a living individual 12½ centimetres long. They are eaten by the natives, and the shells burnt to lime. The animals render spirits of wine of a very beautiful reddish violet colour.

In the descriptions the terms above and below, in front and behind, are used as in other shells, the vertices being termed above and the lunula in front, although the real situation of the living animal would warrant a different terminology. The mantle reaches beyond the edges of the shell, and has three openings—one at the lunula for the foot, the second quite in front for admitting water to the gills, and the third about in the middle of the length of the ventral edge of the valves for the ejection of water and excrements. All these openings are situated more towards the front than in other bivalves, with regard to the regions of the shell, but when the real situation of the whole animal during life is taken into consideration, the position of the openings is similar to that generally found in this class. The portion of the mantle within the pallial line, which adheres closely to the shell; does not contain distinct contractile elements; but the portion beyond it is very muscular, and contains also large arteries. The space enclosed by the mantle is only half filled by the visceral organs of the body, the other half being occupied by water entering from the outside. The mouth is situated in front and above; the intestine traverses the heart; the gills are lamellated and contain the fry, as in other bivalves; in all the individuals examined the little pseudoparasitical crab, *Pinnoteres tridacnæ* (Rüppell), was found near the gills.

The shell resembles in its microscopical structure most that of *Chama,* being rather indistinctly prismatic and traversed by anastomosing, not very numerous channels. The arrangement of the muscles is that of the other *Monomyaria* which are provided with a foot,—the principal being the single large adductor of the valves, a retractor, and a protractor of the foot—the two latter being double, one on each side. As the retractores are

united at their entrance into the foot, they assist also in the shutting of the valves, and may be homologous to one of the two parts distinguished in the adductor of the Oyster and other *Monomyaria* without foot. The *byssus* is a special secretion formed in two furrows within the anterior part of the foot. The ligament may be divided in *Tridacna*, as well as in most other bivalves—into two portions, an outer or epidermal one, which shuts the two valves, and an inner one, fibrous, elastic, effervescent in acids, situated exactly between the valves, and having the function of opening the shell; this latter portion frequently assumes an opalescent aspect (the *lapis pavonius* of elder authors), and is analogous to the inner ligament of *Mya*, *Amphidesma*, &c. In *Pecten* and *Spondylus* this portion is modified, not effervescent in muriatic acid; and the outer portion is absent in *Spondylus*; in *Pholas candida* the outer portion only is present. By some approximative experiments the force of the adductor muscle of a middle-sized *Tridacna*, 20–25 centimetres (about ten inches) long, was found to be equal to 4–7 kilogrammes.

The arrangement of the nervous, circulating, and digestive systems is fully described by the author; there is no important difference from the general organization of bivalves. The "oculiform tentacles" on the outer side of the edge of the mantle are more numerous near the branchial opening: they are placed beyond the edges of the shell when the animal is not disturbed; and it would appear as if it really had a perception of light and shadow, the animal being more influenced by darkness in its expansion than by a rather violent shaking of the vessel in which it is kept. All the individuals examined by the author (more than forty) proved to have ovaries, but no spermatogenous glands; perhaps the latter may be developed at a certain season only.

Order MYTILACEA, Cuv. (*Lucinacea*, Adams).

Lucinidæ.

Lucina tenuilamella, sp. n., Brusina, Verhandl. zool.-bot. Gesellsch. Wien, 1865, p. 37, Dalmatia, near *L. spinifera*.—*L. undata*, sp. n., Carpenter, Proc. Zool. Soc. 1865, p. 279, Gulf of California; *L. tenuisculpta*, sp. n., Carpenter, Proc. Ac. Nat. Sc. Philad. 1865, p. 57, Puget Sound.

Cryptodon sericatus, sp. n., Carpenter, *l. c.* p. 57, Puget Sound.

Ungulinidæ.

Diplodonta savignyi, sp. n., Vaillant, Journ. Conch. xiii. p. 124, Suez.

Lasæidæ.

Kellia boglici, *spatangi*, and *danili* are described as new species by Brusina, Verh. zool.-bot. Ges. Wien, 1865, pp. 37 & 38, from Zara, Dalmatia.

Kellia (*laperousii*, var.) *chironii* and *K. rotundata* are described as new species by Carpenter, Journ. Conch. xiii. pp. 136 & 137, from California.

Pythina striatissima, sp. n., Sowerby, Proc. Zool. Soc. 1865, p. 517, pl. 32. fig. 7, from Borneo.—*Pythina rugifera*, sp. n., Carpenter, Proc. Ac. Nat. Sc. Philad. 1865, p. 57.

Montacuta obtusa, sp. n., Carpenter, ibid., p. 270, hab. — ?

Cycladella, g. n., Carpenter, *l. c.* The cardinal teeth, instead of radiating from the umbo, fall in the curve of the hinge-line, as though uniting the lateral teeth; lateral teeth distant. *C. papyracea*, sp. n., Carpenter, *l. c.*, from Mazatlan, on a Spondylus.

Leptonidæ.

Tellimya tumida, sp. n., Carpenter, Proc. Ac. Nat. Sc. Philad. 1865, p. 58, Puget Sound.

Galeommidæ.

Scintilla semiclausa, *oblonga*, and *lactea* from Borneo, *Sc. rosea* from the Lizard Islands, are new species described by Sowerby, Proc. Zool. Soc. 1865, p. 517, pl. 32. figs. 1–6.

Libratula, g. n., Pease. Flat, without ventral gape, cardinal margin serrate. *L. plana*, sp. n., Pease, Proc. Zool. Soc. 1865, p. 512, Central Pacific.

Astartidæ.

Astarte (*compressa*, var ?) *compacta*, Carpenter, Proc. Ac. Nat. Sc. Philad. 1865, p. 57, Puget Sound.

Gouldia australis, sp. n., Angas, Proc. Zool. Soc. 1865, p. 459, Port Jackson. The species of this genus named in the Panama and Mazatlan catalogues are stated to belong to an aberrant form of *Crassatella*.

Lazaria subquadrata, sp. n., Carpenter, Ann. & Mag. Nat. Hist. xv. p. 178, Monterey.

Unionidæ.

Unio. The monograph of this genus in Reeve's 'Conchologia Iconica' remains incomplete, in consequence of the death of the author, twenty-five plates, with 125 numbers, having been published; the year 1865 begins with plate 19. fig. 85.

Fifty-seven names given by Rafinesque to species of *Unio* are identified with those given by the more recent and exact authors, as Lea, Conrad, and Say. Tryon, Am. Journ. Conch. i. p. 84.

Unio letourneuxi, sp. n., Bourguignat, Malacol. Alg. ii. p. 289, pl. 17. figs. 47–50.

Unio umbonatus=*litoralis*, var. *umb.* (Rossm.), *U. subreniformis*, *penchinatianus*, *graellsianus*, and *courquinianus* (Bourg.), *U. valentinus* (Rossm.), *hispanus* (Moquin-Tandon), all from Spain; and *U. aleroni* (Companyo), from the south-western parts of France, are described and figured by Bourguignat, Revue Zool. 1865, pp. 339–346, pl. 17–23. The same text and plates are published in the fifth fascicle of 'Mollusques nouveaux litigieux, etc.,' pp. 142–153, pls. 21–27. A list of all the Spanish and Algerian species of this genus is added.

Unio rothi, sp. n., Bourguignat, Revue Zool. 1865, p. 338, pl. 16; Moll. nouv. p. 134, pl. 20, Lake of Tiberias. This is the *U. littoralis* of Mousson, 'Catalogue des coquilles recueillies par Roth,' 1862, p. 64.

Unio simonis and *episcopalis*, sp. n., Tristram, Proc. Zool. Soc. 1865, p. 544, Sea of Galilee, Jordan, Orontes, and Leontes.

Unio nodulosus. The shell figured under this name by Reeve, Conch. Ic. fig. 32, does not appear to be that described by Wood, but merely the well known *U. leai* (Gray) from China.

Unio wrightii and *tortuosus*, sp. n., Lea, Proc. Ac. Nat. Sc. Philad. 1865, pp. 74 & 75, China.

Unio peguensis, sp. n., Anthony, Am. Journ. Conch. i. p. 351, pl. 25. fig. 2, Pegu; *U. paivanus*, sp. n., Morelet, Journ. Conch. xiii. p. 227, Siam; *U. misellus* and *U. pellis-lacerti*, sp. n., Morelet, *l. c.* pp. 21 & 22, Siam.

Unio abnormis (Morelet, 1862)=*gravidus* (Lea), *U. imperialis* (Morelet, 1862)=*hainesianus* (Lea), *U. mandarinus* (Morelet, 1864)=*scobinatus* (Lea): see Morelet, *l. c.* p. 20.

Unio kirkii, *nyassaensis*, *aferula*, sp. n., Lea, Proc. Ac. Nat. Sc. Philad. 1864, pp. 108 & 109, Lake Nyassa; *Unio natalensis*, Lea, ibid., Natal.—*U. vignona*, sp. n., Reeve, Conch. Ic. fig. 120, no locality given. [West Africa? Mr. Vignon has collected several land- and freshwater shells in Guinea.]

Unio moretonicus, sp. n., Reeve, *l. c.* fig. 118, Moreton Bay, Australia.

Unio doliaris, *protensus*, *punctatus*, *amabilis*, *lyonii*, *proprius*, *cromaculus*, and *marginis*, sp. n., Lea, Proc. Ac. Nat. Philad. 1865, pp. 88 & 89, United States.

Unio striatissimus, *deviatus*, and *sacculus*, sp. n., Anthony, Am. Journ. Conch. i. pp. 155–157, pl. 12. figs. 1, 2 & 3, Tennessee; *U. distans*, sp. n., Anthony, *l. c.* p. 156, pl. 13. fig. 2, Ohio.

Unio mississippiensis (Conrad), Reeve, Conch. Ic. fig. 85: this species has been quoted as MS. name by Reeve; but it is already mentioned in Lea's 'Synopsis' of 1852, and described as well as figured in Küster's new edition of Chemnitz, *Unio*, pl. 82. fig. 4.

Unio electrinus, a new specific name proposed by Reeve, Conch. Icon. fig. 121, for *U. sayi* (Ward), because it is said not to be the *U. sayi* of Tappan. [This species is described and figured as *U. sayi* also by Küster, new edition of Chemnitz, *Unio*, pl. 83. fig. 1.]

Unio cuneatus, Reeve, Conch. Icon. fig. 173, seems to be identical with *U. patulus* (Lea). Küster, new edition of Chemnitz, pl. 87. fig. 5.

Unio napeanensis (Conrad) and *U. cocoduensis* (White), are quoted as MS. names by Reeve, Conch. Icon. figs. 110 & 117; the former is already mentioned by Lea, 1852.

Unio rufofuscus, sp. n., Lea, Proc. Ac. Nat. Sc. Philad. 1865, p. 75, locality unknown.

Margaritana margaritifera. Mr. John Barker has published "Notes on some Dissections of the Freshwater Pearl-Mussel" in Proc. Nat. Hist. Soc. Dublin, vol. iv. 1865, pp. 111–113. The course of the alimentary canal is described. Distinct branchial ganglia have been found in the nerves supplying the gills. There are free communications between the alimentary canal and the water-vascular system, so as to admit of the foot being contracted suddenly and the water expelled by mouth or water-pore, or both. Mr. F. B. Doyle and Dr. Macalister added some particulars about the occurrence of the Pearl-Mussel in Ireland and Scotland, and the method of fishing for them and getting the pearls.

Alasmodon impressa and *A. rhombica* are new species described by Anthony, Am. Journ. Conch. i. pp. 157 & 158, pl. 12. figs. 4 & 5, from Tennessee and Michigan.

Monocondylea. S. Petit de la Saussaye enumerates fifteen known species of this genus, Journ. Conch. xiii. pp. 15–19, and adds one as new, *M. cambodiensis*, p. 14, pl. 4. fig. 4. Ch. Wheatley has revised this list, Am. Journ. Conch. i. pp. 65–67, and enumerates 27 species, viz. 13 from continental Asia, 2 from Java, 8 from South America, 1 from Southern Europe, 2 doubtful from Africa, and 1 doubtful from Oceania. [The Recorder may add that he found one Javan species, *M. vandenbuschiana*, also in Sumatra and Borneo, and he does not think it to be sufficiently distinct from the Malaccan *M. cumingii*, Lea.]

T. A. Conrad thinks that the Asiatic species of *Monocondylea* are generically distinct from the South American, and refers most of them to the genus *Pseudodon* (Gould, 1844)=*Monodontina* (Conrad, 1852); he proposes a new generic division, *Leguminaia*, for *M. mardinensis* (Lea), and another, *Trigonodon*, for *M. crebristriata* (Anthony), Am. Journ. Conch. i. p. 233. He adds a new species, *Pseudodon ellipticum*, *l. c.* p. 252, pl. 25. fig. 1, Cambodia.

Monocondylæa peguensis and *crebristriata*, sp. n., Anthony, ibid. p. 205, pl. 18. figs. 3 & 1, Pegu.

Anodonta melinia, sp. n., Bourguignat, Revue Zool. 1865, p. 347, pl. 24, o Moll. nouv. p. 154, pl. 28, Valencia.

Anodon subangulata, *imbricata*, *opalina*, *flava*, *subinflata*, *papyracea*, *pallida*, *micans*, *glandulosa*, and *irisans* are new species described by Anthony, Am. Journ. Conch. i. pp. 158–164, figured on pls. 13–16: from Michigan, with the exception of *papyracea*, the locality of which could not be ascertained, and of *micans*, which is from Texas.

Spatha alata, *nyassaensis*, and *modesta*, sp. n., Lea, Proc. Ac. Nat. Sc. Philad. 1864, p. 109, Lake Nyassa; *Spatha natalensis*, sp. n., Lea, *l. c.* p. 113.

Arconaia, g. n., Conrad. Type *Triquetra lanceolata* (Lea). Distinguished from the genus *Triquetra* (Klein=*Hyria*, Lam.) by the teeth and muscular impressions. Am. Journ. Conch. i. p. 234.

Castalia crosseana, sp. n., Hidalgo, Journ. Conch. xiii. p. 316, pl. 14. fig. 2, Ecuador.

Mytilidæ.

Mytilus baldi, Brusina, Verhandl. zool.-bot. Gesellsch. Wien, 1865, p. 39 =*M. minimus*, var. δ (Philippi)=*M. minimus*, var. *squalidermis* (Danilo et Sandri), Dalmatia.

Modiola fornicata, sp. n., Carpenter, Ann. & Mag. Nat. Hist. xv. p. 178, Monterey.

Mytilus (*Modiolaria*) *cænobita*, sp. n., L. Vaillant, Journ. Conch. xiii. p. 122, Suez.

[*Lithodomus*] *Modiola caudigera* (Lam.) has been found on the coast of Algiers by M. Ch. Lallemant: P. Fischer, Journ. Conch. xiii. pp. 127–129.— *Lithodomus lessepsianus*, sp. n., L. Vaillant, ibid. p. 123, Suez.

Prasina (Desh. in Maillard, Ile Réunion) and *Julia* (A. Gould). The close affinity between these two genera, although one has been described with two, and the other with one muscular impression, is pointed out by O. Semper, Journ. Conch. xiii. pp. 296–298.

Dreissenidæ.

Dr. Mörch is inclined to regard *Tubularia caspia* of Pallas as the byssus of *Dreissena polymorpha*. Journ. Conch. xiii. pp. 14 & 15.

On the migration of *Dreissena*, see p. 216.

Order OSTRACEA, Cuv. (*Pectinacea*, Ad.).

Arcidæ.

Barbatia (*Acar*) *laminata*, sp. n., Angas, Proc. Zool. Soc. 1865, p. 697, from South Australia.

Leda fossa, sp. n., Carpenter, Proc. Ac. Nat. Sc. Philad. 1865, p. 58, from Puget Sound.

Yoldia cooperii, sp. n., Gabb, Proc. Calif. Ac. Nat. Sc. 1865, p. , from California.

Pectinidæ.

Pecten æquisulcatus, *paucicostatus*, and *squarrosus*, sp. n., Carpenter, Ann. & Mag. Nat. Hist. xv. p. 179, Sta. Barbara, California; *P. hindsii*, sp. n., Carpenter, Proc. Ac. Nat. Sc. Philad. 1865, p. 58, Puget Sound.

Radulidæ.

Lima hians (Schröt.). M. H. Lacaze-Duthiers (Ann. Sc. Nat. 1865, iv. pp. 347–352, pl. 15. fig. 5) observed this mollusk at Port Mahon, Minorca, living in a nest formed of fragments of stone, shells, seaweeds, &c., which are united by threads. The fact has been stated previously by other naturalists; and the author was unable to discover the way in which the nest is constructed. He endeavours to explain it by the fact that *Mytilus edulis* spontaneously breaks the threads of byssus, by which it is attached, by sudden movements of the foot; but this has scarcely any bearing on the question how *Lima* procures separate pieces of thread to tie together a quantity of loose objects.

Ostreidæ.

Ostrea. On oyster-breeding on the south-west coast of France in the old and present times, see Fischer, Faune conchyliologique marine de la Gironde: Paris, 1865, 8vo.

Ostrea lurida, sp. n., Carpenter, Journ. Conch. xiii. p. 137, Vancouver Island.

Class BRACHIOPODA.

Terebratulidæ.

Meek, F. B. Observations on the microscopic shell-structure of *Spirifer cuspidatus* (Sow.) and some similar American forms. Proc. Acad. Nat. Sc. Philad. 1865, pp. 275–277.

The punctate structure may be seen distinctly in American specimens; they possess, also, exactly the internal characters of the genus *Syringothyris*. It is recommended to British naturalists to examine British specimens of *Spirifer cuspidatus* in order to ascertain whether they agree in these two points with American ones.

Terebratula unguicula, sp. n., Carpenter, Proc. Zool. Soc. 1865, p. 201, with a woodcut, from California.

Terebratulina cailleti, sp. n., Crosse, Journ. Conch. xiii. p. 27, pl. 1. figs. 1–3, Guadeloupe.

Kraussina picta (Val.) has been found by Von Frauenfeld on the shore of the isolated island St. Paul in the southern part of the Indian Ocean, attached to stones, a few inches below low-water mark. Verh. zool.-bot. Gesellsch. Wien, 1865, p. 894.

Rhynchonellidæ.

Carpenter, W. B. On the microscopic structure of the shell of *Rhynchonella geinitziana*. Ann. & Mag. Nat. Hist. 1865, November, pp. 305–307.

A reply to a paper of Prof. King in the August number of the same journal (p. 124).

MOLLUSCOIDA*

BY

E. Perceval Wright, M.A., M.D., F.L.S.

Beissel, Ignaz. Ueber die Bryozoen der Aachner Kreidebildung. Natuurk. Verhandl. Holl. Maatsch. Wet. Haarlem, 1865, 4to, pp. 1–92, pls. 1–10.

Duthiers, H. L. Sur un nouveau type dans le groupe des Ascidiens, le *Chevreulius callensis*. Comptes Rendus, tom. lx. no. 25, 1865, 19 Juin, p. 1264 (extrait par l'auteur); Ann. & Mag. Nat. Hist. 1865, August, p. 143.

Reuss, A. E. Ueber Anthozoen und Bryozoen des Mainzer Tertiärbeckens. Sitzungsber. Ak. Wiss. Wien, Bd. i. 1864, Juli, pp. 197–210, taf. 1–3.

——. Zur Fauna des Deutschen Oberoligocäns. Zweite Abtheilung, Bryozoen. Ibid. 1864, December, pp. 623–690, taf. 7–13.

——. Die fossilen Foraminifera, Anthozoa und Bryozoa von Oberburg in Steiermark. Denkschr. Akad. Wiss. Wien, xxiii. 1864, pp. 1–38, pl. x. (*Bryozoa.*)

Smitt, F. A. Om Hafs-Bryozoernas utveckling och fettkroppar. Œfvers. af K. Vet.-Akad. Forhandl. 1865, No. 1, pp. 5–50, with plates 1–7.

Ubaghs, J. C. Die Bryozoen-Schichten der Maastrichter Kreidebildung, nebst einigen neuen Bryozoen-Arten aus der Maastrichter Tuff-Kreide. Verhand. naturhist. Verein. Preuss. Rheinlande und Westphal. xxii. Folge 3, 1865, pp. 31–62, pls. 2 & 3.

TUNICATA.

Joshua Alder (Nat. Hist. Trans. Northum. & Durham, vol. i. pt. 1, 1865, p. 5) gives a list of Tunicata dredged off the coasts of Northumberland and Durham during 1862, 1863, and 1864. Thirteen species were found (p. 11); two of these, *Cynthia ornata* and *C. vestita*, have not yet been found in any other locality; *C. vestita* is allied to *C.* (*Glandula*) *glacialis*, of Sars, but is

* The literature of the *Brachiopoda* has been noticed in the Record on *Mollusca*, by Dr. von Martens.

sufficiently distinct. *Ascidia conchilega* of Müller, referred by Foster to the restricted genus *Ascidia*, proves to be a *Molgula*; it had not been found previously on the eastern coast.

The remarkable Ascidian *Chevreulius callensis* (H. L. Duthiers, *l. c.*) has, as Mr. Alder has mentioned (Ann. of Nat. Hist. Feb. 1866, p. 152), been previously described by Stimpson (Proc. Acad. Nat. Sc. Phil. 1856, p. 377), under the name of *Schizáscus*, with the following character:—"Tunica exterior fissa; parte posteriore complanata, cavum alterius tamquam operculo claudente et siphones retractos celante; aperturæ sexangulatæ." It is also referred to by Dr. Macdonald under the provisional name of *Peroides* in Trans. Roy. Soc. Edinb. vol. xxiii. 1864, p. 179. This paper was read in 1861. Dr. Macdonald afterwards gave a detailed account of this strange form under the name of *Pera* (*vide* Journ. Linn. Soc. vi. 1862, Zool. p. 78, figs. 1–4).

The following species are already known (*Schizascus*, Stimpson, 1856 = *Pera*, Macdonald, 1862 = *Peroides*, Macdonald, 1864 = *Chevreulius*, L.-Duthiers, 1865):—

1. *S. pellucidus*, Stimpson, China; 2. *S. papillosus*, Stimpson, China; 3. *S. huxleyi*, Macdonald, Bellona Reefs; 4. *S. callensis*, Lacaze-Duthiers, Calle.

In *S. papillosus* the ocelli at the angles of the aperture are of a salmon-colour.

Dr. Macdonald's description and figures, though appearing in a well-known journal, have been strangely overlooked. Although Dr. Lacaze-Duthiers's memoir does not describe a new genus, it gives to us the first detailed account of the anatomy of this very interesting form, which he believes to strengthen the connexion that exists between the *Ascidia* and the *Brachiopoda*, as in it the mantle divides into two portions, the one superior, the other inferior, just as is met with among the *Brachiopoda*.

POLYZOA.

The researches of Mr. Smitt (*l. c.*) appear to confirm the views expressed by him (in yearly Report of the Upsala University for 1863) as to the significance of the fat-corpuscles (Fettkroppar), while they prove at the same time that the modes of propagation are very numerous among the Poly (Bryo)zoa. Their living in colonies and consequent polymorphism is necessarily intimately connected with their mode of development; and in spite of the dissimilarity that will be met with in the multiplication and development of different species, a pervading agreement in the significance and use of the Fettkroppar will be found; the following examples will show this:—

Multiplication of the Colony by Budding outwards.

Among the encrusting Polyzoa, Mr. Smitt selects *Flustra membranacea* (pl. 1. figs. 1–10). Along the margin of the entire colony will be found a bulging out, consisting of Fettkroppar, included in a membrane. (Following Henle, the word Fettkroppar is employed for those structures which, found in the body-fluid of the lower animals, would appear to correspond to the lymph-bodies in the higher animals. Williams calls them "floating cells.") In all the cells the budding commences inwardly as an inflation at the base of the cell (fig. 3), the membrane around the bud grows out over its top (figs. 5 & 6) and grows on to the tentacle-sheath (figs. 7–10). At the base of the bud it is cut off from the endocyst and grows firmly about the base of the tentacles. In the meanwhile the great retractor muscles are developed, and in the loose cellular tissue the pharynx. Stomachal and rectal expansions originate as three distinct cavities, which afterwards communicate with one another. Two semicircular concentric lines of growth appear on the endocyst, and form the operculum; the paricto- and paricto-vaginal muscles also become developed from the mass of Fettkroppar. Such is the general process of budding outwards, which is sometimes combined with fusion. The development after this fashion is described in *Lepralia pallasiana* (pl. 1. figs. 11 & 12, pl. 2. fig. 1), *Scrupocellaria scruposa* (pl. 1. figs. 13 & 14), *Crisia eburnea* (pl. 1. figs. 15–18), *Diastopora obelia* (pl. 4. figs. 15 & 16), *Ætea truncata* (pl. 2. figs. 5–14, pl. 3. figs. 1–8), and *Membranipora pilosa* (pl. 2. figs. 2–4): special differences in each of these forms are pointed out in detail. The multiplication of the Polyzoa may therefore be said to take place by means of a collective bud (Samknop); and at the very commencement of each budding outwards this bud will be found to have the same individual composition. A transposition of this form of development shows that the mass of Fettkroppar takes part also in

The formation of Ova by Budding inwards.

Such a process takes place in the formation of ova in *Lepralia peachii* (pl. 3. figs. 9–11). The ovum is first seen as it lies in the cell imbedded in a loose mass of Fettkroppar collected along the side of the body-cavity; the ovum has already acquired its membrane and its red colour. As it increases in size the Fettkroppar-mass diminishes about it, till at last it lies free in the body-cavity; from which it passes to the ovicells, in order there to complete its development; it now undergoes segmentation, and ultimately the embryo becomes ciliated. The cilia are of two sorts: the smaller and more closely packed are the more active; the larger, which, while the embryo is still within the ovum, can be recognized by their waving and slow movements, are scattered

more thinly, and are about double as long as the others. In this condition it leaves the ovicell; but before doing so the commencement of the crown of tentacles may be observed. The same mode of formation of ova has been observed in *Lepralia pallasiana* (pl. 3. figs. 12–17); but here, there being no ovicells, the embryos remain in the body-cavity until they are ready to seek for a place to attach themselves to in the open sea. Besides the smaller cilia, it possesses a transverse circular series of larger ones, from which project a cluster of six bristles bent at their points; a portion of these will be from time to time drawn in and again shot out: during its movements the embryo would seem to employ these sometimes as feelers and sometimes as points of attachment. There was also observed at its underside a horse-shoe-shaped elevation, which, compared with the drawings Gosse gives of the development of *Lepralia coccinea* (Devon. Coast, p. 218, pl. xiii.), is probably to be regarded as a means of attachment of the embryo before it leaves the parental body-cavity. No spermatozoa have ever been discovered in this form of development, neither before (when they would be expected to occur) nor after segmentation; the production therefore of these asexual ova must be regarded in the light of internal buds, comparable to the formation of outward buds; this form differs, however, from that described by Hincks in *Bugula* and *Bicellaria* (Q. J. M. S. 1861, p. 278). Here also may be mentioned an abnormal formation of ova in *Crisia eburnea* (pl. 4. figs. 1–8), where they would appear to arise from an aggregation of free granules and vessels, which become surrounded by a membrane. Thus the ova arise from a simple differentiation of the Fettkroppar. Some such form of development apparently takes place in *Tubulipora serpens* (pl. 4. figs. 9–12), though there is some reason to suppose that here it may be owing to a true sexual reproduction.

A mode of reproduction very peculiar to the Polyzoa is the

Formation of Germ Capsules (Groddkapselbildning).

In this the mass of Fettkroppar constitutes the basis for the origin of the new parts. These germ capsules have been long known by the name of "dark bodies" (mörka kroppar); these may be seen in *Scrupocellaria scruposa* (pl. 5. fig. 1), in *Bugula fastigiata* (pl. 5. fig. 2), in *Eucratea chelata* (pl. 5. fig. 3): here it is reniform, one end light, the other dark, owing to many close dark dots; but in *Flustra membranacea* (pl. 5. fig. 5) and *Lepralia peachii* (pl. 5. fig. 4) they may be well seen. Farre has observed two germ capsules in the same cell of *Bowerbankia imbricata*. The germ capsules serve the purposes of egg-formation and renewal (återställande) of the nutrient canal; but these purposes may be attained without their existence, as is proved in *Ætea anguina*. A peculiar form of growth in a new species, *Ætea argil-*

lacea, is described in detail (pl. 4. figs. 17 & 18); here the new cell is built upon the top of the old one. Figures and details are given of the nervous system of *Eucratea chelata*, *Lepralia nitida*, *Flustra membranacea*, *Scrupocellaria scruposa*, and *Bugula fastigiata*; the details given of the nervous system are among the most important parts of this memoir.

Sexual Reproduction

Is known to exist in the Polyzoa under very peculiar conditions. In *Scrupocellaria scruposa* (pl. 6. figs. 8–14, pl. 7. figs. 1 & 2), for example, during July and August, the first appearance of ova in the ovisacs is in the form of two or four clear and pellucid vesicles, which lie close to each other enclosed in a thin membrane; there is no trace of a nucleus. As the ovum grows, its contents acquire a yellowish colour, and an excentric shining nuclear body makes its appearance. Other ova make their appearance, but there is generally a great difference in the age of the ova met with in a single ovisac. After the nuclear body is formed the cell-contents become thinly granular; and then there is immediately noticed a germ vesicle; it goes on growing and becomes invested with an epithelial-like coating of cells, probably secreted by the ovisac. At this stage impregnation takes place, the spermatozoa being formed in the lower part of the cell: they first make their appearance as a collection of free round cells; these increase in number though little in size, and at last fill up the whole of the lower fourth part of the cell as extremely minute and fine threads, without distinct heads, and moving in a wriggling manner; they then swarm to the upper part of the cell, where the ova lie. It is most difficult to follow the change in the ovum after impregnation; but segmentation and the development of cilia was distinctly observed. A similar process was observed in *Flustra membranacea* (pl. 7. figs. 3 & 4). Sometimes no distinct definite testis is met with, and then the loose cell-mass from which the spermatozoa are formed, being in the cavity of the body, presents a most striking resemblance, both in appearance and in the mode of its formation, to the Fettkroppar.

These Fettkroppar have been known to be characteristic contents of the chylaqueous fluid of the lower animals, and subservient to their nutrition. We can now, however, see their connexion with reproduction: nor is this only met with in the Polyzoa. Budge has shown the development of spermatozoa in *Sænuris tubifex* from such bodies; Carter has shown the same in some of the *Naides*; the same is probably true in many of the Annelids; and Wagner has lately shown how these Fettkroppar may, even in insects' larvæ (*Cecidomya*), be applied to reproductive purposes.

Cheilostomata.

Salicornaridæ.

J. C. Ubaghs describes *Vincularina trigeri* (*l. c.* p. 49). This species had been previously described by mistake as a *Quadricellaria*.

Scruparidæ.

Smitt incidentally describes a new species of *Ætea* (*l. c.* p. 29). *Æ. argillacea*:—*Æ.* elongata, recta, punctata, basi constricta. Hab. in mari Bahusiensi. This species approaches *Æ. ligulata*, Busk, but is easily distinguished from it by its contracted base.

Membraniporidæ.

Dr. Reuss (Sitzgsber. Ak. Wiss. Wien,. 1864, Dec.) describes the following as new species:—*Membranipora subtilimargo* (p. 630); *M. concatenata* (p. 630), closely related to the recent *M. monostachya*, Busk; *M. appendiculata*=*Cellepora appendiculata*, Reuss (p. 631).

Lepralia squamoidea (p. 632); *L. hörnesi* (p. 633); *L. schlönbachi* (p. 635); *L. diodonta* (p. 636); *L. confluens* (p. 637); *L. bicornigera*, probably identical with *L. mammillata*, Busk (p. 637); *L. cognata*, very nearly related to *L. otophora*, Reuss (p. 638); and *L. excentrica* (p. 641).

J. C. Ubaghs describes (*l. c.*) *Lepralia bosqueti* (p. 52).

Reuss describes (Denkschr. Ak. Wiss. Wien) *Membranipora subæqualis* (p. 30, pl. 10. fig. 1), *Lepralia münsteri* (p. 30, pl. 10. fig. 2), *L. rudis* (p. 31, pl. 10. fig. 3), *L. multiradiata* (p. 31, pl. 10. fig. 5) very closely related to *L. scripta* (Reuss) of the Miocene.

Celleporidæ.

Cellepora escharoides (p. 646) and *C. lyrata* (p. 647) are described as new species by Dr. Reuss. Sitzgsber. Ak. Wiss. Wien, 1864, Dec.

A remarkable variety of *Reptescharinella villiersi*, D'Orbigny, is mentioned and figured by J. C. Ubaghs (*l. c.* p. 53).

Dr. Reuss (*l. c.*) gives a critical examination of the genus *Cumulipora*, v. M. (p. 642–645), placed by Bronn at one time among the *Anthozoa*, and considered to be related to the *Milleporidæ*; the same author has more recently classified it with the *Polyzoa*. Dr. Reuss considers that it has affinities to *Lepralia* on the one hand, and on the other to *Cellepora*. It may be looked upon as a *Lepralia* with the cells arranged in rows, or as a *Cellepora* procumbent with regularly or irregularly arranged cells.

Escharidæ.

The following species of *Eschara* are described as new by Dr. Reuss (*l. c.*):—*E. tetrastoma* (p. 205); *E. schlönbachii* (p. 647), perhaps only a variety of *E. pertusa*, M.-Edw.; *E. polymorpha* (p. 651); *E. carinata* (p. 654); *E. tetragona* (p. 654); *E. wettei* (p. 655); *E. fraterna* (p. 655); *E. inæqualis* (p. 656); *E. complicata* (p. 657); and *E. beyrichii* (p. 657).

Reuss describes as a new species *Eschara membranacea*. Denkschr. Ak. Wiss. Wien, xxiii. p. 32, pl. 10. fig. 6.

Bicupularia, g. n., Reuss, Sitzgsber. Ak. Wiss. Wien, 1864, July, p. 205. The small polyzoary is lens-shaped, both sides moderately arched and exactly alike: on each side the same roundish polygonal cells project; these are separated by narrow furrows. The large central oval openings are arranged quincuncially, and at the same time in obliquely curved rows; outside each of the large cells is a smaller cell, also distinctly circumscribed and provided with a small oral opening. *B. lenticularis* is the only known species.

J. C. Ubaghs (*l. c.*) figures and describes the following as new:—*Steginopora reticulata* (p. 55), *Flustrina falcoburgensis* (p. 50), *Escharipora guascoi* (p. 51), *Semiescharipora cruciata* (p. 54).

J. Beissel (*l. c.*) describes *Semiescharipora galeata* (p. 55), *S. cornuta* (p. 58), *Semiflustrina vesiculosa* (p. 66), *Semieschara arborea* (p. 40), *S. crassa* (p. 42), *Escharipora verrucosa* (p. 45), *E. rhomboidea* (p. 48), *Pavolunulites elegans* (p. 34).

Dr. Reuss (*l. c.*) gives diagnoses and figures of the following new species:—*Biflustra osnaburgensis* (p. 660), *B. canellata* (p. 660), *Retepora marginata* (p. 661).

Selenariadæ.

Dr. Reuss describes (*l. c.*) *Lunulites subplena*, sp. n. (p. 666), closely related to *L. philippinensis*, Busk.

Cyclostomata.

Crisiadæ.

Crisia haueri, sp. n., Reuss (*l. c.* p. 667).

Pustuliporidæ.

Clavitubigera navicularis, sp. n., Beissel (*l. c.* p. 73); *Idmonea irregularis*, Beissel (p. 76), perhaps the same as *I. pseudodistincta*, v. Hgnw.; *I. mülleri*, Beissel (p. 77); *Entalophora bosqueti*, Beissel (p. 78); *E. lineata*, Beissel (p. 80); *Filisparsa mülleri*, Beissel (p. 84).

J. C. Ubaghs describes (*l. c.*) *Idmonea divaricata* (p. 58) and *Entalophora beisseli* (p. 59).

Dr. Reuss describes (*l. c.*) *Idmonea heteropora* (p. 668), *Hornera sparsa* (p. 207), *Cea lobato-ramosa* (p. 208), and proposes the following subdivision of *Pustuliporidæ* (p. 670):—

Polyzoary branching or reticulated, having no accessory pore on the back. Pustuliporidæ.

I. The cell-openings distributed all round the polyzoary.
  a. The cell-openings irregularly scattered ..... *Pustulipora*, Goldf.
  b. The cell-openings winding spirally around the polyzoary.
    α. Simple spiral ..... *Spiropora*, Lam.
    β. Several spirals ..... *Peripora*, d'Orb.

II. The cell-openings limited to the front of the polyzoary.
  a. Irregularly or in irregular cross rows ..... *Filisparsa*, d'Orb.
  b. In regular rows, converging towards the middle line.
    α. In single rows ..... *Tubigera*, d'Orb.
    β. In double rows ..... *Bitubigera*, d'Orb.

Polyzoary branching or reticulated, with accessory pores at the back and between the cell-openings ..... Idmoneidæ.

I. The cell-openings irregular or in complete cross rows. *Hornera*, Lam.

II. The cell-openings regular; cross rows converging towards middle line. *Idmonea*, Lam.

Tubuliporidæ.

Reuss describes as a new species *Proboscina confluens*. Denkschr. Ak. Wiss. Wien, p. 34, pl. 10. fig. 11.

Diastoporidæ.

Defrancia monosticha, sp. n., Reuss, Sitzgsber. Ak. Wiss. Wien, 1864, July, p. 207.

Cerioporidæ.

Dr. Reuss describes (*l. c.*) *Radiopora sandbergeri* (p. 208), *R. laticosta* (p. 675), *R. goldfussi* (p. 676) = *Defrancia stellata*, Reuss. A new genus, *Buskia*, is proposed for *Radiopora tabulifera*, Römer (p. 677); some very perfect specimens of this interesting form are figured, pl. 8. figs. 1–4. *Heteroporella laticosta* (p. 682), *H. deformis* (p. 683), *Ceriopora orbiculata* (p. 683).

J. C. Ubaghs (*l. c.*) describes as new species *Spiroclausa canalifera* (p. 60) and *Stellocavea coronata* (p. 61).

CRUSTACEA

BY

C. SPENCE BATE, F.R.S.

A. *Separate Publications.*

BERGSÖE, V. *Philichthys xiphiæ* (Stp.), Monographisk Fremstillet. Afhandling for den Philosophiske Doctorgrad. Copenhagen, 1864, 8vo, pp. 90, and one plate. Abstract in Ann. Sc. Nat. 1865, vol. iii. pp. 213–220, pl. 1.

CAILLIAUD, F. Catalogue des Radiaires, des Annelides, des Cirrhipèdes et des Mollusques marins, terrestres et fluviatiles recueillis dans le département de la Loire-inférieure. Nantes, 1865, 8vo, pp. 323, with five plates.

This catalogue of the invertebrate marine animals of the Loire-inférieure reports no Crustacea except the *Cirripedia*; and, in announcing these, the author appears not to be aware of Mr. Darwin's monograph of the subclass. In recording the several genera mentioned in this catalogue, we have added in square brackets Mr. Darwin's names as the correct equivalents of those given by M. Cailliaud.

HELLER, C. Reise der österreichischen Fregatte Novara um die Erde in den Jahren 1857–58–59 unter den Befehlen des Commodors B. von Wüllerstorf-Urbair. Zool. Theil, zweiter Band, dritte Abtheilung, Crustaceen. Vienna, 1865, 4to, pp. 280, mit 25 Tafeln.

This volume consists of the Crustacea taken by the naturalists accompanying the Austrian expedition round the world during the years 1857–58–59; it describes the species, and tabulates their geographical arrangement and numerical proportions. Eighty-eight species were obtained at the Nicobar Islands, 62 at Taiti, 36 at Java, 34 at Auckland, 32 at Rio Janeiro, 32 at Madras, 27 at Gibraltar (including those found in the Mediterranean Sea in the passage from the Adriatic), 25 at Ceylon, 24 at Sydney, 16 at Chili, 16 at the Cape of Good Hope, 13 at Shanghai, 11 at Hongkong, 9 at St. Paul, 7 at Punipet, 6 at Manilla, 4 at Singapore, 2 at Madeira, making a total of 376

species. Thus, while adding new species to our knowledge, it assists towards an elucidation of the geographical distribution of the Crustacea.

The volume is illustrated by well-executed figures of the new or more important species, the whole of which, together with descriptions of the new genera, will be found recorded under the heads of their respective families.

SARS, G. O. Norges Ferskvandskrebsdyr. Forste afsnit Branchiopoda. I. Cladocera Ctenopoda (Fam. Sididæ and Holopodidæ). Efter det Academiske Collegiums Foranstaltning udgivet som Universitetsprogram for 1ste Halvaar 1863 ved Dr. M. Sars. Christiania, 1865, 4to, pp. 71, four plates.

This memoir is the first part of a great work on the freshwater Crustacea of Norway. It treats only of the two families *Sididæ* and *Holopodidæ*. It commences with a *résumé* of the contents of the memoir, pp. v–viii, in French, the substance of which will be found under *Cladocera* and the species recorded under their respective families.

——. Oversigt af Norges marine Ostracoder. Vidensk. Selsk. Forh. 1865, pp. 1–130.

This memoir treats of the marine Norwegian Ostracoda, which, after reviewing the opinions of others, the author proposes to divide into four sections. The species are described.

B. *Papers published in Journals.*

BATE, SPENCE. Carcinological Gleanings. Ann. & Mag. of Nat. Hist. 1865, xv. pp. 81–88, pl. 1.

BOECK, A. Oversigt over de ved Norges Kyster iagttagne Copepoder henhörende til Calanidernes, Cyclopidernes og Harpactidernes Familier. Vidensk. Selsk. Forh. for 1864, pp. 57.

This communication describes the genera and species of the *Calanidæ*, *Cyclopidæ*, and *Harpaticidæ*, to each of which are added several new genera and species.

BRADY, G. S. Report on the Pelagic Entomostraca. Nat. Hist. Trans. of Northumberland and Durham, vol. i. part 1, 1865, pp. 29–40.

This article forms part of the report on the deep-sea dredging on the coasts of Northumberland and Durham during the summers of 1862–63–64, carried out under the auspices of the local natural-history societies and the British Association.

——. On the British Oceanic Entomostraca. Intellectual Observer, 1865, pp. 1–10, pl. 1. figs. 1–6.

This memoir is a popularly written account of all the marine swimming Entomostraca, whether found by the author or other naturalists, and is illustrated by a well-executed coloured lithographic figure of *Anomalocera patersonii*.

Brandt, A. Physiologische Beobachtungen am Herzen des Flusskrebses. Bull. de l'Ac. Sc. St. Pétersb. viii. 1865, pp. 416–430.

This memoir details some physiological observations on the heart of the freshwater genus *Astacus* (Ecrevisse) as exemplified by experiments made with various chemical agents, a *résumé* of which will be found under the head of the family *Astacidæ*.

Buchholz, R. *Branchipus grubii* (v. Dybowski). Schrift. Physik.-ökonom. Gesellsch. Königsberg, 1864, pp. 93–108, tab. iii.

This communication is a full description of *Branchipus grubii*, described by Dybowski in a memoir on the *Phyllopoda* in the neighbourhood of Berlin, in Wiegmann's Archiv, 1860.

Capello, F. de B. Descripção de Tres especies novas de Crustaceos da Africa occidental e observações ácerca do *Penæus bocagei* (Johnson), Especie nova dos mares de Portugal. 1864, 4to, pp. 11, with one plate.

This memoir has been published separately, but will form part of the forthcoming volume of the Memoirs of the Lisbon Academy. It contains the description of a new species of *Thelphusa*, *Sesarma*, and *Palinurus*, from the western coast of Africa, to which are added some observations on *Penæus bocagei*, described by Johnson in Proc. Zool. Soc. 1863, June, which the author compares with *P. caramote* (Rondelet).

Claus, C. Ueber die Organisation der Cypriden. Zeitschr. für wissensch. Zool. 1865, xv. pp. 143–154, Taf. x.

This memoir treats of the structure of the *Cypridæ* as exemplified chiefly in the species *Cypridina messinensis*, and is illustrated by well-executed figures.

——. Zur näheren Kenntniss der Jugendformen von *Cypris ovum*. Ibid. pp. 391–398, Taf. xxvii.–xxiii.

This communication is a contribution towards our knowledge of the development of *Cypris*, and shows the different forms that the shell assumes in its progress to the mature form. It will be found useful in the determination of species, particularly when, as in fossil forms, we have little to depend upon except the form of the shell.

——. Ueber die Geschlechtsdifferenzen von *Halocypris*. Ibid. pp. 398–403, tab. xxx.

This memoir is on the structural distinctions between the sexes of the genus *Halocypris*.

Costa, A. Sopra una specie Mediterranea del genere *Lestrigonus*. Rendic. Accad. Sc. fis. e matemat. Napoli, 1865, Feb. p. 34.

——. Di due nuove specie di Crostacei Amfipodi del Golfo di Napoli. Annuario del museo zoologico della R. Università di Napoli, 1864, Anno ii. pp. 153–157.

The Crustacea in this museum are few in number, and collected from various countries. The local species are few. A new *Protomedeia* and *Ampelisca* are described in the present memoir.

Edwards, A. Milne-. Révisions des Crustacés macrures de la famille des Atyoidées. Ann. Soc. Entomol. France, Paris, 1864, iv. pp. 145–153, pl. 3.

——. Note sur un Crustacé decrit comme fossile et qui vit encore aujourd'hui dans l'océan Indien. Ann. Sc. Nat. 1865, iii. pp. 193–196.

Gerbe, Z. Notes sur les métamorphoses des Crustacés marins. Compt. Rend. 1865, pp. 79–87, 103; also in Rev. Mag. Zool. 1865; also Ann. & Mag. Nat. Hist. 1865, xv. pp. 237 & 356.

This memoir discusses the relative connexions of the young of *Palinurus* with the genus *Phyllosoma*.

Grube, E. Ueber die Gattungen *Estheria* und *Limnadia*, und einen neuen *Apus*. Arch. für Naturg. 1865, xxxi. pp. 203–283, taf. viii. und ix.

This memoir discusses upwards of forty species of *Estheria* from all parts of the world, and describes and figures a new species of *Apus* from Algiers.

Heller, C. Kleine Beiträge zur Kenntniss der Süsswasser-Amphipoden. Verh. zoolog.-bot. Gesellsch. Wien, xv. 1865, pp. 979–984, tab. xvii.

This short memoir is a contribution to our knowledge of the freshwater Amphipoda; it contains a new species of *Orchestia* and of *Gammarus*, and a revision of the known freshwater species of Southern Europe. Dr. Heller accepts the genus *Gammarus* of Fabricius as the genus, regarding the genus *Gammarus* as defined in the British Museum Catalogue of Amphipoda and British Sessile-eyed Crustacea, together with *Niphargus* of Schjödte, as subgenera.

[The genus *Gammarus* was founded by Fabricius on *Cancer pulex* of Linnæus; and strictly to the definition of that type

have the authors of the British Sessile-eyed Crustacea confined their genus *Gammarus*.]

Hess, W. Beiträge zur Kenntniss der Decapoden-Krebse Ost-Australiens. Arch. Naturgesch. 1865, pp. 127–173, Taf. vi. und vii.

Hesse, Eu. Observations sur des Crustacés rares ou nouveaux des côtes de la France. Cinquième article, Ann. Sci. Nat. 1865, iii. p. 221. Sixième article. Ibid. 1865, iv. pp. 222.

Hodge, G. Report on the Pycnogonidea. Nat. Hist. Trans. of Northumberland and Durham, vol. i. pp. 41–42.

This communication forms part of the reports of the deep-sea dredging on the coasts of Northumberland and Durham between the years 1862 and 1864.

King, R. L. On the anatomy of certain forms of Australian Entomostraca. Trans. Entomol. Soc. New South Wales, 1865, pp. 162–166, pls. 11, 12, 13.

This memoir treats of the structure of several genera described by the author in the Proc. R. S. Van Diemen's Land.

Kröyer, H. Bidrag til Kundskab om Snyltekrebsene. Naturhist. Tidsskr. 1863–64, pp. 75–426, pls. 1–18.

Lilljeborg, W. On the *Lysianassa magellanica* of Milne-Edwards, and on the Crustacea of the Suborder *Amphipoda* and the Subfamily *Lysianassinæ* found on the coast of Sweden and Norway. Trans. Scientific Society at Upsala, 1865, pp. 38, with five plates.

This important memoir is written in the English language. A digest of it will be found under the Amphipoda.

Lucas, H. Note on *Astacus pellucidus*. Bull. Entom. Paris, 1864, p. iv.

——. A Note on *Apus*. Ibid. 1864, p. xi.

Müller, F. Description of a new genus of Amphipod Crustacea. Ann. & Mag. Nat. Hist. 1865, xv. pp. 276 & 277, pl. 10.

——. Ueber Cumaceen. Arch. Naturgesch. 1865, pp. 311–323.

This memoir is a review of the labours of preceding carcinologists, more especially Kröyer's and Van Beneden's, on the family *Diastylidæ*, together with the results of his own more recent researches into their structure and development.

Norman, A. M. Report on the Crustacea. Nat. Hist. Trans. Northumberland and Durham, 1865, vol. i. pp. 12–29.

This communication forms part of the reports on deep-sea dredging off the coasts of Northumberland and Durham in connexion with the British Association.

Sars, G. O. Om den aberrante Krebsdyrgruppe Cumacea og dens nordiske Arter. Forhandl. Vid. Selsk. 1864, pp. 83.

This memoir treats first of the intimate structure of the animals in the family *Diastylidæ*, and then describes twenty-five species belonging to nine genera taken on the coast of Norway.

Schödler, J. E. Zur Diagnose einiger Daphniden. Arch. für Naturgesch. 1865, xxxi. pp. 283–285.

Soubeiran, L. Sur l'Histoire Naturelle et l'Education des Ecrevisses. Compt. Rend. 1865, lx. pp. 1249–1250.

This memoir is a communication showing the favourable results in an attempt to cultivate the Ecrevisse [*Astacus fluviatilis*] at Clairfontaine, near Rambouillet, since the year 1859. These Crustacea take four years to reach maturity, the males growing more rapidly and attaining a larger size than the females. The author also adds a few remarks on the best means of feeding and nourishing these animals during the period of their acclimatization.

Thorell, T. Om *Argulus dactylopteri*, en ny Vestindisk hafs-argulid. Œfvers Vet. Akad. Förh. 1864, xxi. pp. 609–614, pl. 16.

The author gives a very full descriptive and structural account of this species.

Wagner, N. Recherches sur le Système Circulatoire et les Organes de la Respiration chez le Porcellion élargi. Ann. Sc. Nat. 1865, iv. pp. 317–328.

This communication demonstrates the circulatory system; and in it the author contends that a pulmonary plexus of minute vessels exists in the opercular valves.

Young, J. On the Malacostraca of Aristotle. Ann. & Mag. of Nat. Hist. 1865, xv. pp. 241–261.

Dr. Young has (Ann. & Mag. Nat. Hist., April 1865) collected from the three works of Aristotle, viz. 'Historia Animalium,' 'De Partibus,' and 'De Generatione,' all the notes on the anatomy and physiology of the Malacostraca, and attempted to identify the Crustacea therein spoken of with those known to us by their modern names.

The number of determinations considered doubtful by Dr. Young might be lessened if we accept *Herbstia condyliata*, which differs in general appearance from *Maia squinado* only in having

thinner and proportionately (but slightly) longer legs. This would allow of *Maia* being placed as the equivalent of *Heracleoticus*, in which the legs are short and feeble. Certainly the two forms are so much alike that we think to a general observer specimens of the same size—that is, a full-grown *Herbstia condylata* compared with a half-grown *Maia squinado*—would only appear to differ in the length of their respective legs, or in accordance with the variations between the descriptions of Maîa and Ἡρακλεωτικοί as given by Aristotle.

BRACHYURA.

Leptopodidæ.

The following species are recorded by Prof. Heller (Reise Novara) :—

Libidoclaea braziliensis, sp. n., *l. c.* p. 1, tab. 1. fig. 1, 1*a**, from Rio Janeiro.

Micippe hirtipes (Dana), Heller, *l. c.* p. 3, from the Nicobar Islands.

Naxia diacantha (Dehaan), Heller, *l. c.* p. 3, from Hongkong.—*N. serpulifera* (M.-Edw.), Hess, Archiv für Naturg. 1865, p. 129, from Australia.

Tiarinia verrucosa, sp. n., Heller, *l. c.* p. 4, tab. 1. fig. 2, from the Nicobar Islands †.

Egeria herbstii (Edw.), Heller, *l. c.* p. 4, from Hongkong.

Maiidæ.

Epialtus marginatus (Bell), Heller, Reise Fregatte Novara, p. 5, from Chili.

Acanthonyx consobrinus, (Alph. M.-Edw.), Heller, *l. c.* p. 5, from Madras.

Paramithrax barbicornis (Latr.), Hess, Archiv für Naturg. 1865 p. 129, from Australia.

Periceridæ.

Halimus timidus (Dana), Hess, Archiv für Naturg. 1865, p. 130, Australia.

Halimus spinosus, sp. n., Hess, *l. c.* p. 129, tab. 6. fig. 1.

Xenocarcinus tuberculatus (White), Hess, *l. c.* p. 131, Cumberland group, Long Island, Queensland.

Cancеridæ.

Under this family, which Prof. Heller calls a tribe and Dr. Hess a subtribe within the family *Cyclometopa*, Prof. Heller, Reise Novara, and Dr. Hess in Archiv für Naturg. 1865, pp. 127–173, pls. 6, 7, describe the following species:—*Cancer irroratus* (Bell), Heller, *l. c.* p. 6, from Chili; *C. dentatus* (Bell), Heller, *l. c.* p. 6, from Chili; *C. huonii* (Hombron et Jaquinot), Hess, Arch. für Naturg. 1865, p. 131, Torres Straits; *C. mamillatus* (M.-Edw.), Hess, *l. c.* p. 131, Australia; *C. calculosus* (M.-Edw.), Hess, *l. c.* p. 131, Australia.

Atergatis elegans, sp. n., Heller, *l. c.* p. 7, from Taiti; *A. limbatus* (Edw.), Heller, *l. c.* p. 8, from Taiti; *A. floridus*, (Dehaan), Heller, *l. c.* p. 8, from Taiti.

Carpilius maculatus (Linn.), Heller, *l. c.* p. 9, from Taiti.

Liomera lata (Dana), Heller, *l. c.* p. 9, from Taiti.

Actæa hirsutissima (Rüppell), Heller, *l. c.* p. 9, from Taiti.

Xanthidæ.

Xantho lamarckii (Edw.), Heller, *l. c.* p. 10, and *X. notatus* (Dana), Heller, *l. c.* p. 10, from the Nicobar Islands; *X. granoso-manus* (Dana), Heller, *l. c.* p. 11, from Madras; *X. deplanatus* (White), Hess, Archiv für Naturg. 1865, p. 132, from Garden Island, Sydney; *X. peronii* (Edw.), Hess, *l. c.* p. 133, Australia; *X. incisus* (Edw.), Hess, *l. c.* p. 133, Australia.

Xantho spinosus, sp. n., Hess, *l. c.* p. 132, pl. 6. fig. 3, Sydney; *X. arcuatus*, sp. n., Heller, *l. c.* p. 11, tab. 2. fig 1, from Taiti.

Paraxanthus hirtipes (Edw. & Luc.), Heller, *l. c.* p. 12, from Chili.

Euxanthus rugulosus, sp. n., Heller, *l. c.* p. 12, tab. 2. fig. 2, Mauritius.

Eudora tetraodon, sp. n., Heller, *l. c.* p. 14, tab. 2. fig. 5, from Auckland.

Menippe bellangerii (M.-Edw.), Heller, *l. c.* p. 15, from the Nicobar Islands.

Panopæus herbstii (Edw.), Heller, *l. c.* p. 16, from Rio Janeiro.

Carpilius maculatus (Herbst), Hess, Archiv für Naturg. 1865, p. 133, from the Indian Ocean and Sydney.

Pseudocarcinus gigas (Lam.), Hess, *l. c.* p. 134, Sydney.

Etisus utilis (Hombron & Jacquinot), Heller, *l. c.* p. 16, from the Nicobar Islands; *E. anaglyptus* (M.-Edw.) Hess, *l. c.* p. 134, from Australia.

Carpilodes tristis (Dana), Heller, *l. c.* p. 17, from Taiti.

Actæodes tomentosus (Edw.), Heller, *l. c.* p. 17, from the Nicobar Islands and Taiti; *A. nodipes*, Heller, *l. c.* p. 17, from the Nicobar Islands.

Carpiloxanthus rugipes, Heller, *l. c.* p. 17, from Taiti.

Daira perlata (Herbst), Heller, *l. c.* p. 18, from Auckland.

Zozymus latissimus (M.-Edw.), Hess, *l. c.* p. 134, Australia.

Chlorodius ungulatus (M.-Edw.), Hess, *l. c.* p. 135, Australia; *C. arcolatus* (M.-Edw.), Hess, *l. c.* p. 135, Australia; *C. niger* (Rüppell), Heller, *l. c.* p. 18, from the Nicobar Islands, Taiti, and Madras; *C. sanguineus* (Edw.), Heller, *l. c.* p. 18, from Ceylon and the Nicobar Islands; *C. dehaanii* (Krauss), Heller, *l. c.* p. 19, from Taiti.

Pilodius pugil (Dana), Heller, *l. c.* p. 19, from the Nicobar Islands.

Cymo andreossyi (Sav.), Heller, *l. c.* p. 20, from Taiti.

Eriphiidæ.

This family is considered a tribe by Professor Heller, and a family by Hess and Dana.

Epixanthus frontalis (Edw.), Heller, *l. c.* p. 20, from the Nicobar Islands.

Ozius lobatus, sp. n., Heller, *l. c.* p. 21, tab. 2. fig. 4, from Shanghai, Sydney,

* In the text the figures are erroneously given as f. 1, 2.
† The reference in the text is erroneously given as fig. 3.

and Taiti; *O. rugulosus* (Stimp.), Heller, *l. c.* p. 22, tab. 3. fig. 1, from the Nicobar Islands and Taiti; *O. tuberculosus* (Edw.), Heller, *l. c.* p. 23, from the Nicobar Islands; *O. truncatus* (M.-Edw.), Hess, Archiv für Naturg. 1865, p. 136, Australia, Bay of Islands (New Zealand), Illawarra (New South Wales), Sydney; *O. guttatus* (M.-Edw.), Hess, *l. c.* p. 137, Australia.

Pilumnus rufo-punctatus (Stimp.), Heller, *l. c.* p. 23, from Sydney; *P. fissifrons* (Stimp.), Heller, *l. c.* p. 24, from Sydney; *P. fimbriatus* (M.-Edw.), Hess, *l. c.* p. 137, Australia; *P. tomentosus* (M.-Edw.), Hess, *l. c.* p. 137, Australia; *P. lanatus* (Latr.), Hesse, *l. c.* p. 137, Australia; *P. ursulus* (Adams & White), Hess, *l. c.* p. 137, Eastern Sea, Sydney.

Eriphia lævimana (Edw.), Heller, *l. c.* p. 24, from the Nicobar Islands; *E. gonagra* (Fabr.), Heller, *l. c.* p. 24, from Rio Janeiro.

Eriphia trapeziformis, sp. n., Hess, *l. c.* p. 135, tab. 6. fig. 4, from the Feejee Islands.

Trapezia dentifrons (Latr.), Hess, *l. c.* p. 136, Australia; *T. cærulea* (Rüppell), Heller, *l. c.* p. 25, from the Nicobar Islands; *T. areolata* (Dana), Heller, *l. c.* p. 25, from the Nicobar Islands; *T. cymodoce* (Herbst), Heller, *l. c.* p. 25, from the Nicobar Islands; *T. guttata* (Rüppell), Heller, *l. c.* p. 25, from Taiti.

Tetralia cavimana, Heller, *l. c.* p. 26, from Taiti.

Portunidæ.

In this family, which Professor Heller designates as a tribe, the following species are recorded:—

Neptunus diacanthus (Latr.), Heller, Reise Freg. Novara, p. 26, from Rio Janeiro; *N. sanguinolentus* (Herbst), Heller, *l. c.* p. 26, from the Cape, Ceylon, Madras, the Nicobar Islands, Auckland; *N. pelagicus* (Linn.), Heller, *l. c.* p. 27, from Madras, Java, Singapore, Manilla, Hongkong, Taiti. It is also given by Hess (Archiv für Naturg. 1865, p. 139) from Red Sea, Bombay, Pondichery, Singapore, Philippine Islands, Borneo, Molucca, Macassar, Java, New Holland, and Port Jackson. *N. rugosus* (Alph. Edw.), Hess, *l. c.* p. 139, Australia.

Achelous spinimanus (Latr.), Heller, *l. c.* p. 27, from Rio Janeiro; *A. ruber* (Lam.), Heller, p. 27, from Janeiro.

Scylla serrata (Forskål), Heller, *l. c.* p. 27, from Ceylon, Madras, Nicobar Islands, Auckland, and Taiti, and mentioned by Hess from New Holland and Mauritius. M. A. Milne-Edwards (Ann. des Sc. Nat. t. iii. p. 196) identifies the fossil species *Portunus leucodon* of Desmarest with *Cancer serratus* (Forskål), of which Dehaan formed the genus *Scylla*, therefore the fossil species of Desmarest must for the future be known as *Scylla serrata* (Forskål).

Nectocarcinus integrifrons (Latr.), Hess, *l. c.* p. 139, New Holland and New Zealand.

Carupa læviuscula, sp. n., Heller, *l. c.* p. 27, tab. 3. fig. 2, from Taiti.

Thalamita admete (Herbst), Heller, *l. c.* p. 28, from the Nicobar Islands and Taiti; *T. cæruleipes* (Luc. & Jacqin.), Heller, p. 28, from the Nicobar Islands; *T. crenata* (Latr.), Heller, *l. c.* p. 29, from the Nicobar Islands; *T. danæ* (Stimp.), Heller, *l. c.* p. 29, from Auckland; *T. prymna* (Herbst), Hess, *l. c.* p. 140, Australia; *T. erythodactyla* (Lam.), Hess, *l. c.* p. 140, Australia; *T. rosacea* (Hombron & Jacquinot), Hess, *l. c.* p. 140, New Guinea.

Goniosoma orientale (Dana), Heller, *l. c.* p. 29, tab. 3. fig. 3, from the Nicobar Islands; *G. sexdentatum* (Herbst), Heller, *l. c.* p. 30, from Ceylon.

Carcinus mænas (Linn.), Heller, *l. c.* p. 30, from Rio Janeiro.

Ocypodidæ.

Thelphusa. Th. perlata (Edw.), Heller (Reise Novara), p. 31, from the Cape of Good Hope. The following species are new:—

Thelphusa leschenaultii (Edw.), Heller, *l. c.* p. 32, from Ceylon, the Nicobar Islands, Madras, Taiti; *T. corrugata*, Heller, *l. c.* p. 31, tab. 4. fig. 1, from Madras and Java; *T. bayoniana*, Capello (Tres esp. nov. de Crust. da Africa occident. p. 2, fig. 3), rivers in the interior of Western Africa.

Geothelphusa chilensis, sp. n., Heller, *l. c.* p. 33, tab. 3. fig. 4, from Chili; *G. obtusipes* (Stimp.), Heller, *l. c.* p. 34, from Manila.

Parathelphusa tridentata (Edw.), Heller, *l. c.* p. 34, from Java.

Trichodactylus quadratus (Edw.), Heller, *l. c.* p. 35, Rio Janeiro.

Cardisoma hirtipes (Dana), Heller, *l. c.* p. 35, from Taiti, Auckland; it is also reported from the Feejee Islands, Sydney, by Dr. Hess (Archiv für Naturg. 1865, p. 140), who places it in the family *Gecarcinidæ*. *C. carnifex* (Herbst), Heller, *l. c.* p. 35, from the Nicobar Islands.

Gonoplax angulata (Pen.), Heller, *l. c.* p. 35, from Cape of Good Hope.

Macrophthalmus verreauxii (M.-Edw.), Hess, Archiv für Naturg. 1865, p. 142, Australia; *M. crassipes* (M.-Edw.), Hess, *l. c.* p. 142, Australia; *M. setosus* (M.-Edw.), Hess, *l. c.* p. 142, Australia.

Macrophthalmus bicarinatus, sp. n., Heller, *l. c.* p. 36, tab. 4. fig. 2, from the Nicobar Islands.

Gelasimus vocans (Rumph.), Heller, *l. c.* p. 37, from the Nicobar Islands; *G. tetragonon* (Herbst), Heller, *l. c.* p. 37, from the Nicobar Islands, Taiti; *G. rubripes* (Luc. et Jaquin.), Heller, *l. c.* p. 38, from the Nicobar Islands; *G. annulipes* (Edw.), Heller, *l. c.* p. 38, from Ceylon, Madras, the Nicobar Islands; *G. gaimardi* (Edw.), Heller, *l. c.* p. 38, from Taiti; *G. perplexus* (Edw.), Heller, *l. c.* p. 38, tab. 5. fig. 1, from Ceylon, Madras; *G. forceps* (Herbst), Hess, *l. c.* p. 146, Australia.

Gelasimus signatus, sp. n., Hess, *l. c.* p. 146, tab. 6. fig. 6, Sydney; *G. variatus*, sp. n., Hess, *l. c.* p. 146, tab. 6. fig. 7, Sydney.

Helœcius cordiformis (Edw.), Heller, *l. c.* p. 39, from Sydney; also given by Hess, Archiv für Naturg. 1865, p. 144, Australia, Port Jackson; *H. areolatus* (Heller), Hess, *l. c.* p. 144, Sydney; *H. inornatus* (Dana), Hess, *l. c.* p. 144, South Australia.

Helœcius signatus, Hess, sp. n., *l. c.* p. 145, Sydney.

Myctiris longicarpus (Latr.), Heller, *l. c.* p. 40, from Sydney; it is also mentioned by Hess from Australia. This genus Dr. Hess (Archiv für Naturg. 1865, p. 142) elevates into a family, under the name of *Myctiridæ*.

Hemiplax, g. n., Heller, *l. c.* p. 40. Carapax fere planus; frons tertiam partem latitudinis carapacis implens; latera subrecta, dentata. Maxilipedes externi

(*second pair of gnathopoda*) hiantes; articulus tertius brevior secundo, ad basim angustatus, in superficie obtuse carinatus, neque barbatus. Chelipedes (*first pair of pereiopoda*) subæqui, insequentibus breviores. *Hemiplax hirtipes*, sp. n., Heller, *l. c.* p. 40, tab. 4. fig. 3, from Auckland.

Ocypoda ceratophthalma (Pallas), Heller, *l. c.* p. 42, from Ceylon, the Nicobar Islands; *O. platytarsis* (Edw.), Heller, *l. c.* p. 42, from the Nicobar Islands, Taiti; *O. macrocera* (Edw.), Heller, *l. c.* p. 42, from the Nicobar Islands, Taiti; *O. rhombea* (Fab.), Heller, *l. c.* p. 42, from Rio Janeiro; *O. cordimana* (Desm.), Heller, *l. c.* p. 42, from the Nicobar Islands, Manila; *O. ceratophthalma* (Pallas), Hess (Archiv für Nat. 1865, p. 143), Australia, Egypt, Mauritius, China, Bombay.

Ocypoda macleayana, sp. n., Hess, *l. c.* p. 143, pl. 6. fig. 8, Sydney.

Ommatocarcinus macyllivrayi (White), Hess, *l. c.* Port Curtis, Australia.

Gecarcinidæ (Hess).

Gecarcinus logostoma (M.-Edw.), Hess, Archiv für Naturg. 1865, p. 140, Australia.

Grapsidæ.

Goniopsis cruentatus (Latr.), Heller, Reise Novara, p. 43, from Rio Janeiro.

Metopograpsus thukuhar (Owen), Heller, *l. c.* p. 43, from Taiti; *M. messor* (Forskål), Heller, *l. c.* p. 44, from Madras, Ceylon; *M. oceanicus* (Lucas et Jacquin), Heller, *l. c.* p. 44, from the Nicobar Islands.

Pachygrapsus intermedius, sp. n., Heller, *l. c.* p. 44, from Rio Janeiro; *P. pubescens*, sp. n., Heller, *l. c.* p. 45, tab. 4. fig. 4, from Chili; *P. maurus* (Luc.), Heller, *l. c.* p. 46, from Rio Janeiro; *P. marmoratus* (Fabr.), Heller, *l. c.* p. 46, from Gibraltar, Madeira.

Leptograpsus variegatus (Fabr.), Heller, *l. c.* p. 46, from Shanghai, Sydney.

Grapsus strigosus (Herbst), Heller, *l. c.* p. 47, from the Nicobar Islands; *G. rudis* (Edw.), Heller, *l. c.* p. 47, from Ceylon; *G. strigosus* (Herbst), Hess, Archiv für Naturg. 1865, p. 147, Australia, Indian Ocean, Red Sea; *G. planifrons* (Dana), Hess, *l. c.* p. 147, Valparaiso, Chili, Peru, Sydney; *G. variegatus* (Fabr.), Hess, *l. c.* p. 148, Australia, coast of Chili.

Grapsus inornatus, sp. n., Hess, *l. c.* p. 148, pl. 6. fig. 11, Sydney.

Geograpsus crinipes (Dana), Heller, *l. c.* p. 48, from Taiti.

Perigrapsus, g. n., Heller, *l. c.* p. 48. Carapax convexus, antice et postice angustatus; latera arcuata, dente unico post angulum orbitæ externum instructa. Frons dimidia carapacis latitudine augustior, deflexa. Orbitæ elongatæ, extrorsum parum apertæ; lobus suborbitalis internus dentiformis, frontem non attingens. Articulus tertius maxillipedum externorum (*second pair of gnathopoda*) paulo longior quam latus, versus basim angustatus, in superficie non barbatus. Hiatus externus canalis branchialis sat magnus. Chelipedes (*first pair of pereiopoda*) subæqui, antibrachio intus dente acuto armato, palma compressa, digitis sulcatis. Dactyli pedum insequentium spinulis armati. *Perigrapsus excelsus*, sp. n., Heller, *l. c.* p. 50, tab. 5. fig. 1, from Taiti.

Nautilograpsus minutus (Linn.), Heller, *l. c.* p. 50, Sargasso Sea in the Atlantic Ocean.

Plagusia tomentosa (Edw.), Heller, *l. c.* p. 51, from Cape of Good Hope; *P. squamosa* (Herbst), Heller, *l. c.* p. 51, from the Nicobar Islands, Madras, Sydney; *P. depressa* (Fabr.), Heller, *l. c.* p. 51, from the Nicobar Islands, Shanghai, and Punipet.

Acanthopus planissimus (Herbst), Heller, *l. c.* p. 51, from the Nicobar Islands, Taiti.

Varuna litterata (Fabr.), Heller, *l. c.* p. 51, from Madras, Hongkong, and Auckland.

Eriochirus sinensis (Edw.), Heller, *l. c.* p. 52, from Shanghai.

Pseudograpsus barbatus (Rumph.), Heller, *l. c.* p. 52, from the Nicobar Islands; *P. pallipes* (Latr.), Hess, *l. c.* p. 148, Australia.

Heterograpsus sanguineus (Dehaan), Heller, *l. c.* p. 52, from Punipet and Auckland; *H. maculatus* (Edw.), Heller, *l. c.* p. 54, from Auckland.

Heterograpsus barbimanus, sp. n., Heller, *l. c.* p. 53, tab. 4. fig. 5, from Punipet and Auckland.

Paragrapsus lævis (Dana), Heller, *l. c.* p. 55, from Sydney.

Cyclograpsus punctatus (Edw.), Heller, *l. c.* p. 55, from Cape, Madras, Java; *C. cinereus* (Dana), Heller, *l. c.* p. 56, from Chili; *C. quadridentatus* (M.-Edw.), Hess, *l. c.* p. 152, Australia; *C. gaimardii* (M.-Edw.), Hess, *l. c.* p. 152, Australia.

Cyclograpsus lævis, sp. n., Hess, *l. c.* p. 152, Sydney.

Nectograpsus, g. n., Heller, *l. c.* p. 56. Carapax lævis, latera arcuata; frons declivis, margine fere recto; orbitæ extus apertæ. Maxillipedes externi (*second pair of gnathopoda*) hiantes, articulo tertio secundo breviore, latiusculo, costa obliqua barbata non instructo, hiatu canalis exspiratoriæ amplo. Chelipedes (*first pair of pereiopoda*) æquales, pedes insequentes parum compressi, dactylo elongato, fere tetragono, spinulis armato. Abdomen (*pleon*) maris quinquearticulatum, triangulare, feminæ septemarticulatum, rotundatum. *Nectograpsus politus*, sp. n., Heller, *l. c.* p. 57, tab. 5. fig. 3, from the Nicobar Islands and Taiti.

Grapsodes, g. n., Heller, *l. c.* p. 58. Carapax subhexagonus, supra planus, frons dimidia carapacis latitudine angustior, valde deflexa; latera antice arcuata, dentata, postice recta. Orbitæ extrorsum apertæ, lobus suborbitalis internus dentiformis, frontem non attingens, externus infra marginem lateralem sese continuans. Antennæ internæ transversæ, externæ in hiatu inter frontem et lobum suborbitalem jacentes . . . . . Chelipedes (*first pair of pereiopoda*) subæqui, palma incrassata, digitis sulcatis, introrsum acute dentatis, apice unguiculatis. Pedes ambulatorii (*pereiopoda*) vix compressi, tertio et quarto cæteris longioribus, coxis pilosis, dactylis omnium tetragonis et spinulis armatis. Abdomen (*pleon*) uti in Nectograpso constructum. *Grapsodes notatus*, sp. n., Heller, *l. c.* p. 58, tab. 5. fig. 2, from the Nicobar Islands.

Platynotus depressus (Dehaan), Heller, *l. c.* p. 60, from Hongkong.

Ptychognathus pusillus, sp. n., Heller, *l. c.* p. 60, from the Nicobar Islands.

Chasmagnathus subquadratus (Dana), Hess, *l. c.* p. 152, New South Wales; *C. lævis* (Dana), Hess, *l. c.* p. 153, Sydney, New South Wales.

Helice granulata (Dana), Heller, *l. c.* p. 61, from Rio Janeiro: this spe-

cies is by Dana placed in the genus "*Chasmagnathus*."—*H. crassa* (Dana), Heller, *l. c.* p. 61, from Auckland; Hess, *l. c.* p. 152, also reports this species from coast of Illawarra (New South Wales).

Helice dentipes, sp. n., Heller, *l. c.* p. 62, tab. 5. fig. 5, from Ceylon.

Helice leachii, sp. n., Hess, *l. c.* p. 153, Sydney.

Sesarma affinis (Dehaan), Heller, *l. c.* p. 62, from Shanghai; *S. dehaani* (Edw.), Heller, *l. c.* p. 62, from Shanghai; *S. eydouxi* (Edw.), Heller, *l. c.* p. 64, from Madras; *S. bidens* (Dehaan), Heller, *l. c.* p. 64, from the Nicobar Islands and Hongkong; *S. intermedia* (Dehaan), Heller, *l. c.* p. 64, from Hongkong, Shanghai; *S. indica* (Edw.), Heller, *l. c.* p. 64, from Ceylon and the Nicobar Islands; *S. gracilipes* (Edw.), Heller, *l. c.* p. 65, from the Nicobar Islands.

Sesarma. The following species are described as new:—*S. angolensis*, Capello (Tres espec. nov. de Crust. da Africa occidental, p. 4, fig. 2 *a*, *b*, *c*), Sea of Angola; *S. aspera*, Heller, *l. c.* p. 63, tab. 6. fig. 1, from Ceylon, the Nicobar Islands, Madras; *S. rotundata*, Hess, *l. c.* p. 149, tab. 5. fig. 9, Sydney; *S. atrorubens*, Hess, *l. c.* tab. 6. fig. 12, Sydney; *S. similis*, Hess, *l. c.* p. 150, Sydney; *S. schiittei*, Hess, *l. c.* p. 150, tab. 6. fig. 11, Sydney; *S. erythrodactyla*, Hess, *l. c.* p. 151, tab. 6. fig. 10, Sydney.

Plagusia clavimana (Herbst), Hess, *l. c.* p. 154, Australia and New Zealand; *P. tomentosa* (M.-Edw.), Hess, *l. c.* p. 154, New South Wales, Cape of Good Hope, Chili; *P. glabra* (Dana), Hess, *l. c.* p. 154, New South Wales.

Metasesarma rugulosa, sp. n., Heller, *l. c.* p. 65, from Taiti.

Aratus pisoni (Edw.), Heller, *l. c.* p. 66, from Rio Janeiro.

Holometopus hæmatocheir (Dehaan), Heller, *l. c.* p. 66, from Hongkong.

Halicarcinus planatus (Fabr.), Heller, *l. c.* p. 66, from Auckland.

Pinnotheridæ.

Hymenicus varius (Dana), Heller, Reise Novara, p. 67, from Auckland; *H. pubescens* (Dana), Heller, *l. c.* p. 67, from Auckland.

Hymenicus krefftii, sp. n., Hess, Archiv für Naturg. 1865, p. 141, tab. 6. fig. 5, Sydney.

Pinnotheres pisum (Linn.), Heller, *l. c.* p. 67, from Punipet, Auckland; *P. veterum* (Bosc), Grube, Lussin Meeresfauna, taken from *Pinna squamosa*, in from 9–30 fathoms.

Pinnaxodes, g. n., Heller, *l. c.* p. 67. Carapax suborbicularis, obesus, testa tenuissima; fronte declivi, medio canaliculata. Oculi approximati, fossæ antennales conjunctæ. Palpus maxillipedum externorum (*second pair of gnathopoda*) terminalis triarticulatus, articulo ultimo ad apicem secundi inserto, exognatho occulto. Pedes duri; chelipedes (*first pair of pereiopoda*) manu elongata, digitis paulo deflexis acutis; pedes ambulatorii fere æquales, graciles. Abdomen (*pleon*) feminæ orbiculare, septmearticulatum. *Pinnaxodes hirtipes*, sp. n., Heller, *l. c.* p. 68, tab. 6. fig. 2. Two specimens of this species were found in a species of *Echinus* at Ecuador.

Calappidæ.

Calappa tuberculata (Fabr.), Heller, Reise Novara, p. 69, from the Nicobar islands, Auckland, Taiti; *C. lophos* (Herbst), Heller, *l. c.* p. 69, from Madras; *C. tuberculata* (Linn.), Hess, Archiv für Naturg. 1865, p. 157, Indian Ocean, Sydney.

Matuta victor (Herbst), Heller, *l. c.* p. 69, from the Nicobar Islands, Madras, Java, Taiti.

Hepatus angustatus (Fabr.), Heller, *l. c.* p. 69, from Rio Janeiro; *H. chilensis* (Edw.), Heller, *l. c.* p. 70, from Chili.

Philyra scabriuscula (Fabr.), Heller, *l. c.* p. 70, from Madras; *Ph. lævis* (Bell), Hess, *l. c.* p. 156, Australia, Adelaide.

Dicera ocellata (Edw.), Heller, *l. c.* p. 70, from Cape of Good Hope.

Acanthocyclus gayi (Edw. & Luc.), Heller, *l. c.* p. 70, from Chili.

Leucosiidæ.

M. Alphonse Milne-Edwards, in a short memoir (Sur un Crustacé decrit comme fossile et qui vit encore aujourd'hui dans l'océan Indien, Ann. Sc. Nat. vol. iii. p. 193, 1865), identifies *Ixa edwardsii*, described from a fossil or subfossil specimen by M. Lucas, to be of the same species as one now existing in the Indian Ocean.

Leucosia orbicularis (Bell), Hess, Archiv für Naturg. 1865, p. 155, Australia; *L. ocellata* (Bell), Hess, *l. c.* p. 155, Australia; *L. whitei* (Bell), Hess, *l. c.* p. 155, Australia; *L. polita*, sp. n., Hess, *l. c.* p. 155, tab. 6. fig. 14, Sydney.

Myra mammillaris (Bell), Hess, *l. c.* p. 156, Australia.

Phlyxia crassipes (Bell), Hess, *l. c.* p. 157, East Australia.

Matutidæ (Hess, Archiv für Naturg. 1865, p 158).

Matuta picta, sp. n., Hess, *l. c.* p. 158, tab. 6. fig. 13, Sydney.

ANOMURA.

Cryptodromia lateralis (Gray), Heller, Reise Novara, p. 71, from Sydney and Auckland.

Dromidea spongiora (Stimpson), Heller, *l. c.* p. 72, from St. Paul.

Lithodidæ.

Lomis hirta (Lam.), Hess, Archiv für Naturg. 1865, p. 159, tab. 7. fig. 15, Australia, Sydney.

Hippidæ.

In this family Prof. Heller (Reise Fregatte Novara) has described the following species:—

Albunea symnista (Fab.), Heller, *l. c.* p. 72, from the Nicobars and Madras.

Remipes testudinarius (Edw.), Heller, *l. c.* p. 72, from the Nicobars and Taiti; also from Australia, Hess, Archiv für Naturg. 1865, p. 160.

Hippa emerita (Fabr.), Heller, *l. c.* p. 73, from Rio Janeiro; *H. asiatica* (Edw.), Heller, *l. c.* p. 73, from Ceylon and Madras.

Porcellanidæ.

In this family Prof. Heller has described the following species :—

Porcellana pisum (Edw.), *l. c.* p. 73, from the Nicobars; *P. mitra* (Dana), *l. c.* p. 74, from the South Sea, near Taiti; *P. danæ* (Gibbes), *l. c.* p. 74, the Nicobars; *P. scabricula* (Dana), *l. c.* p. 74, from the Nicobars; *P. rufescens*, *l. c.* p. 76, from Taiti; *P. elongata* (Edw.), *l. c.* p. 78, from Auckland and Punipet.

New species :—

Porcellana pisoides, *l. c.* tab. 6. fig. 3, from the Nicobars; *P. militaris*, *l. c.* p. 74, from the Nicobars; *P. bellis*, *l. c.* p. 76, tab. 6. fig. 4, from the Nicobars; *P. inermis*, *l. c.* p. 76, tab. 6. fig. 5, from the Nicobars; *P. digitalis*, *l. c.* p. 77, tab. 6. fig. 6, from Gibraltar; *P. leporina*, *l. c.* p. 78, tab. 6. fig. 7, from Rio Janeiro; *P. penicillata*, *l. c.* p. 79, from the Nicobars; *P. barbata*, *l. c.* p. 80, tab. 6. fig. 8, from the Nicobars; *P. frontalis*, *l. c.* p. 81, tab. 6. fig. 9, from Rio Janeiro.

Galatheidæ.

Ægleа lævis (Latr.), Heller, Reise Novara, p. 81, from Chili.

Paguridæ.

In this family the following species have been described (Reise Novara):—

Cenobita clypeata (Herbst), p. 82, from the Nicobars and Taiti; *C. rugosa* (Edw.), p. 82, from Ceylon, the Nicobars, Madras, Sydney, and Taiti; *C. olivieri* (Owen), p. 32, from Madras and the Nicobars.

Cenobita violascens, sp. n., Heller, *l. c.* p. 82, tab. 7. fig. 1, from the Nicobars.

Diogenes miles (Fabr.), Heller, *l. c.* p. 83, from the Nicobars and Madras.

Diogenes. The following species are described as new :—*D. acarus*, Heller, *l. c.* p. 83, tab. 7. f. 2, from the Nicobars; *D. senex*, Heller, *l. c.* p. 85, tab. 7. f. 3, from Sydney; *D. miles* (Fabr.), Hess, Archiv für Nat. 1865, p. 161, New South Wales; *D. custos* (Fabr.), New South Wales.

Bergus hirsutes, sp. n., Hess, *l. c.* p. 162, tab. 7. fig. 16, Sydney.

Petrochirus granulatus (Olivier), Heller, *l. c.* p. 85, from Rio Janeiro.

Pagurus difformis (Edw.), Heller, *l. c.* p. 86, from Taiti; *P. punctulatus* (Olivier), Heller, *l. c.* p. 87, from the Nicobars; *P. ferrugineus*, Norman, Trans. Nat. Hist. Soc. of Northumb. and Durham, p. 12, vol. i., Shetland, Guernsey, Clyde, and coast of Northumberland, associated with *P. bernhardus*, *P. pubescens*, *P. lævis*, and *P. hyndmanni*.

Pagurus corallinus (M.-Edw.), Hess, Archiv für Naturg. 1865, p. 160, coast of New Guinea; *P. annulipes* (M.-Edw.), Hess, *l. c.* p. 160, coast of New Guinea; *P. setifer* (M.-Edw.), Hess, *l. c.* p. 161, Australia, Sydney.

Pagurus minutus, sp. n., Hess, *l. c.* p. 160, Sydney.

Aniculus typicus (Dana), Heller, *l. c.* p. 87, from Auckland.

Calcinus tibicen (Herbst), Heller, *l. c.* p. 87, from the Nicobars and Auckland; *C. gaimardii* (Edw.), Heller, *l. c.* p. 87, from the Nicobars and Taiti; *C. elegans* (Edw.), Heller, *l. c.* p. 88, from Taiti; *C. latens* (Randall), Heller, *l. c.* p. 88, from Sydney and Taiti.

Calcinus nitidus, sp. n., Heller, *l. c.* p. 89, tab. 7. fig. 4, from Taiti.

Clibanarius striolatus (Dana), Heller, *l. c.* p. 89, from the Nicobars and Taiti; *C. corallinus* (Edw.), Heller, *l. c.* p. 89, from the Nicobars and Taiti; *C. humilis* (Dana), Heller, *l. c.* p. 90, from the Nicobars; *C. virescens* (Krauss), Heller, *l. c.* p. 90, from Hongkong; *C. longitarsis* (Dehaan), Heller, *l. c.* p. 90, from the Nicobars; *C. æquabilis* (Dana), Heller, *l. c.* p. 91, from Chili.

Clibanarius barbatus, sp. n., Heller, *l. c.* p. 90, tab. 7. fig. 5, from Auckland.

Paguristes ciliatus, sp. n., Heller, *l. c.* p. 91, tab. 7. fig. 6, from the Nicobars.

Eupagurus novæ-zelandiæ (Dana), Heller, *l. c.* p. 92, from Auckland.

MACRURA.

Thalassinidæ.

Thalassina scorpionoides (Latreille), Heller, Reise Fregatte Novara, p. 93, from Java and the Nicobars.

Thalassina maxima, sp. n., Hess, Archiv für Naturg. 1865, p. 163, tab. 7. fig. 18, Sydney.

Scyllaridæ.

Themus orientalis (Herbst), Heller, *l. c.* p. 93, from Madras.

Palinuridæ.

Prof. Heller classifies (Reise Novara, pp. 94–95) the nineteen known species of *Palinurus* into two divisions, one of which, besides other details, has a rostrum, the other has not. He likewise describes the following species as having been taken during the voyage of the Austrian expedition :—

Palinurus lalandii (Edw.), *l. c.* p. 97, from St. Paul; *P. ornatus* (var. *decoratus*) (Fab.), *l. c.* p. 92, from Java; *P. dasypus* (Edw.), *l. c.* p. 100, from Ceylon and Madras.

Palinurus hügelii, sp. n., Heller, *l. c.* p. 96, tab. 8, from the Indian Ocean.

Palinurus regius, sp. n., Capello, Tres espec. nov. de Crust. da Africa occidental, p. 5, fig. 1 *a*, *b*, inhabits the ocean near Cape Verd.

M. Gerbe (Comptes Rendus, Dec. 26, 1864, p. 1101) maintains that the animals of the genus *Phyllosoma* are the larvæ of the genus *Palinurus*, and (*l. c.* Jan. 9, 1865, p. 94) he describes the internal anatomy of the genus *Phyllosoma*, and compares it with that of the larvæ of decapod crustaceans.

The resemblance of the larvæ of *Palinurus* to the genus *Phyllosoma* was first pointed out by the late R. Q. Couch at the meeting of the British Association at Dublin (1857). But when we first had an opportunity of observing the larvæ of *Palinurus*, we came to the conclusion that the drawing bore a closer resemblance to *Phyllosoma* than did the animal from which we copied our figure, in consequence of the former losing the rotund or convex character of the latter. M. Gerbe admits that this larva does not entirely correspond with the characters of *Phyllosoma*, that it presents no trace of pleopoda, and that the caudal extremity

terminates in a simple telson instead of, as in *Phyllosoma*, being supported by a pair of well-developed pleopoda, and that it carries, besides the gnathopoda, but three pairs of pereiopoda, instead of five as seen in *Phyllosoma*. But he says they exhibit those general characters which belong to that genus—for instance, *the absence of branchiæ*, and the *flattened*, membranous, diaphanous body, that is divided into two bucklers, the larger of which constitutes the *cephalon* and supports two pairs of antennæ and a pair of pedunculated eyes, whilst the less forms the pereion bearing the gnathopoda and pereiopoda, which support secondary ciliated appendages.

As our experience has induced us to believe that the *flattened* appearance of the animal is due to the plan of observation—that is, whether the animal be examined from a dorso-ventral or lateral point of view—so our observation has convinced us that the small vesicular appendages attached to the coxæ of the pereiopoda are true branchiæ, of which there are two pairs to each except the last, and are not, as suggested by Prof. Milne-Edwards, the vestiges of the "fouet"* or external branch of these appendages. But M. Gerbe remarks that between the earliest form of the larva of a crustacean and that of the latest there are progressive changes, and these he has observed sufficiently to justify him in regarding the larva of *Palinurus* as an earlier stage of *Phyllosoma*, and that the latter is only the larva of *Palinurus* which has undergone several moultings, and therefore represents the young of *Palinurus* in a more advanced state of development, but that he is still engaged on researches which he hopes will bear him out in these conclusions. If they should, it is remarkable that the abundant larvæ of so common an animal on our coast should be so rarely found; for we know of but one or two specimens of *Phyllosoma* that have been taken; and those are generally supposed to have drifted from warmer latitudes, where they exist in large numbers as well as of comparatively a larger size. On the other hand, it may be remarked that a young *Palinurus* or a young *Homarus* is a thing unknown. The smallest Lobster that we have seen is five inches long, and we have never seen a *Palinurus* so young except in the earliest larval stage. It is therefore a mystery yet to be unravelled, in what form and where they exist from the time that they quit the ovum in a larval condition until we meet with them in the youngest known matured form.

Astacidæ.

Dr. Alex. Brandt communicated to the Imperial Academy of St. Petersburg the results of his physiological experiments on the heart of the freshwater *Astacus* (Bull. de l'Académie Impériale des Sciences de St. Pétersbourg, p. 416, vol. viii. 1865). He experimented by means of muscular irritation, warmth, electricity, water, oxygen, nitrous oxide, carbonic acid, and ammonia; and his observations led him to the following conclusions:—

1. That the heart of the *Astacus* is a muscular organ of trabecular structure and belongs to the true hearts (in contradistinction from the lymphatic heart), and that it pulsates after it has been removed from the body.
2. That portions of the heart, when cut off, continue their rhythmical pulsation, the more powerfully in proportion to the size of the piece.
3. That nothing special is known on the nerves of the heart.
4. That the destruction of the ganglionic central mass of the animal, as well as the opening of the dorsal cavity, will cause only a temporary diastolic cessation in the pulsation of the heart.
5. That the heart of *Astacus* is intermediate in some respects in its structure between the heart of the Vertebrata and the muscle of the Vertebrata, as it can be tetanized by an induction coil; and it also shows its muscular structure under the action of an electric current.
6. That, under the more common physical and chemical reagents, it acts precisely like muscle.

Astacus pellucidus. Lucas (Bull. Entom. p. 4, 1864) states that this species lives in subterranean places, and is destitute of organs of vision. *A. quinquecarinatus* (Gray), Hess, Archiv für Naturg. *l. c.* 1865, p. 164, West Australia, neighbourhood of Swan River: *A. bicarinatus* (Gray), Hess, *l. c.* p. 164, Port Essington; *A. australiensis* (Edw.), Heller, Reise Fregatte Novara, p. 100, Sydney.

Astacoides nobilis (Dana), Heller, *l. c.* p. 101, Sydney; also so reported by Hess, *l. c.* p. 164.—*A. plebejus*, sp. n., Hess, *l. c.* p. 164, tab. 7. fig. 17, Sydney; *A. spinifer*, sp. n., Heller, *l. c.* p. 102, tab. 9, New Holland.

Paranephrops tenuicornis (Dana), Heller, *l. c.* p. 104, from Auckland.

Crangonidæ.

Crangon fasciatus (Risso), Norman, Nat. Hist. Trans. Northumberland and Durham, vol. i. p. 12, from Fern Island.

Alpheidæ.

Alpheus brevirostris (M.-Edw.), Hess, Archiv für Naturg. 1865, p. 167, Australia; *A. frontalis* (M.-Edw.), Hess, *l. c.* p. 167, Australia; *A. levis* (Randall), Heller, *l. c.* p. 107, from the Nicobars, Sydney, Taiti; *A. charon*, Heller, *l. c.* p. 107, from the Nicobars; *A. frontalis* (Say), Heller, *l. c.* p. 107, from Taiti; *A. acarus* (Fabr.), Heller, *l. c.* p. 108, from Sydney; *A. gracilipes* (Stimpson), Heller, *l. c.* p. 108, from Taiti.

Alpheus socialis, sp. n., Heller, *l. c.* p. 106, tab. 10. fig. 1, from Auckland and Sydney; *A. crassimanus*, sp. n., Heller, *l. c.* p. 107, tab. 10. fig. 2, from the Nicobars.

Palæmonidæ.

Hippolyte gibbosus (Edw.), Heller, Reise Novara, p. 120, from the Nicobars and Taiti; *H. gibberosus* (M.-Edw.), Hess, *l. c.* p. 168, Australia. This

* Hist. des Crust. t. ii. p. 474.

genus, which Dr. Hess gives as *Hippolyte* (Leach), is classified by him in Fam. Amphionidæ, Tribe Amphionidea, and Suborder Stomapoda—a position that is certainly not according to its natural classification.

Caridina curvirostris, sp. n., Heller, *l. c.*, p. 105, from Auckland.

Anchistia inæquimana, sp. n., Heller, *l. c.* p. 109, from Taiti; *A. notata*, sp. n., Heller, *l. c.* p. 109, tab. 10. fig. 3, from the Nicobars.

Leander. The following species are described as new by Heller, *l. c.*:—*L. distans*, p. 109, tab. 10. fig. 4, from the Nicobars; *L. serenus*, p. 110, tab. 10. fig. 5, from Sydney; *L. modestus*, p. 111, tab. 10. fig. 6, from Shanghai; *L. indicus*, p. 111, tab. 10. fig. 7, Java.

Palæmon vagus, Heller, *l. c.* p. 113, from Taiti; *P. sundaicus*, Heller, *l. c.* p. 115, from Java; *P. javanicus*, Heller, *l. c.* p. 116, from Java; *P. asper* (Stimp.), Heller, *l. c.* p. 119, from Shanghai; *P. ornatus* (Olivier), Heller, *l. c.* p. 119, from Auckland; *P. lanceifrons* (Dana), Heller, *l. c.* p. 119, from Ceylon and Manilla.

Palæmon. The following species are described by Heller, *l. c.*:—*P. spectabilis*, p. 113, tab. 10. fig. 8, from Taiti; *P. rudis*, p. 114, from Ceylon; *P. scabriculus*, p. 117, tab. 10. fig. 9, from Ceylon; *P. superbus*, p. 118, tab. 10. fig. 10, from Shanghai; *P. sinensis*, p. 119, tab. 10. fig. 11, from Shanghai; *P. danæ*, p. 120, tab. 11. fig. 3, from Sydney.—*P. ruber*, Hess, *l. c.* Archiv für Naturg. 1865, p. 165, tab. 7, fig. 20, Feejee Islands.

Leander serenus (Heller), Hess, *l. c.* p. 167, Sydney.

Rhynchocinetes typus (Edw.), Heller, *l. c.* p. 120, from Chili.

Peneidæ (Hess).

Penæus canaliculatus (Olivier), Heller, *l. c.* p. 121, from Taiti; *P. semisulcatus* (Dehaan), Heller, *l. c.* p. 121, from Hongkong; *P. setiferus* (Linn.), Heller, *l. c.* p. 121, from Rio Janeiro; *P. monoceros* (Fab.), Heller, *l. c.* p. 121, from Ceylon; *P. indicus* (Edw.), Heller, *l. c.* p. 122, from Ceylon and Java; *P. monodon* (Fab.), Heller, *l. c.* p. 122, from Ceylon and the Nicobars; *P. affinis* (Edw.), Heller, *l. c.* p. 123, from Hongkong; *P. carinatus* (Dana), Heller, *l. c.* p. 123, from Java; *P. avirotris* (Dana), Heller, *l. c.* p. 123, from Ceylon; *P. bocagei*, Capello, Tres espec. novas de Crust. da Africa occid. e observ. acerca do *Penæus bocagei*, &c., p. 8, fig. 4.

Penæus tahitensis, sp. n., Heller, *l. c.* p. 121, tab. 11. fig. 2, from Taiti; *P. sculptilis*, sp. n., Heller, *l. c.* p. 122, tab. 11. fig. 1, from Java.

Penæus plebejus, sp. n., Hess, Archiv für Naturg. 1865, p. 168, tab. 7. fig. 19, Sydney.

Atyoidæ.

M. Alphonse Milne-Edwards (Ann. de la Société Entomologique de France, p. 145, 1864) publishes a monograph of this family, which has been established on Leach's genus *Atya*, the single species of which, *A. scabra*, long represented the family that now consists of two genera and ten species, viz.:—

Atya scabra (Leach), from Mexico; *A. sulcalepes* (Newport), Cape Verd; *A. occidentalis* (Newp.), Antilles; *A. spinipes* (Newp.), Philippine Isles; *A. pilipes* (Newp.), New Zealand; *A. robusta*, sp. n., p. 148, pl. 3. fig. 1, New Caledonia; *A. margaritacea*, sp. n., p. 148, pl. 3. fig. 2, New Caledonia; *A. pellucida*, sp. n., p. 149, pl. 3. fig. 3, Philippine Isles.

Atyoidea bisulcata (Randall), Isles of Hawai; *A. tahitensis* (Stimpson), Island of Taiti.

Squillidæ.

Squilla nepa (Latr.), Heller, Reise Novara, p. 124, from Ceylon, Madras, Singapore, Java, Auckland, and Taiti; *S. oratoria* (Dehaan), Heller, *l. c.* p. 124, from Ceylon.

Squilla miles, sp. n., Hess, Arch. Naturg. 1865, p. 169, tab. 7. fig. 21, from Sydney; *S. lævis*, sp. n., Hess, *l. c.* p. 170, tab. 7. fig. 22, from Sydney.

Pseudosquilla oculata (Brullé), Heller, *l. c.* p. 124, from Taiti.

Gonodactylus trispinosus (White), Heller, *l. c.* p. 126, from Auckland; *G. chiragra* (Fabr.), Heller, *l. c.* p. 126, from the Nicobar Islands and Taiti.

CUMACEA.

Diastylidæ.

Dr. F. Müller (Arch. Naturgesch. xxxi. p. 311) reviews the literature of this family of Crustacea, which he considers to be necessary, as various opinions appear to exist among carcinologists as to the true position of the animals. The author's criticisms are mostly directed against the observations of Prof. Van Beneden, who he thinks has not shown his usual ability and accuracy in his memoir on this group in his 'Recherches sur la Faune Littorale de Belgique.' The author defends the observations of Kröyer and Goodsir, and thinks that their researches deserve a larger amount of credence than appears to have been given them by carcinologists.

Hr. G. O. Sars has published (Vid.-Selsk. Forhand. for 1864) a monograph on the Norwegian species of the aberrant Crustacea *Cumacea*, with full descriptions. These consist of twenty-five species, belonging to nine genera. He divides the genus *Diastylis* into two divisions:—

a. *Oculus distinctus*:—*Diastylis rathkii* (Kröyer), Sars, *l. c.* p. 35, taken at the Lofoten Islands; *D. lucifera* (Kröyer), Sars, *l. c.* p. 36, Gulf of Christiania; *D. bispinosa* (Stimpson), Sars, *l. c.* p. 39, Gulf of Christiania and the western shores of Norway (this species the author states to be synonymous with *D. echinatus*, Sp. B.); *D. tumidæ* (Lilljeborg), Sars, *l. c.* p. 43, Gulf of Christiania.

b. *Oculus nullus*:—*D. ampullacea* (Lilljeborg), Sars, *l. c.* p. 50, from Dröbak.

[*Diastylis*] *Cuma rathkii* (Kröyer). Müller (Arch. Naturg. xxxi. p. 315) doubts the species described and figured by Van Beneden (Recherches sur la

Faune Littorale de Belgique, p. 82, pl. 12) as being Kröyer's species, an opinion with which we agree.

Diastylis. The following species have been described as new:—*D. natus*, Spence Bate, Ann. & Mag. Nat. Hist. 1865, xv. p. 81, pl. 1. fig. 1, fi Shetland; *D. bicornis*, Sp. B., *l. c.* p. 84, pl. 1. fig. 2, from Shetland. Hr. G. O. Sars has recently determined that this species, together with *Cuma cornuta* (Boeck), is synonymous with *C. bispinosa* of Stimpson, and is therefore *Diastylis bispinosus*, Stimpson (*vide* Record for 1864, p. 287). *D. borealis*, Sp. B., *l. c.* p. 85, pl. 1. fig. 3, from Port Kennedy; *D. rugosa*, Sars, Vid.-Selskab. Forhand. 1864, p. 44, coast near Christiansund (oculus distinctus); *D. biplicata*, Sars, *l. c.* p. 47 (oculus nullus), deep water in Gulf of Christiania; *D. D. serrata*, Sars, *l. c.* p. 44 (oculus nullus), Gulf of Christiania; *D. longimana*, Sars, *l. c.* p. 48 (oculus nullus), Gulf of Christiania.

Leucon. This genus, which was established by Kröyer, is divided by Hr. Sars into two, adopting the name of *Leucon* for one, which he considers to correspond with *Vaunthompsonia* of Sp. B., and that of *Eudora* (Sp. B.) for the second.

Leucon nasicus (Kröyer), Sars, *l. c.* p. 53, Gulf of Christiania.

Leucon fulvus, sp. n., Sars, *l. c.* p. 55, from the Lofoten Islands; *L. acutirostris*, sp. n., Sars, *l. c.* p. 56, from the Gulf of Christiania and Dröbakia; *L. pallidus*, sp. n., Sars, *l. c.* p. 57, from Dröbakia.

Eudora emarginata (Kröyer), Sars, *l. c.* p. 60, from the Gulf of Christiania. The author considers the species named *Cyrianassa ciliata* by the Rev. A. M. Norman to be identical with the present, which is the *Leucon emarginata* of Kröyer. *E. truncatula* (Sp. B.), Sars, *l. c.* p. 61, from the Gulf of Christiania.

Lamprops, g. n., Sars, *l. c.* p. 63. *Femina.* Corpus elongatum, cephalothorace antice [cephalon] subtruncato, postice [pereion] sæpius sensim attenuato. Integumenta tenuia et coracea structura quasi squamosa. Scutum dorsale parvum, supine læve parumque arcuatum, marginibus lateralibus æqualiter arcuatis nullisque dentibus armatis, angulis latero-anterioribus obsoletis. Rostrum plerumque evanescens, angulum modo formans in fronte parum prominentem. Segmenta thoracica [pereion] 5 sat magna pone scutum dorsale nuda apparent, ultimo quam primo abdominali [pleon] parum latiore. Antennæ superiores forma solita, flagello interiore 3-articulato, exteriore biarticulato et sat longo. . . . . Maxillipedes [gnathopoda] fere ut in generibus antecedentibus. Pedum thoracicorum [pereiopoda] paria 2 priora palpo magno natatorio, sequentia 2 ad basin appendice parva biarticulata et setifera ut rudimentum palpi prædita; primum par tenue; secundum par quam solito longius, articulo ultimo angustato et lineari, setis sparsim obsito. Appendix caudalis media [telson] permagna, laminaris, linguiformis . . . . . Appendices laterales [uropoda] elongatæ, trunco intus dentato, stylis terminalibus angustis, interiore triarticulato intus dentato, exteriore biarticulato articulis subæqualibus, setis aculeiformibus paucis obsito. Oculus distinctissimus . . . . . .

Mas adultus. Corporis forma a femina parum discrepat. Antennæ superiores ad apicem pedunculi fasciculo ciliorum auditoriorum instructæ, inferiores valde elongatæ, pedunculi articulis duobus ultimis dilatatis et infra dense pilosis, flagello tenuissimo ex articulis numerosis brevibus composito. Pedum abdominalium [pleopoda] 3 paria sat magna et bene evoluta, ramo exteriore bi-, interiore uniarticulato, setis numerosis longis et plumosis obsitis. Appendices caudales [uropoda et telson] fere ut in femina.

Pel This genus is founded on *Vaunthompsonia rosea* (Norman) and *Cyrianassa ralesens* (Norman). The former Sars takes as the female, the latter as the male, of the species that he has named *Lamprops rosea* (Norman), *l. c.* p. 64, by the Gulf of Christiana. *Lamprops fasciata*, Sars, *l. c.* p. 66, near Arendal and the Lofoten Islands. *Lamprops fuscata*, sp. n., Sars, *l. c.* p. 67, from the Lofoten Islands.

Pseudocuma, g. n., Sars, *l. c.* p. 69. Corpus elongatum, cephalothorace [cephalon et pereion] subtumido, abdomine [pleon] gracillimo et quam illo nonnihil longiore. Scutum dorsale inerme rostro vero distincto. Segmenta thoracica [pereion] 5 pone scutum dorsale nuda apparent, ultimo antecedenti firmiter conjuncto et quam primo abdominali [pleon] latiore. Integumenta tenuia, coriacea, structura squamosa. Antennarum superiorum flagellum exterius uniarticulatum minimum, interius triarticulatum, pedunculus in mare paucis modo ad apicem instructus ciliis auditoriis; inferiores feminæ ut solito rudimentares indistincte articulatæ, maris longitudinem corporis minime assequentes, articulis 2 ultimis pedunculi sat magnis et infra dense pilosis, flagello attenuato ex articulis sat elongatis et ad marginem inferiorem ut pedunculo dense pilosis composito. . . . . Maxillipedes secundi paris [first pair of gnathopoda] robusti ex articulis modo 5 compositi, ultimo aculeo unguiformi terminato; tertii paris [second pair of gnathopoda] etiam 5-articulati, sat elongati, articulo basali extus ad apicem una solummodo seta longa et plumosa instructo. Pedes thoracici [pereiopoda] sat robusti, paribus anterioribus 2 in femina palpo magno natatorio, sequentibus 2 ut in genere antecedente ad basin appendice minima biarticulata ut rudimentum palpi præditis. Pedes omnes maris præter ultimum par palpigeri. Pedum abdominalium [pleopoda] maris unum solummodo par bene evolutum . . . . Segmentum ejus secundum abdominale appendices [second somite of pleon] modo duas brevissimas claviformes ut rudimenta pedum abdominalium [pleopoda] gerit; segmenta sequentia 3 infra ut in *Diastylide*, setis 2 plumosis instructa. Appendix caudalis media [telson] brevissima sed distincta, laminam formans obtuse rotundatam et setis et aculeis destitutam; appendicum lateralium [uropoda] styli terminales lanceolati, ambo uniarticulati aculeo magno apicali. Oculus parum distinctus.

Herr Sars considers this genus to be identical with *Leucon* as described by Van Beneden.

Pseudocuma bistriata, sp. n., Sars, *l. c.* p. 70, from the Isle of Lofoten.

Petalopus, g. n., Sars, *l. c.* p. 71. Corporis forma sat robusta. Cephalothorax [cephalon and pleon] crassus et altus, margine superiore maxime arcuato et antice valde declive. Scutum dorsale magnum, inerme, rostro terminatum brevi sed distincto. Segmenta thoracica [pereion] 5 pone scutum dorsale nuda apparent, ultimo antecedenti firmiter conjuncto et segmento primo abdominali latiore. Abdomen [pleon] cephalothorace multo brevius. Antennæ superiores breves et robustæ, pedunculi articulis 2 prioribus valde dilatatis, flagello exteriore obsoleto. Mandibulæ ad apicem in plures dentes divisæ et pone illos pectine setoso, dein processu molari magno et crasso instructæ. . . . . Pedum thoracicorum paria 2 anteriora palpigera, cetera in femina palpo destituta. Primum par forma insolita, ex 5 modo articulis compositum, antepe-

nultimo permagno intus valde dilatatus, laminam formans magnam subquadrangularem, cujus angulo inferiori articuli sequentes 2 multo angustiores impingunt. Secundum par breve et robustum, intus setis validis et plumosis obsitum. Appendix caudalis media [telson] fere ut in genere antecedente rudimentaria, subovata, inermis. Appendices laterales [uropoda] breves, stylo interiore uniarticulato, exteriore indistincte biarticulato. Oculus nullus.

Petalopus declivis, sp. n., Sars, *l. c.* p. 72, of which the female alone is known from the group of Lofoten islands.

Cumella, g. n., Sars, *l. c.* p. 73. Corpus sat robustum, cephalothorace [cephalon and pereion] crasso et tumido, et quam abdomine [pleon] longiore. Scutum dorsale maximum, in femina supine crista longitudinali serrata instructum, in mare multo humilius et læve, rostro brevi sed distincto; margo anterior scuti infra rostrum profunde sinuatus, angulis latero-anterioribus valde productis et acuminatis. Segmenta thoracica [pereion] 5 pone scutum dorsale nuda apparent, anteriore supine angustissimo. . . . . Antennarum superiorum flagellum exterius rudimentarium, uniarticulatum, interius 3-articulatum; inferiores maris cephalothorace breviores . . . . . Maxillipedum [gnathopoda] paria 2 posteriora modo 5-articulata. Pedum thoracicorum [pereiopoda] paria modo 2 priora in femina palpigera; sequentia 3 perangusta, articulo penultimo et antepenultimo setis annulatis in ceteris *Cumaceis* [*Diastylidæ*] distinctis omnino destitutis, ultimo aculeo unguiformi terminato. Pedes abdominales [pleopoda] in mare nulli. Appendix caudalis media [telson] omnino deest, segmento ultimo abdominali postice angulum modo obtusum formante. Appendices laterales [uropoda] sat elongatæ, stylis terminalibus trunco brevioribus, interiore uniarticulato, exteriore distincte biarticulato. Oculus magnus . . . . . ac in *Lamprope* præbens.

Cumella pygmæa, sp. n., Sars, *l. c.* p. 74, Gulf of Christiania.

Campylaspis, g. n., Sars, *l. c.* p. 75. *Femina.* Corporis forma abreviata et robusta, cephalothorace [cephalon and pereion] maxime dilatato, supine valde arcuato et antice declivi. Scutum dorsale portentosæ magnitudinis, antice quasi depressum, dein vero valde ascendens et convexum, marginibus lateralibus postice in medio obtuse angulatis, infra sat arcuatis et dein leviter ascendentibus, angulis latero-anterioribus evanescentibus. Rostrum brevissimum et obtusum, horizontale. Segmenta thoracica [pereion] 5 pone scutum dorsale nuda apparent, anterioribus 2 perbrevibus margine posteriore supine in cristam transversam tenuem et antice curvatam elevato, ultimo quam primo abominali latiore. Abdomen [pleon] cephalothorace multo brevius, segmentis in lateribus carinatis, ultimo supra viso pentagonali, postice angulum obtusum formante. Integumenta præsertim scuti dorsalis durissima, structura squamosa. Antennæ superiores breves et robustæ, flagello interiore 3-articulato, exteriore brevissimo tuberculum modo parvum setiferum formante; inferiores ut solito rudimentariæ non vero articulatæ nullisque setis plumosis obsitæ. . . . . Pedum thoracicorum [pereiopoda] paria modo 2 priora palpigera; primum par maxillipedibus tertii paris parum longius. . . . . Pedum sequentium articulus antepenultimus elongatus et ut penultimus ad apicem seta unica annulata instructus, ultimus aculeo spinifero armatus. Appendix caudalis media [telson] omnino deest. Appendices laterales [uropoda] robustæ, trunco sat elongato, stylis vero terminalibus brevissimis, exteriore biarticulato, interiore uniarticulato ad apicem et marginem interiorem aculeato. Oculus distinctus, prominens.

Mas adultus. Scuto dorsali multo humiliore et depresso a femina discrepat. Antennæ superiores fere ut in femina, inferiores vero valde elongatæ. . . . . Pedes omnes præter ultimum par palpigeri. . . . . Appendices caudæ laterales [uropoda] magis elongatæ, trunco intus setis plumosis obsito.

Mr. Sars considers this genus to be identical with that of *Cuma* as defined by Lilljeborg, and has founded it upon *Cuma rubicunda* of that author.

Campylaspis rubicunda (Lilljeborg), Sars, *l. c.* p. 77, Gulf of Christiania.

Campylaspis costata, sp. n., Sars, *l. c.* p. 79, Gulf of Christiania; *C. nudata*, sp. n., Sars, *l. c.* p. 80, from the Lofoten Islands.

Cyclapis, g. n., Sars, *l. c.* p. 81. Corpus elongatum, cephalothorace [cephalon and pereion] postice valde attenuato. Scutum dorsale magnum et tumidum, inerme, a latere visum fere orbiculare, margine superiore et inferiore valde arcuatis, rostro brevissimo. Segmenta thoracica [pereion] 4 modo pone scutum dorsale nuda apparent, ultimis 2 subæqualibus, valde angustis et abdomine vix latioribus. Abdomen [pleon] perlongum, cephalothorace multo longius, segmento ultimo quam solito majore. Antennarum superiorum flagellum exterius omnino deest, interius brevissimum 3-articulatum cilio auditorio unico longo præditum. . . . . Maxillipedes tertii paris [second pair of gnathopoda] valde elongati . . . . . Pedum thoracicorum [pereiopoda] primum solummodo par (etiam in mare) palpigerum, sat elongatum, setis fere nudum, articulo basali maximo et valde dilatato, laminari, ultimis angustissimis; paria sequentia . . . . . forma sibi similia. Pedum abdominalium [pleopoda] maris 5 paria bene evoluta, biramea. Appendix caudalis media [telson] brevissima, laminam semiovatam setis et aculeis destitutam formans. Appendices laterales [uropoda] breves et robustæ, trunco brevissimo, stylis terminalibus multo longioribus, lanceolatis nullisque aculeis dentibusve armatis, interiore uniarticulato, exteriore distincte biarticulato. Oculus nullus.

Cyclapis longicaudata, sp. n., Sars, *l. c.* p. 82, from the Lofoten Islands.

Nannastacidæ.

This family is formed to distinguish those Cumacea that differ from the *Diastylidæ* in having two distinct and separate eyes.

Nannastacus, g. n., Spence Bate, Ann. & Mag. Nat. Hist. 1865, xv. p. 86. The anterior somites of the carapace are separated from the posterior by a distinct suture. The antero-lateral extremities of the posterior portion of the carapace do not extend so far anteriorly as the rostrum, and do not meet in front. The pereion has four somites exposed dorsally posteriorly to the carapace. The eyes are sessile and situated widely apart, one on each side of the anterior division of the carapace. The pereiopoda have the seven joints of each leg normally developed, and support a secondary appendage. The last four somites of the pleon and the telson are wanting. *Nannastacus binoculoides*, sp. n., Sp. B. *l. c.* p. 87, pl. 1. fig. 4, from the Shetlands.

AMPHIPODA.

Orchestidæ.

Orchestia cavimana, sp. n., Heller, Verhandl. zool.-bot. Gesellsch. 1865,

p. 979. Taken in the island of Cyprus, 4000 feet up the sides of Mount Olympus.

Allorchestes paulensis, sp. n., Heller, Reise Novara, p. 128, taf. ii. fig. 4, from the island of St. Paul.

Gammaridæ.

In the 'Transactions of the Scientific Society of Upsala' for 1865 Prof. Lilljeborg has published an important and interesting monograph on the Lysianassina. Previously to entering into a consideration of the several species, Prof. Lilljeborg arranges the families of the Amphipoda generally in accordance with the arrangement in the classification given in the 'British Sessile-eyed Crustacea,' with the exception of placing the family *Orchestidæ* after instead of before the *Gammaridæ*, in which we doubt if he will be followed by any carcinologist. He then tabulates the subfamilies and genera comprised within the family *Gammaridæ* that belong to the coasts of Sweden and Norway, and describes several new genera and species.

Subfamily Lysianassina.

The discovery on the coast of the Norwegian Finmark by Prof. Fries of a gigantic species (length 3 inches) of Amphipod appears to have been the incentive to Prof. Lilljeborg to work out this extensive subfamily.

The large northern specimens bear so close a resemblance to one that was captured some years since in the Straits of Magellan, and described by Prof. Milne-Edwards under the name of *Lysianassa magellanica*, that Prof. Lilljeborg has been induced to consider them as belonging to the same species. He has consequently entered into a very interesting dissertation on the resemblance that exists between the faunæ and floræ of the arctic and antarctic regions, from which it appears that whereas genera are frequently represented by species in each of the frigid latitudes, yet in no one instance have forms been recognized that can be identified as pertaining to the same species, except such as are known to have an intermediate or cosmopolitan existence.

It may be that zoologists rely too emphatically upon distance as an element in the consideration of specific distinctions, and estimate as of specific value, in specimens from widely separated localities, differences which may be in variable characters only and which would not have so much importance assigned to them had they occurred in specimens obtained from the one region only. *Crangon nigricauda*, common in the San Francisco markets, has little in any fixed character by which to distinguish it from *C. vulgaris* of the European coasts. The closest inspection of specimens of *Caprella æquilibra* from the United States of America has not enabled us to distinguish it from specimens found at Hongkong and England by so much as a variation that could be tortured into being of specific value. This, moreover, appears frequently to be true of forms that we find described as specifically distinct; but as yet no forms have been determined by competent zoologists as specifically identical in both extreme zones, there being no intermediate locality in which they are known to exist.

This appears to be true of the species in question, the type of which we have seen, and from it the figure is taken that is given in the 'Catalogue of Amphipodous Crustacea' for the British Museum. Prof. Lilljeborg states that, in the British Museum Catalogue of Amphipodous Crustacea, "neither the description nor the drawing is good" of this species—an assertion, considering that he had not seen the type specimen in the Museum of the Jardin des Plantes, that rather argues a distinction between the arctic and antarctic specimens than that the figure in the catalogue is incorrect. The figure was originally drawn by an experienced artist for M. Lucas for M. Castelnau's work, 'Animaux nouveaux,' &c. From a plate of this work, previously to its publication, a tracing was taken, then with the assistance of the original type specimen a close comparison was instituted, and some few, but small, corrections were made. The figure was afterwards seen both by Prof. Milne-Edwards and M. Lucas; so that we think that we are justified in stating that the carcinologist may have confidence that the figure in the British Museum Catalogue fairly and faithfully represents the general form of the type specimen of *Lysianassa magellanica*. An opportunity for dissection was not available, as the specimen in the Museum was unique; but we feel assured that both the short description and the figure may be depended upon, except perhaps that of one of the inferior antennæ, which was broken off when we saw it, at the second or third articulus of the flagellum, and which is so represented in the tracing from M. Lucas's figure, but which, if our memory is not treacherous, was ascertained by comparison with the same organ on the opposite side; or it may have been hypothetically inserted. The difference between the figures of the arctic specimens as represented by Prof. Lilljeborg and that given of the antarctic specimen in the British Museum Catalogue is considerable. The cephalon is much longer, the pereion less deep, particularly near the centre of the animal; consequently, when extended, the arctic specimen is far less arcuate than that from the antarctic region. The superior antennæ are much longer, and carry a secondary appendage that itself reaches beyond that of the primary branch in *L. magellanica*. The first pair of gnathopoda are less robust and formed differently from that of the antarctic specimen. These several points of separation are too important, when taken in connexion with Prof. Lilljeborg's deduction that no two specimens of the

p. 979. Taken in the island of Cyprus, 4000 feet up the sides of Mount Olympus.

Allorchestes paulensis, sp. n., Heller, Reise Novara, p. 128, taf. ii. fig. 4, from the island of St. Paul.

Gammaridæ.

In the 'Transactions of the Scientific Society of Upsala' for 1865 Prof. Lilljeborg has published an important and interesting monograph on the Lysianassina. Previously to entering into a consideration of the several species, Prof. Lilljeborg arranges the families of the Amphipoda generally in accordance with the arrangement in the classification given in the 'British Sessile-eyed Crustacea,' with the exception of placing the family *Orchestidæ* after instead of before the *Gammaridæ*, in which we doubt if he will be followed by any carcinologist. He then tabulates the subfamilies and genera comprised within the family *Gammaridæ* that belong to the coasts of Sweden and Norway, and describes several new genera and species.

Subfamily Lysianassina.

The discovery on the coast of the Norwegian Finmark by Prof. Fries of a gigantic species (length 3 inches) of Amphipod appears to have been the incentive to Prof. Lilljeborg to work out this extensive subfamily.

The large northern specimens bear so close a resemblance to one that was captured some years since in the Straits of Magellan, and described by Prof. Milne-Edwards under the name of *Lysianassa magellanica*, that Prof. Lilljeborg has been induced to consider them as belonging to the same species. He has consequently entered into a very interesting dissertation on the resemblance that exists between the faunæ and floræ of the arctic and antarctic regions, from which it appears that whereas genera are frequently represented by species in each of the frigid latitudes, yet in no one instance have forms been recognized that can be identified as pertaining to the same species, except such as are known to have an intermediate or cosmopolitan existence.

It may be that zoologists rely too emphatically upon distance as an element in the consideration of specific distinctions, and estimate as of specific value, in specimens from widely separated localities, differences which may be in variable characters only and which would not have so much importance assigned to them had they occurred in specimens obtained from the one region only. *Crangon nigricauda*, common in the San Francisco markets, has little in any fixed character by which to distinguish it from *C. vulgaris* of the European coasts. The closest inspection of specimens of *Caprella æquilibra* from the United States of America has not enabled us to distinguish it from specimens found at Hongkong and England by so much as a variation that could be tortured into being of specific value. This, moreover, appears frequently to be true of forms that we find described as specifically distinct; but as yet no forms have been determined by competent zoologists as specifically identical in both extreme zones, there being no intermediate locality in which they are known to exist.

This appears to be true of the species in question, the type of which we have seen, and from it the figure is taken that is given in the 'Catalogue of Amphipodous Crustacea' for the British Museum. Prof. Lilljeborg states that, in the British Museum Catalogue of Amphipodous Crustacea, "neither the description nor the drawing is good" of this species—an assertion, considering that he had not seen the type specimen in the Museum of the Jardin des Plantes, that rather argues a distinction between the arctic and antarctic specimens than that the figure in the catalogue is incorrect. The figure was originally drawn by an experienced artist for M. Lucas for M. Castelnau's work, 'Animaux nouveaux,' &c. From a plate of this work, previously to its publication, a tracing was taken, then with the assistance of the original type specimen a close comparison was instituted, and some few, but small, corrections were made. The figure was afterwards seen both by Prof. Milne-Edwards and M. Lucas; so that we think that we are justified in stating that the carcinologist may have confidence that the figure in the British Museum Catalogue fairly and faithfully represents the general form of the type specimen of *Lysianassa magellanica*. An opportunity for dissection was not available, as the specimen in the Museum was unique; but we feel assured that both the short description and the figure may be depended upon, except perhaps that of one of the inferior antennæ, which was broken off when we saw it, at the second or third articulus of the flagellum, and which is so represented in the tracing from M. Lucas's figure, but which, if our memory is not treacherous, was ascertained by comparison with the same organ on the opposite side; or it may have been hypothetically inserted. The difference between the figures of the arctic specimens as represented by Prof. Lilljeborg and that given of the antarctic specimen in the British Museum Catalogue is considerable. The cephalon is much longer, the pereion less deep, particularly near the centre of the animal; consequently, when extended, the arctic specimen is far less arcuate than that from the antarctic region. The superior antennæ are much longer, and carry a secondary appendage that itself reaches beyond that of the primary branch in *L. magellanica*. The first pair of gnathopoda are less robust and formed differently from that of the antarctic specimen. These several points of separation are too important, when taken in connexion with Prof. Lilljeborg's deduction that no two specimens of the

same species have been found inhabitants of the arctic and antarctic regions, for us to admit that these arctic gigantic Amphipoda are identical with that taken in the antarctic region and described under the name of *L. magellanica*.

Prof. Lilljeborg, after a careful dissection of the northern form, has arrived at the conclusion that it "differs in many important features very considerably from the other species included in the subfamily *Lysianassina*," and consequently considers it desirable to establish for it a distinct genus, which he distinguishes by the name of *Eurytenes*, Lilljeborg, *l. c.* p. 11 :—

Corporis forma crassa et robusta, epimeris [coxa] magnis et pedibus brevibus. Antennæ superiores flagello appendiculari præditæ, pedunculo crasso et ejus segmentis secundo et tertio brevibus, et flagelli segmento primo longo. Antennæ inferiores segmento pedunculi primo magno et inflato et extus visibili. Mandibulæ palpigeræ acie lævi et tuberculo molari magno instructæ. Maxillæ primi paris palpo biarticulato augusto, apice duas vel tres setas vel aculeos minores mobiles gerente, et earum ramus interior latus et brevis et setis multis ciliatis instructus. Maxillipedum lamina trunci segmenti secundi, sive lamina exterior margine interiore tenuissime noduloso, et eorum palpus quadriarticulatus et unguiferus. Pedes trunci [pereiopoda] sive thoracici primi et secundi paris subcheliformes, illi validi et breves, ungue bene evoluto, hi longiores et graciliores, ungue minutissimo. Reliqui pedes trunci formâ solita, robusti. Laminæ branchiales simplices minimeque pectinatim plicatæ. Pedes caudales ultimi [uropoda] paris ramis lamellosis. Segmentum septimum sive ultimum caudæ [telson] profunde bifidum, laciniis acuminatis ad apicem vero non spiniferis.

We can see not the slightest portion of this description that distinguishes it from that of the genus *Anonyx*, and into which the species described as *Lysianassa magellanica*, with its squamiform, undivided telson, cannot enter. Prof. Lilljeborg has drawn up his description of the genus from the arctic specimens; and it is to be regretted that he should have associated it with the name of an animal that is peculiar to the antarctic zone before he had the opportunity of actual comparison.

Eurytenes magellanica (Milne-Edwards?), Lilljeborg, *l. c.* p. 11, from the Norwegian Finmark.

Lysianassa (*Ichnopus*) *spinicornis* (Boeck) Lilljeborg, *l. c.* p. 20, from Bergen and Trondhjem; *L. cahli* (Kröyer), Lilljeborg, *l. c.* p. 21, from Bergen to Finmark; *L. costæ* (Edwards), Lilljeborg, *l. c.* p. 21, from Christiania.

Anonyx ampulla (Phipps), Lilljeborg, *l. c.* p. 23, tab. iv. fig. 52. Prof. Lilljeborg says, "This species does not appear in Spence Bate's and I. O. Westwood's 'British Sessile-eyed Crustacea.'" The reason is, because the animal described by Phipps, pl. 12. fig. 2, 'Voy. au Pôle Boréale,' under the name of *Cancer ampulla*, is not a *Lysianassa* at all, but the same as is described by Kröyer, Naturk. Tidsk. iv. 1842, p. 150, under the name of *Stegocephalus inflatus*. This species has not yet been found in British waters; but it will be found described under the name of *S. ampulla* (Phipps) in the Catalogue of Amphipoda of the British Museum, p. 63, and figured in pl. x. fig. 2.

Prof. Lilljeborg likewise states that the *Anonyx ampulla* "introduced under this name in the 'British Sessile-eyed Crustacea' is a totally different one." Of course all observers are liable to error, particularly in comparing figures and descriptions with specimens; but we think that in this instance the error does not exist on the part of the authors of the 'Sessile-eyed Crustacea.' On comparison of the figure given in the 'British Sessile-eyed Crustacea' with Kröyer's in Voy. Scand. pl. xiii. fig. 2, to which Prof. Lilljeborg does not refer, we think the resemblance will be found to be too close to have justified the authors in placing it in any other position than that which they have done.—*A. longipes* (Sp. B.), Lilljeborg, *l. c.* p. 23, from Haugesund, &c. The author considers *A. ampulla* of the 'British Sessile-eyed Crustacea' the male of this species.—*A. gulosus* (Kröyer), Lilljeborg, *l. c.* p. 24, from Bohuslän to Finmark. This species the author states to be identical with *A. holbölli* of the 'British Sessile-eyed Crustacea,' as well as with *A. norvegicus* of Lilljeborg and Bruzelius.—*A. bruzelii* (Boeck), Lilljeborg, *l. c.* p. 28, from Norway; *A. nanus* (Kröyer), Lilljeborg, *l. c.* p. 28, from the Kattegat and Farsund; *A. pinguis* (Boeck), Lilljeborg, *l. c.* p. 29; *A. serratus* (Boeck), Lilljeborg, *l. c.* p. 29, tab. iv. fig. 50, from Grip near Christianssund. Prof. Lilljeborg considers that *A. edwardsii* (Sp. B.) belongs to this species.—*A. edwardsii* (Kröyer), Lilljeborg, *l. c.* p. 30. This species is unknown to the author.—*A. litoralis* (Kröyer), Lilljeborg, *l. c.* p. 30, from Warangarfjord, extreme north of Norway; *A. holböllii* (Kröyer), Lilljeborg, *l. c.* p. 31, from Bohuslän to Finmark, also Norman, Trans. North. & Durh. Nat. Hist. Soc. vol. i. p. 12, off the coast of Durham. Prof. Lilljeborg considers *A. denticulatus* (Sp. B.) the male of this species.—*A. obtusifrons* (Boeck), Lilljeborg, *l. c.* p. 32, Norway; *A. tumidus* (Kröy.), Lilljeborg. *l. c.* p. 32, tab. iv. fig. 5, taken in the branchial sac of an Ascidian in the Kattegat.

Anonyx nanoides, sp. n., Lilljeborg, *l. c.* p. 25, tab. iii. figs. 32–34, from Molde; *A. pumilus*, sp. n., Lilljeborg, *l. c.* p. 26, tab. iv. figs. 35–41, from Molde; *A. brachycercus*, sp. n., Lilljeborg, *l. c.* p. 27, tab. iv. figs. 42–49, near Christianssund.

Callisoma kröyeri (Bruzelius), Lilljeborg, *l. c.* p. 33, from Bohuslän to Finmark.

Acidostoma, g. n., Lilljeborg, *l. c.* p. 34. Forma corporis et antennarum cum genere *Anonycis* congruit, oris partes appendiculares tamen plane diversæ. Labii rami laterales angusti. Mandibulæ processu accessorio, maxillæ primi paris palpo, et palpus maxillipedum ungue carentes, et hæ partes oris conjunctim acumen productum præbent. Pedes trunci primi paris [anterior pair of gnathopoda] robusti, manu prehensili. Pedes secundi paris [second pair of gnathopoda] graciles, ungue carentes.

A. obesum (Sp. B.), Lilljeborg, *l. c.* p. 34, tab. v. figs. 53–65, from Molde, Farsund, and Bahusia. Prof. Lilljeborg considers *Anonyx obesus* sufficiently structurally distinct from the other species of *Anonyx* to require a separate genus; in this conclusion we cannot coincide, as all the distinguishing conditions are changes in degree only.

Subfam. Phoxina.

Tiron acanthurus, gen. et sp. nov., Lilljeborg, *l. c.* p. 19. Forma capitis [cephalon] ex parte cum eadem gen. *Odiceri* congruit, antennæ superiores

vero flagello appendiculari longo sunt præditæ, et pedes trunci septimi paris [posterior pair of pereiopoda] longitudine pedes anteriores æquant, et breves, crassi et unguiferi sunt. Pedes trunci primi et secundi paris [gnathopoda] graciles, ungue tamen non flexibili instructi. Segmenta caudalia [pleon] superne in medio longitudinaliter carinata, carina ad marginem posteriorem segmentorum in aculeum, qui in segmentis quarto et quinto magnus est, et adhuc in segmento sexto observatur, excurrente. Antennæ superiores longitudine pedunculo antennarum inferiorum æquales. Frons aliquanto producta, basin antennarum superiorum obtegens, rostro brevi sed acuto. Oculi rubri. Longitudo circ. 10 millim. Taken at Christianssund.

Œdiceropsis, g. n., Lilljeborg, *l. c.* p. 19. Forma corporis eidem gen. *Œdiceri* valde similis, caput [cephalon] tamen rostro caret, et pedes trunci septimi [posterior pair of pereiopoda] paris, qui longum et rectum unguem habent, et longi et graciles sunt, tamen pedibus anterioribus sexti paris non duplo—circ. sesqui—longiores sunt. Antennæ superiores non finem articuli penultimi pedunculi antennarum inferiorum assequuntur, et flagello appendiculari carent. Antennæ inferiores magnæ, fere pediformes, articulo penultimo pedunculi ceteris majore et ad apicem infra setam magnam gerente. Oris partes appendiculares et hujus et anterioris speciei structura solita. Pedes trunci primi et secundi [gnathopoda] paris forma inter se similes, manu subcheliformi, ovali, carpo postice aliquantum producto. Pedes trunci [pereiopoda] tertii et quarti paris parvi et graciles. Segmentum caudale septimum [telson] integrum et parvum sed laminare. Pedes caudales ultimi [uropoda] ramis duobus angustis, fere æqualibus. Color flavescens; oculi rubescentes, sed parum visibiles. *Œdiceropsis brevicornis*, sp. n., Lilljeborg, *l. c.* p. 19, taken off Molde.

The Rev. A. M. Norman (Trans. Northum. & Durham Nat. Hist. Soc. i. p. 12) states, in a list of Amphipoda taken on that coast, the following as having been met with for the first time:—*Monoculodes carinatus* (Sp. B.), *Westwoodilla cæcula* (Sp. B.).

Subfam. Ampeliscina.

Ampelisca rubella, sp. n., Costa, Annuario del Mus. Zool. d. R. Universit. di Napoli, p. 153, tab. ii. fig. 7 *a–f*, Bay of Naples.

Subfam. Gammarina.

This subfamily Mr. Norman (Nat. Hist. Trans. North. & Durham) elevates into a family under the name of *Gammaridæ*.

Cheirocratus, g. n., Norman, *l. c.* p. 12. Superior antennæ shorter than the inferior, having a secondary appendage. First gnathopods not subchelate; second gnathopods subchelate, very large; telson double; last pair of pereiopods very long. *Cheirocratus mantis*, sp. n., Norman, *l. c.* p. 13, pl. vii. figs. 14 & 15, taken off Holy Island.

Prof. Lilljeborg, *l. c.* p. 19, proposes to exchange the names of the following genera, on account of their having already before been given to other animals:—*Idunа* (Boeck) into *Microplax*, *Otus* (Sp. B.) into *Odius*, *Calliope* (Leach) into *Callopius*.

Protomedeia whiteï (Sp. B.), Norman, *l. c.* p. 24, reports, in his list of Crustacea from the coasts of Northumberland and Durham, this species being taken there for the first time.

Protomedeia rubella, sp. n., Costa, Annuario del Mus. Zool. della R. Universit. di Napoli, p. 154, tab. ii. fig. 8, *a–c*, from the Bay of Naples.

Batea, g. n., Müller, Ann. & Mag. Nat. Hist. vol. xv. p. 276. Antennæ simple. Coxæ of the first pair of gnathopoda rudimentary, those of the second pair and first two pairs of pereiopoda largely developed. Coxa of the second pair of pereiopoda deeply excavated upon the upper part of the posterior margin. First pair of gnathopoda rudimentary, consisting of coxa and basis only; second pair of gnathopoda subchelate. Mandibles having an articulated appendage. Maxillipeds having a squamiform plate on both the basis and ischium. Fourth and fifth pairs of pleopoda with styliform rami, sixth pair with subfoliaceous rami. Telson single, deeply cleft.—*Batea catharinensis*, sp. n., Müller, *l. c.* p. 276, pl. x. fig. 1, from Catharine Island off the coast of Brazil.

Crangonyx recurvus (Grube), Heller, Verh. zool.-bot. Gesell. Wien, 1865, p. 982 (vide *Gammarus recurvus*, in 'Record' for 1864, vol. i. p. 288). Dr. Heller considers that the genera *Crangonyx*, *Niphargus*, and *Gammarus*, as described in the Catalague of the British Museum and in the 'British Sessile-eyed Crustacea,' are but subgenera of the genus *Gammarus* as defined by Fabricius. Now Fabricius established his genus on the *Cancer pulex* of Linnæus; consequently we must consider all species that differ in structural character from the typical species as not coming within the scope of the same genus. This is the case with both of the genera above mentioned by Heller.

Niphargus puteanus (Caspary). Heller, *l. c.* p. 982, considers this species synonymous with *N. stygius* of Schjödte, and with *N. aquilex* of the 'British Sessile-eyed Crustacea.' In this opinion he coincides with the Catalogue of the Amphipodous Crustacea of the British Museum rather than with the joint authors of the 'British Sessile-eyed Crustacea.'

Gammarus roeselii (Gervais), Heller, *l. c.* p. 983, from the neighbourhood of the Salt-mines of Salzburg. The author considers this to be distinct from *G. fluviatilis* [*pulex*], while Prof. Milne-Edwards regards them as synonymous. *Gammarus pulex* (Desmarest), Heller, *l. c.* p. 984, taken in standing pools in the neighbourhood of Innspruck, at an elevation of 3000 to 4000 feet. The author gives Desmarest as the original describer of this species, whereas Linnæus first named it *Cancer pulex*. Heller agrees with the authors of the 'British Sessile-eyed Crustacea' in considering Prof. Milne-Edwards's *G. fluviatilis* a synonym of this species. It is a circumstance worth recording in the history of this species, that no describer has ever seen both *G. pulex* and *G. fluviatilis*, yet undoubtedly there are two descriptions and two figures. It would be a curious incident should both have been taken from the same animal.—*Gammarus pungens* (Edw.), Heller, *l. c.* p. 984, Warm springs, Mount Cassini, Italy. This species appears to us, from M.-Edwards's description, to be closely allied to *Niphargus*; the author considers this species as forming part of a subgenus of true *Gammari*, therefore distinct from that of the next, which belongs to *Gammarus* in a more extended sense.

Gammarus veneris, sp. n., Heller, *l. c.* p. 981, taken in the well of Venus, Cyprus, fifty feet above the sea. The author considers this species to be

intermediate between *G. marinus* and *G. pulex*, both of which are true *Gammari*.

Corophiidæ.

Unciola planipes, sp. n., Norman, Nat. Hist. Trans. of Northumb. and Durham, vol. i. p. 14, pl. vii. figs. 9–13, Holy Island.

Hyperiidæ.

Listrigonus mediterraneus, sp. n., Costa, Rend. Acad. Sc. Fis. e Matem. Soc. Real. Napoli, p. 34, found inhabiting Medusæ in the Bay of Naples.

Caprellidæ.

Naupredia tristis (Van Beneden). Dr. Müller, Arch. Naturgesch. xxxi. p. 314, in a note supports the opinion expressed in the Appendix to the British Museum Catalogue of Amphipodous Crustacea, that this supposed genus is but a mutilated *Proto*, and this so-called species a damaged *Proto pedata* (Leach).

ISOPODA.

Tanaidæ.

Tanais gracilis, sp. n., Heller, Reise Novara, p. 133, tab. xii. fig. 3, from St. Paul.

Bopiridæ.

M. Hesse communicates (Ann. des Sc. Nat. vol. iii.), in his fifth article on the new or rare Crustacea of the coast of France, a new genus and species:—

Pleurocrypta galateæ, p. 226, pl. iv. figs. 1–28, and a second notice *l. c.* vol. iv. p. 225.

Male: Elongo-ovate. Pereion divided into seven subequal somites, of which the first is fused with the cephalon, defined by a strong line of demarcation, and the last is attached to the pleon. Pleon triangular, consisting of a single piece. Pereiopoda terminating with a strong unguiculated and dentated dactylos.

Female: Ovate, symmetrical, provided below with very long incubatory lamellæ, covering entirely the inferior surface of the pereion. Pleon divided into six somites, each furnished with simple branchiæ, pointed, and of unequal size. Pereiopoda formed of five joints (besides the coxa), flat below and round above, and curved in the form of a hook. The propodos is larger than the rest, and curiously formed; it is found above, flat below, ampulliform, presenting at the extremity a little opening, which is contractile and bordered by a circle in relief, and on the other side some small denticulations. Length of male 0·001 millim., of female 0·007 millim. Taken beneath the carapace of *Galathea squamosa*. We have little doubt that this genus of Hesse is identical with that of *Phryxus* of Kröyer; and this present species appears to us strongly to resemble that which has been named *Phryxus longibranchiatus* in the list of Crustacea published by the Dredging-Committee of the British Association. There are, however, some differences of detail, but which appear to be the result of the artist's or engraver's misconception of the structure of the animal.

Cymothoidæ.

Livoneca ornata, sp. n., Heller, Reise Novara, p. 145, tab. xii. fig. 15, from the Red Sea; *L. mediterranea*, sp. n., Heller, *l. c.* p. 146, tab. xii. fig. 15.

Lim[illegible]*ymothoa frontalis* (Edwds.), Heller, *l. c.* p. 146, from Singapore.

Ceratothoa trigonocephala (Leach), Heller, *l. c.* p. 148, from Sydney; *C. cuni*[illegible]*i* (Leach), Heller, *l. c.* p. 148, from Java.

Ceratothoa rapax, sp. n., Heller, *l. c.* p. 146, tab. xii. fig. 17, from Chili.

Ourozeuktes owenii (Edwds.), Heller, *l. c.* p. 148, from Sydney.

Ægidæ.

Cirolana rugicauda, sp. n., Heller, *l. c.* p. 142, tab. xii. fig. 13, from St. Paul.

Æga basalis, sp. n., Heller, *l. c.* p. 143, tab. xii. fig. 14, from the Nicobars.

Idotheidæ.

Idotea nitida, sp. n., Heller, *l. c.* p. 131, tab. xii. fig. 1, from St. Paul.

Cleantis granulosa, sp. n., Heller, *l. c.* p. 132, tab. xii. fig. 2, from St. Paul.

Sphæromidæ.

Sphæroma quoyana (Edw.), Heller, *l. c.* p. 137, from Sydney; *S. perforata* (Edw.), Heller, *l. c.* p. 139, from St. Paul.

New species:—

Sphæroma lævisucula, Heller, *l. c.* p. 138, tab. xii. fig. 7, from Java; *S. integra*, Heller, *l. c.* p. 138, tab. xii. fig. 8, from Chili; *S. stimpsoni*, Heller, *l. c.* p. 139, tab. xii. fig. 10, from the Cape of Good Hope; *S. scabricula*, Heller, *l. c.* p. 141, tab. xii. fig. 11, from the Cape of Good Hope; *S. tristis*, Heller, *l. c.* p. 142, tab. xii. fig. 12, from the Nicobars.

Oniscidæ.

Lygia gaudichaudii (Edw.), Heller, *l. c.* p. 134, from Madras and Manilla.

Spherillo danæ, sp. n., Heller, *l. c.* p. 134, tab. xii. fig. 4, from Auckland.

Porcellio dilatatus (Brndt.). Professor Wagner has, in the November number of the Annales des Sc. Nat. for 1865, vol. iv. p. 37, published some observations on the circulatory and respiratory systems as observed by him in this species. Having adopted the method that was first shown to be practicable by M. Emile Blanchard, and which has since been successfully pursued by M. Kowalewsky on *Idotea*, he injected a mixture of glycerine and water coloured with carmine into the arterial system, through the heart, and by so doing was enabled to confirm the conclusions of M. Kowalewsky that there exists a well-developed arterial system in the Isopoda. The greatest amount of arterial development, as might have been anticipated, is to be found about the cephalic, branchial, and generative organs, as the author has illustrated by four diagrammatical figures.

In writing of the branchial organs Professor Wagner says that the pleon (partie abdominale) of the Isopoda does not correspond with the pleon of the Decapoda, but with the lateral part or branchial region of the pereion. An expression of this kind is only intended to convey that the office of respiration is carried on in different orders of Crustacea by parts that are homologically distinct. We might therefore reasonably suppose that, in order to

render each system of respiratory apparatus the more efficient for its work, the heart should exist in the anterior portion of the body of those animals that have the branchial organs developed in the pereion, and at the poster... portion in those which have them attached to the pleon.

The organs of respiration in *Porcellio* have been already described by ... and Savigny as well as by MM. Duvernoy and Lereboullet; but Prof. Wagner ... the assistance of the coloured injection, has been able to trace more c... the course that the blood takes in passing through these organs. Profes... Wagner shows also the relation of the opercular valves to the respiratory system, and contends that, besides their power of protecting the branchial plates from injury and precluding a too speedy escape of moisture, they fulfil, by means of a plexus of minute vessels situated at the base of the operculum, a pulmonary function. This organ, which he figures, has, he says, a kind of tracheal division into numerous ramifications: seen by transmitted light it is opaque, viewed by direct light it is silvery white; and he contends that it is a kind of pulmonary or tracheal chamber, which serves as a supplementary organ to the true branchiæ. To this the editor of the Annal. des Sc. Nat. adds a note in confirmation, and refers to the 'Atlas du Règne Animal,' Cuvier, Crustacea, pl. 70. fig. 1 *l*, *m*, and 'Leçons sur la Physiologie et l'Anatomie comparée,' t. ii. p. 141. Our own view of these organs of the branchial operculum was that they were glands for the purpose of secreting a fluid that lubricated the branchial plates in hot and strongly evaporating atmospheres. We were led to this idea from finding that they diminished in size in those specimens that we have detained long in glasses.

Porcellio paulensis, sp. n., Heller, *l. c.* p. 136, tab. xii. fig. 5, from the island St. Paul; *P. interruptus*, sp. n., Heller, *l. c.* p. 136, tab. xii. fig. 6, from Chili.

Deto echinata (Guérin), Heller, *l. c.* p. 137, from the Cape of Good Hope.

Tylos latreillii (Aud.), Heller, *l. c.* p. 137, from Gibraltar.

ENTOMOSTRACA.

PHYLLOPODA.

Apodidæ.

Apus cancriformis (Schæffer), Lucas, Bull. Ent. 1864, p. xi, from Algeria and the neighbourhood of Constantinople; *A. productus* (Bosc), Lucas, *l. c.* 1864, p. xi, from the neighbourhood of Hippône, in company with *Estheria cycladoides*.

Apus granarius, sp. n., Lucas, *l. c.* p. xii, from the environs of Pekin; *A. nunidicus*, sp. n., Grube, Arch. für Naturgesch. vol. xxx. p. 278, pl. 11. fig. 14 *a*, *b*.

Lepidurus viridis (Baird), King, Trans. Ent. Soc. N. S. Wales, vol. i. pl. xi., has figures illustrating the structure without reference in the text. From the neighbourhood of Sydney.

Limnadiadæ.

Estheria cycladoides (Joly), Lucas, Bull. Ent. 1864, p. xi, neighbourhood of Hippône, in company with *Apus productus*.

Prof. Grube, in a monograph on the genera and species of this family (Arch. für Naturgesch. xxxi. p. 203), after a short introduction relative to his own and the researches of others in the Phyllopoda, particularly on the species of *Estheria* and *Limnadia hermanni*, proceeds to describe the genus *Estheria* (Rüppel) (*Cyzicus*, Aud., *Isaura*, Joly), giving a detailed account of its structure, and adds a list of all the known species according to the following districts, *l. c.* p. 233:—

North America: *Estheria calderelli* (Baird), from Winipegsee.—Central America: *Estheria jonesii* (Baird), Grube, *l. c.* p. 261, tab. xi. figs. 7–12, tab. ix. fig. 11, tab. x. fig. 16, from Cuba, in brackish water; *E. dunkeri* (Baird), from Mexico and Zimapan; *E. mexicana* (Claus), Grube, *l. c.* p. 255, tab. xi. fig. 5, tab. viii. fig. 6, tab. x. fig. 13, from Mexico and Zimapan.—South America: *Estheria brasiliensis* (Baird), from Brazil; *E. dal'asii* (Baird), from Brazil (?).—Australia: *Estheria berckii* (Baird), from South Australia.—East India: *Estheria boysii* (Baird), *E. similis* (Baird), *E. polita* (Baird), *E. hislopi* (Baird), *E. compressa* (Baird).—Syria and Mesopotamia: *Estheria gihoni* (Baird), from Jerusalem; *E. hierosolymitana* (Fischer), from Jerusalem; *E. lofti* (Baird), in pools left by the overflow of the Tigris.—Europe: *Limnadia* [*Estheria*] *tetracera* (Krynicki), Grube, *l. c.* p. 248, tab. xi. fig. 2, tab. ix. fig. 20, from Charkow, Warsaw, and Moscow; *Isaura* [*Estheria*] *cycladoides* (Joly), Grube, *l. c.* pl. xi. fig. 3, from Toulon; *Estheria ...itensis* (Baird), from Malta and Sicily; *Isaura* [*Estheria*] *ticitensis* (Crevelli), Grube, *l. c.* p. 259, tab. xi. figs. 4–11, tab. viii. figs. 5–8, tab. x. fig. 14, from Lombardy; *E. pestensis* (Brühl), from Pesth.—Algeria, Egypt, Abyssinia: *Estheria guberuator* (Klunziger), from brackish pools near Cairo; *E. dahalacensis* (Rüpp.), Grube, *l. c.* p. 245, tab. xi. fig. 1, from Abyssinia and Dahalia.—Cape of Good Hope: *Estheria macgillivrayi* (Baird), from the Cape and from Greene Point in the open sea; *E. rubidgei* (Baird), from the Cape and Port Elizabeth; *E. donaciformis* (Baird), Grube, *l. c.* p. 243, tab. xi. figs. 8–13, tab. x. figs. 1–9, tab. viii. figs. 1, 2, 3, 7, tab. ix. figs. 2, 3, 7, 12, 13, 14, from Kordofan; *Cyzicus australis* (Lovén), from Kaffirland.

The author also enumerates the species (fourteen) that have been found fossil, and classifies the recent species under three heads, according to the form of the shell:—

I. Round, as exampled in *E. hislopi*.

II. Oval, as exampled in *E. donaciformis* and *E. boysii*, which he again divides and subdivides according to the markings, structure, and glossy appearance of the shell.

III. Quadrangular, or roundish-oblong, as exampled in *Estheria dunkeri*.

Full descriptions and illustrations are given of those species to which we have placed the references, as well as a figure of the fossil species *E. middendorfi* in tab. xi. fig. 8.

Prof. Grube then gives a full description of *Limnadia* (Brongt.), as well as of the following species:—

Limnadia hermanni (Brongt.), *l. c.* p. 268. He thinks that there is nothing in Linnæus's short description of *Monoculus lenticularis* from Finland that is inconsistent with its being taken for the present species. *L. mauritiana* (Guér.), *l. c.* p. 271; *L. antillarum* (Baird), *l. c.* p. 272, from St. Domingo.

The Rev. R. L. King gives figures, without any reference in the text, of parts of the structure of *Limnadia sordida* (King) and *L. stanleyana* (King ?). Trans. Ent. Soc. New South Wales, vol. i. pl. xi.

Limnetis (Lovén). This genus is fully described by Grube, *l. c.* p. 273, which he makes synonymous with *Hedessa* (Lièvin) and *Lynceus* (F. O. Müller).

Limnetis brachyurus (*Lynceus brachyurus*, Müller; *Hedessa sieboldii*, Liév., and *Limnetis wahlbergi*, Lovén), Grube, *l. c.* p. 273, from Port Natal, and Sars, Norges Ferskvandskrebsdyr, tab. i. fig. 17; *L. gouldii* (Baird), Grube, *l. c.* p. 273, from Canada; *L. macleayana* (King), Trans. Ent. Soc. N. South Wales, p. 162, pl. xi.; *Limnadella kitei* (Girard), Grube, *l. c.* p. 275.

Branchipodidæ.

Branchipus grubii (Dibowski), Buchholz, Schrift. physik.-ökonom. Gesellsch. Königsberg, 1864, p. 93, tab. iii., from the neighbourhood of Königsberg. The author gives a minute description of the species, and compares it with other known species. He discusses the mystery of its sudden appearance in pools into which no stream runs. He observed that they frequently become a prey to insect larvæ much smaller than themselves, that they cast their skin every few days; he had twice observed the act of copulation. The male swims below the female; holding her dorsally by the great frontal horns, suddenly turns over, and performs the act instantaneously. Dr. Buchholz had failed to hatch any of the ova, though he tried both by keeping them in water and in fresh earth for a time before placing them into water. He also failed to detect the termination of the nerves in the skin as it had been seen by Leydig in *B. stagnalis*.

Artemia proxima, King, Trans. Ent. Soc. N. S. Wales, vol. i.: pl. xi. contains illustrated portions of the structure; but no reference is made in the text to them.

CLADOCERA.

Daphniidæ.

Daphnia carinata, King, Trans. Ent. Soc. N. S. Wales, vol. i. p. 164, pl. xii., from the neighbourhood of Sydney.

New species:—

Bosmina gibbera, Schödler, Arch. für Naturgesch. xxxi. p. 283, from the neighbourhood of Kahlberg; *B. rotunda*, Schödler, *l. c.* p. 284, from Spree near Treptow; *B. longicornis*, Schödler, *l. c.* p. 284, from Spree.

Halyodaphnia berolinensis, Schödler, *l. c.* p. 284, from the neighbourhood of Berlin; *H. kahlbergiensis*, Schödler, *l. c.* p. 285, from the neighbourhood of Kahlberg.

Herr G. O. Sars has published (Norges Ferskvandskrebsdyr, 1865) the first part of a work on the freshwater Crustacea of

Norway. This part is confined to the families to which he has given the names Sididæ and Holopedidæ. After a general introduction, the author treats of the most important points in the organization of the Cladocera.

The first which he desires to establish is the close relationship of the Cladocera with the Phyllopoda. These two forms, which have hitherto been recognized as distinct orders, Hr. Sars contends, are united through the Branchiopoda, which are distinguished from other Entomostraca by having the organs of respiration attached to the feet, whereas in the other orders they are attached to the oral appendages. The union between these two orders has been thought by Professor Grube to be through the family Lynceidæ; but Hr. Sars contends that the nearest approach is through the Sididæ, in which the organization is more perfect than in any other family of the Cladocera, and which have the nearest resemblance to the bivalve Phyllopoda, as *Gimnetes*, *Estheria*, *Limnadia*.

He maintains that there is a very considerable analogy between the different groups of the Entomostraca and the great divisions of the Malacostraca, and points out, at the end of his general introduction (page 4), some of the most pronounced mutual affinities.

Hr. Sars adopts the usual structural nomenclature, and names those somites that carry the antennæ and oral appendages the head [cephalon], the part that carries the feet the thorax [pereion], the posterior part that carries no appendages the abdomen, and states that in most *Cladocera* there is a portion of the animal still posterior, that may be called "post-abdomen" [pleon]. These terms, he says, are those proposed by Prof. Lilljeborg; but this latter author has, in his recent communications in carcinology exchanged them for "caput" [cephalon], "truncus" [pereion], "cauda" [pleon]. In some genera these divisions are so distinctly visible that Hr. Sars thinks they at once demonstrate the desirability of their adoption in preference to those suggested by M. Leydig and certain recent carcinologists, since they are applicable not only to the Crustacea but also to the entire section of the Arthropoda.

Hr. Sars coincides with the opinion of Prof. Milne-Edwards that the bivalve test of the *Cladocera* is the homologue of the carapace of the *Decapoda*, having undergone excessive development of the lateral walls.

The author has given considerable attention to the pereiopoda, of which the construction is very complicated. He objects to the term "feet" being given to these appendages, as they do not assist in locomotion, while their chief functions are respiration and alimentation. He therefore thinks that, on

account of their function, they should be called "mâchoires ou pattes mâchoires." If terms are to be altered with every change of function, those by which the parts of a crustacean may be known will never be settled. We contend that, from the highest typical species to the most aberrant form, but one name should be the scientific expression of the same part in all, and that the least analogical reference the name can bear to that of any animal beyond the limits of the class, so much the more convenient will it be found in clearness of description.

Hr. Sars contends that the so-called shell-gland has an intimate connexion with respiration (a view coinciding with that of Leydig), that its contents are perfectly limpid and free from the presence of cellules, and that there are reasons to believe that it has some analogy with the aquiferous vessels of the *Hirudinées* and *Lombricines*.

The author next treats of the minute structural anatomy of the mouth, the salivary glands, the nervous system, and the organs of sense.

He considers that the first pair of antennæ represent the organs of two senses—one existing in the *auditory cilia*, which, from their resemblance to the same organism in the higher Crustacea, he presumes to represent the same sense, and the other in some hairs terminating in an extremely fine and delicate point; these he considers to be organs of touch; this is presumed in consequence of having observed that this form of hair in the genus *Holopedium* is transferred from the first pair of antennæ, which are protected by a membrane, to the second pair, they being the only part of the animal which has direct communication with the exterior.

In treating of the propagation of these animals he differs from all authors, and denies that the formation of the ephippial ova is common to all the Cladocera, and asserts that they only exist in the family of *Daphnidæ* as defined in his memoir and comprising only the old genus *Daphnia*. He states that at the approach of winter certain species of Cladocera are provided with winter ova; but these, like the summer ova, are fecundated, and have their place immediately upon the body of the animal, in the great cavity of the shell, called by Jurine the matrix.

In the classification of the Cladocera, the author, besides the attention which the structure of the pereiopoda requires, takes into consideration many of the particulars of the rest of the organization—as, for instance, the arrangement of the very varied nervous system, and, which is perhaps the most noticeable, the presence or absence of the valves; on these he founds the two primary divisions, each of which he subdivides into two tribes, dependent upon the structure of the pereiopoda, as follows:—

Suborder CLADOCERA.

1st division. CALYPTOMERA, with dorsal valves and nervous system in a ganglionic chain.

Tribe 1. CTENOPODA: 6 pereiopoda alike, foliaceous, pectinated, having branchial laminæ attached to all.

Families *Sididæ* and *Holopedidæ*.

Tribe 2. ANOMOPODA: pereiopoda dissimilar, anterior more or less prehensile, destitute of branchial laminæ; second pair of antennæ biramose.

Families *Daphniidæ, Bosminidæ, Lyncodaphnidæ, Lynceidæ*.

2nd division. GYMNOMERA: without valves; nervous system united into one ganglion.

Tribe 3. ONYCHOPODA: pereiopoda naked, subcylindrical, four pairs armed with a strong unguis. Branchial laminæ small and rudimentary.

Family *Polyphemidæ*.

Tribe 4. HAPLOPODA: pereiopoda naked, simple, subcylindrical.

Family *Leptodoridæ*.

The present memoir treats of the first two families only; of these the *Sididæ* have four genera, which the author arranges according to the following table:—

Superior ramus of the second pair of antennæ triarticulated.

Cephalon rostrated. Pleon armed with a row of strong spines on the posterior dorsal surface.	Cephalon without rostrum. Pleon not armed with posterior dorsal spines.
Sida.	*Limnosida* (g. n., p. 36).

Superior ramus of second pair of antennæ biarticulated.

Cephalon long, narrow, without rostrum. Posterior dorsal surface of pleon destitute of spines.	Cephalon broad, large. Posterior dorsal surface of pleon armed with a few spines.
Daphnella.	*Latona.*

Fam. SIDIDÆ, Sars.

Sida crystallina (Müller), Sars, *l. c.* p. 33, tab. 1. figs. 1–16; *S. elongata* (De Geer), Sars, *l. c.* p. 35, tab. 1. figs. 18–32, near Christiania.

Limnosida frontosa, sp. n., Sars, *l. c.* p. 37, South Norway.

Daphnella brachyura (Liéven), Sars, *l. c.* p. 44, tab. ii. figs. 16–24; *D. brandtiana* (Fischer), Sars, *l. c.* p. 45, tab. ii. figs. 25–33.

Latona setifera (Fr. Müller), Sars, *l. c.* p. 47, tab. iii.

Fam. HOLOPEDIDÆ, Sars.

Holopedium gibberum (Zaddach). Sars, *l. c.* p. 57, tab. iv., has fully described the genus as well as the species.

POLYPHEMIDÆ.

Evadne nordmanni (Lovén), G. Brady, Intellectual Observer, vol. vii. p. 4, pl. i., and Nat. Hist. Trans. of North. & Durham, p. 30, off Tynemouth; *E. polyphemoides* (Leuckart), G. Brady, Intellectual Observer, vol. vii. p. 4, which the author describes fully, as well as Dana's genus *Pleopes* as defined by G. O. Sars, under the name of *Pleopes polyphemoides* (Leuckart), Nat. Hist.

Trans. of Northumb. & Durham, p. 30 & 31, pl. iv. fig. 14, from off Tynemouth.

Lynceidæ.

Eurycercus cookii, King, Trans. Ent. Soc. N. South Wales, vol. i. p. 164, pl. xii., from rivers in the neighbourhood of Sydney.

OSTRACODA.

Prof. Claus has communicated in Zeitschr. für wiss. Zool. xv. p. 391, a memoir on the various changes that take place in the young *Cypris* during the growth of the animal, from the time that it quits the egg to that of its attaining adult development. He traces the changes by aid of the exuviation of the growing animal, and finds that there are eight distinct changes in the course of development after the larva has quitted the ovum, of the period preceding which he has made no observation.

In the *first stage* the shell (length 0·132 mm., height 0·999 mm.) is unlike that of the adult, being broader in proportion to its length, as 4 : 3; it is extremely delicate and already minutely dotted and porous, having four muscular impressions on each side. The appendages at this time are three pairs (the two pairs of antennæ and the mandibles), all of which appear to be used exclusively for locomotion. The animal now closely resembles the larva of *Nauplius* among the Copepoda. Tab. xxviii. fig. 1.

In the *second stage* the shell (length 0·16 mm., height 0·115 mm.) has increased in length, is still delicate, but already a little calcareous, with thickening edges. The alimentary canal is visible in the entire length, but without the liver-lobes. The stomach is round. The antennæ have not altered much; but the molar process is developed at the base of the mandibles, and the first pair of maxillæ and the first pair of feet have made their appearance in a rudimentary form. Fig. 2.

The *third stage*. The shell (length 0·18 mm., height 0·133 mm.) passes nearer to the form of the *Cypris*, without altering much that of the appendages, the greatest alteration being the increased development of the maxillæ and the appearance of a branchial lamina. Fig. 3.

Fourth stage. The shell (length 0·23 mm., height 0·15 mm.) shows a considerable indentation of the ventral margins. The maxillæ have made the greatest advancement, and the second pair present themselves much as the first appear in the second stage. Fig. 4.

Fifth stage. The shell has attained a length of 0·28 mm., height 0·18 mm.; all the appendages approximate nearer to the adult form; and the last pair of feet have made their appearance in the form of a delicate sac, and resemble an early stage of the maxillæ. Fig. 5.

In the *sixth stage* the shell is in length 0·35 mm., height 0·215 mm.; it exhibits a few hairs on the surface, and all the appendages have increased in length and adult characters. Fig. 6.

In the *seventh stage* the shell in length is 0·45 mm., and in height 0·28 mm. Now the pleon (or, more correctly, the furcal appendages, which certainly homologize with a pair of the pleopoda, and may be the posterior or uropoda) makes its appearance. Fig. 7.

Eighth stage. Length of the shell 0·54 mm., height 0·34 mm. This stage is only perceptible from the slight increase in the length of the feet and the furcal appendages and from the permanently characteristic size and form. Fig. 8.

It is therefore of much importance in the description of new species, both fossil and recent, that carcinologists should bear in mind that changes take place in the form as well as the size of the shell, all of which Claus has delineated in two plates.

Hr. G. O. Sars (Vid.-Selsk. Forhand. for 1865) has communicated a memoir on the Norwegian marine *Ostracoda* (pp. 130). After a short introduction on the previous researches of various authors, he proposes three great groups, of which *Cypris* and *Cythere* are types of the first, *Cypridina* and *Conchœcia* are types of the second, and *Polycope* and *Cytherella* are types of the third :—

I. Antennæ inferiores simplices, subpediformes, geniculatæ, ad apicem unguiferæ, antennis superioribus parum dissimiles. Antennæ utriusque paris sive longe setiferæ et natatoriæ sive breviter pilosæ et ad natandum ineptæ. Mandibulæ distinctæ, ad extremitatem inferiorem plerumque fortiter dentatæ, palpo mediocri appendice instructo branchiali plus minusve evoluta. Maxillæ primi paris lamina præditæ magna branchiali : Podocopa.

A. Pedum 2 paria, ultimum intra valvulas inflexum. Postabdomen [posterior portion of pleon] ramos duos plerumque sat elongatos et angustos, ad apicem unguiferos formans ..... *Cyprididæ*.

B. Pedum 3 paria, omnia ambulatoria et inter se consimilia anticeque vergentia. Postabdomen [posterior portion of pleon] rudimentare, lobos duos minimos formans. Antennæ minime natatoriæ ..... *Cytheridæ*.

II. Antennæ inferiores biramosæ :—

A. Ramo altero rudimentari, immobili, altero elongato cylindrico, flexibili, multiarticulato, setis longis natatoriis uniserialiter obsito, parte basali permagna et crassa, musculis impleta. Antennæ superiores vix natatoriæ. Palpus mandibularis permagnus, geniculatus, subpediformis, appendice branchiali destitutus. Maxillæ primi paris lamina branchiali carentes. Postabdomen [posterior portion of the pleon] in laminas duas latas postice unguiferas divisum : Myodocopa.

a. Pedum unum solummodo par forma singulari, appendicem elongatam supra curvatam, flexibilem, annulatam, vermiformem, apicem versus spiniferam formans. Antennæ superiores magnæ, distincte articulatæ, ad basin geniculatæ. Mandibularum pars propria obsolescens. Maxillæ secundi paris lamina magna branchiali instructæ. Oculi compositi, pedunculati, longe sejuncti; inter ambos antice oculus simplex magnus et tentaculum breve frontale ..... *Cypridinidæ*.

b. Pedum 2 paria, posterius minimum et rudimentare, anterius ut maxillæ secundi paris lamina branchiali parva et lobata instructum. Antennæ superiores feminæ parvæ et d biles, immobiles et distincte articulatæ. Mandibulæ distinctæ. Oculi nulli. Tentaculum frontale permagnum et plerumque ad apicem dilatatum ..... *Conchœciidæ*.

B. Ramis ambobus bene evolutis, mobilibus et natatoriis. Antennæ

etiam superiores natatoriæ non geniculatæ, fasciculo setarum longarum terminatæ. Mandibulæ distinctæ, palpo brevi minimeque pediformi, appendice vero branchiali parva instructo. Membrorum thoracicorum [pleopoda] 2 solummodo paria, anterius magnum, bifidum, natatorium, posterius membranaceum et branchiale. Oculi nulli. Postabdomen [posterior part of pleon] in laminas duas breves postice aculeatas divisum : CLADOCOPA. One family..... *Polycopidæ.*

III. Antennæ inferiores complanatæ, pedibus *Copepodum* simillimæ, parte basali biarticulatæ et geniculatæ, ramis complanatis pauciarticulatis, setis numerosis in utroque margine obsitis. Antennæ superiores permagnæ et validæ, multiarticulatæ, ad basin geniculatæ, breviter spiniferæ. Mandibulæ parvæ et debiles, palpo vero magno. Membrorum thoracicorum [pleopoda] 3 modo paria, omnia maxilliformia. Palpus mandibulis et maxillis primi paris inhærens intus pectine setoso magno ornatus. Maxillæ primi et secundi paris lamina instructæ magna branchiali, tertii paris in femina rudimentares, in mare vero bene evolutæ et prehensiles. Rami postabdominales [posterior portion of pleon] parvi et augusti, distincte sejuncti, ad apicem spiniferi : PLATYCOPA. One family ..... *Cytherellidæ.*

CYPRIDIDÆ.

Paracypris, g. n., Sars, *l. c.* p. 11. Maxillæ secundi paris appendice branchiali præditæ, palpo subconico, minime articulato, setis 3 terminato. Antennæ breviter setiferæ, inferiorum articulus secundus fasciculo setarum destitutus. *P. polita*, sp. n., p. 12, from Langesund, in fine sand.

Pontocypris, g. n., Sars, *l. c.* p. 13. Maxillæ secundi paris appendice branchiali carentes, palpo distincte articulato, subpediformi, 3-articulato. Antennæ superiores elongatæ, 7-articulatæ, setis longis obsitæ. *P. serrulata*, sp. n., Sars, *l. c.* p. 15, from Christianssund and Flekkefjord, amongst algæ ; *P. hispida*, sp. n., Sars, *l. c.* p. 16, from the gulf of Christiania, in mud ; *P. trigonella*, sp. n., Sars, *l. c.* p. 16, from the Lofotens, calcareous bottom.

Argillœcia, g. n., Sars, *l. c.* p. 17. Distinguished from *Pontocypris* in having Antennæ superiores breves et robustæ, 5-articulatæ, in femina breviter setiferæ, in mare setis nonnullis valde elongatis. *A. cylindrica*, sp. n., p. 18, from Christiania.

Bairdia angusta, sp. n., Sars, *l. c.* p. 22, from the Gulf of Christiania and in the Gulf of Nidarosia ; *B. obtusata*, sp. n., Sars, *l. c.* p. 24, from Flekkefjord, in mud and sand ; *B. obliquata*, sp. n., Sars, *l. c.* p. 24, from Oxfjord, Finmark.

CYTHERIDÆ.

Hr. Sars tabulates this family according to the various structural characters of the genera, of which the following have been found on the Norwegian coasts :—

Cythere lutea (Müller), Sars, *l. c.* p. 28, from the whole coast of Norway ; *C. viridis* (Müller), Sars, *l. c.* p. 30, from Christiania to Finmark ; *C. pellucida* (Baird), Sars, *l. c.* p. 31, from Christiania to Finmark.

He describes as new species :—

Cythere castanea, Sars, p. 32, from the Gulf of Christiania ; *C. cicatricosa*, Sars, p. 33, from the Gulf of Christiania, amongst algæ ; *C. rentricosa*, Sars, p. 34, from Drobaki and Langesund, in calcareous sand ; *C. nodosa*, Sars, p. 34, from the Lofoten Islands and in the Gulf of Nidarosia.

Cythere bradii. Norman, Nat. Hist. Trans. of Northumberland and Durham, p. 29, restores this name to the species which, at page 15, he had made a synonym of *C. debilis* (Jones), off Northumberland and Durham ; it is illustrated as *C. bradii*, pl. v. figs. 5–8. *C. avena*, Norman, *l. c.* p. 17, from Firth of Clyde, Anan, and Shetland.

Mr. Norman describes as new species :—

Cythere declivis, p. 16, pl. v. figs. 9–12, from Shetland, Plymouth, &c. ; *C. simplex*, p. 17, pl. v. figs. 1–4, from the Arctic seas, Shetland, Tynemouth ; *C. lœvata*, p. 18, pl. v. figs. 13–16, from Shetland, the mouth of the Ribble, &c. ; *C. multiflora*, p. 18, pl. vi. figs. 13–16, from Holy Island and Shetland ; *C. latissima*, p. 19, pl. vi. figs. 5–8, from the Shetlands, Doggerbank, Seaham, &c. ; *C. guttata*, p. 19, pl. vi. figs. 9–12, from Holy Island and Seaham. The last three species had previously been named by the author respectively *C. rugosa*, *C. obesa*, and *C. concentrica*, which names were preoccupied.

Cytheria acuta (Baird), Norman, *l. c.* p. 17, says is founded "on the carapaces of the larva of a *Balanus*."

Cytherois jonesii (Baird), Norman, *l. c.* p. 21, pl. vii. figs. 5–8, from Shetland and Durham coast.

Cytherois. The following species are described as new :—*C. limicola*, Norman, *l. c.* p. 20, pl. vi. figs. 1–4, from the Doggerbank and off Seaham ; *C. dunelmensis*, Norman, *l. c.* p. 22, pl. vii. figs. 1–4, from off Seaham ; *C. cellulosa*, Norman, *l. c.* p. 22, pl. v. figs. 17–20, pl. vi. fig. 17, from Berwick, Guernsey, Donegal ; *C. emarginata*, Sars, *l. c.* p. 38, from Oxfjord in Finmark ; *C. crenulata*, Sars, *l. c.* p. 39, from Langesund ; *C. clavata*, Sars, *l. c.* p. 39, from Christiania to the Lofoten Islands ; *C. angulata*, Sars, *l. c.* p. 40, from Oxfjord in Finmark ; *C. finmarchica*, Sars, *l. c.* p. 41, from Oxfjord ; *C. villosa*, Sars, *l. c.* p. 42, from Christiania and Oxfjord ; *C. abyssicola*, Sars, *l. c.* p. 43, from Drobaki and the Lofoten Islands ; *C. echinata*, Sars, *l. c.* p. 44, from Christiania ; *C. horrida*, Sars, *l. c.* p. 45, from Christiania and the Lofoten Islands ; *C. spectabilis*, Sars, *l. c.* p. 46, from Gulf of Christiania ; *C. mucronata*, Sars, *l. c.* p. 48, from the Lofoten Islands.

Cypridcis torosa (Jones), Sars, *l. c.* p. 51, in an estuary near Christiania ; *C. bairdii*, Sars, *l. c.* p. 52, from the Gulf of Christiania and the Lofoten Islands ; *C. proxima*, sp. n., Sars, *l. c.* p. 54, from Christiania to Finmark.

Cytheridea dentata, sp. n., Sars, *l. c.* p. 56, from Oxfjord in Finmark ; *C. inermis*, sp. n., Sars, *l. c.* p. 56, from Finmark.

Cytheropsis, g. n., Sars, *l. c.* p. 57. Antennæ inferiores 4-articulatæ, flagello longo apicem earum antennarum superante. Antennæ sup. 5-articulatæ, articulis 3 ultimis elongatis et junctis, antecedente longioribus, spinis ex parte validis obsitis. Pedes in fem. et mare similes. Lobus maxillarum primi paris internus rudimentaris [by which it is distinguished from *Cythere*]. *C. argus*, sp. n., p. 58, from Christiania and Oxfjord ; *C. tenuitesta*, sp. n., p. 59, from Christiania and the Lofoten Islands.

Ilyobates, g. n., Sars, *l. c.* p. 59. Antennæ infer. 4-articulatæ, flagello longo apicem earum antennarum superante. Antennæ sup. 5-articulatæ,

articulis 3 ultimis brevibus et crassis. Oculi nulli. *I. prætexta*, sp. n., p. 60, from Christiania and the Lofoten Islands.

Loxoconcha, g. n., Sars, *l. c.* p. 61. Antennæ infer. quales in *Ilyobati*. Antennæ sup. 6-articulatæ setis simplicibus obsitæ, articulis ultimis 4 plerumque valde elongatis et tenuibus inæqualibusque. To this genus belong *Cythere rhomboidea* (Fischer), Sars, *l. c.* p. 62, *L. longipes*, sp. n., p. 63, *L. granulata*, sp. n., p. 64, and *L. fragilis*, sp. n., p. 65, from Christiania and the Lofoten Islands.

Xestoleberis, g. n., Sars, *l. c.* p. 66. Differing from *Loxoconcha* in having the last four joints of the upper antennæ short, gradually decreasing in length. *L. (Cythere) nitida* (Lilljeb.), Sars, p. 67, and *X. depressa*, sp. n., Sars, p. 68, from the entire coast of Norway and Finmark.

Cytherura, g. n., Sars, *l. c.* p. 69. Antennæ infer. 5-articulatæ, super. 6-articulatæ, articulis ultimis 4 antecedentibus multo angustioribus et pilis brevibus ex parte spiniformibus sparse obsitis. Lobi postabdominales rudimentarii, pilis destituti. Oculi duo distincti. To this genus belong *Cytherura gibba* (Müller), Sars, *l. c.* p. 70, from the Gulf of Christiania on Zostera; *C. nigrescens* (Baird), Sars, *l. c.* p. 71, on algæ.

Cytherura. The following species are described as new:—*C. similis*, p. 72, from Langesund and Finmark, among algæ; *C. sella*, p. 73, from the Gulf of Christiania; *C. striata*, p. 74, from the Gulf of Christiania; *C. atra*, p. 75, from the Lofoten Islands; *C. undata*, p. 75, from the Gulf of Christiania and Finmark; *C. acuticostata*, p. 76, from Christiania; *C. affinis*, p. 77, from Finmark; *C. clathrata*, p. 77, from the Lofoten Islands; *C. nana*, p. 78, from Christiania, among algæ.

Cytheropteron, g. n., Sars, *l. c.* p. 79. Antennæ inferiores 5-articulatæ; super. 5-articulatæ, pilis brevibus sparse obsitæ. Lobi postabdominales breves et lati, pilis 3 obsiti. Oculi nulli. *C. (Cythere) convexum* (Baird), Sars, p. 80, *C. subuncinatum*, sp. n., Sars, p. 81, and *C. alatum*, sp. n., Sars, p. 81, from Christiania.

Bythocythere, g. n., Sars, *l. c.* p. 82. Antennæ infer. quales in *Cythere*; super. 7-articulatæ, articulis 2 prioribus permagnis et crassis, ultimis 5 tenuibus setis ex parte sat longis obsitis. All the species are new:—*Bythocythere turgida*, p. 84, from near Drobak; *B. constricta*, p. 85, and *B. dromedaria*, p. 86, from the Gulf of Christiania; *B. acuminata*, p. 86, from the Lofoten Islands.

Pseudocythere, g. n., Sars, *l. c.* p. 87. Antennæ infer. 5-articulatæ; super. 7-articulatæ, setis numerosis et longissimis obsitæ, articulo ultimo perlongo. Lobi postabdom. subconici et infra vergentes pilis, 3 obsiti. Oculi nulli. *P. caudata*, sp. n., p. 88, from Christiania.

Sclerochilus, g. n., Sars, *l. c.* p. 89. Antennæ infer. 5-articulatæ; super. 6-articulatæ, articulis ultimis 4 antecedentibus parum angustioribus et versus apicem setis numerosis longis obsitis. Lobi postabdom. majores, bipartiti, setisque 5 obsiti. Oculus unicus. *S. contortus* (Norman), Sars, *l. c.* p. 90, from Finmark.

Paradoxostoma variabile (Baird), Sars, *l. c.* p. 93, from Norway.

Paradoxostoma. The following species are new:—*P. abbreviatum*, p. 94; *P. pulchellum*, p. 95; *P. vitreum*, p. 95, and *P. fischeri*, p. 96, from the Gulf of Christiania; *P. obliquum* and *P. rostratum*, p. 97, from Finmark.

Cypridinidæ.

Cypridina norvegica (Baird), Sars, *l. c.* p. 104, from the Gulf of Nidarosia; *C. messinensis*, Claus, Zeitschr. für wiss. Zool. xv. p. 153, pl. 10. figs. 1–9, from Messina.

Cypridina. Prof. Claus (Zeitschr. für wiss. Zool. xv. p. 142) has communicated a paper on the organization of this genus as illustrated by a species (*C. messinensis*) which he found very abundant. He describes the structure of all the organs, and clearly illustrates the same in seven figures on plate 10; among which he describes and figures several minutely articulated hairs armed with lateral cilia of peculiar structure; these he calls organs of smell, and says (p. 148) that all admit that the anterior antennæ, not only in Crustacea, but in the whole of the Arthropoda, are organs of smell—a statement that the more recent observations of carcinologists tend to disprove.

Halocypris. Prof. Claus, *l. c.* p. 399, publishes an account of the sexual distinctions of animals belonging to this genus. His chief observations have been upon a species that he took abundantly in the sea near Messina, which corresponds very closely with *H. atlantica* of Lubbock. His researches tend to show that the female differs from the male—1, in being longer and narrower, the male being shorter and broader in proportion, though altogether smaller; 2, in the difference between forms of the anterior antennæ in the male and in the female; 3, in a second appendage being attached to the underside of the second pair of antennæ, which in the male carries a strong prehensile hook; 4, in the form of the second pair of feet; and 5, in the organs of copulation. Consequently the author concludes that there is "no small amount of dimorphism in the form of the males and females of this genus."

Philomedes longicornis (Lilljeborg), Sars, *l. c.* p. 107, from the Gulf of Christiania and Sweden.

Bradycinetus, g. n., Sars, *l. c.* p. 109 (= *Cypridina*, Lilljeborg). Valvulæ testæ sat ventricosæ et quam in generibus antecedentibus structura duriore, superficie dense punctata. Incisura testæ infra medium sita profunda, pectine setoso ubique marginata. Antennæ superiores 6-articulatæ . . . .; inferiores fere ut in *Cypridina*, ramo natatorio 9-articulato . . . . Oculi parvi, ... vix per testam visibiles; . . . . . *Bradycinetus globosus* (Lilljeborg), Sars, *l. c.* p. 110, from the Gulf of Christiania; *B. lilljeborgii*, sp. n., Sars, *l. c.* p. 112, from Drobak.

Conchœciidæ.

Conchœcia elegans, sp. n., Sars, *l. c.* p. 117, from Drobak and the Lofoten Islands; *C. obtusata*, sp. n., Sars, *l. c.* p. 118, from the Gulf of Nidarosia; *C. borealis*, Sars, sp. n., *l. c.* p. 119, from the Lofoten Islands.

Polycopidæ (Sars).

This family comprises only *Polycope*, g. n., Sars, *l. c.* p. 121. *P. orbicularis*, sp. n., p. 122, from the Lofoten Islands.

Cytherellidæ.

Cytherella abyssorum, sp. n., Sars, *l. c.* p. 127, all the coast of Norway to Lofoten Islands.

Hr. Sars terminates his important memoir with the following list of equivalents of Ostracoda (from the Rev. A. M. Norman's Report of the deep-sea dredging on the coasts of Northumberland and Durham) with some that he has described :—

Cythere bradii (Norman) (*C. debilis*, Jones, vide Norm. *l. c.* p. 15) = *Cytherideis bairdii*, Sars; *C. declivis* (N.) = *Cytheropsis tenuitesta* (fem.), Sars; *C. simplex* (N.) = *Bythocythere acuminata*, Sars; *C. lævata* (N.) = *Loxoleberis longipes*, Sars; *C. latissima* (N.) = *Cytheropteron convexum*, Sars; *C. limicola* (N.) = *Cythere nodosa*, Sars; *C. jonesii* (Baird) = *Cythereis spectabilis*, Sars (fid. Norman); *C. dunelmensis* (N.) = *Cythereis horrida*, Sars; *C. cellulosa* (N.) = *Cytherura nana*, Sars.

COPEPODA.

Cyclopidæ.

Canthocamptus (?) *hippolytes*, sp. n., Kröyer, Naturhist. Tidsk. 1864, p. 408, tab. xvii. fig. 9 *a*, *b*, on the branchia of *Hippolyte aculeata* (Fabr.)

Cyclops magniceps (Lillj.), Boeck, Vidensk. Selskab. Forhand. for 1864, p. 22, from near Kullaberg.

Cyclopina norvegica, sp. n., Boeck, *l. c.* p. 23, from Norway.

Misophria, g. n., Boeck, *l. c.* p. 24. Resembles *Cyclops*. First pair of antennæ multiarticulate; second pair robust and four-articulated, furnished with a strong brush of hairs at the tip. At the extremity of the first articulation is attached a biramoid six-jointed appendage. The second pair of maxillipeds resemble those of *Calanus*, the first pair of pereiopoda resemble those of *Cyclops*. *Misophria pallida*, sp. n., Boeck, *l. c.* p. 24, from near Hangesund.

Oithona spinifrons, sp. n., Boeck, *l. c.* p. 25, from Christianiafjord; *Oi. pygmea*, sp. n., Boeck, *l. c.* p. 25, from Christianiafjord.

Thorellia, g. n., Boeck, *l. c.* p. 25. Form and number of somites as in *Cyclops*. First pair of antennæ reaches not so far as the extremity of the pereion, multiarticulate; second pair four-articulated, without a biramoid appendage. Mandibles, maxillæ, and first pair of maxillipeds as in *Cyclops*; second pair of maxillipeds terminating in strongly hooked claws. *Thorellia brunnea*, sp. n., Boeck, *l. c.* p. 26, from near Skudesnæs.

Harpactidæ.

Tachidius brevicornis (Lillj.), Brady, Nat. Hist. Trans. Northumb. and Durham, vol. i. p. 32, 1865, and Intellectual Observer, vol. vii. p. 6, pl. 1. fig. 1, from a salt-marsh, Sunderland; and Boeck, *l. c.* p. 33, from Christianiafjord.

Tisbe furcata (Baird), Brady, Intell. Observ. vol. vii. p. 5.

Westwoodia nobilis (Baird), Brady, *l. c.* p. 5, from Berwick Bay, Dover, &c.; also Boeck, Vidensk.-Selsk. Forhand. 1864, p. 35, Norway.

Dactylopus stromii (Baird), Brady, *l. c.* p. 5, from rock pools, Durham, and the Isle of Man, &c.; *D. tisboides* (Claus), Brady, *l. c.* p. 5, from the Northumberland, Durham, Man, and Shetland coasts; *D. longirostris* (Claus), Boeck, *l. c.* p. 46, from Christianiafjord; *D. latipes*, Boeck, *l. c.* from Hangesund.

Thalestris longimana (Claus), Brady, *l. c.* p. 6, fig. 2, from off Sunderland; *T. harpactoides* (Claus), Boeck, *l. c.* p. 41, from Norway; *T. myris* (Claus), Boeck, *l. c.* p. 44, from Norway; *T. longipes*, sp. n., Boeck, *l. c.* p. 42, from Christianiafjord; *T. karmensis*, sp. n., Boeck, *l. c.* p. 42, from Karmen; *T. curticornis*, sp. n., Boeck, *l. c.* p. 43, from Christianiafjord; *T. curticaudata*, sp. n., Boeck, *l. c.* p. 43, from Karmen.

Harpacticus chelifer (Müller), Brady, *l. c.* p. 6, from near Sunderland; also Boeck, *l. c.* p. 37, from Christianiafjord.

Harpacticus. Boeck describes as new species *H. elongatus*, p. 37, from Christianiafjord (this species the author thinks may be *H. gracilis* of Claus); *H. depressus*, p. 38, from Norway; *H. curticornis*, Boeck, p. 38, from Norway (the author thinks this may be *H. chelifer* of Lilljeborg).

Amenophia, g. n., Boeck, *l. c.* p. 44. This genus resembles *Thalestris*, from which it differs in the form of the eyes, the species of the present genus having these organs projected upon soft peduncles much as if they had been torn from the sockets and fallen asunder. *A. peltata*, sp. n., Boeck, *l. c.* p. 45, from Karnea.

Longipedia coronata (Claus), Boeck, *l. c.* p. 29, from Christianiafjord.

Ectinosoma, g. n., Boeck, *l. c.* p. 30. Long and narrow, the pleon continuing of the same breadth as the pereion. Cephalon joined with the first somite of the pereion, which is very short. First pair of antennæ very short, seven-articulated, tapering to the extremity, furnished with long cilia; second pair much longer and stronger, three-articulated. *E. melaniceps*, sp. n., Boeck, *l. c.* p. 30, from Christianiafjord.

Amyone sphærica (Claus), Boeck, *l. c.* p. 32, from Christianiafjord.

Tachidius brevicornis (Müller), Boeck, *l. c.* p. 33, from Christianiafjord.

Idya (Philippi). Boeck (*l. c.* p. 33) considers this to be *Tisbe** of Lilljeborg and *Westwoodia* of Dana.

Idya furcata (Baird), Boeck, *l. c.* p. 34, from near Stranden.

Stenhelia, g. n., Boeck, *l. c.* p. 47. Long, cylindrical, with an inflated cephalon. Two first somites of the pleon are not joined in the female. First pair of antennæ eight-articulated; second pair carry a very long three-jointed biramoid appendage. First pair of pereiopoda are formed as in *Dactylopus*; the following three pairs are biramous. *St. gibba*, sp. n., Boeck, *l. c.* p. 47, from Karmen.

Ameira, g. n., Boeck, *l. c.* p. 49. First pair of antennæ eight-articulated; second pair have the inner ramus very short and uniarticulate. The outer ramus of the first pair of pereiopoda is three-jointed, terminating in a strong brush. Both rami on the following three pairs of pereiopoda are three-jointed. *A. longipes*, sp. n., Boeck, *l. c.* p. 49, from Hangesund; *A. minuta*, sp. n., Boeck, *l. c.* p. 49, from Norway.

Nitokra, g. n., Boeck, *l. c.* p. 50. The first pair of antennæ eight-articulated; second pair have the inner ramus short and unijointed. First pair of pereiopoda are formed as in *Altentha*; both rami on the following three pairs of

* In the text it is spelt *Tispe*.

pereiopoda are three-jointed. *N. typica*, sp. n., Boeck, *l. c.* p. 50, from Hangesund; *N. spinipes*, sp. n., Boeck, *l. c.* p. 50, from Karmen.

Mesochra, g. n., Boeck, *l. c.* p. 51. The first pair of antennæ are seven- or eight-articulated. The inner ramus of the second pair is uniarticulate; mandibular palp unibranched, supported on a large basal point. First pair of pereiopoda have a strong inner ramus, the first joint of which is very long; while the second and third pairs are generally found together. The outer ramus is shorter than the interior, and is triarticulate. All the rest of the pereiopoda have the inner ramus biarticulate.

Mesochra lilljeborgii, Boeck, *l. c.* p. 51, from Christianiafjord (the author thinks that this may be *Canthocamptus strömii* of Lilljeborg); *M. pygmæa* (Claus), Boeck, *l. c.* p. 52, from Christianiafjord.

Mesochra kröyeri, sp. n., Boeck, *l. c.* p. 52, from Christianiafjord.

Laophonte serrata (Claus), Boeck, *l. c.* p. 53, from Hangesund.

Boeck describes as new species *Laophonte setosa*, p. 53, and *L. thoracica*, p. 54, from Christianiafjord; *L. curticaudata*, p. 54, and *L. longicaudata*, p. 55, from Karmen.

*Porcellidium fasciatum**, sp. n., Boeck, *l. c.* p. 56, from Tangblade.

Setella norvegica, sp. n., Boeck, *l. c.* p. 56, form Norway.

Pontellidæ.

Anomalocera patersonii (Templeton), Brady, Intell. Observer, vol. vii. p. 9, pl. 1. fig. 6, from Scotland; and Boeck, *l. c.* p. 21, from Norway.

Pontella wollastonii (Lubbock), Brady, *l. c.* p. 10. Mr. Brady supposes this species to be identical with *P. heligolandica*. *P. brevicornis* (Lubb.), Brady, *l. c.* p. 10, from the English Channel.

Peltidiidæ.

Peltidium purpureum (Philippi), Brady, Intellectual Observer, vol. vii. p. 6, from Sunderland and Plymouth.

Hersillia apodiformis (Philippi), Brady, *l. c.* p. 6, from off Devon.

Alteutha depressa (Baird), Brady, *l. c.* p. 6, from Bewick Bay; *A. bopyroides* (Claus), Brady, *l. c.* p. 7, and Nat. Hist. Trans. of Northumb. and Durham, vol. i. p. 32, from the coast of Durham.

Alteutha norvegica, sp. n., Boeck, *l. c.* p. 48, from Norway. The author thinks that this may be *A. bopyroides* of Claus.

Zaus spinosus (Claus), Brady, Intell. Observer, vol. vii. p. 7, from near Sunderland; *Z. ovalis* (Goodsir), Brady, *l. c.* p. 7, from Banff.—*Z. spinosus* (Goodsir), Boeck, *l. c.* p. 40, from Hangesund.

Corycæidæ.

Monstrilla anglica (Lubbock), Brady, *l. c.*, from Britain.

Corycæus anglicus (Lubbock), Brady, *l. c.* p. 7, from Britain. Mr. Brady supposes these last two species to be referable to the Pœcilopoda or fish-parasites.

* The author gives this as *O. fasciatum*, evidently a typographical error.

Calanidæ.

Cetochilus septentrionalis (Goodsir), Brady, Nat. Hist. Trans. Northumberland and Durham, vol. i. p. 32, and Intellectual Observer, vol. vii. p. 7, from all round Britain.

Calanus anglicus (Lubbock), Brady, Intell. Observ. vii. p. 8; *C. finmarchicus* (Gunner), Boeck, Vidensk.-Selsk. Forhand. for 1864, p. 8, from Norway.

Calanus clausii, sp. n., Brady, Nat. Hist. Trans. North. & Durh. i. p. 33, pl. 1. figs. 1–11, 13, from Shetland, Durham, and the Channel Islands.

Paracalanus, g. n., Boeck, *l. c.* p. 8. This genus corresponds with *Calanus* of Claus. *Paracalanus parvus* (Claus), Boeck, *l. c.* p. 9, from Norway.

Clausia, g. n., Boeck, *l. c.* p. 9. Body long. Cephalon connected with the first somite of the pereion, anteriorly produced into a short and robust frontal horn. Fourth and fifth somites of the pereion joined together. Pleon formed as in *Calanus*. *C. elongata*, sp. n., Boeck, *l. c.* p. 10, from Christianiafjord.

Candace norvegica, sp. n., Boeck, *l. c.* p. 11, from Norway.

Euchæta prestandrea (Phil.), Boeck, *l. c.* p. 12, from Norway.

Dias longiremis (Lillj.), Boeck, *l. c.* p. 13, from Norway; Brady, Nat. Hist. Trans. North. & Durham. vol. i. p. 35, pl. i. fig 14, and pl. ii. fig. 11–18, and Intell. Observ. vol. vii. p. 8, pl. i. fig. 3, from Durham, Isle of Man, and Channel Islands.

Metridia, g. n., Boeck, *l. c.* p. 13. Resembling *Pleuroma* (Claus), from which it differs in having the first somite of the pereion not joined with the cephalon, and in having the inner ramus of the pereiopoda triarticulate. The characteristic pigment belonging to the maxillipeds is wanting in this genus, the males of which have but a simple eye. The species of this genus, with movement, give forth a phosphorescent light. *M. lucens*, sp. n., Boeck, *l. c.* p. 13; *M. armata*, sp. n., Boeck, *l. c.* p. 14, both from Norway.

Temora longicornis (Müller), Boeck, *l. c.* p. 15, from Christianiafjord. Dr. Boeck states this to be the same as *T. finmarchica* of Baird, but not *Monoculus finmarchicus* of Gunner. It is also the same as *Diaptomus longicaudatus* of Lubbock.—*T. finmarchica* (Gunner), Brady, Nat. Hist. Trans. North. & Durh. vol. i. p. 36, pl. i. fig. 15, and pl. ii. fig. 1–10, from Shetland and the Channel Islands; *T. velox* (Lillj.), Brady, *l. c.* p. 38, and Intell. Observ. vol. vii. p. 9, pl. i. fig. 5, from Cumbrae and Sunderland; and Boeck, *l. c.* p. 17, from Norway.

Temora inermis, sp. n., Boeck, *l. c.* p. 16, from Norway.

Ixias, g. n., Boeck, *l. c.* p. 17. This genus resembles *Leuckartia* (Claus), from which in some degree it is separated; it also resembles *Centropages* (Kröyer). The cephalon is separated from the first somite of the pereion, whereas the fourth and fifth are united. The pleon in the male has five somites, in the female three. *I. clavipes*, sp. n., Boeck, *l. c.* p. 18, from Norway.

Centropages (Kröyer) Dr. Boeck (*l. c.* p. 18) states to be synonymous with *Ichthyophorba* of Lilljeborg, and that *Centropages typicus* (Kröyer), Boeck, *l. c.* p. 19, from Norway, is synonymous with *Ichthyophorba denti-*

cornis (Claus), *C. hamatus* (Lilljeborg), Boeck, *l. c.* p. 20, from Christianafjord, is synonymous with *I. angustata* of Claus.

Ichthyophorba denticornis (Claus), Brady, Nat. Hist. Trans. North. & Durh. vol. i. p. 40, and Intell. Observ. vol. vii. p. 19, pl. i. fig. 4, from coast of Durham; *I. hamata* (Lillj.), Brady, Nat. Hist. Trans. North. & Durh. vol. i. p. 39, and Intell. Observ. vol. vii. p. 9, from Shetland, Durham, and the Channel Islands. (*Vide* the previous genus and species.)

PŒCILOPODA.

SIPHONOSTOMATA.

Prof. Kröyer (Nat. Tidssk. 1863–64, pp. 75–426, pls. 1–18) has described and figured ninety-six species of parasitic Crustacea which have accumulated in the museums of Copenhagen and Vienna since the publication of his treatise on these animals in the same journal in 1838. He adheres, in the present memoir, to the classification of Prof. Milne-Edwards; he however, thinks that Thorell's proposition (K. Vet.-Akad. vol. iii.) for a division of the Copepoda into, 1, those having free mandibles, *Gnathostoma*; 2, those without mandibles, *Pœcilostoma*; 3, those having mandibles enclosed within a tube, *Siphonostoma*, is based on sound principles. On the other hand, he thinks that the views of Steenstrup and Lütken, which are based on the number and arrangement of the ovisacs, are valueless and inconvenient, since the female often differs much from the male, which the author considers the more typical, and because several genera, such as *Notodelphys*, *Doropygus*, &c., resemble *Argulus* in being without external ovisacs, and yet by the structure of the mouth would group with the Siphonostomata.

The author appears to be opposed to the opinion of Zenker and Thorell (the memoir of the latter, having been published almost simultaneously with Kröyer's, could not have been known to him, *vide* 'Zool. Record,' vol. i. p. 302*), that *Argulus* should be arranged with the Branchiopoda; and discusses the homological relations of the cephalic appendages, contending that the anterior pair of hook-shaped organs, described by Milne-Edwards as the only pair of antennæ, is the second pair, and corresponds both in form and position with those of *Caligus*, which Milne-Edwards describes as the first pair of footjaws, but which Prof. Kröyer contends are the second pair of antennæ. The organs described by Milne-Edwards as the second pair d'appendices antenniformes in *Argulus*, Prof. Kröyer believes to be the first pair of ordinary feet [pereiopoda], since the suckers, both from their development and from comparative observations

* We take this opportunity of correcting an error in the 'Record' of the preceding year, p. 303, where the Recorder speaks of a pair of antennæ being "*fixed* organs;" this ought to be "organs of fixing."—Ed.

on *Gyropeltis*, are found to correspond with the second pair of feet in *Caligus*. The forked appendages in *Caligus* Prof. Kröyer contends are an aborted pair of feet; and what Milne-Edwards calls the ovate posterior bilobed abdomen and Thorell the hinder part of the animal, Prof. Kröyer contends is the homologue of that portion of the pereion which he calls the genital somite; and the rudimentary appendages beneath he considers to be the representatives of the pleon.

These conditions, together with the occasional absence in certain genera of the external ovisac, and the general presence of three eyes placed in a triangular relation to each other, in certain free Copepods (*Sapphirina*) as well as in the larvæ of these parasitic Crustacea, he thinks sufficient to preclude the separation of the *Argulidæ* from the rest of the Siphonostomata.

Argulidæ.

Prof. Heller (Reise Fregatte Novara) arranges this family into those which have—

1. Pedes maxillares primi paris in cotylos magnos transformati, aculeus ante rostrum porrectus.

2. Pedes maxillares primi paris subcheliformes, aculeus ante rostrum nullus.

Argulus salmonei, Kröy. (Naturhist. Tidssk. 1863, p. 89 & 102, tab. i. fig. 1 *a–f*, on a species of Salmon from Brazil; *A. chromidis*, Kr. *l. c.* pp. 92 & 102, tab. i. fig. 2 *a–c*, from Nicaragua; *A. fundulî*, Kr. *l. c.* p. 94 & 103, tab. ii. fig. 1 *a–e*, on a *Fundulus limbatus* from New Orleans; *A. nattereri* (Kollr.*), Kr. *l. c.* pp. 97 & 103, tab. i. fig. 3 *a–d*, on *Hydrocyon brevidens* (Cuv.) from Brazil; *A.* (*Agenor*) *dactylopteri*, Thorell, Œfvers. af k. Vet.-Akad. Förh. 1864, p. 609, tab. xvi., on *Dactylopterus volitans* (Linn.).

Gyropeltis (Hllr.), Kr. *l. c.* p. 163. This new genus corresponds much with *Argulus*, but, besides minor details, differs in having prehensile hooks instead of suckers, and no spines under the rostrum.

Gyropeltis longicauda (Hllr.), Kr. *l. c.* pp. 99 & 103, tab. i. fig. 4 *a–c*, on *Hydrocyon brevidens* from Brazil; *G. kollari* (Hllr.), Kr. p. 103.

Caligidæ.

Prof. Heller (Reise Novara, p. 160) tabulates the genera of this family according to the following outline:—

I. Rostrum breve, crassum; palpi non articulati, spiniformes. . *Caligidæ*.
II. Rostrum longum, angustum; palpi articulati, foliacei . . . . . *Pandaridæ*.

The first he divides into those which have—

1. Annuli abdominis [pleon] tres capite connati, &c.

* In the Danish description, p. 97, the name is given as one of Kollar's species; in the Latin, p. 103, it is ascribed to Heller. Hr. Thorell, Om tvenne Europeiska Argulider (K. Vet.-Akad. 1864), refers it to the latter.

2. Annuli abdominis duo anteriores capite connati, &c.

The second into those which have—

1. Lamina frontalis bene conspicua, &c.

2. Lamina frontalis nulla aut parum conspicua, &c.

These he again divides into several minor sections.

Caligus curtus (Müll.), Kröyer, *l. c.* p. 180; *C. productus* (Dana), Kr. *l. c.* pp. 138 & 175, tab. iii. fig. 4 *a–i*; *C. rapax* (M.-Edw.), Kr. *l. c.* p. 145; *C. minutus* (Müll.), Hell. *l. c.* p. 163, on *Labrax lupus* from the Adriatic.

Caligus. The following species are described as new:—*C. stromatei*, Kröyer, *l. c.* pp. 117 & 169, tab. iv. fig. 1 *a–f*, on a *Stromateus*; *C. trichiuri*, Kr. *l. c.* pp. 120 & 170, tab. iv. fig. 2 *a–f*, on a *Trichiurus haumala*; *C. hæmulonis*, Kr. *l. c.* pp. 122 & 170, tab. iv. fig. 3 *a–d*, on *Hæmulon elegans*; *C. pelamydis*, Kr. *l. c.* pp. 124 & 171, tab. iv. fig. 4 *a–g*, on *Pelamys sarda*; *C. cheilodactyli*, Kr. *l. c.* pp. 126 & 172, tab. iv. fig. 5 *a–d*, on a *Cheilodactylus* from Valparaiso; *C. alalongæ*, Kr. *l. c.* pp. 129 & 172, tab. iv. fig. 6 *a–c*, on *Thynnus alalonga*; *C. trachypteri* (Kollr.*), Kr. *l. c.* pp. 131 & 173, tab. iii. fig. 1 *a–f*, on a *Trachypterus* from Sicily; *C. monacanthi*, Kr. *l. c.* pp. 133 & 173, tab. iii. fig. 2 *a–e*, on a *Monacanthus* from the West Indies; *C. abbreviatus*, Kr. *l. c.* pp. 135 & 174, tab. iii. fig. 3 *a–h*, on *Labrus bergylta* from Bergen; *C. chorinemi* (Kollr.), Kr. *l. c.* pp. 141 & 175, tab. v. fig. 1 *a–h*, also Hell. *l. c.* p. 174, tab. xv. fig. 4, on *Chorinemus saliens* from Brazil; *C. carangis*, Kr. *l. c.* p. 142, tab. v. fig. 2 *a–e*, on a *Caranx* from East India; *C. lumpi*, Kr. *l. c.* pp. 147 & 177, tab. ii. fig. 2 *a–f*, on *Cyclopterus lumpus* from the Kattegat; *C. gurnardi*, Kr. *l. c.* pp. 150 & 177, tab. ii. fig. 3 *a–g*, on *Trigla gurnardus* from the Kattegat; *C. diaphanus* (Nordm.), Kr. *l. c.* pp. 153 & 177, tab. vii. fig. 5 *a–e*, on *Trigla gurnardus*; *C. belones*, Kr. *l. c.* pp. 155 & 178, tab. vii. fig. 1 *a–e*, on a Hornfish; *C. angustatus*, Kr. *l. c.* pp. 158 & 179, tab. vii. fig. 2 *a–d*, on a *Gadus*; *C. nanus*, Kr. *l. c.* pp. 160 & 180, tab. ii. fig. 4 *a–h*; *C. æglefini*, Kr. *l. c.* pp. 163 & 181, tab. vii. fig. 3 *a*, on *Gadus æglefinus*; *C. fallax*, Kr. *l. c.* pp. 166 & 182, tab. xvii. fig. 3 *a–i*, on a Codfish; *C. vexator*, Hell. Reise Novara, p. 165, tab. xv. fig. 2, on *Dentex vulgaris* from the Adriatic Sea; *C. infestans*, Hell. *l. c.* p. 167, tab. xiv. figs. 3–4, on a Scomber from the Indian Ocean; *C. trachynoti*, Hell. *l. c.* p. 169, tab. xv. fig. 1, on a species of *Trachynotus* near Brazil; *C. macrurus*, Hell. *l. c.* p. 170, tab. xv. fig. 2, on *Lobotes erate* from Java; *C. tenax*, Hell. *l. c.* p. 172, tab. xv. fig. 3, on *Caranx carangus*, from Brazil; *C. constrictus*, Hell. *l. c.* p. 175, tab. xv. fig. 5, on a *Stromateus* from the Indian Ocean; *C. torpedinis*, Hell. *l. c.* p. 176, tab. xv. fig. 6, on a Torpedo from the Indian Ocean; *C. irritans*, Hell. *l. c.* p. 177, tab. xv. figs. 7–8, on a *Serranus* from Brazil.

Synestius caliginus (Steenp. and Lütk.), Hell. *l. c.* p. 179, on a *Stromateus argenteus* from the Indian Ocean.

Parapetalus orientalis (Steenp. and Lütk.), *l. c.* p. 179, on a *Calichthys* from the Indian Ocean.

Caligodes, g. n., Heller, *l. c.* p. 180. Scutum orbiculare, minutum, antice lunulis instructum; annulus thoracis ultimus liber, elongatus; quartum pedum par simplex, triarticulatum, seta terminali unica armatum; annulus genitalis

* The references to Kollar are throughout to specimens named by him in the Imperial Museum of Vienna.

ad angulos posteriores in processus duos longos productus; cauda sat longa, postice paulo dilatata, appendices minimæ. *Caligodes laciniatus* (Kollr.), Hell. *l. c.* p. 180, on a Belone from the Indian Ocean. (*Vide* genus *Scienophilus*, infrà.)

Lepeophtheirus nordmanni (Edw.), Hell. *l. c.* p. 180, tab. xvi. figs. 1 & 2, on *Orthagoniscus mola* from the Mediterranean Sea.

Lepeophtheirus. The following new species have been described:—*L. monacanthus*, Hell. *l. c.* p. 183, tab. xvi. fig. 3, on a species of *Pimelodus* from Brazil; *L. brachyurus*, Hell. *l. c.* p. 185, tab. xvi. fig. 4, on *Tetraodon calamariæ* from Java; *L. grohmanni*, Kr. Naturhist. Tidssk. 1863, pp. 182 & 214, tab. v. fig. 3 *a–i*, on *Pleuronectes grohmanni*; *L. heckelii*, Kr. *l. c.* pp. 184 & 221, tab. vii. fig. 4 *a–h*, on *Ephippus gigas* from Brazil; *L. pectoralis* (Müll), Kr. *l. c.* p. 215; *L. quadratus*, Kr. *l. c.* pp. 187 & 216, tab. vii. fig. 7 *a–f*, on *Bagrus argenteus* from China; *L. cossyphi*, Kr. *l. c.* pp. 189 & 217, tab. vii. fig. 6 *a–e*, on *Cossyphus bodianus* from West India; *L. rhombi*, Kr. *l. c.* pp. 193 & 217, tab. v. fig. 5 *a–i*, from the Kattegat; *L. gibbus*, Kr. *l. c.* pp. 195 & 218, tab. xvii. fig. 2 *a–i*, on a Rhombus; *L. gracilescens*, Kr. *l. c.* pp. 198 & 219, tab. vi. fig. 2 *a–i*, on *Rhombus vulgaris*; *L. intercurrens*, Kr. *l. c.* pp. 200 & 220, tab. v. fig. 4 *a–g*, tab. vi. fig. 1, on a Rhombus (Pigvarren); *L. crabbo*, Kr. *l. c.* pp. 203 & 221, tab. vi. fig. 3 *a–h*, on a Flounder from the Kattegat; *L. hippoglossi*, Kr. *l. c.* p. 205, tab. vi. fig. 5 *a–d*; *L. appendiculatus*, Kr. *l. c.* p. 207, tab. vi. fig. 4 *a–i*, on *Raia clavata*; *L. robustus*, Kr. *l. c.* p. 209, tab. vi. fig. 6 *a–c*, on a Ray from Greenland; *L. salmonis*, Kr. *l. c.* p. 211, tab. xvii. fig. 1 *a, b*, from the Kattegat; *L. sturionis*, Kr. *l. c.* p. 213.

Anuretus, g. n., Heller, Reise Novara, p. 186. *Lepeophtheiro* similis, sed cauda destitutus, appendicibus duabus, a margine posteriore annuli genitalis ortis, minimis. *A. heckelii* (Kollr.), Hell. *l. c.* p. 186, on a species of *Ephippus* from Brazil. (Vide *Lepeophtheirus heckelii*, suprà.)

Trebius caudatus, sp. n., Kr. *l. c.* p. 223, tab. x. fig. 1 *a–k*, on *Galeus vulgaris*.

Scienophilus laciniatus (Kllr.), Kr. *l. c.* p. 227, tab. viii. fig. 3 *a–e*, on a species of *Belone*.

Arneus thynni (Kllr.), Kr. *l. c.* p. 231, tab. viii. fig. 5 *a–g*, on a Tunny.

Hermilius, g. n., Hell. *l. c.* p. 186. (Abbreviated description:) Cephalothorax [cephalon and percion] non divisus . . . . . annulo abdominis [pleon] ultimo solummodo libero. Antennæ anteriores biarticulatæ, antennæ posteriores triarticulatæ. Pedes . . . . . uti in *Caligo* formati. Appendices caudales setis brevissimis. . . . . *H. pyriventris*, sp. n., Hell. *l. c.* p. 187, tab. xviii. fig. 1, on *Arius acutus* from Java.

Euryphorus nympha (Steenp. & Lütk.), Hell. *l. c.* p. 189, on a species of *Coryphæna* from the Indian Ocean.

Elytrophora brachyptera (Gerstaecker), Hell. *l. c.* p. 189, tab. xvii., on *Thynnus vulgaris* from the Mediterranean Sea.

Norion, g. n., Nordm., *l. c.* p. 488. *Male* (¼ of an inch). Cephalon small, round, short. Percion large, ovate; lateral lobes anteriorly projecting beyond the cephalon: anterior antennæ short, multiarticulate; posterior strong, sharp-pointed, biarticulate, prehensile: anterior oral appendages feeble; posterior biarticulate, terminating in a sharp hook.

Alebion, g. n., Kr. *l. c.* p. 242. (Abbreviated description:) Rostrum formam præbens inter Caliginorum et Pandarinorum ferme intermediam ..... Laciniæ duæ a margine scuti postico protenduntur. Annulus thoracicus sextus elytris instructus ..... *A. carchariæ*, Kr. *l. c.* p. 239, tab. xii. fig. 1 *a, b.*

Dr. Nordmann has published (Bull. Soc. Imp. de Moscou, vol. xxxvii. p. 461) a memoir on the parasitic Copepods, in which, after giving a list of all the works on the subject consulted, he classifies the genera under two heads—

A. Copepoda parasita filis ovigeris, ovulis uniseriatis.
B. Copepoda parasita sacculis ovigeris, ovulis pluriseriatis.

These divisions he again divides into several smaller groups, and then describes several new genera and species.

Lernanthropus musca (Blainv.), Nord. *l. c.* p. 500, on a *Diodon* from Manilla; *L. paradoxus* (Nord.), *l. c.* p. 500, on a species of *Mugil*; *L. pupa* (Burmeister), Nord. *l. c.* p. 500, on a *Platax* from Brazil; *L. krögeri* (Van Ben.), Nord. *l. c.* p. 508, tab. vii. figs. 5–8, on *Labrax lupus*; *L. gisleri* (Van Ben.), Nord. *l. c.* p. 501, on *Sciæna aquila*; *L. petersi* (Van Ben.), Nord. *l. c.* p. 510, tab. viii., on *Serranus goliath* from Mozambique; *L. königii* (Strp. & Lütk.), Nord. *l. c.* p. 501, on *Stromatias paru* from Tranquebar.

Lernanthropus. The following species have been described as new:—*L. tenuinçkii*, Nordm. *l. c.* p. 501, tab. vi. figs. 11–13, on *Saurus lacerta* from East India; *L. holmbergii*, Nordm. *l. c.* p. 505, tab. vii. figs. 1–4, from Honolulu; *L. atrox*, Hell. Reise Freg. Novara, p. 221, tab. xxi. fig. 3, on *Pagrus guttulatus* from New Holland; *L. lativentris*, Hell. *l. c.* p. 223, tab. xxi. fig. 4, and tab. xxii. fig. 1, on *Mesoprion phaiotæniatus* from Java; *L. nobilis*, Hell. *l. c.* p. 225, tab. xxii. fig. 2, on *Temnodon saltatorius* from Brazil; *L. trigonocephalus*, Hell. *l. c.* p. 226, tab. xxii. fig. 3, on *Serranus scriba* from the Mediterranean; *L. larvatus*, Hell. *l. c.* p. 227, tab. xxii. figs. 4 & 5, on *Priacanthus ocellatus* from the Indian Ocean; *L. angulatus*, Kr. Natur. Tidssk. 1863, pp. 270 & 284, tab. ix. fig. 1 *a–q*, on a *Serranus* from the West Indies; *L. pagelli*, Kr. *l. c.* pp. 274 & 284, tab. ix. fig. 2 *a–g*, on *Pagellus penna*; *L. scribæ*, Kr. *l. c.* pp. 277 & 285, tab. ix. fig. 3 *a–g*, on *Serranus scriba*; *L. belones* (Kollr.), Kr. *l. c.* pp. 279 & 286, tab. iv. *a–e*, on *Belone almeida* from Brazil; *L. giganteus* (Kollr.), Kr. *l. c.* pp. 280 & 286, tab. viii. fig. 1 *a–e*, on *Caranx carangus*; *L. pagodus* (Kollr.), Kr. *l. c.* pp. 282 & 286, tab. viii. fig. 2 *a–f*, on *Eques balteatus* from Brazil.

Peniculus fistula, Nordm. *l. c.* p. 515, on *Zeus aper* from the Mediterranean; *P. calamus*, Nordm. *l. c.* p. 515, from Honolulu.

Nesippus, g. n., Heller, Reise Novara, p. 193. Primus solummodo articulus abdominis cephalothorace junctus, articuli duo insequentes inter se connati, articulus quartus liber. ..... With the following new species:—

Nesippus orientalis, Hell. *l. c.* p. 194, tab. xviii. figs. 2 & 3, on *Prionodon menisorrah* from Java; *N. crypturus*, Hell. *l. c.* p. 196, tab. xviii. fig. 4, on *Zygæna malleus* from Java.

Echthrogaleus braccatus (Dana), Hell. *l. c.* p. 197, tab. xx. fig. 3, from Auckland.

Dynematura latifolia (Steenp. & Lütk.), Hell. *l. c.* p. 199, on a Dogfish from the Mediterranean; *D. lamnæ* (Johnst.), Kr. *l. c.* p. 253, vix *producta* (Müll.), on *Lamna cornubica* from the Mediterranean.

Dynematura serrata, sp. n., Kr. *l. c.* p. 250, tab. viii. fig. 4 *a–i*; *D. indistincta*, sp. n., Kr. *l. c.* p. 257, on a Dogfish from Valparaiso.

Demoleus, g. n., Hell. *l. c.* p. 194. Cephalothorax [cephalon and pereion] postice emarginatus, annulis duobus insequentibus liberis, annulo quarto (in femina) alato; lamina frontalis bene conspicua, antennis primi paris sub illa pro parte celatis, biarticulatis. ..... Annulus genitalis elongatus, mas *Nogagi* formam præbens.

Demoleus paradoxus (Otto), Hell. *l. c.* p. 199, tab. xix. fig. 3, on a Dogfish from the Mediterranean.

Pandarus bicolor (Leach), Kr. *l. c.* p. 261. Prof. Kröyer thinks that *P. fissifrons* (Edw.) is a variety of this species. *P. dentatus* (Edw.), Hell. *l. c.* p. 206, on a Dogfish from Auckland.

Pandarus armatus, sp. n., Hell. *l. c.* p. 202, tab. xix. fig. 4, on *Scyllium africanum* from the Cape of Good Hope; *P. lugubris*, sp. n., Hell. *l. c.* p. 205, tab. xx. figs. 1 & 2, on a Dogfish from the Mediterranean.

Nogagus latreillii (Leach), Kr. *l. c.* p. 242, tab. x. fig. 2 *a–f*, from the Atlantic.

Nogagus elongatus, sp. n., Hell. *l. c.* p. 206, tab. xx. fig. 5, on a Shark from Auckland; *N. cælebs*, sp. n., Hell. *l. c.* p. 208, tab. xx. fig. 4, from the Mediterranean; *N. errans* sp. n., Kr. *l. c.* p. 247, tab. x. fig. 3 *a–h*.

Cecropsina, g. n., Hell. *l. c.* p. 209. Cephalothorax [cephalon and pereion] brevis, obcordatus; lamina frontalis nulla; ..... annuli duo insequentes inter se coaliti; annulus quartus liber, breviter alatus .....

Cecropsina glabra, sp. n., Hell. *l. c.* p. 209, tab. xix. fig. 1 & 2, from the Adriatic.

Læmargus muricatus, Kr. *l. c.* p. 262.

Cecrops latreillii (Leach), Kr. *l. c.* p. 264.

Notodelphidæ.

The genera constituting this family Prof. Heller has tabulated under the name of *Ergasilidæ*, in Reise Novara, p. 150, under two heads:—

1. Corpus in processum lateralem non productum.
This section he subdivides into groups and subgroups.
2. Corpus in processum lateralem utrinque productum.
This section comprises but one genus, *Nicothoë* of Milne-Edwards.

Ergasilus sieboldii (Nordm.), Kr. Naturhist. Tidssk. 1863, p. 311, tab. xiii. fig. 2 *a, b.*

New species:—

Ergasilus funduli, Kr. *l. c.* pp. 302 & 312, tab. xi. fig. 1 *a–f*, on *Fundulus limbatus* from New Orleans; *E. labracis*, Kr. *l. c.* p. 303, tab. xi. fig. 2 *a–c*, on *Labrax lineatus* from Baltimore; *E. longimanus*, Kr. *l. c.* p. 305, tab. xiii. fig. 1 *a, b*, from Brazil; *E. lizæ*, Kr. *l. c.* p. 306, on *Mugil liza* from New Orleans; *E. gasterostei*, Kr. *l. c.* p. 307, tab. xii. fig. 2 *a–h*, on *Gasterosteus aculeatus*

atus; *E. peregrinus*, Heller, *l. c.* p. 152, tab. xiii. fig. 1, on *Perca chuatsi* from Shanghai.

Bomoculus chatoessi, Kr. *l. c.* p. 288, tab. xi. fig. 5 *a–i*, on a *Chatoessus* from East India; *B. scomberesocis*, Kr. *l. c.* p. 291, tab. x. fig. 5 *a, b*, on a *Scomberesox* from the Atlantic; *B. ardeolæ*, Kr. *l. c.* p. 294, tab. xi. fig. 3 *a–e*, on a *Belone ardeola* from New Orleans; *B. glyphisodontis*, Kr. *l. c.* p. 297, tab. xi. fig. 4 *a–h*, on *Glyphisodon saxatilis* from Nicaragua; *B. megaceros*, Heller, *l. c.* p. 153, tab. xiii. fig. 1, on *Stromateus niger* from the Indian Ocean; *B. gracilis*, Heller, *l. c.* p. 157, tab. xiii. fig. 3, on *Zygæna malleus*, from Java.

Dichelestidæ.

Professor Heller (Reise Freg. Novara, p. 212) tabulates this family under two heads:—

I. Corpus appendicibus foliaceis in superficie nullis.
II. Corpus appendicibus duabus foliaceis supra ornatum.

The second section is represented by the single genus *Anthosoma* of Leach.

Eudactylina aspera, sp. n., Heller, *l. c.* p. 213, tab. xxi. fig. 1, on *Carcharias pleurotænia* from Java.

Clavella tenuis, sp. n., Heller, *l. c.* p. 215, tab. xxiii. fig. 1, on a species of *Monocentrus* from the Philippine Islands.

Cycnus gracilis (Edw.), Heller, *l. c.* p. 216, tab. xxii. fig. 6, from the Adriatic; *C. budegassæ*, sp. n., Kr. Natur. Tidssk. 1864, p. 344, tab. xii. fig. 3 *a, b*, on *Lophius budegassa* from the Mediterranean.

Pseudocycnus, g. n., Heller, *l. c.* p. 218, resembles *Cycnus*, except: Antennæ anteriores triarticulatæ, . . . pedibus maxillaribus secundi paris validis biarticulatis, unco curvato . . . . Pedes abdominales [pereiopoda] breves, illi secundi paris biremes, reliqui omnes uniremes . . . . *Ps. appendiculatus*, Heller, *l. c.* p. 218, tab. xxii. fig. 7, on a *Coryphæna* from the Atlantic.

Nemesis mediterranea (Roux), Heller, *l. c.* p. 220, tab. xxi. fig. 2, on a Dog-fish from the Mediterranean.

Chondracanthidæ.

In Reise Novara, p. 228, Prof. Heller tabulates the several genera of this family into the following two divisions:—

I. Corpus non distincte articulatum.
II. Corpus distincte articulatum.

Prof. Kröyer (Naturhist. Tidssk. 1864, p. 328) arranges the genera of this family under two divisions—

A. Collum nullum vel indistinctum.
B. Regio antennalis postice in collum longum protracta.

Chondracanthus radiatus (Fabr.), Kröy. *l. c.* p. 325 & 331, tab. xiv. fig. 1 *a, b*, on *Coryphæna rupestris* from Greenland; *C. merlangi* (Holt.), Kröy. *l. c.* p. 331; *C. gibbosus*, Kröy. *l. c.* p. 331.

The following species are new:—

Chondracanthus brevicollis (Kllr.), Kröy. *l. c.* pp. 320 & 328, tab. xiii. fig. 3 *a–d*, from the Indian Ocean; *C. crassicornis*, Kröy. *l. c.* p. 329; *C. cornutus*, (Müll.), Kröy. *l. c.* pp. 323 & 329, tab. xiii. fig. 7 *a–d*; *C. ophidii*, Kröy. *l. c.* pp. 318 & 329, tab. xii. fig. 6 *a, b*, on an *Ophidium* from Valparaiso; *C. sicyasis*, Kröy. *l. c.* pp. 318 & 329, tab. xiii. fig. 4 *a–d*, on a Sicyasis from Valparaiso; *C. limandæ*, Kröy. *l. c.* pp. 322 & 330, tab. xiv. fig. 2 *a, b*, on *Platessa limanda* from the Kattegat; *C. flurææ*, Kröy. *l. c.* pp. 323 & 330, tab. xiii. fig. 6 *a, b*, on *Platessa limandoides* from near the Island Flúra, Kattegat; *C. soleæ*, Kröy. *l. c.* p. 330; *C. psetti*, Kröy. *l. c.* pp. 317 & 331, tab. xiii. fig. 5 *a–d*, from Valparaiso; *C. nodosus* (Müll.), Kröy. *l. c.* p. 332; *C. triglæ*, Kröy. *l. c.* p. 332; *C. angustatus*, Heller, *l. c.* p. 230, tab. xxiii. fig. 2, on *Uranoscopus scaber* from the Mediterranean; *C. alatus*, Heller, *l. c.* p. 231, tab. xxiii. fig. 3, on *Hippoglossus nalaka* from Singapore; *C. horridus*, Heller, *l. c.* p. 232, tab. xxiii. fig. 4, on *Gobius fozzo* from the Mediterranean.

Philichthys xiphiæ (Stp.). Bergoe gives an elaborate description of the structure and habits of the animal. See p. 306.

Diocus, g. n., Kröy. *l. c.* p. 333. This genus appears to be very closely allied to *Chondracanthus*, but, according to the author's description, has the first pair of antennæ longer in the male and in the young female. It is founded on *Lernæa gobina* of Fabricius.

Blias, g. n., Kröy. *l. c.* p. 336. Closely allied to *Chondracanthus*, particularly the male, except that it is very small. The female differs in having the structure more generally indistinct and aborted. *B. prionoti* (Klh.), Kröy. *l. c.* p. 336, tab. xii. fig. 5 *a–f*, on *Prionotus punctatus* from Brazil.

Trichthacerus, g. n., Kröy. *l. c.* p. 338. The *male* of this genus appears to agree with that of *Chondracanthus*. The *female* nearly resembles that of *Blias*, but may be easily recognized by the clavate horns by which the animal attaches itself. *T. peristedii*, Kröy. *l. c.* tab. xiv. fig. 7 *a–f*, on a *Peristedius* from Rio Janeiro.

Penicillus clavatus, Kröy. *l. c.* p. 340, tab. xiv. fig. 8 *a–g*, on *Sebastes norvegicus* from Greenland; *P. furcatus* (Kllr.), Kröy. *l. c.* p. 342, tab. xii. fig. 4 *a, b*, on a *Holacanthus* from the Mauritius.

Strabax, g. n., Nordman, *l. c.* p. 477. *Male.* $\frac{1}{12}$th of an inch. Carapace very nearly half the animal. Anterior antennæ minute, feeble, multiarticulate; posterior short, robust, biarticulate, prehensile. Oral appendages robust, the rest rudimentary; very like the male in *Chondracanthus*. *Female.* $\frac{3}{4}$ths of an inch. Cephalon quadrate, having a spherical lobe at each angle and a pair on the central ventral surface, just posterior to the mouth. Pereion twice as long as the cephalon, terminating in eight short dactyloid appendages, besides a central uniarticulate somite carrying the *receptacula seminis*. *St. monstrosus*, sp. n., Nordm. *l. c.* p. 478, tab. v. fig. 1–10, on the tongue of *Scorpæna porcus*.

Pseudulus lingualis, sp. n., Nordm. *l. c.* p. 484, tab. v. fig. 11.

Penella sultangi, sp. n., Nordm. *l. c.* p. 485, tab. v. figs. 12–16, figs. 13 & 14 representing a variety, *P. sigmoidea*. The former was found in the mouth of *Caranx ascensionis*; the variety on the lips of *Scorpæna buffonia*.

Notopterophorus. M. Hesse (Ann. des Sc. Nat. vol. iii. p. 221) adds a few observations to the knowledge of *N. papilio* (Hesse), and describes *N. bombyx*, sp. n., Hesse, *l. c.* p. 223, found in the interior of *Phallusia intestinalis*.

The same author (Ann. Sc. Nat. vol. iv.) describes

Botryllophilus virescens, Hesse, *l. c.* p. 223, found in a variety of *Botryllus constellatus* attached to *Fucus*; *B. pallidus*, sp. n., Hesse, *l. c.* p. 224, found in a *Botryllus*.

M. Hesse has arranged together several genera in consequence of the similarity of their modes of existence and the relation that they bear to one another in structure. Upon this latter feature he has classified them as

A. The pleon terminating in two sharp-pointed appendages.
B. The pleon terminating in two flat appendages.
C. The pleon terminating in a broad flat process.

Adranesius, g. n., Hesse, *l. c.* p. 254. Cephalon small, triangular; eye median; antennæ short; pereion cylindrical, narrowing to the extremities; somites distinct, four; pleon nearly as long as the pereion, terminating in two sharp appendages. *Adranesius ruber*, sp. n., Hesse, *l. c.* p. 229, pl. vi. figs. 1 D–4 D *, found in a *Polyclinum constellatum*.

Mychophilus, g. n., Hesse, *l. c.* p. 255. Cephalon small, triangular, provided with two short stout antennæ; eye median; pereion cylindrical, tumid, narrowing to the extremities; pleon longer than the pereion, terminating in two sharp-pointed appendages. *M. roseus* ♀, sp. n., Hesse, *l. c.* p. 232, pl. vi. figs. 1–8, and *M. pachygaster* ♀, sp. n., Hesse, *l. c.* p. 235, found in compound Ascidians.

Narcodes, g. n., Hesse, *l. c.* p. 255. Cephalon tolerably large; eye median; antennæ short and stout; pereion cylindrical, long, broader dorsally than ventrally; somites distinct; pleon small, conical, terminating in two long sharp appendages. *Narcodes macrostoma*, Hesse, *l. c.* p. 236, pl. vi. figs. 1 A–5 A, found in a compound Ascidian.

Cryptopodus, g. n., Hesse, *l. c.* p. 255. Cephalon small, triangular, provided with a pair of tolerably large round or flat antennæ, accompanied at their base by a flat process; eye median; pereion long, cylindrical; somites four, the last twice the size of the others, and provided with lateral flat processes; pleon straight, conical, and cylindrical, divided or not into four somites, of which the last is flat and bifurcate. *Cryptopodus flavus* ♀, sp. n., Hesse, *l. c.* p. 237, pl. vii.† figs. 2 A–2 I, in a yellowish-white compound Ascidian; *C. viridis* ♀, sp. n., Hesse, *l. c.* p. 239, pl. vii. figs. 3 A–3 H, found in a green compound Ascidian.

Biocryptus, g. n., Hesse, *l. c.* p. 256. Cephalon large, round; eye median; antennæ none or rudimentary; pereion stout, short, cylindrical; somites indistinct; posterior somite inferiorly developed to form a protection to the base of the ovisacs; pleon as broad as the pereion, truncated, furnished with two small oval appendages; pereiopoda supporting a secondary appendage (pattes thoraciques doubles). *Biocryptus roseus* ♀, Hesse, *l. c.* 242, pl. vi. figs. 1 B–10 B, found in a compound Ascidian; *B. flavus*, Hesse, *l. c.* p. 244, pl. vi. figs. 1 C–10 C, found in a compound Ascidian. The author says that these species have a close affinity to *Intercola fulgens* of Van Beneden.

* In the reference in the text 1 P is misprinted for 1 D.
† The reference in the text is misprinted "Pl. 6."

Hypnodes, g. n., Hesse, *l. c.* p. 256. Cephalon large, triangular; eye median; antennæ broad and flat; pereion cylindrical, thick, and short; somites distinct, subequal; pleon small, terminating in a double flat extremity; the rest much as in the previous genus. *Hypnodes flavus* ♀, Hesse, *l. c.* p. 247, pl. vii. figs. 1–10, found in an Ascidian.

It is near this position that we think the following genera must be placed :—

Psilomallus hippolytes, Kröy. Naturhisk. Tidssk. 1864, p. 410, on *Hippolyte aculeata*; and

Donusa, g. n., Nordm. *l. c.* p. 494. *Female.* $\frac{4}{5}$ths of an inch. Long and narrow, consisting of nine somites besides the cephalon, which, with the anterior somite of the pereion, forms a triangle of which the apex is anterior; pleon consists of three somites, of which the last supports a pair of biarticulate appendages. *Donusa clymenicola*, sp. n., Nordm. *l. c.* p. 497, tab. vi. figs. 4–6, from the west coast of Sweden.

Lygephile, g. n., Hesse, *l. c.* p. 256. Cephalon triangular, large; eye median; antennæ multiarticulate; pereion long, flat below, arched above; somites distinct, the posterior provided with two lateral flat processes; pleon short, cylindrical, somites apparent, terminating in a rounded, deeply-cleft plate. *Lygephile violaceus* ♀, Hesse, *l. c.* p. 249, pl. vii. figs. 1 A–19, found in a compound Ascidian.

Lernæopodidæ.

Prof. Heller (Reise Fregatte Novara, p. 238) has tabulated the genera of this family under two heads—

I. Corpus pedibus maxillaribus instructum.
II. Corpus pedibus maxillaribus destitutum.

each of which are again subdivided.

Achtheres pimelodi, Kröy. Natur. Tidssk. pp. 346 & 349, tab. xvii. figs. 5 *a*, *b*, on *Pimelodus maculatus*, from Cincinnati; *A. lacæ* (Kllr.), Kröy. *l. c.* pp. 348 & 349, tab. xvii. fig. 6, on *Perca loca* from North America.

Lernæopoda salmonea (Linn.), Kröy. *l. c.* pp. 349 & 351, tab. xiv. fig. 3 *a–f*; *L. sebastis*, Kröy. *l. c.* p. 353, tab. xvii. fig. 7 *a–h*, from Greenland; *L. carpionis*, Kröy. *l. c.* p. 351, tab. xiv. fig. 4 *a–g*.

Charopinus, g. n., Kröy. *l. c.* p. 361. *Femina.* Caput [cephalon] mediocre, subconicum vel obclavatum, collo nullo vel brevi. Pedes et anterioris paris subcheliformes et posterioris paris (vel brachia) dorso animalis affixi; abdomen (pleon) . . . . rudimentarium. . . . . *Charopinus dalmanni* (Retz.), Kröy. *l. c.* pp. 354 & 462, tab. xiv. fig. 6 *a–g*; *C. ramosus*, Kröy. *l. c.* pp. 358 & 362, on *Raia clavata* from Denmark.

Thysanote, g. n., Kröy. *l. c.* p. 362. Caput [cephalon] collumque brevia, crassa . . . . . Brachia brevia, crassa, infra et ad latera quatuor fimbriarum longarum . . . . Abdomen . . . . deest. . . . *Thysanote pomacanthi*, sp. n., Kröy. *l. c.* p. 362, on *Pomacanthus paru* from the West Indies.

Brachiella rostrata, Kröy. *l. c.* p. 364, tab. xvii. fig. 8 *a–f*, on *Hippoglossus maximus* from the Kattegat and on *H. pinguis* from Greenland; *B. insidiosa*, Heller, *l. c.* p. 239, tab. xxiv. fig. 1, on a species of *Gadus* from the Adriatic;

B. fimbriata, Heller, *l. c.* p. 240, tab. xxiv. fig. 2, on *Serranus sexfasciatus* from Batavia; *B. lobiventris*, Heller, *l. c.* p. 241, tab. xxiv. fig. 3, on *Rhypticus saponaceus* from Brazil.

Anchorella fallax, Heller, *l. c.* p. 241, tab. xxiv. figs. 4 & 5, on *Dentex vulgaris* from the Mediterranean; *A. canthari*, Heller, *l. c.* p. 242, tab. xxiv. fig. 6, on *Cantharus bleekeri* from the Cape of Good Hope; *A. hostilis*, Heller, *l. c.* p. 243, tab. xxiv. fig. 7, on *Umbrina cirrhosa* from the Mediterranean; *A. sciænophila*, Heller, *l. c.* p. 243, tab. xxiv. fig. 8, on a *Sciæna* from the Indian Ocean.

Prof. Kröyer (Naturist. Tidssk. p. 383) describes the following species:—

A. Abdomine nullo, vel indistincto.

Anchorella emarginata, Kröy. p. 383; *A. ovalis*, Kröy. p. 383; *A. rugosa*, Kröy. p. 383; *A. stellata*, Kröy. p. 383; *A. angulata*, Kröy. pp. 367 & 383, tab. xv. fig. 3, on a *Mugil* from Central America; *A. lizæ*, Kröy. pp. 368 & 383, tab. xvi. fig. 11 *a–c*, on *Mugil liza* from New Orleans.

B. Abdomine bene distincto.

Anchorella pagelli, Kröy. pp. 369 & 384, tab. xvi. figs. 3 *a*, *b*, on a *Pagellus* from the Mediterranean; *A. denticis*, Kröy. pp. 370 & 384, tab. xvi. fig. 4 *a*, *b*, on *Dentex argyrozona*, and also Heller, *l. c.* p. 243, on *Dentex rupestris* from the Cape of Good Hope; *A. bergyltæ*, Kröy. pp. 371 & 384, tab. xvi. fig. 5 *a–c*, on *Labrus maculatus*; *A. stichæi*, Kröy. pp. 372 & 384, tab. xvi. fig. 1 *a–g*, on *Stichæus punctatus* from Greenland; *A. agilis*, Kröy. pp. 374 & 384, tab. xvi. fig. 2 *a*, *b*, on *Gadus agilis* from Greenland; *A. unciata* (Müll.), Kröy. p. 384; *A. pagri*, Kröy. pp. 375 & 385, tab. xvi. fig. 9 *a–e*, on *Pagrus vulgaris* from the Mediterranean; *A. dilatata*, Kröy. pp. 376 & 385, tab. xv. fig. 2 *a–f*, on a *Cheilodactylus* from the Cape of Good Hope; *A. urolophi*, Kröy. pp. 378 & 385, tab. xvi. fig. 10 *a–d*, on a *Urolophus* from Mexico; *A. paradoxa* (Van Beneden), Kröy. p. 385; *A. appendiculata*, Kröy. pp. 379 & 385, tab. xvi. fig. 7 *a–d*, from Valparaiso; *A. appendiculosa*, Kröy. pp. 380 & 386, tab. xvi. fig. 6 *a–e*, from New Orleans; *A. laciniata*, Kröy. pp. 382 & 386, tab. xvi. fig. 8 *a*, *b*, on *Acanthurus chirurgus* from the West Indies.

Lernæidæ.

Prof. Heller (Reise Freg. Novara, p. 244) has divided this family into two great divisions—

I. Fœminæ sacculis ovigeris instructæ.
II. Fœminæ filis ovigeris instructæ.

These he again subdivides.

Lernæocera. The following species are described as new:—*L. lagenula*, Heller, *l. c.* p. 246, tab. xxiv. fig. 9, on an undescribed fish from Brazil; *L. catostomi*, Kröy. *l. c.* p. 395, tab. xviii. fig. 4 *a–e*, on *Catostomus macrolepidotus* from St. Louis; *L. pomotidis*, Kröy. *l. c.* p. 397, tab. xv. fig. 5 *a–h*, on a *Pomotis* from New Orleans; *L. phoxinaëa* (Kllr.), Kröy. *l. c.* p. 399, tab. xviii. fig. 3 *a–d*, on *Phoxinus marsilii*.

Penella crassicornis (Stnst. & Lütk.), Heller, *l. c.* p. 247, from the Mediterranean.

Peniculus fistula (Nordm.), Heller, *l. c.* p. 248, tab. xxv. fig. 3, from the Mediterranean.

Peniculus clavatus, sp. n., Kröy. *l. c.* p. 340, tab. xiv. figs. 8 *a–9*, on *Sebastes norvegicus* from Greenland; *P. furcatus*, sp. n. (Kllr.), Kröy. *l. c.* p. 342, tab. xiv. fig. 4 *a–h*, on a *Holacanthus* from the Mauritius.

Lernæonema monilaris (Edw.), Heller, *l. c.* p. 248, tab. xxv. fig. 4, on a *Clupea* from the Mediterranean.

Lernæonema gracilis, sp. n., Heller, *l. c.* p. 249, tab. xxv. fig. 5, on *Lichia amia* from the Adriatic.

Peroderma, g. n., Heller, *l. c.* p. 250. Corpus* [entire animal] elongatum, versus partem anteriorem processu laterali instructum . . . . ad apicem caput [cephalon] cum ore rostriformi . . . . Pedes abdominales [pereiopoda] primi et quarti paris rudimentarii . . . . Fila ovigera longissima attenuata. *P. cylindricum*, sp. n., Heller, *l. c.* p. 250, tab. xxv. fig. 6, on a Sardine from the Mediterranean.

Lernæolophus, g. n., Heller, *l. c.* p. 251. Corpus [entire animal] durum, corneum. Capite [cephalon] rotundato, cornibus tribus simplicibus aut ramosis munito. Antennis rudimentariis. Abdomen [pereion] elongatum, antice attenuatum . . . . postice incrassatum, ... et appendicibus penniformibus instructum. Pedum abdominalium (pereiopoda) quatuor paria. . . . . *Lernæolophus sultanus* (Edw.), Heller, *l. c.* p. 251, tab. xxv. fig. 7, on *Serranus scriba* and *cabrilla* from the Adriatic and Mediterranean seas.

Medesicaste, g. n., Kröy. *l. c.* p. 386. *Femina.* Animal constat capite [cephalon] minuto; collo elongato, gracili, ... nullis vero pedibus; parte genitali [posterior somites of pereion] lata, depressa, disciformi, nodosa; cauda rudimentaria . . . . . *Mas* a maribus generis *Chondracanthi* habitu non valde distans constat cephalothorace [cephalon and pereion] biannulato, cujus annulus anterior minor antennas portat. *Medesicaste triglarum*, sp. n., Kröy. *l. c.* p. 386, on *Trigla hirundo* from the Kattegat.

Echetus, g. n., Kröy. *l. c.* p. 389. Animal constans capite . . . .? collo longissimo, ... parte genitali, tumida, ovali; cauda [pleon] longissima, crassiore, ... appendicibus rudimentariis. *Echetus typicus*, sp. n., Kröy. *l. c.* p. 389, tab. xv. fig. 6 *a–c*, on *Corvina unimaculata* from New Orleans.

Therodamas, g. n., Kröy. *l. c.* p. 390. . . . . collo constanter longissimo tuberculoque terminali caput [cephalon] imitante . . . . . annulo denique caudali [pleon] appendicibus minutis setigeris instructo. *Th. serrani*, sp. n., Kröy. *l. c.* p. 390, tab. xv. fig. 4 *a*, *b*, on a *Serranus* from the West Indies.

Lernæa hemiramphi, sp. n., Kröy. *l. c.* p. 392, tab. xv. fig. 7 *a–f*, on a *Hemiramphus* from the West Indies; *L. rigida*, sp. n., Kröy. *l. c.* p. 394, tab. xviii. fig. 2 *a*, *b*, from Valparaiso.

Lesteira, g. n., Kröy. *l. c.* p. 402. Caput [cephalon], cujus latera quasi in alas duas dilatantur rotundatas, ... collum longissimum, prætenue, ... pars genitalis appendicibus duabus posticis prædita racemosis saccisque oviferis rectis, cylindricis, sat crassis; abdomen [pleon] rudimentarium. *Lesteira lumpi*, sp. n., Kröy. *l. c.* p. 399, tab. xviii. fig. 5 *a–g*, on *Cyclopterus lumpus*.

* The term corpus in Prof. Heller's descriptions is evidently intended for the entire animal. When it is used by Kröyer, it is only expressive of the pereion, and probably not the whole of that, as he speaks of the genital ring as a distinct part of the animal.

Silenium, g. n., Kröy. *l. c.* p. 406. *Femina* forma simplicissima insignis, nec antennis, nec rostro, nec pedibus prædita distinctis, solo corpore constans globoso vel sacciformi, bulla, qua affigitur, petiolata . . . . . *Mas* minutissimus, forma haud *Cyclopi* absimilis . . . . *Silenium polynoes*, n. sp. Kröy. *l. c.* p. 403, tab. xviii. fig. 6 *a–g*, on *Herpyllobius arcticus*.

Pegesimallus, g. n., Kröy, *l. c.* p. 406. Animal. . . . . capite elongato-ovato . . . . collo gracili . . . . tertia parte racemosa, ... parte denique villosa . . . . *P. spiralis*, sp. n., Kröy. *l. c.* p. 406, tab. xviii. fig. 7 *a, b*, from Greenland.

CIRRIPEDIA.

Lepadidæ.

Lepas anatifera (Linn.), Heller, Reise Novara, p. 256, from the Cape of Good Hope; *L. anserifera* (Linn.), Heller, *l. c.* p. 256, from the Nicobars and Shanghai; *L. fascicularis* (Ellis and Sol.), Heller, *l. c.* p. 253, from Rio Janeiro.

M. Cailliaud gives (Cat. des Rad. des Annul. des Cirripèdes, &c. p. 40), as inhabitants of the coast of Loire-inférieure several species (see p. 306):—

Anatifa lævis (Linn.) [*Lepas anatifera* (Linn.), Darw.].
A. dentata (Brug.) [*L. anatifera* (Linn.), var. Darw.].
A. striata (Brug.) [*L. anatifera* (Linn.), Darw.].
A. vitrea (Lam.) [*L. fascicularis* (Ellis & Solander), Darw.].
A. pelucidus (Chenu) has no corresponding species in Mr. Darwin's work.
A. sulcata (Quoy) [*L. pectinata* (Spengler), Darw.].
Alepa parasita (Rang.), Caill. *l. c.* p. 42 [*Alepas parasita*, Darw.].

Conchoderma aurita (Linn.), Heller, *l. c.* p. 253, from Auckland.

Otion cuvieri (Leach), Cailliaud, *l. c.* p. 43. Mr. Darwin, *l. c.* vol. i. p. 141, gives *Otion cuvieranus* (Leach) (quoting the same authority as M. Cailliaud) as a synonym of *Conchoderma aurita* (Linn.), brought on ships' bottoms.

Ceneras vittata (Lam.), Caill. *l. c.* p. 43, brought on ships' bottoms. Mr. Darwin gives this as a synonym of *Conchoderma virgata* (Speng.).

Pollicipes mitella (Linn.), Heller, *l. c.* p. 254, from Hong-Kong; *P. cornucopia* (Leach), Caill. *l. c.* p. 42.

Balanidæ.

Balanus tintinnabulum (Linn.), Heller, *l. c.* p. 254, from Madras and Chili.

Tetraclita porosa (Gmel.), Heller, *l. c.* p. 254, from Sydney.

Chthamalus cirratus (Darw.), Heller, *l. c.* p. 254, from the Nicobars.

SUCTORIA.

Sacculina carcini (Rathke). Mr. E. Parfit (Zoologist, vol. xxiii. p. 9848) records this species from Devonshire on *Carcinus mœnas*.

Pycnogonidæ.

Mr. G. Hodge, in his contribution to the Reports of the Deep-sea Dredging on the Coasts of Northumberland and Durham (Nat. Hist. Trans. Northumberland and Durham), adds one species to the list we gave in the 'Record' for 1864:—*Nymphon rubrum*, sp. n., p. 41, pl. x. fig. 1, deep water off the coast of Durham.

ARACHNIDA

BY

W. S. Dallas, F.L.S., M.E.S.

Papers published in Journals, &c.

* Descriptive.

Blackwall, John. Descriptions of recently discovered Spiders collected in the Cape de Verde Islands by John Gray, Esq. Ann. & Mag. Nat. Hist. 3rd series, vol. xvi. pp. 80–101: August 1, 1865.

——. Descriptions of recently discovered species, and characters of a new genus, of *Araneidea* from the East of Central Africa. Ibid. pp. 336–352: November 1, 1865.

Bogdanoff, A. Deux Acariens trouvés par M. Schérémétewsky sur l'homme. Bull. Soc. Nat. de Moscou, tome xxxvii. part 1. pp. 341–345, plate 7: 1864.

Fauvel, A. Description et Figure d'une Aranéide inédite de la Nouvelle-Calédonie. Bull. Soc. Linn. de Normandie, tome ix. pp. 66–69, pl. 1: 1865 (*Gasteracantha læta*).

Filippi, — de. Descrizione di un nuovo genere di Acaridi parassiti. Memorie R. Accad. Scienze di Torino, serie 2da, tomo xxi. p. lxxii: 1865.

Frauenfeld, Georg von. Zoologische Miscellen. IV. Eine neue Pflanzenmilbe. Verhandl. zool.-bot. Gesellsch. in Wien, Band xv. pp. 263–264 (read April 12, 1865).

——. Zoologische Miscellen. VI. Einige neue Pflanzenmilben. Ibid. pp. 895–899 (read October 4, 1865).

Hasselt, A. W. M. van. Een woord over het vergiftig vermogen der Schorpioenen (Kleine Entom. Meded.). Tijdschrift voor Entomologie, 1865, pp. 100 & 101.

——. Tarantula rediviva (Kleine Entom. Meded.). Tijdschrift voor Entomologie, 1865, pp. 122–128.

Keyserling, Eu. Beiträge zur Kenntniss der *Orbitelæ* Latrl. Verh. zool.-bot. Ges. Wien, Band xv. pp. 799–856, taf. 18–21.

This paper contains descriptions of numerous new species of Epeïridæ and a revision of the table of genera belonging to that family published by the author in the 'Sitzungsbericht der Isis zu Dresden,' and reported on in the 'Record' for 1864, p. 320. It also includes a revision of the known species of the genus *Tetragnatha*.

Koch, L. Beschreibungen neuer Arachniden und Myriopoden. Verhandl. zool.-bot. Gesellsch. in Wien, Band xv. pp. 857–892 (read August 2, 1865).

Lucas, H. Observations sur le genre *Eriodon*, Aranéide de la Tribu des Théraphoses, précédées de quelques remarques sur les coupes génériques qui composent actuellement cette Tribu. Annales Soc. Entom. de France 4e série, tome v. pp. 309–320, pl. 8. fig. 6, December 13, 1865 (read June 14).

Pollock, Frederick. On the history and habits of the *Epeïra aurelia* Spider. Ann. & Mag. Nat. Hist. 3rd series, vol. xv. pp. 459–465: June 1, 1865.

Schiödte, J. C. Om Slægten Stalita. Naturhistorisk Tidsskrift, 3rd ser. vol. iii. 1864, pp. 70–82.

Schultze, Max. *Echiniscus sigismundi*, ein Arctiscoide der Nordsee. Archiv für mikrosk. Anat., Band i. pp. 428–436, Tafel, 26: December 20, 1865.

Simonds, J. B. Observations on Parasites and Parasitic Diseases as affecting Domesticated Animals. Journ. Roy. Agricult. Soc. 2nd series, vol. i. pp. 33–72: 1865.

This paper treats of the parasitic insects, ticks, &c. of domestic animals, describes their effects upon the animals and the modes of treatment. It contains nothing new on the natural history of the parasites.

** Anatomical and Physiological.

Greeff, Richard. Ueber das Nervensystem der Bärthierchen, *Arctiscoida*, C. A. S. Schultze (*Tardigraden*, Doyère), mit besonderer Berücksichtigung der Muskelnerven und deren Endigungen. Schultze's Archiv für mikrosk. Anat., Band i. pp. 101–123, Tafel 4: May 1865.

This memoir contains an elaborate description of the structure of the nervous system in the Tardigrade animalcules.

Krohn, A. On the male generative organs of *Phalangium*. Translated in Ann. & Mag. Nat. Hist. 3rd series, vol. xvi. pp. 149–153.

Lindemann, K. Zoologische Skizzen. Bull. Soc. Nat. Moscou, xxxvii. pt. 2, 1865, pp. 531–546, pls. 10–29.

In this portion of his paper Lindemann enters into an elaborate examination of the muscles of the legs of the *Phalangiidæ* and the mechanism of their locomotion, illustrated by comparisons with those of other Arachnida and insects.

Lubbock, Sir John. On the male generative organs of *Phalangium*. Ann. & Mag. Nat. Hist. 3rd series, vol. xvi. p. 301: October 1, 1865.

Lucas, H. Quelques remarques sur les mues de diverses Aranéides, et particulièrement sur celles de la *Mygale bicolor* et de la *Segestria florentina*. Ann. Soc. Ent. Fr. 4e série, tome iv. pp. 721–726: May 24, 1865.

——. Nouvelles remarques sur une mue de la *Mygale bicolor*. Ann. Soc. Ent. Fr. 4e série, tome v. p. 86.

ARANEIDA.

In connexion with Trimen's observation (see Record 1864, p. 316), Piffard and Barrett have published notes on imitative Spiders frequenting flowers, in Ent. Monthly Mag. vol. ii. pp. 14 & 71.

Beck describes the results of some observations made with the microscope on the spinnerets of Spiders. Brit. Assoc. Rep. for 1864, Trans. Sect. pp. 88, 89.

Scytodidæ.

Scytodes pallida, sp. n., Blackwall, Ann. & Mag. Nat. Hist. 3rd ser. vol. xvi. p. 100, from the Cape Verde Islands.

Pholcus ancoralis, sp. n., Koch, Verh. zool.-bot. Ges. in Wien, Bd. xv. p. 862, from Upolu (Samoan Islands).

Mygalidæ.

Lucas (Ann. Soc. Ent. Fr. 4e sér. tom. v. pp. 309–316) discusses the distinctive characters of the genera of this family, of which he admits *Mygale*, *Oletera* (= *Atypus*), *Actinopus* (= *Sphodros*), *Calommata*, *Cyrtocephalus*, *Eriodon*, and *Acanthodon*. He also gives a detailed description of the structure of *Eriodon occatoria* from a specimen received in spirit from Melbourne, and characterizes the genus (*l. c.* pp. 316–318) and species (*l. c.* p. 318). The lower surface of *Eriodon occatorius*, the profile of the cephalothorax, and the arrangement of the eyes are represented, pl. 8. fig. 6.

Lucas has described the moulting of *Mygale bicolor*. Ann. Soc. Ent. Fr. 4e sér. tom. v. p. 86.

Lycosidæ.

Van Hasselt discusses the question of the bite of the Tarantula and its recorded effects, which he is inclined to regard as to a certain extent real phenomena. Tijdsch. voor Entom. 1865, pp. 122–128.

Dolomedes australianus, sp. n., Koch, Verh. zool.-bot. Ges. in Wien, Bd. xv. p. 863, from Wollongong.

Lycosa vulpecula, sp. n., Koch, *l. c.* p. 864, from Wallis Islands; *L. bellatrix*, Koch, *l. c.* p. 866, from Sydney; and *L. godeffroyi*, Koch, *l. c.* p. 867, from Wollongong.—*Lycosa helva*, sp. n., Blackwall, Ann. & Mag. Nat. Hist. 3rd ser. vol. xvi. p. 80, from the Cape Verde Islands.

Hersilia versicolor, sp. n., Blackwall, *l. c.* p. 81, from the Cape Verde Islands.

Ctenus velox, sp. n., Blackwall, *l. c.* p. 336, and *C. vividus*, Blackwall, *l. c.* p. 337, from the Zambesi region.

Pasithea pulchra, sp. n., Blackwall, *l. c.* p. 338, from the Zambesi region.

Salticidæ.

Salticus simplex, sp. n., Blackwall, Ann. & Mag. Nat. Hist. 3rd ser. vol. xvi. p. 82, *S. lepidus*, Blackw. *l. c.* p. 83, and *S. sedulus*, Blackw. *l. c.* p. 84, from the Cape Verde Islands.

Euophrys delibuta, sp. n., Koch, Verh. zool.-bot. Ges. in Wien, Bd. xv. p. 874, from Upolu (Samoan Islands).

Hyllus pterygodes, sp. n., Koch, *l. c.* p. 876, from Upolu.

Thomisidæ.

Thomisus piger, sp. n., Blackwall, Ann. & Mag. Nat. Hist. 3rd ser. vol. xvi. p. 85, from the Cape Verde Islands.—*Thomisus prætextus*, sp. n., Koch, Verh. zool.-bot. Ges. in Wien, Bd. xv. p. 869, from Upolu (Samoan Islands).

Ocypete sartrix, sp. n., Koch, *l. c.* p. 870, from Sydney.

Sparassus punctatus, sp. n., Koch, *l. c.* p. 872, and *S. præcinctus*, Koch, *l. c.* p. 873, from New South Wales.

Selenops alacer, sp. n., Blackwall, *l. c.* p. 340, from the Zambesi region.

Drassidæ.

Schiödte (Naturh. Tidsskr. 3rd ser. iii. pp. 70–82) has submitted Keyserling's statements with regard to the genus *Stalita* to a severe criticism and pointed out several inaccuracies in them. Keyserling stated (Verh. zool.-bot. Ges. in Wien, 1862, p. 540) that Schiödte had omitted to describe the female of *Stalita*, and that his figure of part of the mouth of the female differed considerably from that of the male. He added that he had obtained females of *Stalita* showing in the same parts a much closer resemblance to Schiödte's figure of the male, and therefore thought that Schiödte's females belonged to a species distinct from *Stalita tænaria*. Schiödte now indicates that his figures represent the right maxilla of the female, with the labrum, *seen from above*, and the left maxilla of the male, with the labium, *seen from below*. This explains Keyserling's mistake. Schiödte also places in parallel columns the characters of the true female of his species and those of the females as described by Keyserling, showing great differences, which, although some of them may be explained away, seem to lead to the supposition that Keyserling's specimens belong to a second species.

The habits of *Argyroneta aquatica* are described by Peers, Zoologist, 1865, pp. 9737, 9738.

Drassus nigromaculatus, sp. n., Blackwall, Ann. & Mag. Nat. Hist. 3rd ser. vol. xvi. p. 86, and *D. assimilatus*, Blackw. *l. c.* p. 88, from the Cape Verde Islands.

Ciniflonidæ.

Orithyia luteola, sp. n., Blackwall, Ann. & Mag. Nat. Hist. 3rd ser. vol. xvi. p. 89, and *O. gnava*, Blackw. *l. c.* p. 90, from the Cape Verde Islands.

Theridiidæ.

Theridion fallax, sp. n., Blackwall, Ann. & Mag. Nat. Hist. 3rd ser. vol. xvi. p. 91, *T. quinquenotatum*, Blackw. *l. c.* p. 92, and *T. sagax*, Blackw. *l. c.* p. 93, from the Cape Verde Islands.

Theridium thorellii, sp. n., Koch, Verh. zool.-bot. Ges. in Wien, Bd. xv. p. 857, from Sydney, and *T. semiflavum*, Koch, *l. c.* p. 858, from Wollongong.

Enyo braccata, sp. n., Koch, *l. c.* p. 859, and *E. picta*, Koch, *l. c.* p. 861, from Australia.

Latrodectus cinctus, sp. n., Blackwall, *l. c.* p. 341, from the Zambesi region.

W. D. Crotch publishes a note on the inoffensive habits of a variety of *Latrodectus malmignatus* found by him in the island of Ierro. Entomologist, ii. pp. 179, 180.

Epeïridæ.

Keyserling (Verhandl. zool.-bot. Gesellsch. in Wien, Bd. xv. pp. 799 & 800) revises his table of the genera of this family, and makes the following alterations in it. In the first section (I.), in which the maxillæ are as long as broad, the texture of the abdominal integument is adopted as the primary divisional character, and the comparative length of the legs is no longer employed; the genera with a horny skin on the abdomen are tabulated as in his former table (see 'Record,' 1864, p. 320), but those with a soft abdomen are characterized as follows:—

B.....

1. The posterior lateral eyes are much further from the anterior than these are from the middle ones; in the anterior row there are six, and in the posterior only two eyes ..... *Poltys*, Koch.
2. The posterior lateral eyes are by no means so far from the anterior as these from the middle ones; each row formed of four eyes.
   a. Lateral eyes further apart than the anterior middle ones. *Arachnoura*, Vinson.
   b. Lateral eyes usually close together on a common tubercle, never more than an eye's breadth asunder.
      α. Cephalothorax elongated and arched, cephalic portion as long as the posterior ..... *Epeïra*, Walck.
      β. Cephalothorax nearly round, flat, and densely clothed with white hairs; cephalic portion much smaller than posterior. *Argyopes*, Sav.

Arachnioura (Vinson) is here substituted for *Hapalochrota* (Keys.), as having slightly the priority.

In the second section, having the maxillæ longer than broad, Keyserling separates *Meta* (Koch) from *Tetragnatha* as follows:—

α. Cephalothorax nearly twice as long as broad; lateral eyes separated by several eyes' breadths ..... *Tetragnatha*, Walck.

β. Cephalothorax not much longer than broad; lateral eyes close together upon a common tubercle ..... *Meta*, Koch.

Remarks on known species, &c:—

Epeïra grayii (Blackwall) is described and figured by Keyserling, Verh. zool.-bot. Ges. in Wien, Bd. xv. p. 809, pl. 18. figs. 9 & 10.

Tetragnatha. Keyserling (*l. c.* pp. 836–838) gives a tabular synopsis of the known species of this genus, of which he describes the following, and gives figures of their mandibles:—*T. striata* (Linn.), *l. c.* p. 838, pl. 20. figs. 11–15; *T. similis* (Nic.), *l. c.* p. 840, pl. 20. figs. 21–23; *T. laboriosa* (Hentz), *l. c.* p. 841, pl. 20. figs. 16 & 17; *T. cylindrica* (Walck.), *l. c.* p. 842, pl. 20. figs. 18 & 19; *T. filiformis* (Sav.), *l. c.* p. 843, pl. 20. fig. 20; *T. extensa* (Linn.), *l. c.* p. 844, pl. 21. figs. 19–22; *T. nitens* (Sav.), *l. c.* p. 845, pl. 21. figs. 1–4; *T. protensa* (Walck.), *l. c.* p. 847, pl. 21. figs. 14–17; *T. mandibulata* (Walck.), *l. c.* p. 848, pl. 21. figs. 6–9; *T. grallator* (Hentz), *l. c.* p. 850, pl. 21. figs. 24–27; *T. labialis* (Nic.), *l. c.* p. 851, pl. 21. figs. 11–13; and *T. linearis* (Nic.), *l. c.* p. 853, pl. 21. fig. 23.

Pollock has described in detail the habits of *Epeïra aurelia*, observed by him in Madeira. Ann. & Mag. Nat. Hist. 3rd ser. vol. xv. pp. 459–465.

Guérin-Méneville exhibited to the French Entomological Society the silky cocoons of an *Epeïra* from Senegal, and remarked upon the possibility of these cocoons and the similar ones found in Paraguay being used in the arts. Bull. Soc. Ent. Fr. 1865, pp. iv & v.

Odewahn has sent from Gawler (South Australia) some globular Spiders' nests, found on branches of trees, and resembling the fruit of *Leptospermum*. The Spiders were hanging near the nests, and resembled the excrement of some bird in appearance. Proc. Ent. Soc. 1864, p. 57.

New genus and species:—

Pycnacantha, g. n., Blackwall, Ann. & Mag. Nat. Hist. 3rd ser. vol. xvi. p. 350. Allied to *Acrosoma*; abdomen subglobose, with numerous, close-set, sharp spines, of various sizes, on the upper part and sides. Sp. *P. meadii*, sp. n., Blackw. *l. c.* p. 351, from the Zambesi region.

Gasteracantha flavomaculata, Keyserling, Verh. zool.-bot. Ges. in Wien, Bd. xv. p. 801, pl. 19. figs. 8 & 9, from Sydney.—*G. lata* (Montr. MS.), Fauvel, Bull. Soc. Linn. Norm. tome ix. p. 68, pl. 1. fig. 18, from New Caledonia.

Eurysoma thoratoni, Blackwall, *l. c.* p. 348, and *E. wallerii*, Blackw. *l. c.* p. 349, from the Zambesi region.

Cyrtogaster bispinosa, Keyserling, *l. c.* p. 802, pl. 19. figs. 10 & 11, from Sydney.

Argyopes ætherea, Keyserling, *l. c.* p. 803, pl. 19. figs. 1 & 2, from Australia (Wollongong).—*Argyopes clarkii*, Blackwall, *l. c.* p. 98, from the Cape Verde Islands; *A. caudatus*, Blackwall, *l. c.* p. 346, from the Zambesi region.

Epeïra mœsta, Blackwall, Ann. & Mag. Nat. Hist. 3rd ser. vol. xvi. p. 94, and *E. blanda*, Blackw. *l. c.* p. 95, from the Cape Verde Islands; *Epeïra vigilans*, Blackwall, *l. c.* p. 342, from the Zambesi region.

Epeïra. The following new species are described by Keyserling:—From New Granada: *E. undecim-tuberculata*, *l. c.* p. 805, pl. 18. figs. 1 & 2; *E. crassicauda*, *l. c.* p. 806, pl. 18. figs. 3 & 4; *E. tumida*, *l. c.* p. 808, pl. 18. fig. 6–8; *E. albostriata*, *l. c.* p. 815, pl. 19. figs. 27 & 28; *E. acuta*, *l. c.* p. 816, pl. 18. figs. 13 & 14; *E. veniliæ*, *l. c.* p. 817, pl. 19. figs. 23 & 24; *E. vegeta*, *l. c.* p. 819, pl. 19. figs. 31–34; *E. globosa*, *l. c.* p. 820, pl. 18. figs. 19–21; *E. ursina*, *l. c.* p. 822, pl. 19. figs. 3–5; *E. guttata*, *l. c.* p. 823, pl. 18. figs. 17 & 18; *E. verecunda*, *l. c.* p. 824, pl. 19. figs. 14–16; *E. meropes*, *l. c.* p. 825, pl. 19. figs. 6 & 7, and *E. gracilis*, *l. c.* p. 826, pl. 19. figs. 29 & 30. From North America: *E. maculata*, *l. c.* p. 827, pl. 18. figs. 24–27 (Baltimore); and *E. formosa*, *l. c.* p. 828, pl. 19. figs. 17 & 18 (Mackenzie River). From Uruguay: *E. truncata*, *l. c.* p. 807, pl. 19. figs. 21 & 22, and *E. meridionalis*, *l. c.* p. 810, pl. 19. figs. 19 & 20. From Australia: *E. græffii*, *l. c.* p. 811, pl. 19. figs. 12 & 13 (Wollongong), and *E. transmarina*, *l. c.* p. 814, pl. 18. figs. 15 & 16 (New South Wales); also *E. viridis*, *l. c.* p. 812, pl. 18. figs. 11 & 12, from the Samoa Islands, and *E. maritima*, *l. c.* p. 813, pl. 18. figs. 22 & 23, from the Fiji Islands.

Nephila grayii, Blackwall, *l. c.* p. 96, from the Cape Verde Islands; *N. keyserlingii*, Blackwall, *l. c.* p. 343, and *N. venusta*, Blackw. *l. c.* p. 345, from the Zambesi region.

Meta. Keyserling describes the following new species of this genus:—*M. insularis*, *l. c.* p. 830, pl. 20. figs. 8 & 9, and *M. tuberculata*, *l. c.* p. 831, pl. 20. fig. 10, from the Samoa Islands; *M. pulcherrima*, *l. c.* p. 832, pl. 20. figs. 4 & 5, *M. nigro-vittata*, *l. c.* p. 833, pl. 20. figs. 1–3, and *M. argentea*, *l. c.* p. 834, pl. 20. figs. 6 & 7, from New Granada.

Tetragnatha fluviatilis, Keyserling, *l. c.* p. 852, pl. 21. fig. 10, from the Mackenzie River; *T. mexicana*, Keys. *l. c.* p. 854, pl. 21. fig. 18, from Vera Cruz; and *T. bogotensis*, Keys. ibid. pl. 21. fig. 5, from New Granada.

Tetragnatha maculata, Blackwall, *l. c.* p. 99, from the Cape Verde Islands.

Eresus bubo, Koch, Verh. zool.-bot. Ges. in Wien, Bd. xv. p. 878, from Algoa Bay.

Phalangodes quadrioculatus, Koch, *l. c.* p. 880, from Upolu (Samoa Islands).

Vœjovis debilis, Koch, *l. c.* p. 881, from Mexico.

PEDIPALPI.

Van Hasselt discusses the question of the venomous powers of the Scorpions, which he considers to have been much exaggerated by the earlier writers. From the reports of later travellers he shows that fatal effects are at least very rarely produced by the sting of the Scorpions, and concludes that "they are not so bad as they look." Tijdschr. voor Entom. 1865, pp. 100 & 101.

Julius Milde communicates some notes on the habits of *Scorpius germanus* (Schäff.) and *S. italicus* (Herbst) as observed by him at Meran. Verh. zool.-bot. Ges. in Wien, Bd. xv. p. 962.

ADELARTHROSOMATA.

Solpugidæ.

Becker observes that *Solpuga araneoides* dies in a few days in confinement. Bull. Soc. Nat. Mosc. xxxvii. pt. i. p. 486.

Cheliferidæ.

Stainton records the occurrence, in 1865, of an unusual number of specimens of *Chelifer* attached to the legs of flies, and states that the *Chelifer* never quits its hold of a fly upon which it has seized. Proc. Ent. Soc. 1865, p. 112.

ACARINA.

Ixodidæ.

Cox calls attention to the occasional occurrence of great numbers of *Ixodes plumbeus* in dog-kennels. Proc. Ent. Soc. pp. 82 & 83. The wood of Major Cox's kennel was destroyed, as he supposed by the Ticks; but this notion was negatived by Westwood and Saunders. See also *l. c.* p. 85.

Ixodes ricinus. The habits and treatment of this and other species are referred to by Simonds. Journ. Agric. Soc. ser. 2. vol. i. pp. 39–43.

Gamasidæ.

The occurrence of numerous red Mites symmetrically arranged upon the wings of a *Caradrina* is recorded by Stainton. Proc. Ent. Soc. 1865, p. 112.

Lælaps, g. n., Filippi, Mem. Accad. Sci. Torino, ser. 2ª, tome xxi. p. lxxii. Female with tracheæ, having two stigmata at the sides of the neck. Abdomen in pregnant ♀ developed into a sphere of a diameter equal to six times the length of the body, which contains the generative organs and the young. The species, *L. heterogyne*, of which no further characters are given, is found in great abundance in an oak-gall, probably produced by a *Cynips*.

Acaridæ.

Frauenfeld (Verh. zool.-bot. Ges. in Wien, Bd. xv. pp. 895, 896, and 898, 899) remarks upon the effects produced by Mites, especially of the genus *Phytoptus*, upon various plants, and refers particularly to the production of the so-called Phylleriaceæ.

Tetranychus lintearius produces white spots on the lower surface of the leaves of *Camellia japonica* at Marseilles, according to Laboulbène. Bull. Soc. Ent. Fr. 1865, p. xlii.

Acarus coffeæ, a species said by Nietner to be injurious to the coffee-trees in Ceylon is noticed by Guérin. Rev. et Mag. de Zool. 1864, pp. 121 & 122.

Stone records the occurrence of a species of *Acarus* in great numbers in a nest of *Vespa sylvestris*. Proc. Ent. Soc. 1865, p. 63.

Phytoptus. Frauenfeld (Verh. zool.-bot. Ges. in Wien, Bd. xv.) describes the following new species of this genus:—*P. coryli*, *l. c.* p. 263; *P. carpini*, *l. c.* p. 896; *P. granulatus* and *campestricola*, *l. c.* p. 897; and *P. evonymi*, *l. c.* p. 898.

Bogdanoff has described two forms of *Acaridæ* found parasitic upon the human skin. One of these occurs upon the surface of the skin in patients affected with the itch; the other has been found on a single occasion on a child suffering from herpes farinosus. The author regards the two forms as probably ♂ and ♀ of the same species, which he names *Dermatophagoides scheremetewskyi*, its nearest relationship being with the genus *Dermatophagus*. Bull. Soc. Nat. Mosc. tome xxxvii. part i. pp. 341–345, pl. 7.

Simoneidæ.

Simonea folliculorum. Simonds describes the occurrence of this species in various domestic animals. Journ. Agric. Soc. 2nd ser. vol. i. pp. 69–72.

TARDIGRADA.

Echiniscus sigismundi, sp. n., M. Schultze, Archiv für mikr. Anat. Bd. i. p. 430, pl. 26, from Heligoland and Ostend.

LINGUATULINA.

Dr. William Aitken, in an Appendix to his work 'The Science and Practice of Medicine,' gives the particulars of the fatal effects of the presence of *Pentastoma constrictum* in the human body. The parasites were encysted in the lungs and liver.

PODOSOMATA.

Mr. Hodge's Report on the *Pycnogonoidea* dredged off the coast of Northumberland is referred to in the 'Record' on Crustacea, p. 310.

MYRIOPODA

BY

W. S. Dallas, F.L.S., M.E.S.

Humbert, A. Essai sur les Myriapodes de Ceylan. Mém. Soc. de Phys. et d'Hist. Nat. de Genève, tome xviii. pp. 1–62, plates 1–5 : July 1865.

In this memoir M. Humbert gives descriptions of all the known species of Cingalese Myriopoda, illustrated by numerous figures of great beauty, executed by M. A. Lunel. The species described belong to the genera *Scutigera* (1), *Scolopendra* (5), *Heterostoma* (1), *Mecistocephalus* (2), *Polydesmus* (11), *Sphæropæus* (3), *Trachyjulus* (1), *Spirostreptus* (6), *Spirobolus* (3), and *Siphonophora* (1); total 34, of which 22 are described as new.

Koch, L. Beschreibungen neuer Arachniden und Myriopoden. Verhandl. zool.-bot. Gesellsch. in Wien, Band xv. pp. 857–892 (read 2nd August, 1865).

Lucas, H. Sur une nouvelle espèce de Scolopendride (*Eucorybas grandidieri*). Ann. Soc. Ent. Fr. 4e sér. tom. iv. p. 420 :. 25th January, 1865.

Wood, H. C., jun. The Myriapoda of North America. Trans. Amer. Phil. Soc., new series, vol. xiii. pp. 137–248, with 3 plates (read 16th June, 1865).

In this valuable monograph the author not only describes the North-American species of the Class Myriopoda, but enters into an elaborate discussion of the principles of their classification. His results will be given further on. The synoptical table of the species (pp. 244–248) will be found useful in their determination, and the full description given of the details of structure, illustrated with numerous woodcuts, may, it is to be hoped, induce other entomologists to take up the study of this interesting but neglected class.

General Notes on the Class.

The classification adopted by Wood in his "Monograph of the North-American Myriopoda" (Trans. Amer. Phil. Soc. new ser. vol. xiii.) is somewhat modified by him in a general synopsis given at the end of his work (*l. c.* pp. 244–248). This, which is the final result of his investigations, presents some slight alterations upon that of Newport, as will be seen from the following abstract of his groups :—

Order I. Syngnatha (Leach, 1815) = Chilopoda (Latr. 1831).

Suborder 1. Schizotarsia.

Fam. *Cermatiidæ*.

Suborder 2. Holotarsia.

Fam. *Lithobiidæ, Scolopendridæ, Scolopendrellidæ, Geophilidæ*.

Order II. Chilognatha.

Suborder 3. Pentazonia.

Fam. *Glomeridæ, Sphærotheridæ* (Wood) = *Zephroniidæ* (Gray).

Suborder 4. Strongylia (Wood).

Fam. *Polyxenidæ, Polydesmidæ* (incl. *Oniscodesmidæ*, Sauss.), *Julidæ, Lysiopetalidæ*.

Suborder 5. Sugentia.

Fam. *Polyzoniidæ, Siphonophoridæ*.

Wood maintains (*l. c.* p. 178) that *Geophilus carpophagus* is to be regarded as the type of the genus *Geophilus* of Leach, and the latter name must therefore be applied to the section of the old genus which includes that species, which was named *Arthranomalus* by Newport. To *Geophilus* of Newport he applies Gray's name *Strigamia*. The total number of North American species described by Wood is 94, of which only 3 are new, the new species having been described by him in 1863 and 1864 in the Journal of the Academy of Natural Sciences of Philadelphia. Several of these are here figured.

CHILOPODA.

Cermatiidæ.

Cermatia forceps (Rafin.) = *coleoptrata* (Say) = *floridana* (Newp.) is described and figured by Wood, Trans. Amer. Phil. Soc. n. ser. vol. xiii. p. 145, pl. 3. fig. 1.

Cermatia violacea, sp. n., Koch, Verh. zool.-bot. Ges. in Wien, Bd. xv. p. 890, from Wollongong.

Scutigera templetoni, sp. n., Humbert, Mém. Soc. Phys. et Hist. Nat. Gen. tome xviii. p. 8, pl. 1. fig. 1, from Ceylon.

Lithobiidæ.

The following species of this family are figured by Wood in full or in detail :—

Lithobius americanus (Newp.), *l. c.* pl. 1. fig. 3, & p. 148. fig. 6; *Bothropolys multidentatus* (Newp.), *l. c.* pl. 1. fig. 2, & p. 152. fig. 7.

Scolopendridæ.

The following species of this family are figured by Wood: –

Scolopendra heros, var. *castaneiceps* (Wood), *l. c.* pl. 1. fig. 1; *S. polymorpha* (Wood), *l. c.* pl. 1. fig. 6; *Opisthomega postica* (Wood), *l. c.* pl. 1. fig. 4, & p. 169, figs. 8 & 9; *O. spinicauda* (Wood), *l. c.* p. 170, figs. 10 & 11.—*Scolopocryptops sexspinosa* (Say), *l. c.* pl. 1. fig. 5, & p. 172, figs. 12 & 13; *S. spinicauda* (Wood), *l. c.* p. 174, fig. 15; *S. gracilis* (Wood), *l. c.* p. 174, fig. 14; *S. lanatipes* (Wood), *l. c.* p. 175, figs. 16 & 17.

Heterostoma spinosa (Newp.). Details of this species are figured by Humbert, Mém. Soc. Phys. Hist. Nat. Gen. tome xviii. pls. 1 & 2. figs. 3 *a*–3 *e*.

The effects of the bite of *Scolopendra morsitans* are referred to by Becker, Bull. Soc. Nat. Mosc. xxxvii. pt. i. p. 485.

Scolopendra bicolor, sp. n., Humbert, Mém. Soc. Phys. Hist. Nat. Gen. tome xviii. p. 12, pl. 1. fig. 2, from Ceylon.—*Scolopendra fissispina*, sp. n., Koch, Verh. zool.-bot. Ges. in Wien, Bd. xv. p. 891, from Penang.

Eucorybas grandidieri, sp. n., Lucas, Ann. Soc. Ent. Fr. 4ᵉ série, tome iv. p. 420, from Zanzibar.

Geophilidæ.

The following species of this family are figured in full or in detail by Wood :—

Mecistocephalus fulvus (Wood), *l. c.* p. 176. fig. 18; *M. lineatus* (Wood), *l. c.* pl. 1. fig. 7; *Strigamia bothriopus* (Wood), *l. c.* pl. 1. fig. 9; *S. epileptica* (Wood), *l. c.* pl. 1. fig. 8, and p. 188. figs. 21–22.

Mecistocephalus punctifrons (Newp.). The head of this species is figured by Humbert, *l. c.* pl. 2. fig. 5.

Mecistocephalus heteropus, sp. n., Humbert, Mém. Soc. Phys. Hist. Nat. Gen. tome xviii. p. 19, pl. 2. fig. 4, from Ceylon.

Strigamia walkeri, sp. n., Wood, *l. c.* p. 184, from Pennsylvania.

Glomeridæ.

Sphæropœus (*Zephronia*) *versicolor* (White) is figured by Humbert, *l. c.* pl. 3. fig. 17.

Sphæropœus brandtii, sp. n., Humbert, Mém. Soc. Phys. Hist. Nat. Gen. tom. xviii. p. 38, pl. 3. fig. 15 (*Zephronia b.*), and *S. inermis*, *l. c.* p. 39, pl. 3. fig. 16 (*Zephronia i.*), from Ceylon.

Polydesmidæ.

The following species of *Polydesmus* are figured by Wood :—

P. (*Polydesmus*) *granulatus* (Say), *l. c.* pl. 2. fig. 8, and p. 214. fig. 41; *P.* (*P.*) *serratus* (Say), *l. c.* pl. 2. fig. 9, and p. 215. fig. 42; *P.* (*P.*) *canadensis* (Newp.), *l. c.* pl. 2. fig. 7, and p. 216. figs. 43 & 44; *P.* (*P.*) *cerasinus* (Wood), *l. c.* p. 217. fig. 45 (♂ app.); *P.* (*Paradesmus*) *erythropygus* (Br.), *l. c.* p. 218. figs. 46 & 47 (♂ ♀ app.); *P.* (*Parad.*) *hispidipes* (Wood), *l. c.* p. 220. fig. 48 (leg); *P.* (*Fontaria*) *virginiensis* (Drury), *l. c.* p. 221. fig. 49 (♂ app.); *P.* (*F.*) *corrugatus* (Wood), *l. c.* p. 222. figs. 50–57 (♂ ♀ app.); *P.* (*F.*) *bifidus* (Wood), *l. c.* 223. fig. 52 (♂ app.); *P.* (*F.*) *trimaculatus* (Wood), *l. c.* p. 224. figs. 53 & 54 (♂ ♀ app.); *P.* (*F.*) *crassicutis* (Wood), *l. c.* p. 224. fig. 55 (♂ app.), and p. 212. fig. 40 (segment and ♀ app.); *P.* (*Leptodesmus*) *placidus* (Wood), *l. c.* p. 225. fig. 56 (♂ app.); *P.* (*L.*) *haydenianus* (Wood), *l. c.* p. 227, fig. 57 (♂ app.).

Humbert describes and figures (Mém. Soc. Phys. Hist. Nat. Gen. tom. xviii.) the following nine new species from Ceylon:—*Polydesmus cognatus*, *l. c.* p. 22, pl. 2. fig. 6; *P. kelaarti*, *l. c.* p. 23, pl. 2. fig. 7; *P. saussurii*, *l. c.* p. 26, pl. 2. fig. 8; *P. thwaitesii*, *l. c.* p. 27, pl. 2. fig. 9; *P. layardi*, *l. c.* p. 28, pl. 3. fig. 10; *P. inornatus*, *l. c.* p. 30, pl. 3. fig. 11; *P.* (*Strongylosoma*) *skinneri*, *l. c.* p. 31, pl. 3. fig. 12; *P.* (*S.*) *cingalensis*, *l. c.* p. 32, pl. 3. fig. 13; and *P.* (*S.*) *simplex*, *l. c.* p. 34, pl. 3. fig. 14.

Polydesmus setiger, sp. n., Wood, *l. c.* p. 213, pl. 2. fig. 10, from Pennsylvania.

Strongylosoma petersii, Koch, Verh. zool.-bot. Ges. in Wien, Bd. xv. p. 882, from Wollongong.

Julidæ.

Numerous species of this family are figured, with details, by Wood, namely :—

Julus impressus (Say) = *venustus* (Wood), *l. c.* pl. 2. fig. 3, and p. 197. figs. 26–30; *J. pilosiscuta* (Wood), *l. c.* pl. 2. fig. 12; *J. oregonensis* (Wood), *l. c.* p. 199. fig. 31; *J. canadensis* (Newp.), *l. c.* pl. 1. fig. 11, pl. 2. fig. 4, and p. 200. fig. 32; *J. immaculatus* (Wood), *l. c.* pl. 2. fig. 1, and p. 200. fig. 33; *J. pennsylvanicus* (Brandt), *l. c.* pl. 2. fig. 2, and p. 201. fig. 34; *J. canaliculatus* (Wood), *l. c.* pl. 2. fig. 5; *J. laqueatus* (Wood), *l. c.* pl. 2. figs. 15 & 16; *J. virgatus* (Wood), *l. c.* pl. 2. fig. 13; *Spirobolus marginatus* (Say), *l. c.* p. 208. fig. 35 (♂ app.); *S. uncigerus* (Wood), *l. c.* p. 209. fig. 36 (♂ app.); *S. angusticeps* (Wood), *l. c.* p. 210. fig. 37 (♀ app.); *S. spinigerus* (Wood), *l. c.* p. 211. figs. 38 & 39 (♂ app.); and *Oligaspis puncticeps*, *l. c.* pl. 1. fig. 10, and pl. 2. fig. 17.

Trachyjulus ceylanicus (Peters) is figured, with numerous details, by Humbert, *l. c.* pl. 3. fig. 18.

New species :—

Spirobolus. Koch (Verh. zool.-bot. Ges. in Wien, Bd. xv.) describes the following five new species of this genus :—*S. pictus*, *l. c.* p. 883, *S. costatus*, *l. c.* p. 885, and *S. colubrinus*, *l. c.* p. 886, from the Fiji Islands; *S. litoralis*, *l. c.* p. 884, from Algoa Bay; and *S. lugubris*, *l. c.* p. 887, from Wollongong.

Spirobolus crebristriatus, Humbert, *l. c.* p. 55, pl. 5. fig. 24 (*Julus c.*), and *S. taprobanensis*, Humb. *l. c.* p. 56, pl. 5. fig. 25 (*Julus t.*), from Ceylon.

Spirostreptus. Humbert (Mém. Soc. Phys. Hist. Nat. Gen. tom. xviii.) describes five new species of this genus from Ceylon, namely :—*S. lunelii*, *l. c.* p. 47, pl. 4. fig. 19 (*Julus l.*); *S. kandyanus*, *l. c.* p. 49, pl. 4. fig. 20 (*Julus k.*); *S. lankaensis*, *l. c.* p. 50, pl. 4. fig. 21 (*Julus l.*); *S. hamifer*, *l. c.* p. 52, pl. 4. fig. 22 (*Julus h.*), and *S. modestus*, *l. c.* p. 53, pl. 5. fig. 23 (*Julus m.*).

Spirostreptus corvinus, Koch, *l. c.* p. 887, *S. pyroceplalus*, Koch, *l. c.* p. 888, and *S. græffei*, Koch, *l. c.* p. 889, from Algoa Bay.

Lysiopetalidæ.

Spirostrephon lactarius (Say). Details of this species are figured by Wood, *l. c.* pl. 2. fig. 11, and p. 193. fig. 25 (♀ appendage).

Spirostrephon cæsioannulatus, sp. n., Wood, Trans. Amer. Phil. Soc. n. ser. vol. xiii. p. 194, pl. 2. fig. 14, from Pennsylvania.

Polyzonidæ.

Octoglena bivirgata (Wood). The head and antennæ of this species are figured by Wood, *l. c.* p. 230, figs. 58 & 59.

Siphonophoridæ.

Brachycybe lecontii (Wood). The head and anterior portion, the legs, and male appendages are figured by Wood, *l. c.* p. 231. figs. 60 & 61.

Siphonophora picteti, sp. n., Humbert, Mém. Soc. Phys. Hist. Nat. Gen. tom. xviii. p. 59, pl. 5. fig. 26, from Ceylon.

INSECTA

BY

W. S. Dallas, F.L.S., M.E.S.

THE GENERAL SUBJECT.

A. *Works in progress.*

Costa, A. Annuario del Museo Zoologico, della R. Univ. di Napoli. Anno ii. 1862. Naples, 1864, with four plates.

The first part of this volume contains a long list of accessions to the Zoological Museum of the University of Naples during the year 1862, including a vast quantity of insects of various orders, many of which are briefly characterized as new in footnotes. This is followed by a series of articles containing—I. New genera and species of insects of the Italian fauna; II. Descriptions of some insects foreign to Europe; with similar but shorter notices of Crustacea and Mollusca.

Fitch, Asa. Eighth and Ninth Reports on the noxious and other Insects of the State of New York. pp. 175–226 of the second volume of Reports. New York, 1864 and 1865.

These continuations of the valuable reports of Fitch upon the Insects of New York are devoted to some of those infesting gardens, and include notices of *Crioceris asparagi*, 6 species of *Smynthurus*, new species of *Orgyia* and *Macrodactylus*, *Sphinx quinquemaculata*, *Doryphora* 10-*lineata*, *Arctia caja*, *Agrotis nigricans*, and *Trupanea apivora* (sp. n.), the last as injurious to Bees. The parasites of several of the species are also described, and the eighth report contains a notice on the first appearance of the Hessian fly in America.

L'Abeille. Mémoires d'Entomologie, par S. A. de Marseul, avec la collaboration de plusieurs membres distingués de la Société Entomologique de France. Tome i. livr. 5, 6, and tome ii. livr. 1–6. 12mo.

The continuation of this periodical work consists exclusively of coleopterological papers, and includes descriptions of the *Histeridæ* of the Malay archipelago by the editor, a monograph

of the *Gallerucides* (sens. str.) by M. de Joannis, and a monograph of the *Buprestidæ* by the editor. The two last-mentioned works, which are still incomplete, belong to the second volume; but as they constitute a sort of parallel publication, being paged separately, there is some difficulty in determining how they should be quoted, as the monograph of *Buprestidæ*, the last to be commenced, is only distinguished from its associated memoir by having A. II. at the left-hand corner of the first page of each sheet. It would seem, however, from a notice on the wrapper of livr. 6, that the editor intends these portions to form the second and third volumes of his work; and as he leaves us in the dark as to the precise mode in which this is to be effected, the only course is to regard the *Gallerucides* as forming part of the second volume and the *Buprestidæ* as occupying the third. The concluding portion of the first volume includes a notice of the Transactions of the Entomological Society of London, n. s. vol. i., and some descriptions of new Beetles by Dr. Clemens Hampe from the Wiener entom. Monatsschr. for 1861. The first part of vol. ii. includes descriptions of new Coleoptera published by L. Miller in the same journal.

B. *Separate Work.*

Taschenberg, E. L. Naturgeschichte der wirbellosen Thiere, die in Deutschland sowie in den Provinzen Preussen und Posen den Feld-, Wiesen- und Weide-Culturpflanzen schädlich werden. Leipzig, 1865, 8vo, pp. xii & 288, with 7 plates.

In this work, which received the first prize of the Royal Prussian College of Agricultural Economy, the author has described the species of invertebrate animals which are injurious to agriculture in Germany, including the provinces of Prussia and Posen. The great majority of these are insects, the injurious species of which are well described in a popular systematic form, which will enable people of moderate intelligence easily to determine the nature of any insect whose action upon their crops is injurious. Under each species there is an account of its general habits and of the means to be adopted for its destruction; the parasitic and other natural enemies of many of the species are also noticed. This descriptive portion of the work is illustrated with seven coloured plates, most of the figures on which, though rather rough, are recognizable. A second section contains a list of the principal cultivated plants, with analytical tables of their insect enemies, so as to enable the agriculturist to ascertain, from a purely practical point of view, the nature of the influence under which his crops are suffering. This section of the work will be particularly useful. The work concludes with a list of the more important works referred to in

different parts of the text, with occasional notes on synonymic and other questions.

C. *Papers published in Journals.*

Becker, A. Naturhistorische Mittheilungen. Bull. Soc. Nat. de Moscou, tome xxxvii. pt. i. pp. 477–493 : 1864.

This paper contains numerous observations on the entomology of the district of Sarepta, chiefly arranged in chronological order, extending from May to November 1863. The observations relate to species of Coleoptera, Orthoptera, Diptera, and Rhynchota; and a good many new species are briefly characterized. These will be referred to hereafter, although most of the characters are far too imperfect to allow the insects to be identified. The paper concludes with lists of some species of Coleoptera, Lepidoptera, and Orthoptera to be added to the fauna of the neighbourhood of Sarepta.

——. Mittheilungen einer botanischen und entomologischen Reise. Bull. Soc. Nat. Mosc. tome xxxviii. pt. i. pp. 562–582 : August 11, 1865.

This paper consists only of a description of the author's travels in June 1864 from Sarepta up the Volga to Saratof, Katharinstadt, Wolsk, and Chwalinsk, with an account of some of the plants and insects which he met with in different localities. It possesses no general entomological interest.

Bold, T. J. Entomological Notes for the year 1864. Nat. Hist. Trans. Northumb. and Durham, vol. i. 1865, pp. 123–127.

In this paper Mr. Bold has given a general account of the more striking phenomena of insect life observed by him in Northumberland in 1864. He states that the great peculiarity of the season, from an entomological point of view, was the extraordinary abundance of such species as are destructive to farm and garden produce. The Aphides seem to have been most injurious.

Dohrn, C. A. Zur entomologischen Nomenclatur. Stettiner entom. Zeitung, 1865, pp. 345, 346.

In this short article Dohrn refers to some practices prevalent of late in the citation of authors whose names are furnished with signs of nobility, such as *de*, *von*, and *van*. He justly maintains that in quotations these prefixes may be advantageously omitted, and that this is still more necessary when the names of entomologists are employed for the designation of species. Another proposition appears less satisfactory, namely that in quoting the joint work of two or more authors, the name only of the chief of them should be cited.

Dohrn, Heinrich. Aus dem Reisejournal. Stettiner entom. Zeitung, 1865, pp. 189–204, 355–370.

This article contains a general account of the writer's experiences in the Cape de Verde Islands during the first month of his residence there, from Christmas 1864 to 22nd January 1865. It consists chiefly of a description of the author's travels in the two islands, S. Vicente and S. Antao, visited by him, but includes no special entomological information.

Dufour, L. De la direction à donner aux études entomologiques. Ann. Soc. Ent. France, 4e sér. tome iv. pp. 567–628 : January 25, 1865.

In this presidential address, the last work of its veteran author, we have a somewhat rapid sketch of the present state of our knowledge of many interesting departments of entomological study, accompanied by indications of existing deficiencies and of the course in which investigations should be directed in order to fill up these gaps.

Schaum, H. Zur Beseitigung von Missverständnissen. Wiener entom. Monatsschrift. viii. pp. 55–58 : February 1864.

This paper, which is in reply to an article by Schiner (Wien. ent. Mon. Bd. vii.), is in support of the view entertained by several continental entomologists that the works of certain authors who are notorious for the production of imperfect descriptions, and for a careless and uncritical arrangement of their materials, should be entirely ignored by their successors. It may be granted that the writings specially referred to by Dr. Schaum are really worse than useless, but unless their rejection by entomologists of future generations can be assured, those of the present day must be content to accept the burden thus laid upon them and make the best they can of it.

Erber, Josef. Ueber die auf der Seestrandskiefer, *Pinus halepensis*, Mich., lebenden schädlichen Insekten. Verh. zool.-bot. Gesellsch. in Wien, Band xv. pp. 943 *bis*–946 *bis*.

The insects referred to are *Cnethocampa pityocampa*, *Nephopteryx pinæ* (Staud.), *Retinia pinicolana* (Doubl.), *Otiorhynchus görzensis*, and *Dendroctonus pinæ*.

Simonds, J. B. Observations on Parasites and Parasitic Diseases as affecting domesticated animals. Journ. Roy. Agricult. Soc. 2nd series, vol. i. pp. 33–72 : 1865.

This paper contains a series of observations on the occurrence of parasitic insects and Acarina on domesticated animals, their effects, and the treatment necessary when these become troublesome or injurious. There is nothing new in a natural-history point of view in this paper.

Vollenhoven, S. C. Snellen van. Opmerkingen omtrent de Vangst van kleine Insecten. Tijdschrift voor Entomologie, 1865, pp. 132–136.

In this paper the author urges the Dutch entomologists to devote their attention to the smaller insects, and especially to the parasitic species, and furnishes them with some hints as to the best mode of proceeding.

Walker, F. Notes on Insects inhabiting the Reed, and their parasites. Ent. Monthly Mag. vol. i. pp. 184, 185.

This paper chiefly relates to Giraud's memoir on the insects living on the Reed, and gives a list of the species recorded by him.

Walsh, B. D. On certain remarkable or exceptional larvæ, Coleopterous, Lepidopterous, and Dipterous, with descriptions of several new genera and species, and of several species injurious to vegetation, which have been already published in agricultural journals. Proceedings Boston Soc. Nat. Hist. vol. ix. pp. 286–318 : February and March 1864.

This paper includes, together with some original remarks on larvæ of insects and characters of new genera and species, a selection or notices of articles published by the author in various American journals. In the first portion of the paper, Walsh refers to the circumstances, connected with his *Sphingicampa distigma*, *Dryocampa bicolor*, *Halesidota antiphola* and *tessellaris*, and *Clytus pictus*, which furnished the subject of his subsequent paper read to the Entomological Society of Philadelphia. (See Record, 1864, p. 332.)

D. *Anatomical and Physiological Papers.*

Blackwall, J. Facts relative to the movements of Insects on dry, polished, vertical surfaces. Proc. Linn. Soc. viii. pp. 136–140.

In this paper the author describes a series of observations made with the view of proving that flies and other insects are enabled to move on polished surfaces by means of an adhesive fluid emitted from the hairs of their pulvilli.

Bogdanoff, A. Les pigments des insectes sont-ils isolables? Bull. Soc. Nat. de Moscou, xxxvii. 1864, part i. pp. 346–348.

In this paper the author gives the results of some experiments upon the solubility of the colouring matters of insects. He finds that alcohol, which dissolves the pigments of birds' feathers, has no action upon those of insects, but that the brown,

yellow, and red colours of the latter, at least, are soluble in acetic acid. The orange pigment of *Papilio machaon* resists acetic acid.

Lindemann, Karl. Notizen zur Lehre vom "Äusseren Skelete" der Insekten. (Gelenke und Muskeln der Füsse.) Ibid. pp. 426–432, Taf. 9.

In this paper the author puts forward the notion that the term "external skeleton" applied to the hardened integument of arthropod animals must be given up, as he has made out, and proves here, from an examination of the structure of the leg in the larva of *Lampyris noctiluca*, that the muscles of the limbs are really inserted upon the outer surface of the joints they are intended to move. The author does not seem to the Recorder to have explained very clearly the relations of the muscles to the thin membranes closing the articulations in Insects and other Arthropoda*; but under any circumstances the term "external skeleton" is still perfectly applicable to their integuments, the hardened portions of which undoubtedly both enclose the muscles, and furnish their attachments, in contradistinction to the "internal" skeleton, clothed with muscles, of the Vertebrata.

——. Zoologische Skizzen. Ibid. part ii. pp. 521–560, Taf. 9 & 10.

In this paper the author discusses the structure and functions of the "fatty body" of insects, and shows that Fabre's views as to the latter are founded upon erroneous observations. According to Lindemann, the fatty body serves for the formation of certain organs, of which he mentions the generative organs, the tracheæ, the sericteria, and the Malpighian tubes. He says that its cells also produce blood-corpuscles from their nuclei (*l. c.* pp. 521–526). The sericteria of some larvæ of Lepidoptera become converted, according to Lindemann, into the lateral stems of the tracheal system (*l. c.* pp. 526–528). The metamorphosis of *Coccinella 7-punctata* takes place, according to Lindemann (*l. c.* pp. 528–531), in the following remarkable manner:—The larva, having selected its station, adheres firmly by its feet, brings its anal extremity down nearly to the feet, and then throws off its head. After three or four days' rest, two clavate tubercles make their appearance on the ventral surface, which are seen to consist of the chitinous skin of the larva with a solid cellular cord. The apices of these become dilated until they form laminæ, when two similar but much more delicate tubercles appear beneath them. At the same time six small excrescences appear behind these, three on each side of the belly of the larva. A globular enlargement is formed a little above the anus. The laminar form of the first two pairs increases, and tracheæ are produced in them; they are the future elytra and wings. The other three pairs

* In a subsequent paper, "On the structure of the skeleton in the Coleoptera," he explains that this membrane is exterior to the insertions of the muscles; hence the points of insertion must be regarded as situated upon internal processes of the hardened chitinous integument.

increase in length, and are the rudiments of the feet. The spherical enlargement over the anus is the new head of the *Coccinella*. When this state is attained, the old larva-skin is separated, and in two or three weeks, by the gradual development of these parts, the perfect beetle is produced. These statements seem to require confirmation.

Weismann, Au. Ueber die Entwickelung der Tipuliden, als zweiter Typus der Insectenmetamorphose. Amtl. Bericht. 39ster Versamml. deutscher Naturf., &c., in Giessen, September 1864, pp. 156–160: 1865.

In this paper the author describes the metamorphosis of *Corethra*, and contrasts it with that of *Musca*. He concludes from his observations that we may distinguish two kinds of complete metamorphosis in insects, represented by the types *Musca* and *Corethra*. In the former the thorax and head of the imago are entirely new formations; the internal systems of organs are also new formations or undergo a total revolution (*Umwälzung*). The pupa possesses only a latent vitality. In the type *Corethra*, on the contrary, the appendages of the imago sprout from the *hypodermis* of the larva. The head and thorax are directly derived from the corresponding parts of the larva; the internal organs are subject to no very important changes, and all the new parts, instead of being first formed in the pupa, show their first traces in the embryo. The life of the pupa is not latent, but is distinguished from that of the larva only by the cessation of feeding.

——. Zur Embryologie der Insecten. Müller's Archiv für Anat. &c., 1864, pp. 265–277, Taf. 7 B.

This paper contains a general account of the production of the embryo in the eggs of insects.

The Ann. Soc. Ent. France contain the orations pronounced by the Mayor of Saint-Sever and by Dr. Laboulbène at the funeral of Léon Dufour (*l. c.* tom. v. pp. 211–215), and also a list of the entomological works published by the deceased during his long and active life (ibid. pp. 216–252).

Wilson has communicated to the Entomological Society of London (Proc. 1864, pp. 50, 51) some notes on the entomology of South Australia. He gives the numerical proportions of the seven principal orders of insects as occurring in that colony as follows:—Coleoptera 20, Hymenoptera 11½, Lepidoptera 6½, Diptera 4½, Rhynchota 2, Orthoptera 1, Neuroptera ½.

The data for orders 2–4 are confessedly imperfect; probably all the numbers are too small in comparison with Coleoptera. The number of Coleoptera in collections is estimated at 2000 species.

An abstract of Walsh's observations on phytophagic varie-

ties, &c., is published in Silliman's 'American Journal,' September 1865, and reprinted in Ann. & Mag. Nat. Hist. 3rd ser. xvi. pp. 383, 384.

Liais has published some notes on the action of the wings in the flight of insects. Comptes Rendus, November 28, 1864, p. 907; translated in Ann. & Mag. Nat. Hist. 3rd ser. xv. pp. 155–159.

Pascoe publishes some observations on the occurrence of various insects on the snow-fields of Monte Moro (8000 feet). The insects were Diptera and Ichneumonidæ, and they were found lying each in a cylindrical hole in the snow. Proc. Ent. Soc. 1865, p. 90.

Girard communicates the results of some experiments in rearing caterpillars of *Vanessa urticæ*. In one set the transformations took place with great rapidity, and the butterflies produced were nearly all dwarfs. Girard attributes this to unfavourable conditions of air and light. Balbiani thinks that the rapid development and small size have a common cause in excess of heat, which is confirmed by the observations of Dareste upon Birds. A second set of larvæ reared by Girard were attacked by various parasites, especially *Entomobiæ*, and the pupa presented filaments of cryptogamic plants, the spores of which were probably introduced among the caterpillars by the parasites. Grenier remarks upon the parasitic Cryptogamia infesting these and other insects. Bull. Soc. Ent. Fr. 1865, pp. xxxvi–xxxviii.

Paris indicates some exceptions to the rule that the development of insects is hastened by heat.

Sichel remarks on the early appearance of Hymenoptera in warm seasons. Bull. Soc. Ent. Fr. 1865, p. xxxix.

On some examples of Fungi parasitic on Indian Lepidopterous insects, see Moore, Proc. Ent. Soc. 1865, p. 89.

Goureau communicated to the French Entomological Society some remarks on the occurrence of Nematode worms (*Gordius* and *Mermis*) in insects of various orders, and on the presence of larvæ of insects in ulcers and in the nasal fossæ of man. From the latter he takes occasion to recommend the study of entomology to medical men. Bull. Soc. Ent. Fr. 1865, pp. xv–xvi.

Pascoe has discussed the practice of changing the names of genera on account of similarity of sound, and maintains, with great justice, that this has been carried out by many writers in such a manner as to lead to much confusion and inconvenience. In this view he was supported by Westwood and Saunders. Proc. Ent. Soc. 1865, pp. 85–87.

Gasselin de Bompart communicates a mode of preserving collections and destroying any insects that may infest them. His process consists in exposing the collection to the vapour of coal-tar in a closed glass case: the destructive larvæ are killed by this means; and the collection acquires a strong odour, which preserves it from future attacks. Bull. Soc. Ent. Fr. 1865, pp. xxxix–xl.

Westwood mentions a mode of preserving larvæ adopted by Burchell, which, he states, preserves their colours admirably. The contents of the body are squeezed out, and the skins dried rapidly under pressure. Proc. Ent. Soc. 1865, p. 98.

COLEOPTERA.

A. *Works in progress.*

Clark, Hamlet. A Catalogue of Phytophaga [Coleoptera, Pseudotetramera.] Part I. *Sagridæ, Donacidæ, Criocerida, Megalopidæ.* With an Appendix containing descriptions of new species by H. W. Bates and Rev. Hamlet Clark. 8vo, pp. 50 & 88: 1866.

Although published in 1866, this part of Mr. Clark's catalogue has been long ready, and even its dedication bears date October 1865; it may therefore fairly be noticed in the present volume. This first part includes, in the first place, a synonymic catalogue of the species belonging to the group *Criocerides*, with indications of habitat, and references under each genus to the places where the larvæ, if any are known, have been described. The appendix contains descriptions of a great number of new species, those from the Valley of the Amazons by Mr. Bates.

Fairmaire, Léon. Genera des Coléoptères d'Europe, comprenant leur classification en familles naturelles, la description de tous les genres, &c. Livraisons 128–131. Paris, 1865.

The four livraisons published in 1865, of the continuation of Jacquelin du Val's 'Genera of European Coleoptera,' contain the conclusion of the Longicorns, the synoptical table of genera, and the commencement of the catalogue of species belonging to this section of the European Coleoptera.

Thomson, C. G. Skandinaviens Coleoptera, synoptiskt bearbetade. Tom. vii. Lund, 1865, pp. 394.

This volume of Thomson's great work includes the *Rhynchophori*, the twelfth series of his classification. The subordinate arrangement adopted by him will be indicated under Curculionidæ.

B. *Separate Publications.*

Chapuis, F. Monographie des Platypides. 8vo. Liége, 1865, pp. 344, with 24 plates.

In this valuable monograph M. Chapuis has presented us with perhaps the most remarkable entomological work of the year,

not only from the great number of new species described in it, but on account of the exceedingly careful and thorough-going manner in which he has worked upon his materials, and the clearness with which he has communicated the results of his investigations. Of a group numbering 16 previously described species, M. Chapuis now describes 202; of these he has in many cases determined and brought together the two sexes, which generally differ considerably; and the analytical tables for the determination of the species are prepared from the characters of both sexes. The plates with which the work is illustrated contain admirably characteristic figures of all the species.

Chaudoir, Baron de. Catalogue de la Collection de Cicindélètes de M. le Baron de Chaudoir. Brussels, March 1865, pp. 64, 8vo.

In this catalogue the author enumerates all the species of Cicindelidæ in his collection, which contains probably the finest series of these insects in the world. An appendix contains descriptions of several new species and the characters of some new generic groups.

Kraatz, G. Revision der Tenebrioniden der alten Welt aus Lacordaire's Gruppen der Erodiides, Tentyriides, Akisides, Piméliides, und der europäischen Zophosis-Arten. Berlin, 1865, 8vo, pp. vi & 393.

In this work, which must be looked upon only as an instalment of a complete revision of the *Tenebrionidæ* of the eastern hemisphere, the author has endeavoured to bring into something like order the chaotic mass of species belonging to four of Lacordaire's tribes. This, however, is not completed, the revision of the Egyptian and Algerian *Pimeliæ* being still kept back. The arrangement adopted is, with few modifications, that of Lacordaire's genera; and tabular analyses of the genera in each of the larger tribes are given. In treating of the larger genera the author, after a discussion of the generic characters, &c., commences with a general revision of Solier's species, interspersed with similar notes upon the species described by other authors. This is followed by an analytical table of the species, and this, again, by their Latin diagnoses and synonymy as elaborated in the first revision. In most cases in the larger genera the species are treated of in geographical sections. This is evidently a work of great labour and research, and it throws a new light on a difficult and obscure department of entomology. We can but hope that Dr. Kraatz may be enabled to treat the remainder of the family in the same spirit.

Thomson, James. Systema Cerambycidarum ou exposé de tous les genres compris dans la famille des Cérambycides et familles limitrophes. 4e livraison. Liége, Paris, &c., pp. 353–578, 8vo. (See Record, 1864, p. 336).

The greater part of the fourth livraison of this work, published in 1865, is occupied by the synoptical tables of the genera, &c., commenced in the third livraison of 1864, or, to state the matter more precisely, the tabular analysis of pp. 13–336 occupies pp. 337–481! This is followed by a list of errata and synonymic corrections, and this by an appendix to the supplement, containing references to new genera established since the preparation of the body of the work, especially those proposed by Pascoe in the first part of his 'Longicornia Malayana.' This portion also includes the characters of one or two new genera. Thus, as M. Thomson states (p. 497), apparently with some little pride in the part he has taken in bringing about such a result, the number of proposed genera of Longicorns here referred to is 1178, of which, he adds, "*more than one-third* are of my creation." The remainder of the work is occupied by a full alphabetical index of genera and species, and by the diagnoses of 251 new species, which will be fully described in an appendix to the 'Systema Cerambycidarum.'

Wollaston, T. V. Coleoptera Atlantidum, being an enumeration of the Coleopterous Insects of the Madeiras, Salvages, and Canaries. London, 1865, pp. xlvii, 526, & 140.

In this work Mr. Wollaston has brought to a focus, as it were, the entire results of his investigations of the Coleoptera of the group of Atlantic islands comprising Madeira and its dependencies in the north, the Canaries in the south, and the detached rocky Salvages in the space between these. The general results of these researches were indicated in the 'Record' for 1864 (pp. 337, 338) in noticing the author's Catalogue of Canarian Coleoptera; the present volume includes the results of an investigation of the Coleoptera of some of the Canary Islands by the Messrs. Crotch, which, with the addition of a few species discovered by other observers, somewhat alter the numerical relations of the constituents of the fauna. The total number of known species recorded in this work, as derived from the whole of the islands, is 1449; of these, 1007 occur in the Canaries, 661 in the Madeiras, and 24 in the Salvages. Of the whole 1449 species, 1039 are considered to be peculiar to the islands, the remaining 410 being known in other countries, especially the south of Europe and north of Africa. But a great number of the 1039 species are marked by the author as possibly only geographical modifications of species known elsewhere; others will probably occur in the Mediterranean region; but Mr. Wollaston considers that of the whole about 700 (or nearly half) may be regarded truly endemic, or "peculiar to the province of which the several islands are detached parts."

not only from the great number of new species described in it, but on account of the exceedingly careful and thorough-going manner in which he has worked upon his materials, and the clearness with which he has communicated the results of his investigations. Of a group numbering 16 previously described species, M. Chapuis now describes 202; of these he has in many cases determined and brought together the two sexes, which generally differ considerably; and the analytical tables for the determination of the species are prepared from the characters of both sexes. The plates with which the work is illustrated contain admirably characteristic figures of all the species.

Chaudoir, Baron de. Catalogue de la Collection de Cicindélètes de M. le Baron de Chaudoir. Brussels, March 1865, pp. 64, 8vo.

In this catalogue the author enumerates all the species of Cicindelidæ in his collection, which contains probably the finest series of these insects in the world. An appendix contains descriptions of several new species and the characters of some new generic groups.

Kraatz, G. Revision der Tenebrioniden der alten Welt aus Lacordaire's Gruppen der Erodiides, Tentyriides, Akisides, Piméliides, und der europäischen Zophosis-Arten. Berlin, 1865, 8vo, pp. vi & 393.

In this work, which must be looked upon only as an instalment of a complete revision of the *Tenebrionidæ* of the eastern hemisphere, the author has endeavoured to bring into something like order the chaotic mass of species belonging to four of Lacordaire's tribes. This, however, is not completed, the revision of the Egyptian and Algerian *Pimeliæ* being still kept back. The arrangement adopted is, with few modifications, that of Lacordaire's genera; and tabular analyses of the genera in each of the larger tribes are given. In treating of the larger genera the author, after a discussion of the generic characters, &c., commences with a general revision of Solier's species, interspersed with similar notes upon the species described by other authors. This is followed by an analytical table of the species, and this, again, by their Latin diagnoses and synonymy as elaborated in the first revision. In most cases in the larger genera the species are treated of in geographical sections. This is evidently a work of great labour and research, and it throws a new light on a difficult and obscure department of entomology. We can but hope that Dr. Kraatz may be enabled to treat the remainder of the family in the same spirit.

Thomson, James. Systema Cerambycidarum ou exposé de tous les genres compris dans la famille des Cérambycides et familles limitrophes. 4e livraison. Liége, Paris, &c., pp. 353–578, 8vo. (See Record, 1864, p. 336).

The greater part of the fourth livraison of this work, published in 1865, is occupied by the synoptical tables of the genera, &c., commenced in the third livraison of 1864, or, to state the matter more precisely, the tabular analysis of pp. 13–336 occupies pp. 337–481! This is followed by a list of errata and synonymic corrections, and this by an appendix to the supplement, containing references to new genera established since the preparation of the body of the work, especially those proposed by Pascoe in the first part of his 'Longicornia Malayana.' This portion also includes the characters of one or two new genera. Thus, as M. Thomson states (p. 497), apparently with some little pride in the part he has taken in bringing about such a result, the number of proposed genera of Longicorns here referred to is 1178, of which, he adds, "*more than one-third* are of my creation." The remainder of the work is occupied by a full alphabetical index of genera and species, and by the diagnoses of 251 new species, which will be fully described in an appendix to the 'Systema Cerambycidarum.'

Wollaston, T. V. Coleoptera Atlantidum, being an enumeration of the Coleopterous Insects of the Madeiras, Salvages, and Canaries. London, 1865, pp. xlvii, 526, & 140.

In this work Mr. Wollaston has brought to a focus, as it were, the entire results of his investigations of the Coleoptera of the group of Atlantic islands comprising Madeira and its dependencies in the north, the Canaries in the south, and the detached rocky Salvages in the space between these. The general results of these researches were indicated in the 'Record' for 1864 (pp. 337, 338) in noticing the author's Catalogue of Canarian Coleoptera; the present volume includes the results of an investigation of the Coleoptera of some of the Canary Islands by the Messrs. Crotch, which, with the addition of a few species discovered by other observers, somewhat alter the numerical relations of the constituents of the fauna. The total number of known species recorded in this work, as derived from the whole of the islands, is 1449; of these, 1007 occur in the Canaries, 661 in the Madeiras, and 24 in the Salvages. Of the whole 1449 species, 1039 are considered to be peculiar to the islands, the remaining 410 being known in other countries, especially the south of Europe and north of Africa. But a great number of the 1039 species are marked by the author as possibly only geographical modifications of species known elsewhere; others will probably occur in the Mediterranean region; but Mr. Wollaston considers that of the whole about 700 (or nearly half) may be regarded truly endemic, or "peculiar to the province of which the several islands are detached parts."

The numbers of observed species in the different islands are now given by Wollaston as follows :—

Madeira	598	Lanzarote	277	Gomera	396
Porto Santo	100	Fuerteventura ..	261	Palma	258
3 Desertas	87	Grand Canary....	341	Hierro	224
2 Salvages	24	Teneriffe	578		

The proportions of the different groups are :—

Rhynchophora ..	282	Heteromera.....	172	Pseudotrimera ..	30
Necrophaga.....	219	Priocerata	135	Philhydrida	29
Brachelytra	215	Phytophaga	64	Hydradephaga ..	29
Geodephaga	188	Cordylocerata....	64	Eucerata	22

These proportions are but little altered by the introduction of the Madeiran coleopterous fauna; and the author remarks that, although the more extensive fauna of the Canaries includes several well-known generic types which are wanting in the Madeiras, yet the true Atlantic types permeate the whole of the islands in such a manner as to give a striking appearance of unity to the general fauna. The coincidence of species is, however, less than might have been expected; only 238 have been observed which are common to the two principal groups.

Some considerable alteration will be necessary in these numerical results if the species indicated by Wollaston as possibly derivatives from other known species should hereafter be reduced to the rank of varieties. Many of these, no doubt, are founded upon very slight differences; but in the present state of scientific opinion as to the origin of species, these doubtful specific forms, inhabiting what may be regarded as the highest summits of a submerged continent, possess a peculiar interest, heightened by the mode of their distribution in the different islands of the archipelago.

In his remarks on "dominant forms" the author calls attention to the great development of the Curculionid subfamily *Laparocerides*, which includes 57 Atlantic species, 19 in the Madeiras and 38 in the Canaries. In the former group the genus *Atlantis* predominates, in the latter *Laparocerus*: the whole of the species are peculiar to these islands. *Acalles* (including *Echinodrea*) is represented by 36 species in the Atlantic islands, the whole of Europe having only about 27. The genus *Homalota* is represented by 43 species, and *Tarphius* by 34. *Helops* has 27 species, *Calathus* 23 (19 peculiar to the Canaries), *Attalus* 22, and *Hegeter*, *Longitarsus*, and *Dromius* 20 species each.

Some of the deficiencies are also singular. Thus the *Cistelitoniides*, sparingly represented in the Canaries, are wanting in the Madeiras, where also the *Elateridæ* are represented only by a single obscure species belonging to the genus *Coptostethus*, 6 species of which are the sole examples of this great family in the Canaries. The allied *Buprestidæ* also, of which 6 Canarian

species are recorded, have only a single representative in the Madeiras. Of abundant Canarian genera wanting in Madeira the author cites *Nebria*, *Carabus*, *Silpha*, *Hispa*, *Zophosis*, *Tentyria*, *Pimelia*, *Cossyphus*, and *Ocyphus*. A few blind species have been met with, and some of these are inhabitants of ants' nests.

In the concluding sections of his introduction Wollaston remarks upon the groups of Beetles found in particular situations, such as the sand-infesting species, and those affecting particular sets of plants, such as the Euphorbias, Pines, and "Retamas." In these and in the "general considerations" we find many valuable observations. In the "Index topographicus," which only indicates the distribution of the species in the three primary groups of islands, the author has marked those species which he thinks may be derivative forms by appending to their names an arrow with the name of the species from which they may be supposed to be derived. The species which have not been found elsewhere, and those which the author regards as strictly endemic, are also indicated by typographical marks.

C. *Papers published in Journals, &c.*

Allard, E. Description d'une nouvelle espèce de *Clythra*, et tableau synoptique du sous-genre *Lacnæa*. Ann. Soc. Ent. Fr. 4e sér. tom. iv. pp. 383–386: January 25, 1865.

——. Tableau synoptique des espèces du genre *Erodius*. *Loc. cit.* pp. 389–398.

——. See Rye.

Altum, —. Die Käfer Borkum's. Stettiner entom. Zeitung 1865, pp. 144–147: June 1865.

——. Die Arten der Gattung *Dytiscus* in der nächsten Umgebung von Münster. Ibid. pp. 346–352: December 1865.

Archer, William Henry. On a genus of Coleoptera hitherto unfound in Victoria. Trans. Roy. Soc. of Victoria, vol. vi. pp. 106–107: May 1865. (*Hyperion schrœtteri.*)

Baly, J. S. Descriptions of new genera and species of *Phytophaga*. Ann. & Mag. Nat. Hist. 3rd ser. vol. xv. pp. 33–38: January 1, 1865.

——. Descriptions of new genera and species of *Phytophaga*. Trans. Ent. Soc. London, 3rd ser. vol. ii. pp. 333–357 (March 1865) and pp. 427–440 (September 1865).

——. *Phytophaga Malayana*; a revision of the Phytophagous Beetles of the Malay Archipelago, with descriptions of the

new species collected by Mr. A. R. Wallace. Ibid. vol. iv. pp. 1–76, pls. 1–3 : June 1865.

Baly, J. S. Descriptions of new species of *Crioceridæ*. Ann. & Mag. Nat. Hist. xvi. pp. 153–160 : September 1, 1865.

——. Descriptions of new genera and species of *Gallerucidæ*. Ibid. pp. 247–255 : October 1, 1865.

——. Descriptions of new genera and species of *Gallerucidæ*. Ibid. pp. 402–410 : December 1, 1865.

——. Descriptions of new genera and species of *Gallerucidæ*. Entom. Monthly Mag. ii. p. 97–101, 127–128, and 147–148 : October to December 1865.

——. Attempt at a classification of the *Eumolpidæ*. (Continuation.) Journ. of Entom. vol. ii. pp. 433–442 : November 1865.

Contains the *Myochroinæ* and *Bromiinæ*.

Bates, H. W. On the species of *Agra* of the Amazons Region. Trans. Ent. Soc. London, 3rd ser. vol. ii. pp. 359–383, pl. 20 : September 1865 (read 3rd April).

——. New species of *Agra* in the collection of Mr. W. W. Saunders. Ibid. pp. 385–388, pl. 20 (read 1st May).

——. Contributions to an Insect Fauna of the Amazons Valley. Coleoptera : Longicornes. (Continued.) Ann. & Mag. Nat. Hist. 3rd ser. vol. xv. pp. 213–225 (March 1, 1865), pp. 382–394 (May 1, 1865) ; and vol. xvi. pp. 101–113 (August 1, 1865), pp. 167–182 (September 1, 1865), and pp. 308–315 (November 1, 1865).

Bethe, —. Zur Diagnose des *Xantholinus linearis* (Oliv.) und *X. longiventris* (Heer). Stett. ent. Zeit. 1865, pp. 65–67 : March 1865 (also *l. c.* p. 184).

——. Ueber die in Deutschland bis jetzt aufgefundenen Arten des Genus *Throscus*, Latr. Ibid. pp. 234–238 : September.

Bland, J. H. B. Descriptions of several new species of North American Coleoptera. Proc. Ent. Soc. Philad. vol. iv. pp. 381–384 : June 1865.

——. Compiled descriptions of North American Staphylinidæ. Proc. Ent. Soc. Philad. vol. iv. pp. 391–425 : June 1865.

Boieldieu, A. Quelques Coléoptères nouveaux des îles d'Eubée et Baléares. Ann. Soc. Ent. Fr. 4e sér. tom. v. pp. 5–12, pl. 1 : August 23, 1865.

Bold, M. J. List of Coleopterous Insects added to the fauna of Northumberland and Durham during the year 1864. Nat. Hist. Trans. Northumb. and Durham, vol. i. pp. 131–133.

Contains a list of 25 species, all of which are known to be British.

Borre, A. de. Addenda au Catalogue des Coléoptères de Belgique. Annales Soc. Entom. de Belgique, tome viii. pp. 277–278 : 1864.

This is a mere list of additions to the Coleopterous Fauna of Belgium, for the most part recorded in previous volumes of the 'Annales.' Only three species are really added to the list.

Brendel, Emil. On some new species of *Pselaphidæ*. Proc. Ent. Soc. Philad. vol. v. pp. 28–32 : October 9, 1865.

Brisout de Barneville, Henri. Monographie des espèces Européennes et Algériennes du genre *Orchestis*. Annales Soc. Entom. de France, 4e sér. tome v. pp. 253–296, December 13, 1865 (read July 12, 1865).

——. Monographie des espèces Européennes et Algériennes du genre *Acalles*, suivies de la description abrégée des espèces propres à l'île de Madère, d'après M. Wollaston. Ann. Soc. Ent. Fr. 4e sér. tome iv. pp. 441–482 : January 25, 1865.

Burmeister, Hermann. Longicornia Argentina. Systematischer Uebersicht der Bockkäfer der La Plata Staaten. Stettiner entom. Zeitung, 1865, pp. 156–181 : June 1865.

Butler, A. G. Description of a new species of *Cetonia* in the collection of the British Museum. Ann. & Mag. Nat. Hist. 3rd series, vol. xvi. pp. 161–162 : September 1, 1865.

Chaudoir, Baron de. Monographie du genre *Collyris* (Fabricius). Annales Soc. Entom. France, 4e série, tome iv. pp. 483–536, pl. 7–9 : January 25, 1865.

——. Essai sur les Féronies de l'Australie et de la Nouvelle Zélande. Bull. Soc. Nat. de Moscou, tome xxxviii. pt. 2. pp. 65–112 : 1865.

——. Note sur les genres *Dromica*, *Tricondyla* et *Collyris*. Revue et Magasin de Zool. 1864, pp. 7–11, 37–43, 72–77, 104–108 : January to April 1864.

Chevrolat, Auguste. Coléoptères de l'île de Cuba. Notes, synonymies et descriptions d'espèces nouvelles. (Cinquième Mémoire.) Ann. Soc. Ent. Fr. 4e série, tome iv. pp. 405–418 : January 25, 1865.

In this memoir the author continues his descriptions of Cuban Coleoptera, through the groups *Parnides*, *Heterocerides*, *Passa-*

lides, and a portion of the *Lamellicornia*. The total number of species referred to is twenty-nine, of which eleven are new.

Chevrolat, Auguste. Coléoptères de l'île de Cuba. Suite. (Sixième Mémoire.) Ibid. tome v. pp. 21–36 : August 23, 1865.

Contains the remainder of the *Lamellicornia*, thirty-three species, ten new.

——. Description d'un nouveau genre et diverses espèces d'insectes Coléoptères de l'île de Cuba. Revue et Magasin de Zoologie, 1864, pp. 179–182.

——. Descriptions de Coléoptères d'Espagne, nouveaux ou peu connus. 1er Mémoire. Ibid. 1865, pp. 347–352 & 290–397 : November and December 1865.

Clark, Hamlet. Descriptions of species of *Phytophaga* received from Pulo Penang or its neighbourhood. Ann. & Mag. Nat. Hist. xv. pp. 139–148 : February 1, 1865.

——. Descriptions of New *Phytophaga* from Western Australia. Trans. Ent. Soc. London, 3rd series, vol. ii. pp. 401–421 : September 1865 (read 1st May & 5th June).

——. An examination of the Dejeanian genus *Cœlomera* (*Coleoptera Phytophaga*) and its affinities. Annals & Mag. Nat. Hist. 3rd series, vol. xvi. pp. 256–258 & 315–326 : October and November 1865.

——. An examination of the *Halticidæ* of South America. Journ. of Entom. vol. ii. pp. 375–412 : November 1865.

Costa, A. See Insecta, p. 381.

Couper, William. Descriptions of new species of Canadian Coleoptera. Canad. Nat. & Geol. new series, vol. ii. pp. 60–63 : 8th March, 1865.

Crotch, G. R. Revision of the genus *Telephorus*, as far as regards the British species. Entomologist, vol. ii. pp. 167–172.

——. Notes on the genera *Malthinus* and *Malthodes*. Ibid. pp. 181–183.

——. Notes on the genus *Telmatophilus*, with description of a new British species. Ibid. pp. 209–210.

——. Notes on the *Melyridæ*. Ibid. pp. 213–216.

——. Extract from the Monograph of *Gymnetron*, by M. H. de Barneville. Ibid. pp. 216–221.

Crotch, G. R. Remarks on the genus *Ceuthorhynchus* and its allies. Ibid. pp. 259–261.

——. Some remarks on the genus *Nothus* of Olivier. Ibid. pp. 261–263.

——. Notes on the genus *Hister*. Ibid. pp. 307–311.

Desbrochers des Loges. Remarques sur divers Coléoptères. Ann. Soc. Ent. Fr. 4e série, tome v. pp. 207–210 : October 25, 1865.

Deyrolle, Henri. Description des Buprestides de la Malaisie, recueillis par M. Wallace. Annales de la Soc. Entom. de Belgique, tome viii. pp. 1–269, plates i.–iv.

In this memoir, which bears the date of 1864, but was not published until March 1865, M. Deyrolle does for the *Buprestidæ* of the Malasian region what is being done by Mr. Pascoe for the Longicorns and by Mr. Baly for the Phytophaga. In this, as in the other works describing the Coleoptera collected by Mr. Wallace, the number of new species is very great, and a very considerable proportion of them are regarded by the author as justifying the foundation of new generic groups. Several of the new species are beautifully figured on three plates by M. Migneaux; and the author has added a fourth plate, illustrating in outline the characters of the new genera. The species in the larger genera are carefully tabulated.

Dietrich, Kaspar. Beitrag zur Kenntniss der Insekten-Fauna des Kantons Zürich. Käfer. Nouv. Mémoires de la Soc. Helv. des Sci. Nat. tome xxi. pp. 240 : 1865.

This paper includes a complete catalogue of the species of Coleoptera ascertained to inhabit the canton of Zürich. Few synonyms are given; but here and there the author has appended notes on the synonymy of particular species, which will be referred to in their proper places. The mode of occurrence of the species is carefully noted.

Dohrn, C. A. Trypanæus oder Tryponæus? Stett. ent. Zeit. 1865, pp. 57–59.

In this paper the author indicates the confusion that has prevailed as to the spelling of the name of the genus referred to in its title.

——. Eine Rittergeschichte. Stett. ent. Zeit. 1865, pp. 59–63. (On *Bembidium eques*.)

——. Note zur Lamellicornien Gattung *Orsilochus*, Burmeister. Stett. ent. Zeitung, 1865, pp. 187–188 : June 1865.

——. *Trichogomphus martabani*, Guér. Stett. ent. Zeitung, 1865, pp. 371–375 : December 1865.

Dohrn, C. A. Tandem Aliquando. Stett. ent. Zeitung, 1865, pp. 289–294: September 1865.

In a paper under the above fanciful title, Dohrn refers to the numerous disappointments which he, in common with other entomologists, has experienced at the hands of travelling friends who promised to collect insects in the countries visited by them. To make up for the many failures, however, he has received from Japan, among other Beetles, a considerable number of specimens of a *Damaster*, which appears to be distinct from *D. blaptoides* (Koll.).

Fairmaire, Léon. Monographie des Chrysomèles de Suffrian. Traduction. Suite. Ann. Soc. Ent. France, 4e série, tome v. pp. 37–82: August 23, 1865.

This portion of M. Fairmaire's translation of Suffrian's Monograph includes the species belonging to groups 11–13 of that author, 34 in number. In an appendix the translator adds several additional species to the groups already translated, some of which are new.

Fairmaire, L., et Germain. Révision des Coléoptères du Chili. Revue et Magasin de Zoologie, 1864, pp. 258–262, 283–287, & 385–394: August, September, and December.

These papers constitute a supplement to the Buprestidæ of the Chilian fauna, and contain descriptions of new species, which will be referred to in their proper places.

Fauvel, A. Tableau synoptique des espèces du genre *Oxyporus* (Fab.). L'Abeille, tome i. pp. 369–372.

——. Etudes sur les Staphylinides de l'Amérique centrale, principalement du Mexique. Bull. Soc. Linn. de Normandie, ix. 1865, pp. 8–66, pl. 1 (read November 9, 1863).

This paper contains a revision of the Central American species of the subfamily *Piestini* (Erichs.).

——. Enumération des Insectes recueillis en Savoie et en Dauphiné (1861–1863) et descriptions d'espèces nouvelles. Coléoptères. Ibid. pp. 253–321 (read April 11, 1864).

This paper commences an enumeration of the species of Coleoptera collected during entomological excursions to the alpine regions of Savoy, and extends over the families *Cicindelidæ*, *Carabidæ*, *Dytiscidæ*, *Gyrinidæ*, *Palpicornes*, and *Staphylinidæ*. The number of species is very considerable, and several of them, especially among the *Staphylinidæ*, are described as new. Most of the references are accompanied by notes on the mode of the occurrence of the species, and sometimes on their distinctive characters.

Fauvel, A. Addenda et Delenda au Catalogue de Coléoptères de France de M. le Dr. Grenier. Staphylinides. Ibid. pp. 348–361.

Ferrari, Grap. Kleiner Beitrag zur Käferfauna Venedigs und des Lido. Wiener entom. Monatsschrift, Band viii. pp. 105–113: April 1864.

This paper contains some observations upon the Coleoptera occurring in the vicinity of Venice, the more important of which will be noticed hereafter, and a list of species ascertained by the author, amounting to 177 in number. The *Carabidæ* (28), *Staphylinidæ* (35), *Lamellicornia* (26), and *Curculionidæ* (15), as usual, include the greater number of the species; but nearly all the families of Coleoptera are represented by one or more species. A description of a new species of *Bothriophorus* is added.

——. *Acmastes haroldii*, Schaum, eine für die europäische Coleopteren-Fauna neue Gattung und Art aus der Familie der Carabiden. Ibid. pp. 235–236.

——. Einige Worte über die Coleopteren-Gattung *Calobius*, Wollaston, und die dazu gehörigen Arten. Ibid. pp. 473–478: March 1865.

Gerhardt, —. *Orchestes quedenfeldtii*, n. sp. Stettiner entom. Zeitung, 1865, pp. 214, 215: June 1865.

Germiny, Paul le Bégue de. Description d'une nouvelle espèce de *Nebria*. Ann. Soc. Ent. Fr. 4e série, tome iv. p. 419: January 25, 1865.

Goureau, O. Note sur la larve de la *Psilliodes napi*. Annales Soc. Entom. France, 4e série, tome iv. p. 668.

Gray, G. R. Notice of a new species of *Goliathus*. Proc. Zool. Soc. Lond. 1864, p. 34, pl. 5.

Hagens, — von. Ueber Ameisengäste. Ueber *Myrmedonia plicata* und *erratica*. Berliner entom. Zeitschrift, 1865, pp. 105–113.

Hampe, Clemens. Neue Käfer-Arten. Wiener entom. Monatsschrift, Band viii. pp. 190–193: June 1864.

(——. Einige neue Käfer aus Croatien und Siebenbürgen. Descriptions reprinted in L'Abeille, tome i. pp. cix–cxii.)

Jekel, H. Recherches sur la classification naturelle des Curculionides. Ann. Soc. Ent. France, 4e série, tome iv. pp. 537–566: January 25, 1865.

Joannis, L. de. Gallérucides, Tribu de la Famille des Phytophages, ou Chrysomélines. L'Abeille, tome ii. pp. 1–144: 1865. (Not completed.)

This monograph relates only to the European species.

Kiesenwetter, H. von. Zur systematischen Stellung von *Byturus*. Berliner entom. Zeitschrift, 1865, pp. 357–358.

——. Eine entomologische Excursion nach Spanien im Sommer 1865. Berliner entom. Zeitschrift, 1865, pp. 359–396.

In this paper Kiesenwetter gives a most interesting report of the proceedings of one party of German entomologists who took part in the entomological excursion into Spain at Easter last year. His account of the travelling experiences of his party, and of the localities explored by them in search of Coleoptera, will furnish an excellent guide to any entomologist wishing to follow in their steps. The mode of life of many known species is indicated, and a considerable number of new species met with are briefly described in notes. These will be referred to hereafter.

In conclusion, Kiesenwetter calls attention to the geographical distribution of the Coleoptera as illustrated by the results of the exploration of the mountain-regions of Spain. The predominant alpine forms, *Carabus, Nebria* (especially subg. *Alpæus*), *Pterostichus, Anthophagus, Otiorhynchus, Chrysomela* (subg. *Oreina*), occur without exception in the Pyrenees, but are represented generally by distinct species. In the mountains of Castile only three of the above forms make their appearance, namely *Carabus, Nebria*, and *Otiorhynchus*; but these are represented by comparatively few species, and in the Sierra Nevada the characteristic alpine forms are nearly wanting. They are replaced by a series of genera characteristic of the fauna of the South Spanish mountains, such as *Cymindis, Zabrus, Chlænius, Philorinum, Rhytirrhinus, Cyrtonus*, and *Timarcha*, but especially by numerous *Tenebrionidæ*. The above-mentioned genera, with the exception of *Rhytirrhinus*, extend northward into the Castilian mountains, but are there generally represented by different species; they are accompanied by the *Tenebrionidæ* also, although these are less abundant than in the Sierra Nevada. *Cymindis, Zabrus, Chlænius*, and *Timarcha* occur in the Pyrenees; the other southern genera are wanting, and the *Tenebrionidæ* are much reduced in number; and in the Alps *Cymindis* alone makes its appearance.

King, R. L. Description of Australian species of Georyssides and Parnides. Trans. Entom. Soc. of New South Wales, vol. i. pp. 158–161, pl. 14: 1865 (read August 1, 1864).

——. On the Pselaphidæ of Australia. Ibid. pp. 167–175, pl. 14 (read November 7, 1864).

Kirsch, T. Beiträge zur Käferfauna von Bogotá. Berliner entom. Zeitschrift, 1865, pp. 40–104, pl. 3.

This paper contains a general description of the geographical features of Bogotá, and descriptions of numerous new species and genera of Coleoptera from that country.

——. Sammelbericht. Berliner entom. Zeitschrift, 1865, pp. 121–123.

Contains a list of captures of Coleoptera, chiefly in the neighbourhood of Dresden, with remarks on the occurrence of some of the species, and the description of a new species of *Polydrusus*.

Kraatz, G. Ueber die vermeintliche Tasterbildung des *Machærites subterraneus*. Wiener entom. Monatsschrift, viii. 1864, pp. 86–89; with a reply by Lederer, pp. 89–92.

——. Ueber die Arten der Gattung *Bulæa* (Muls.). Berliner entom. Zeitschrift, 1865, pp. 119, 120.

Kutschera, F. Beiträge zur Kenntniss der europäischen Halticinen. Wiener entom. Monatsschrift, Band viii. pp. 33–52, 141–164, 269–288, 303–321, 337–353, & 373–472: 1864.

Lederer, J. Zur Machærites-Literatur. Ibid. pp. 202–204: June 1864. (See also Kraatz.)

——. Ueber *Clytus arvicola*. Ibid. 1865, pp. 483–485.

Lucas, H. Note sur les *Plusiotis adelaida* et *costata*, Coléoptères de la famille des Lamellicornes et de la tribu des Rutélides. Ann. Soc. Ent. Fr. 4e série, tome v. pp. 203–205. October 25, 1865.

——. Note sur le genre *Diodyrhynchus*, Germar. Ibid. p. 206.

MacLeay, W., Jun. Description of a new genus of Carabideous Insects. Trans. Entom. Soc. of New South Wales, vol. i. 1865, pp. 155–157, pl. 15. (Read June 6, 1864.)

A blind form allied to *Anillus*.

——. On the *Scaritidæ* of New Holland. Third paper. Ibid. pp. 176–198. (Read March 6, 1865.)

In this paper the author describes 20 new species of the genus *Carenum*, besides some other forms, and gives a complete tabular catalogue of the Australian species of *Scaritides*.

——. The genera and species of the *Amycteridæ*. Ibid. pp. 199–298. (Read August 7, 1865.)

Marquet, —. Espèces nouvelles de Coléoptères de France. L'Abeille, tome i. pp. 372–373.

Joannis, L. de. Gallérucides, Tribu de la Famille des Phytophages, ou Chrysomélines. L'Abeille, tome ii. pp. 1–144: 1865. (Not completed.)

This monograph relates only to the European species.

Kiesenwetter, H. von. Zur systematischen Stellung von *Byturus*. Berliner entom. Zeitschrift, 1865, pp. 357–358.

——. Eine entomologische Excursion nach Spanien im Sommer 1865. Berliner entom. Zeitschrift, 1865, pp. 359–396.

In this paper Kiesenwetter gives a most interesting report of the proceedings of one party of German entomologists who took part in the entomological excursion into Spain at Easter last year. His account of the travelling experiences of his party, and of the localities explored by them in search of Coleoptera, will furnish an excellent guide to any entomologist wishing to follow in their steps. The mode of life of many known species is indicated, and a considerable number of new species met with are briefly described in notes. These will be referred to hereafter.

In conclusion, Kiesenwetter calls attention to the geographical distribution of the Coleoptera as illustrated by the results of the exploration of the mountain-regions of Spain. The predominant alpine forms, *Carabus, Nebria* (especially subg. *Alpæus*), *Pterostichus, Anthophagus, Otiorhynchus, Chrysomela* (subg. *Oreina*), occur without exception in the Pyrenees, but are represented generally by distinct species. In the mountains of Castile only three of the above forms make their appearance, namely *Carabus, Nebria*, and *Otiorhynchus*; but these are represented by comparatively few species, and in the Sierra Nevada the characteristic alpine forms are nearly wanting. They are replaced by a series of genera characteristic of the fauna of the South Spanish mountains, such as *Cymindis, Zabrus, Chlænius, Philorinum, Rhytirrhinus, Cyrtonus*, and *Timarcha*, but especially by numerous *Tenebrionidæ*. The above-mentioned genera, with the exception of *Rhytirrhinus*, extend northward into the Castilian mountains, but are there generally represented by different species; they are accompanied by the *Tenebrionidæ* also, although these are less abundant than in the Sierra Nevada. *Cymindis, Zabrus, Chlænius*, and *Timarcha* occur in the Pyrenees; the other southern genera are wanting, and the *Tenebrionidæ* are much reduced in number; and in the Alps *Cymindis* alone makes its appearance.

King, R. L. Description of Australian species of Georyssides and Parnides. Trans. Entom. Soc. of New South Wales, vol. i. pp. 158–161, pl. 14: 1865 (read August 1, 1864).

——. On the Pselaphidæ of Australia. Ibid. pp. 167–175, pl. 14 (read November 7, 1864).

Kirsch, T. Beiträge zur Käferfauna von Bogotá. Berliner entom. Zeitschrift, 1865, pp. 40–104, pl. 3.

This paper contains a general description of the geographical features of Bogotá, and descriptions of numerous new species and genera of Coleoptera from that country.

——. Sammelbericht. Berliner entom. Zeitschrift, 1865, pp. 121–123.

Contains a list of captures of Coleoptera, chiefly in the neighbourhood of Dresden, with remarks on the occurrence of some of the species, and the description of a new species of *Polydrusus*.

Kraatz, G. Ueber die vermeintliche Tasterbildung des *Machærites subterraneus*. Wiener entom. Monatsschrift, viii. 1864, pp. 86–89; with a reply by Lederer, pp. 89–92.

——. Ueber die Arten der Gattung *Bulæa* (Muls.). Berliner entom. Zeitschrift, 1865, pp. 119, 120.

Kutschera, F. Beiträge zur Kenntniss der europäischen Halticinen. Wiener entom. Monatsschrift, Band viii. pp. 33–52, 141–164, 269–288, 303–321, 337–353, & 373–472: 1864.

Lederer, J. Zur Machærites-Literatur. Ibid. pp. 202–204: June 1864. (See also Kraatz.)

——. Ueber *Clytus arvicola*. Ibid. 1865, pp. 483–485.

Lucas, H. Note sur les *Plusiotis adelaida* et *costata*, Coléoptères de la famille des Lamellicornes et de la tribu des Rutélides. Ann. Soc. Ent. Fr. 4e série, tome v. pp. 203–205. October 25, 1865.

——. Note sur le genre *Diodyrhynchus*, Germar. Ibid. p. 206.

MacLeay, W., Jun. Description of a new genus of Carabideous Insects. Trans. Entom. Soc. of New South Wales, vol. i. 1865, pp. 155–157, pl. 15. (Read June 6, 1864.)

A blind form allied to *Anillus*.

——. On the *Scaritidæ* of New Holland. Third paper. Ibid. pp. 176–198. (Read March 6, 1865.)

In this paper the author describes 20 new species of the genus *Carenum*, besides some other forms, and gives a complete tabular catalogue of the Australian species of *Scaritides*.

——. The genera and species of the *Amycteridæ*. Ibid. pp. 199–298. (Read August 7, 1865.)

Marquet, —. Espèces nouvelles de Coléoptères de France. L'Abeille, tome i. pp. 372–373.

Marseul, S. A. de. Histérides de l'Archipel Malais ou Indo-Australien. Ibid. pp. 271–341 : November 1864.

——. Espèces d'Histérides nouvelles ou publiées depuis le Supplément à la Monographie, appartenant à l'Europe ou au bassin de la Méditerranée. Ibid. pp. 341–364.

In this paper De Marseul describes numerous new species of *Histeridæ*, and adds descriptions of those European and Atlantic forms which have been described, chiefly by Wollaston, since the publication of the supplement to his monograph of the family. It is followed by an index to its contents and to those of the paper on the Malasian *Histeridæ*.

——. Monographie des Buprestides, famille des Sternoxes de Latreille. L'Abeille, tome iii. pp. 1–288 : 1865. (Not completed.)

This monograph relates only to the species of Europe, the Mediterranean basin, and the bordering countries.

Marshall, T. A. Eumolpidarum species novæ. Journal of Entom. vol. ii. pp. 347–352 : March 1865.

Mathan, —, de. Note sur l'*Ochthebius lejolisii*, Mulsant et Rey. Ann. Soc. Ent. Fr. 4ᵉ série, tome v. pp. 199–202 : October 25, 1865.

Matthews, A. On various species of *Trichopterygidæ* new to Britain. Entom. Monthly Mag. vol. i. pp. 173–178 : January 1865.

——. Descriptions of three new species of *Trichopteryx* found in the Canary Islands. Ibid. pp. 247–250 : April 1865 ; and vol. ii. p. 35 : July 1865.

Miller, L. *Homalota glacialis*, n. sp. Wiener entom. Monatsschrift, Band viii. pp. 200, 201 : June 1864.

(——. Nouveaux Coléoptères. Descriptions reprinted from the Wiener ent. Monatsschrift, 1861 & 1863, in L'Abeille, tome ii. pp. i–xvii & xxiii–xxiv.)

Morsbach, —. Ein einfaches Mittel, den Metallglanz der Cassiden zu erhalten. Stettiner ent. Zeitung, 1865, pp. 114–115 : March 1865.

Motschulsky, V. Enumération des nouvelles espèces de Coléoptères rapportés de ses voyages. Quatrième article. Bull. Soc. Nat. de Moscou, xxxvii. pt. 2. pp. 171–240.

——. Un genre nouveau de Staphilinites de l'Amérique septentrionale. Ibid. xxxviii. pt. 1. pp. 583–584 : August 11, 1865.

Mulsant, E., & Rey, Cl. Longicornes nouveaux ou peu connus. Annales Soc. Linnéenne de Lyon, tome x. pp. 144–184.

——. Essai sur la famille des Anobides proprement dits. Ibid. pp. 30–143.

This paper is, to a great extent, anticipated by the volume of the "Coléoptères de France : Térédiles," noticed in last year's Record (1864, pp. 396 *et seq.*). The "*Anobides proprement dits*" of the authors correspond with the *Anobiaires* of their subsequent work, and include precisely the same genera. This essay, however, must be noticed here, although somewhat after date. Although dated February 1864, the volume containing it does not appear to have reached this country at the time of the preparation of the Record for that year.

——. Description d'un genre nouveau de la famille des Cryptophagides. Ibid. pp. 1–3 : February 1864.

——. Description de quelques Coléoptères nouveaux ou peu connus. Ibid. pp. 4–29.

——. Tribu des Angusticolles. Ibid. pp. 247–380, pls. 1, 2 : February 1864.

——. Tribu des Diversipalpes. Ibid. pp. 381–404.

These two papers contain the authors' monographs of the French *Cleridæ* and *Lymexylonidæ*.

Pascoe, F. P. *Longicornia Malayana* ; or, a descriptive Catalogue of the species of the three Longicorn families *Lamiidæ*, *Cerambycidæ*, and *Prionidæ*, collected by Mr. A. R. Wallace in the Malay Archipelago. (Continued.) Trans. Ent. Soc. London, 3rd series, vol. iii. pp. 97–224, pls. 5–9 : August 1865.

——. A second series of descriptions of New Australian Longicornia. Journ. of Entom. vol. ii. pp. 352–374, pl. 16 : March 1865.

——. On some new genera of *Curculionidæ*. Part i. ibid. pp. 413–432, pl. 17 : November 1865.

In this paper Pascoe refers to the different views lately put forward by Lacordaire, Jekel, Kraatz, Gerstäcker, and others, upon the classification of the Curculionidæ, and describes several new species forming types of distinct genera of rather doubtful position.

Pfeil, Ottomar. Zwei entomologische Riesengebirgs Excursionen. Berliner entom. Zeitschrift, 1865, pp. 219–233.

In this paper the author gives an account of the results of two excursions in pursuit of Coleoptera to the Riesengebirge, in July 1863 and 1864. It contains a list of a large number of

species taken apparently in comparatively short time, with notes upon the mode of life of many of them, which would render it a useful guide to any coleopterist intending to pay a visit to those mountains.

Piochard de la Brulerie, C. Métamorphoses de la *Serica holosericea* (Scopoli). Annales Soc. Ent. France, 4e série, tome iv. pp. 663–667, pl. 10: May 24, 1865.

Power, J. A. Revision of the genus *Necrophorus*, as far as regards the British species. Entomologist, vol. ii. pp. 197–201.

Puton, Auguste. Description d'une nouvelle espèce de Coléoptères de la division des Malacodermes. Ann. Soc. Ent. Fr. 4e sér. tome v. pp. 131, 132: August 23, 1865.

Putzeys, J. Remarques sur les Amaroides. Stettiner entom. Zeitung, 1865, pp. 332–344: December.

Reiche, L. Note sur les *Carabus latus, complanatus, brevis* et *helluo* de Dejean. Annales Soc. Ent. France, 4e série, tome iv. pp. 661, 662: May 24, 1865.

Rye, E. C. Description of an *Oxypoda* new to science. Entom. Monthly Mag. vol. i. p. 212: February 1865.

——. Description (not hitherto published) of *Ceuthorhynchideus minimus*, Walton. Ibid. vol. ii. pp. 11–12: June 1865.

——. Description of a species of *Bledius* new to science. Ibid. pp. 154–155: December 1865.

——. Extract from M. Allard's paper on *Sitones*, &c. Ibid. vol. i. pp. 206–208, 229–232, & 275–278.

——. Coleoptera. New British species, Corrections of Nomenclature, &c., noticed since the publication of the Entomologist's Annual, 1865. Entom. Annual for 1866, pp. 47–121.

The number of new species added to the British list, accord- to Rye, is 56, including the types of two new genera (*Borboropora* and *Anisoxya*). The paper includes notes of captures of rare and local species and a list of peculiar species marked as British in De Marseul's catalogue.

Saulcy, Félicien de. Descriptions des espèces nouvelles de Coléoptères recueillies en Syrie, en Egypte et en Palestine . . . . . par M. de Saulcy. Ann. Soc. Ent. Fr. 4e série, tome iv. pp. 421–440, January 25, 1865, and pp. 629–660, May 24, 1865.

This paper contains descriptions of a good many species of Beetles found in Ants' nests.

Saulcy, Félicien de. Description d'un genre nouveau et d'une espèce nouvelle (*Scydménide*) propre à la France méridionale. Ibid. tome v. pp. 18–20: August 23, 1865.

Schaufuss, L. W. *Platyderus varians* und *Haptoderus cantabricus*. Stettiner entom. Zeitung, 1865, p. 403.

Schiödte, J. C. De metamorphosi Eleutheratorum observationes. Bidrag til Insekternes Udviklings-historie. Naturhist. Tidsskr. 3rd series, vol. viii. pp. 131–224, pls. 1–12: 1864.

This paper, the publication of which was merely indicated in the last 'Record,' contains a continuation of the author's classification and descriptions of the larvæ of Coleoptera. The larvæ here described belong to the families *Histeridæ*, *Dytiscidæ*, *Gyrinidæ*, and *Staphylinidæ*; the descriptions, which are very full, are written in Latin, and illustrated with exceedingly beautiful figures.

——. Danmarks Buprestes og Elateres. Ibid. pp. 1–128, pl. 15: 1865.

A monographic revision of the Danish *Sternoxi*, with remarks on the classification of the group.

Seidlitz, Georg. Monographie der Curculioniden-Gattung *Peritelus* (Germ.). Berliner entom. Zeitschrift, 1865, pp. 271–355, Tafel 4.

Solsky, S. Description de quelques nouvelles espèces de Staphylinides. Bull. Soc. Nat. de Moscou, tome xxxvii. pt. 1. pp. 423–451, cum fig.

Stål, C. Monographie de Chrysomélides de l'Amérique. Part iii. Nova Acta R. Soc. Sci. Upsal. ser. 3. vol. v. (1865) pp. 177–365.

This part contains the conclusion of Stål's monograph of the American Chrysomelidæ, with an appendix of additional species belonging to groups treated in previous parts and an alphabetical index to the whole work. There is also a descriptive note of species unknown to the author, and a long list of American species described as new by Motschulsky in Schrenck's 'Reisen und Forschungen im Amurlande,' with the names of their equivalents in Stål's monograph.

Stierlin, G. Ueber *Attelabus atricornis*, Muls. Berliner entom. Zeitschr. 1865, pp. 117, 118.

(——. Beitrag zur Insekten-Fauna von Epirus. Wiener ent.

Monatsschr. 1861. Description of new species, reprinted in L'Abeille, tome ii. pp. xvii–xxii.)

STEINER, ERNEST. Erster Nachtrag zu dem von Herrn Julius Müller in der Sitzung vom 10. December, 1862, vorgelegten Verzeichnisse der bis jetzt in Mähren und Oesterreichisch-Schlesien aufgefundenen Coleopteren. Verhandl. der naturf. Vereines in Brünn, Band iii. pp. 203–208: 1865.

This paper contains a list of species detected in Moravia and Austrian Silesia since the publication of Julius Müller's catalogue in 1862, incorporated with which are the names of species previously known to inhabit that region, but only recently discovered in the vicinity of Brünn. The number of species new to the district is 108, raising the whole Coleopterous fauna to 2479 species, of which 1768 occur in the environs of Brünn.

SUFFRIAN. (See FAIRMAIRE.)

WALSH, B. D. See INSECTA, p. 385.

WANKOWICZ, JEAN. Description de quelques Coléoptères nouveaux trouvés en Lithuanie. Annales Soc. Ent. France, 4e série, tome v. pp. 297–300: December 13, 1865.

(WATERHOUSE, G. R. Description des espèces anglaises du genre *Euplectus*, de la famille des Psélaphides. From Trans. Ent. Soc. 3rd ser. vol. i. Abstract in L'Abeille, tome i. p. lxxiii.)

(——. Descriptions des espèces de *Gyrophæna* de la Grande-Bretagne. Trans. Ent. Soc. 3rd ser. vol. i. Note in L'Abeille, tome i. pp. ciii.)

(——. Note sur certaines espèces de *Quedius* de la Grande-Bretagne, &c. Ibid. Note in L'Abeille, *l. c.* pp. ciii–civ.)

WOLLASTON, T. V. Note on *Anommatus 12-striatus*. Ent. Monthly Mag. vol. i. pp. 245–247.

(——. Sur les Coléoptères des îles Canaries qui infestent les euphorbes. From Trans. Ent. Soc. 3rd ser. vol. i. Abstract in L'Abeille, tome i. pp. lxxvi–xciii.)

(——. Ptinidæ des îles Canaries. From Trans. Ent. Soc. 3rd ser. vol. i. Abstract in L'Abeille, tome i. pp. xciii–ciii.)

C. *Anatomical and Physiological Papers.*

LINDEMANN, KARL. Ueber den Bau des Skeletes der Coleopteren. Das Skelet der Brust, und des Kopfes. Bull. Soc. Nat. de Moscou, tome xxxviii. pt. 1. pp. 25–100, Tafel 4: August 1865.

In this elaborate memoir the author discusses the structure of the skeleton of the thorax and head in the Coleoptera, and refers in detail to the opinions of previous writers on the subject. His conclusion is opposed to the conception of an analogy between the segments of an insect and the vertebræ of the higher animals. He regards the head as composed of a single segment, and the organs of the mouth as its metamorphosed pleuræ.

LINDEMANN, KARL. See INSECTA, p. 386.

SCHULTZE, MAX. Zur Kenntniss der Leuchtorgane von *Lampyris splendidula*. Archiv für mikrosk. Anat. Band i. pp. 124–137, Tafeln 5 & 6: May 1865.

This is an enlargement of the paper on the structure of the luminous organs in *Lampyris splendidula*, published by the author in 1864, and referred to in the Record for that year at page 351. It is accompanied by two plates, illustrating the curious structures described by the author.

GENERAL NOTES.

DIETRICH, in his Catalogue of the Coleoptera of Zürich (Nouv. Mémoires Soc. Helv. Sci. Nat. tom. xxi. 1865), enumerates 1872 species as occurring in that canton, or about the half of the species known from the whole of Switzerland. Referring to Füssli's catalogue published in 1775, and which includes 1203 species, the author remarks that since the date of its publication several species appear to have disappeared from the canton of Zürich. Füssli includes *Uloma culinaris* in his catalogue; but it is no longer to be found in Zürich. Very few species of *Aphodius* occur there, and *Copris lunaris* and the species of *Onthophagus* have either disappeared or become very scarce. This diminution in the number of Dung-beetles is attributed by Dietrich to the prevalence of the practice of feeding cattle in stalls. A few species appear to have immigrated into the canton since Füssli's time. The author enumerates the families and their constituent genera and species in a table. All the European families admitted by Schaum, except nine, are represented in Zürich; these nine families are small and chiefly confined to the south of Europe. The largest families are *Staphylinidæ* with 354, *Curculionidæ* with 304, *Carabidæ* with 182, and *Chrysomelidæ* (=*Phytophaga*) with 181 species. The genus *Apion* is represented by 58 species; the genera *Stenus*, *Philonthus*, *Homalota*, *Cantharis* (=*Telephorus*), and *Bembidium* come next in number of species. *Otiorhynchus*, the most extensive European genus of Coleoptera, includes only 14 species found in Zürich.

Desbrochers des Loges gives a list of Coleoptera captured by him in France and not included in Grenier's catalogue, namely *Ptinella pallida*

(Erichs.), *Gymnetron fuliginosus* (Ros.), *Cryptocephalus pallifrons* (Gyll.), *Tropiphorus cinereus* (Boh.), and *Dircæa reveilleri* (Muls.). The same author also refers to various captures of rare species. Bull. Soc. Ent. Fr. 1865, pp. xiii, xiv.

Bellier de la Chavignerie and Kiesenwetter communicated to the French Entomological Society the particulars of some of the more interesting species of Coleoptera detected by them in recent tours in Spain. The latter mentions a new genus allied to *Malthodes*, and numerous new species of Malacoderms among his captures. Bull. Soc. Ent. Fr. 1865, pp. xxix, xxx.

Becker (Bull. Soc. Nat. Mosc. xxxvii. pt. 1. pp. 481–490) publishes numerous notes on the occurrence of Sareptan Beetles, with a few remarks on synonymy. He adds a list of Coleoptera new to the fauna of his district (*l. c.* pp. 490–491).

Altum (Stett. ent. Zeitung, 1865, pp. 144–147) has published a list of the Coleoptera obtained by him from the little island of Borkum off the mouth of the Dollart. The list includes only 65 species, among which the *Carabidæ* occupy the most prominent position.

Bethe gives a list of Coleoptera first detected by him in Pomerania. Stett. ent. Zeit. 1865, p. 186.

Fauvel reports (Bull. Soc. Linn. Norm. tome ix. pp. 404–406) on the entomological results of the excursion of the Linnean Society of Normandy on 25th June 1864. This presents nothing of importance except the discovery in Normandy of *Nossidium pilosellum* (Marsh.).

Walsh (Proc. Bost. Soc. Nat. Hist. ix. pp. 309–311) refers to various articles published by him in agricultural journals containing statements of entomological facts. The new species cited will be noted further on, although their original descriptions extend over two or three years. The known species of Coleoptera named are *Ips quadrisignata* (Say), *Chrysobothrys femorata* (Fab.), *Saperda vittata* (Say), *Amphicerus bicaudatus* (Say), *Brachytarsus variegatus* (Say), *Ithycerus noveboracensis* (Forst.), *Conotrachelus posticatus* (Schönh.), *Epicærus imbricatus* (Say), *Sitophilus remotepunctatus* (Gyll.), *Doryphora decemlineata* (Say), *Lytta atrata* (Fab.), and *Chilocarus bivulnerus* (Muls.).

Schwippel (Verh. naturf. Ver. in Brünn, Bd. iii. p. 55) refers to the Coleoptera destructive of Beet in the neighbourhood of Lettowitz and Brünn; he mentions the larva of a species of *Silpha*, *Cleonus punctiventris*, and *Opatrum sabulosum*, all of which devour the young seed-leaves.

Bland (Proc. Ent. Soc. Phil. vol. v. p. ii) enumerates various species of Beetles found by him in fungi. Decayed puff-balls in damp places furnished *Tachinus fimbriolatus* and a species of *Onthophagus*; in higher places *Dorcatoma similis* (Say). From "toadstools" he obtained *Oxyporus vittata* and *lateralis* and *Tritoma humeralis* and *thoracica*.

Von Hagens (Berl. ent. Zeits. 1865, pp. 105–112) treats of Ants'-nest Beetles, and indicates that now that the species of Ants have been accurately determined, the time has come for the more exact determination of the relations of these Beetles to the different species of Ants. He also points out that the occasional occurrence of a Beetle in an ants' nest by no means entitles it to be regarded as a "guest," but admits that in some cases, such as that of *Falagria thoracica*, the real relations are still doubtful. From his own examinations of ants' nests he divides the species of *Lasius* and *Formica* and those of *Myrmica* investigated by him into four groups in accordance with the nature of their guest beetles.

I. The first of these includes *F. rufa* (Linn.) with *F. pinophila* (Schenk), *polyctena* (Först.), *truncicola* (Först.), *congerens* (Nyl.), and *exserta* (Nyl.). *F. truncicola* (Nyl.) also probably belongs to this group. Its peculiar guests are *Thiasophila angulata*, *Homalota flavipes*, and *anceps*, *Oxypoda hæmorrhoa*, *Leptacinus formicetorum*, *Stenus aterrimus*, *Myrmecoxenus subterraneus*, and *Dendrophilus pygmæus*. The Formicide *Stenamma westwoodii* is also found in nests of *F. rufa* and *congerens*. II. The second group includes *F. sanguinea* (Lat.), *rufibarbis* (Fab.), *fusca* (Linn.), and *Myrmica lævinodis* (Nyl.). Guests, *Lomechusa strumosa*, species of *Atemeles* and *Dinarda*, *Hetærius sesquicornis*. III. The third group consists of *Lasius fuliginosus* alone, and has numerous guests, especially *Oxypoda vittata*, *Amphotis marginata*, and most of the species of *Myrmedonia*. *Thiasophila inquilina*, *Homalota confusa*, and *Dendrophilus punctatus* correspond with the species of the same genera belonging to the first group. IV. The fourth group includes the remaining species of *Lasius*, *Tapinoma erraticum* (Lat.) and *Tetramorium cæspitum*. Guests *Claviger*, *Chennium*, *Centrotoma*, *Batrisus*, *Trichonyx*, some rare *Myrmedoniæ*, *Eurynsa*, and *Lamprinus*. The genera *Haploglossa* and *Homæusa* are common to groups III. & IV. Species ordinarily peculiar to a particular species of Ant are sometimes found in the nests of other species; in some cases, under these circumstances, they present slight variations. The author gives a list of the Ants'-nest Beetles observed by him (*l. c.* pp. 108–112), with particulars of their mode of occurrence. He records the fact that he has several times seen *Lomechusa strumosa* seized and licked or sucked by *Formica sanguinea*, and that E. Schröder has observed *Lomechusæ* being fed by the Ants (*l. c.* p. 112).

Wilkinson publishes a note on Ants'-nest Beetles occurring near Scarborough. Ent. M. Mag. ii. p. 14.

E. Waterhouse notices some captures of rare Coleoptera in the heart of London. Ent. M. Mag. ii. p. 13.

T. Blackburn publishes notes on the results of his collecting Coleoptera in the north of England (from Cheshire to the Lake District) in June and July 1865. Ent. M. Mag. ii. pp. 87, 88.

Bold records new localities for numerous rare and local species of Coleoptera in Nat. Hist. Trans. North. and Durh. i. pp. 134, 135.

Rye and Sharp have published an account of their collecting in the Black Forest at Rannoch in Perthshire, with notes on the habits and mode of occurrence of many species of Coleoptera. Ent. M. Mag. ii. pp. 49–53.

Power records the results of his winter collecting in South Devonshire and at Reigate. Ent. M. Mag. i. p. 260.

Lewis publishes some notes on the Coleoptera noticed by him in Japan in May, 1865. Ent. M. Mag. ii. p. 89.

Cicindelidæ.

Chaudoir (Cat. de Cicind.) divides this family into five groups, *Ctenostomidæ*, *Collyridæ*, *Cicindelidæ*, *Megacephalidæ*, and *Manticoridæ*. Of the former his collection contains 35 species, namely *Pogonostoma* 11 and *Ctenostoma* 24, the latter including *Procephalus* (Lap.) and *Myrmecilla* (Lac.). Of the *Collyridæ* he enumerates 83 species, of which *Collyris* alone includes 59, *Derocrania* (Chaud.) 5, and *Tricondyla* 19. The total number of his *Cicindelidæ* is 486, of which by far the greater number, namely 328, are retained by him in the genus *Cicindela*, which includes *Cylindera* (Westw.), *Catoptria* (Guér.), *Hypætha* (Leconte), *Laphyra* (Lac.), *Habroscelis* (Hope), *Calochroa* (Hope), *Euryarthron* (Guér.), and several other genera of various authors, especially Motschulsky. *Dromica*, including *Myrmecoptera* and *Cosmema*, has 23 species, *Therates* 20, and *Odontocheila*, including *Phyllodroma*, *Plochiocera*, and *Euryoda*, 55. Of *Megacephalidæ* we find 59 species, of which *Oxychila*, including *Rominagrobis* (Thoms.), and *Phæoxantha*, including *Metriocheila* (Thoms.), have 9 each, and *Tetracha*, including *Grammognatha* (Motsch.) and *Aniara* (Hope), 32. The *Manticoridæ* are only 9 in number, belonging to 4 genera, namely *Manticora* (4 sp.), *Chaleposomus* (1), *Omus* (3), and *Pycnochile* (1).

Collyris. The Baron Chaudoir has described 72 species in his monograph of this genus (Ann. Soc. Ent. Fr. 4e sér. tome iv. pp. 483–536). Of these 32 are new. He divides the genus into two great sections: the first, having amongst other characters the third joint of the max. palpi long and the last joint very short, includes only the four large species, *C. dohrnii*, *longicollis*, *caviceps*, and *mniszechii*; the second, with the third joint a little shorter than the last, which is subelongate and ovate, includes the remaining species. According to the author, *C. cylindrica* (Schm.-Göb.) = *C. fuscitarsis* (S.-G.), *l. c.* p. 499; *C. diardi* (Lat.) and *C. tarsata* (Klug) = *C. modesta* (Dej.), *l. c.* p. 510; *C. femorata* (Westw.) = *C. albitarsis* (Er.), *l. c.* p. 511.

The following known species of *Collyris* are figured by Chaudoir:—*Collyris longicollis* (Fab.) = *lafertei* (Chaud.), *l. c.* pl. 7. fig. 1; *C. crassicornis* (Dej.) = *diardi* (MacL.) = *macleayi* (Brullé) = *pleuritica* (Schm.-Göb.) = *purpurata* (Kl.) = *gibbicollis* (Motsch.), pl. 7. fig. 2; *C. subclavata* (Chaud.), pl. 7. fig. 3; *C. insignis* (Chaud.), pl. 7. fig. 4; *C. saphyrina* (Chaud.) + *boysii* (Chaud.), pl. 7. fig. 5; *C. ortygia* (Buq.) = *cribellata* (Chaud.) + *puncticollis* (Chaud), pl. 7. fig. 6; *C. bonellii* (Guér.) = *C. obscura* (Cast.) = ? *ruficornis* (Brullé), pl. 7. fig. 7; *C. emarginata* (Dej.) = *brevicollis* (Klug) = *longicollis* (Oliv.), pl. 7. fig. 8; *C. filiformis* (Chaud.), pl. 8. fig. 9; *C. celebensis* (Chaud.), pl. 8. fig. 10; *C. flavicornis* (Chaud.), pl. 8. fig. 11; *C. tuberculata* (MacLeay) = *longicollis* (Dej.) = *audouinii* (Cast.) = *chevrolatii* (Guér.), pl. 8. fig. 14; *C. aptera* (Fab.), pl. 8. fig. 15; *C. speciosa* (Schaum), pl. 8. fig. 16; *C. acrolia* (Chaud.), pl. 8. fig. 17; *C. attenuata* (Redt.), pl. 9. fig. 19; *C. arnoldi* (MacL.) = *elegans* (Vanderl.), pl. 9. fig. 20; *C. leucodactyla* (Chaud.) = *albitarsis* (Thoms.) = *leucopus* (Schaum), pl. 9. fig. 21; *C. sarawakensis* (Thoms.), pl. 9. fig. 22; and *C. horsfieldii* (MacL.) = *rugicollis* (Klug), pl. 9. fig. 23.

Dromica. Chaudoir (Rev. & Mag. Zool. 1864) enumerates the species of this genus and describes the following known species:—*D. gigantea* (De Brême), *l. c.* p. 7; *clathrata* (Klug), *l. c.* p. 8; and *tuberculata* (Dej), *l. c.* p. 39. The same author states (*l. c.* p. 74) that his *Tricondyla crebrepunctata* is identical with *T. wallacei* (Thoms.).

Myrmecoptera læta (Tatum) belongs to the vicinity of *Bostrichophorus* and not to *Dromica*, according to Chaudoir, Cat. Cicind. p. 51.

Cicindela grossa (Fab.), the type of the genus *Apteroessa* (Hope), is probably allied to *Megacephala*, according to Chaudoir, *l. c.* p. 54.

The habits of *Cicindela sexguttata* (Fab.) are referred to by Walsh, Proc. Bost. Soc. Nat. Hist. vol. ix. p. 286.

New species and genera:—

Dromicidia, g. n., Chaudoir, Cat. Cicind. p. 54. Allied to *Dromica*; mentum with a long, acute, median tooth; labrum arched, narrow in front, unidentate on each side, median lobe porrect and tridentate; max. palpi short, joint 2 thickened; tarsi furrowed above; apterous. Type *C. scrobiculata* (Wied.), *l. c.* p. 54.

Jansenia (rite *Jansonia*), g. n., Chaudoir, *l. c.* p. 55. Allied to *Distipsidera*; mentum with a minute tooth; labrum large, circular, arched; max. palpi short, joint 2 thickened; lab. palpi inflated at base; episterna of pro- and metathorax rugose, the latter quadrate; abdomen with the sternum ovate, convex, narrowed behind, with white villosity on the sides; tarsi furrowed above. Sp. *Dromica westermanni* (Schaum).

Chlorida, g. n., Chaudoir, *l. c.* p. 56. Allied to *Distipsidera*; mentum with a long spiniform tooth; labrum large, circular, arched, covering the mandibles; abdomen and sternum compresso-cylindrical, gradually narrowed towards apex; sides with white villosity; anterior and intermediate tarsi not sulcate. Sp. *C. chlorida*, sp. n., Chaud. *l. c.* p. 56, from Malabar.

Parmecus, g. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxvii. pt. 2. p. 172. Allied to *Dromica*; elytra dilated behind; wings well-developed. Sp. *P. pictus*, sp. n., Motsch. *l. c.* p. 173, from the East Indies.

Cicindosa, g. n., Motschulsky, *l. c.* p. 173. Allied to *Cicindela*; antennæ slender, joint 3 longer than 4; labial palpi as long as the maxillary; forehead not visibly strigulate. Sp. *C. obliquealba*, sp. n., Motsch. *l. c.* p. 173, and *C. inæqualis*, Motsch. *l. c.* p. 174, from Equatorial America.

Pseudoxychila angustata, Chaudoir, Cat. Cicind. p. 62, from Peru; *P. ceratoma*, Chaud. ibid., from New Granada.

Tetracha australis, Chaudoir, *l. c.* p. 63, from Australia; *T. longipennis*, Chaud. ibid., from the Amazons; *T. confusa*, Chaud. ibid., from Brazil; and *T. germainii*, Chaud. *l. c.* p. 64, from Mendoza.

Cicindela. Chaudoir describes the following new species as belonging to this genus:—*C. rugosiceps*, *l. c.* p. 57, and *C. tetragrammica*, *l. c.* p. 58, from Malabar; *C. chloropleura*, *l. c.* p. 59, from Northern India; *C. pupilligera*, ibid., from New Guinea; (*Calochroa*): *C. flavolineata*, *l. c.* p. 60 and *C. mouhoti*, ibid., from Laos; *C. flavovittata*, *l. c.* p. 61, from Coromandel; *C. tristrigata*, ibid., from West Africa; and *C. lineifrons*, *l. c.* p. 62, from Cambodia.

Heptadonta eugenia, Chaudoir, *l. c.* p. 56, from Cochinchina.

Distipsidera fasciata, Motschulsky, *l. c.* p. 174, from New Zealand.

Dromica. Of this genus Chaudoir describes the following new species (Rev. et Mag. Zool. 1864):—*D. bisbicarinata*, *l. c.* p. 10, from the Zulu country; *D. sculpturata*, *l. c.* p. 37, from Caffraria; *D. quadricollis*, ibid., from South Africa; *D. octocostata*, *l. c.* p. 38, from Algoa Bay; *D. carinulata*, *l. c.* p. 39, from Natal; *D. acuminata*, *l. c.* p. 40, from Natal (*Cosmema*, Boh.); *D. citreoguttata*, *l. c.* p. 41, from the Zulu country; and *D. sexmaculata*, *l. c.* p. 42, from Algoa Bay; also

D. albivittis, Cat. Cicind. p. 50, from Natal; *D.* (*Myrmecoptera*) *saundersii*, *l. c.* p. 51, from Algoa Bay; *D. variolata*, ibid., from Algoa Bay; *D. grutii*, *l. c.* p. 52, from Natal; and *D. cordicollis*, *l. c.* p. 53, from Natal.

Therates scapularis, Chaudoir, Cat. Cicind. p. 55, from Mysol; *T. schaumii*, Chaud. ibid., from Singapore.

Tricondyla stricticeps, Chaudoir, *l. c.* p. 74, from Malacca.

Tricondyla ovicollis, Motschulsky, *l. c.* p. 178, from the Philippines.

Collyris. Motschulsky (*l. c.* pp. 175–178) gives a tabular synopsis of the oriental species of this genus, including several new species:—*C. rufipes*, *l. c.* p. 175, from Bengal; *C. violacea*, *l. c.* p. 176, from Burmah; *C. longicornis*, ibid., from Burmah; *C. conicollis*, ibid., from India; *C. fuscicornis*, *l. c.* p. 177, from India; *C. nigricornis*, ibid., from India; *C. abbreviata*, *l. c.* p. 178, from Java; and *C. gibbicollis*, ibid., from Assam.

Collyris. Chaudoir describes the following new species of this genus:—*C. mniszechii*, Rev. et Mag. Zool. 1864, p. 75, & Ann. Soc. Ent. Fr. 4e sér. tome iv. p. 492, from Malacca; *C. vollenhovii*, *l. c.* p. 495, from Celebes; *C. saundersii*, *l. c.* p. 496, from Ceylon; *C. crassicollis*, *l. c.* p. 497 (East Indies); *C. impressifrons*, *l. c.* p. 500, from Cochinchina; *C. procera*, *l. c.* p. 501, from Bombay; *C. viridula*, *l. c.* p. 503, from Timor; *C. rufipalpis*, *l. c.* p. 504, from North India; *C. cribrosa* (sp. n. ?), *l. c.* p. 507 (=*melanopoda* ?, Schm.-Göb., *flavitarsis*, Brullé); *C. terminalis*, *l. c.* p. 509, from Malacca; *C. elongata*, ibid., from Malacca; *C. dolens*, *l. c.* p. 510, from Sarawak; *C. palpalis*, *l. c.* p. 512, from Sula and Celebes; *C. fasciata*, Rev. et Mag. Zool. 1864, p. 107, & Ann. Soc. Ent. Fr. *l. c.* p. 513, pl. 8. fig. 12, from Siam and Cambodia; *C. cylindripennis*, *ll. cc.* p. 106, & p. 514, pl. 8. fig. 13, from Siam; *C. mouhatii*, Ann. Soc. Ent. Fr. *l. c.* p. 515, from Laos; *C. rugosa*, *l. c.* p. 515 (origin unknown); *C. apicalis*, Rev. et Mag. Zool. 1864, p. 105, & Ann. Soc. Ent. Fr. *l. c.* p. 517, from Malacca; *C. smithii*, *l. c.* p. 518 (East Indies); *C. waterhousei*, Rev. et Mag. Zool. 1864, p. 104, & Ann. Soc. Ent. Fr. *l. c.* p. 521, from Manilla ?; *C. dimidiata*, Ann. Soc. Ent. Fr. *l. c.* p. 521, pl. 9. fig. 18, from Malacca and Laos; *C. punctatella*, *l. c.* p. 525, from Ceylon; *C. subtilis*, Rev. et Mag. Zool. 1864, p. 111, & Ann. Soc. Ent. Fr. *l. c.* p. 525, from Siam; *C. tenuicornis*, Ann. Soc. Ent. Fr. *l. c.* p. 526, and *C. xanthoscelis*, ibid., from Singapore; *C. ceylonica*, *l. c.* p. 529, from Ceylon; *C. variicornis*, *l. c.* p. 530, from Sylhet; *C. discolor*, *l. c.* p. 531, from Sumatra; *C. lissodera*, *l. c.* p. 532, from Sarawak ?; *C. plicaticollis*, *l. c.* p. 534, from Ceylon; and *C. macrodera*, Rev. et Mag. Zool. 1864, p. 105, & Ann. Soc. Ent. Fr. *l. c.* p. 536, from Malacca. Also *C. mniszechii*, Cat. Cicind. p. 75, from Siam; *C. insignis*, *l. c.* p. 76, from Silhet; *C. waterhousei*, *l. c.* 104, from Manilla ?; *C. apicalis*, *l. c.* p. 105, from Malacca; *C. macrodera*, ibid., from Malacca;

C. cylindripennis, *l. c.* p. 106, from Siam; and *C. fasciata*, *l. c.* p. 107, from Siam.

Ctenostoma fryi, Chaudoir, Cat. Cicind. p. 49, from Brazil; and *C. oblitum*, Chaud. *l. c.* p. 50, from the Amazons.

CARABIDÆ.

Carabides.

Gautier des Cottes has given some remarks on the synonymy of certain Spanish *Carabi*, Bull. Soc. Ent. Fr. 1865, pp. xxxiv–xxxv. He states that *Carabus cantabricus* (Chevr.)= *C. macrocephalus* (Dej.); *Carabus castillianus*, *latus*, *complanatus*, *brevis*, and *helluo* (Dej.) constitute a single species, although Reiche is of opinion that *C. latus* may be distinct. *Carabus guadarramus* (Laf.) = *C. steuarti* (Dej.) = *C. errans* (Gory).

Reiche has examined the types and numerous other specimens of *Carabus latus*, *complanatus*, *brevis*, and *helluo* of Dejean, which Kraatz proposed to unite under a single species. Reiche concludes that *C. latus* is distinct (it is identical with *C. gougeleti*, Reiche); the other three forms constitute one species, *C. helluo* (Dej.). Ann. Soc. Ent. Fr. 4e sér. tome iv. pp. 661, 662.

Chaudoir states that he regards *Nebria lariollei* (Germiny) as a distinct species, and even as perhaps forming the type of a subgenus of *Nebria*. Bull. Soc. Ent. Fr. 1865, p. xvii.

Dohrn (Stett. ent. Zeit. 1865, p. 293) mentions his having received numerous specimens of a new species of *Damaster* from Japan, which is mentioned in a subsequent note (*l. c.* p. 370) under the name of *D. fortunei*.

The larva and imago of *Calosoma calidum* are described and figured by Fitch, 9th Rep. Ins. New York, pp. 249–250, pl. 4. figs. 4 & 5. In both states this insect is destructive of the *Cut-worm* or larva of *Agrotis nigricans*.

Desbrochers des Loges records the occurrence of eight parasitic pupæ in the thorax of a specimen of *Procrustes coriaceus*. Bull. Soc. Ent. Fr. 1865, p. xliii.

New species:—

Nebria lariollei, Germiny, Ann. Soc. Ent. Fr. 4e sér. tome iv. p. 419, from Bagnères-de-Bigorre.

Notiophilus. Motschulsky (*l. c.* pp. 192–194) gives a table of the species of this genus, three of which appear to be new: *N. lateralis*, *l. c.* p. 192, from the Caucasus; *N. cribrilaterus*, *l. c.* 193, from North America; *N. sibiricus*, ibid., from Siberia.

Trachypachus. Motschulsky (*l. c.* p. 194) tabulates four new species of this genus, namely, *T. inermis* and *T. californicus*, from California; *T. laticollis*, from North-eastern Siberia; and *T. transversicollis*, from the Daurian Alps.

Brachinides.

Cymindis cordata (Ramb.)= *C. aaychina* (Dej.), according to Gautier des Cottes, Bull. Soc. Ent. Fr. 1865, p. xxxv.

Pheropsophus hispanicus. Some remarks on the habits of this species are given by Kiesenwetter, Berl. ent. Zeits. 1865, pp. 370–371.

Brachinus. Motschulsky (*l. c.* p. 215) gives an analytical table of the species of *Brachinus* with bluish elytra.

Brachinus explodens (Dufts.) is recorded as British by Power (under the name of *glabratus*, Dej.), Ent. M. Mag. i. p. 236.

Dromius fasciatus. Power records the capture of this species, usually regarded as a strictly littoral insect, near Royston. Numerous specimens were beaten from thatch. Entomologist, ii. pp. 323, 324.

Agra. Bates (Ent. Trans. 3rd ser. vol. ii. pp. 359–383) gives descriptions of the species of this genus found in the region of the Amazons. He indicates the relations of the group and the characters by which it is distinguished from allied genera, and describes the general habits of the insects. From his observations, they possess a certain crepitating power, although in a far less degree than the *Brachini*. The number of species previously described by Chaudoir and other writers is 124; in this memoir the author describes 14 new species and 2 supposed varieties of *A. subænea* (Chaud.), and in a second paper 4 others from Saunders's collection, raising the total number of species belonging to the group to 142 (or 144). Of these, 47 are recorded from the Amazons. The author adopts Chaudoir's division of the genus into *Agridia* and *Agra*, which, however, he seems to regard as only of subgeneric value. He describes the following known species:—

Agridia batesii (Chaud.), *l. c.* p. 363, and *Agridia platyscelis* (Chaud.), *l. c.* p. 364; *Agra erythropus* (Dej.), *l. c.* p. 365; *A. latipes* (Chaud.), ibid.; *A. ænea* (Fab.), *l. c.* 366; *A. metallescens* (Chaud.), ibid.; *A. megera* (Thoms.), ibid.; *A. infuscata* (Klug), *l. c.* p. 368; *A. reflexidens* (Chaud.), ibid.; *A. femorata* (Klug), *l. c.* p. 369; *A. mœrens* (Chaud.), *l. c.* p. 370; *A. geniculata* (Klug), *l. c.* p. 371; *A. subænea* (Chaud.), ibid., with three varieties (?), *A. chryseis*, Bates, *A. curtula*, Bates, and *A. ruficornis* (Klug); *A. femoralis* (Chaud.), *l. c.* p. 373; *A. tibialis* (Chaud.), ibid. pl. 20. fig. 2; *A. mœsta* (Chaud.), *l. c.* p. 374; *A. pulchella* (Chaud.), ibid.; *A. brevicollis* (Klug), ibid.; *A. æneipennis* (Chaud.), *l. c.* p. 377; *A. excavata* (Klug), ibid.; *A. variolosa* (Klug), *l. c.* p. 378; *A. biseriata* (Chaud.), ibid; *A. foveigera* (Chaud.), ibid.; *A. immersa* (Klug), *l. c.* p. 379; *A. chalcoptera* (Klug)=*elegans* (Chaud.), ibid.; *A. exarata* (Klug), *l. c.* p. 380; *A. cytherea* (Thoms.), ibid. pl. 20. fig. 3; *A. punctato-striata* (Chaud.), ibid.; *A. varians* (Chaud.), *l. c.* p. 381; *A. cuprea* (Klug), *l. c.* p. 382; *A. multiplicata* (Klug), *l. c.* p. 383; and *A. clavipes* (Klug), ibid.

New genera and species:—

Cymindides. Motschulsky (*l. c.* p. 240) divides this group of Carabidæ into the following genera:—

I. Wings well developed.
  A. Upper surface opaque, not punctate ..... *Malisus* (Motsch.) (*variegata*, Dej.).
  B. Upper surface more or less metallic, punctation of elytra not distinct. *Apenes* (Lec.).
  C. Upper surface shining, not metallic.

  * Interstices of elytra not punctated or with indistinct punctures, not pubescent; striæ not strong ..... *Planesus* (Motsch.) (*fuscata*, Dej.).
  * Interstices faintly and sparsely punctate; pubescence visible from the side ..... *Arrhostus* (Motsch.) (*picta*, Pall.).
  * Interstices strongly and closely punctured; pubescence dense. *Tarsostinus* (Motsch.) (*lateralis*, Fisch.).

II. Wings wanting.
  A. Upper surface very shining.
    * Striæ of elytra deep; punctation and pubescence sparse. *Cymindis* (Latr.).
    * Striæ not deep; punctation very faint; pubescence not visible.
      a. Prothorax smooth ..... *Psammastes* (Motsch.). (*suturalis*, Dej.).
      b. Prothorax punctate, very narrowly margined. *Nominus* (Motsch.) (*pustulata*, Dej.).
  B. Upper surface not very shining.
    * Striæ of elytra not deep ..... *Tarus* (Clairv.).
    * Striæ deep.
      a. Form wide and flattened ..... *Mastus* (Motsch.) (*rufipes*, Gebl.).
      b. Form cylindrical ..... *Menas* (Motsch.) (*miliaris*, Fab.).
      c. Form oval and convex ..... *Berus* (Motsch.) (*faldermanni*, Gistl.).

Lebistina, g. n., Motschulsky, *l. c.* p. 227. Elytra distinctly striated, with the interstices strongly punctured; penultimate joint of tarsi triangular. (Type *Lebia picta*, Dej.).

Lebidema, g. n., Motschulsky, ibid. Elytra finely striated, with smooth interstices; penultimate joint of tarsi deeply bilobed. (Type *L. clavicornis*, Murray.) N. sp. *L. spissicornis*, Motsch. *l. c.* p. 227, from Brazil.

Lobius, g. n., Motschulsky, *l. c.* p. 230 (=*Dromius* ex part.). Penultimate joint of tarsi simple; claws dentate; tooth of mentum large, obtuse or rounded at extremity. Sp. *D. cyaneus* (Dej.), *viridis* (Esch.), &c.; *L. nigro-viridis*, sp. n., Motsch. *l. c.* p. 230, from Valdivia.

Casnonia hæmorrhoidalis, Motschulsky, *l. c.* p. 219, from Tranquebar.

Stigmaphorus tessellatus, Motschulsky, *l. c.* p. 221, from Panama.

Apiodera longicollis, Motschulsky, *l. c.* p. 218, from the Amazons; *A. transparens*, Motsch. *l. c.* p. 218, from Central America.

Leptotrachelus pallens, Motschulsky, *l. c.* p. 218, from South America; *L. fulvus* and *planus*, Motsch. ibid., from Panama; *L. pallidulus*, Motsch. ibid., from New Orleans.

Drypta dilutipes, Motschulsky, *l. c.* p. 217, from the Cape of Good Hope.

Cordistes bifasciatus, Motschulsky, *l. c.* p. 217, from Brazil; *C. latifasciatus*, Motsch. ibid., from Pará; *C. unifasciatus*, Motsch. ibid., from Venezuela.

Aptinus cyaneus, Motschulsky, *l. c.* p. 214, from the Cape of Good Hope.

Agridia phœnicodera, Bates, Ent. Trans. 3rd ser. vol. ii. p. 364, from Ega.

Agra. Bates describes the following fourteen new species from the Amazons:—*A. anguinea*, *l. c.* p. 367, pl. 20. fig. 6; *A. mustela*, *l. c.* p. 369; *A. scrutatrix*, *l. c.* p. 370; *A. callictis*, *l. c.* p. 371; *A. chaudoirii*, *l. c.* p. 375; *A. bicostata*, ibid.; *A. brevicornis*, *l. c.* p. 376; *A. rubrocuprea*, ibid.; *A. aurata*, *l. c.* p. 377; *A. gaudiola*, ibid.; *A. graminea*, *l. c.* p. 379; *A. optimia*, *l. c.* p. 381; *A. laticeps*, *l. c.* p. 382; *A. phœogona*, ibid. Bates also describes *A. valentina*, *l. c.* p. 385, pl. 20. fig. 7, from Venezuela; *A. dominula*, *l. c.* p. 386, pl. 20. fig. 5, and *A. saundersii*, ibid. pl. 20. fig. 4, from Peru; and *A. occipitalis*, *l. c.* p. 387, pl. 20. fig. 1, from Brazil.

Charopterus flaviceps, Motschulsky, *l. c.* p. 232, and *C. discipinnis*, Motsch. ibid., from the Cape of Good Hope.

Calleida. The following species are described by Motschulsky:—*C. cærulea*, *l. c.* p. 235, *C. obscurata*, *l. c.* p. 236, from Brazil; *C. maura*, *l. c.* p. 235, *C. nigropicea*, ibid., *C. rufocincta*, *l. c.* p. 237, *C. rufolimbata*, ibid., *C.? angulicollis*, *l. c.* p. 239, from the Cape of Good Hope; *C. subærea*, *l. c.* p. 236, and *C. viridicincta*, *l. c.* p. 238, from Panama; *C. aurata*, *l. c.* p. 236, *C. semirufa*, *l. c.* p. 237, from Nicaragua; *C. brevicollis*, *l. c.* p. 239, from Venezuela; *C. iridea*, *l. c.* p. 238, from Valdivia; and *C. rubricata*, *l. c.* p. 238, from the East Indies.

Malisus (g. n.) *brunnicollis* and 4-*guttulatus*, Motschulsky, *l. c.* p. 240, from Columbia; *M.* 8-*guttulatus*, Motsch. ibid., from Brazil; and *M. scriatus*, Motsch. ibid., from Panama.

Planesus (g. n.) *lævigatus*, Motschulsky, *l. c.* p. 207, and *P. fuscicollis*, Motsch. ibid., from North America.

Psammastus (g. n.) *subocalis*, Motschulsky, *l. c.* p. 209, from Egypt; *P. glabricollis* and *angustissimus*, Motsch. ibid., from the Cape of Good Hope.

Tarus. Motschulsky describes the following species:—*T. dilatipennis*, *intricatus*, *gebieri*, *l. c.* p. 300, *T. marginalis*, *l. c.* p. 301, *T. sublucidus*, *l. c.* p. 302, from Siberia; *T. viridipennis*, *l. c.* p. 301, and *oblongus*, *l. c.* p. 302, from the Caucasus; *T. macularis*, ibid., from Russia; and *T. apicalis*, ibid., from Dauria.

Tarus velatus, Wollaston, Col. Atl. App. p. 2, from Gomera.

Dromius plagipennis, Wollaston, *l. c.* p. 3, *D. oceanicus*, Woll. ibid., *D. strigifrons*, Woll. *l. c.* p. 5, from the Canaries; *D. umbratus*, Woll. *l. c.* p. 6, from Madeira.

Singilis dimidiatus, Motschulsky, *l. c.* p. 234, from Anatolia.

Trichis lateripicta, Motschulsky, *l. c.* p. 240, from the Cape.

Demetrius (sic) *obtusus*, Motschulsky, *l. c.* p. 230, from France.

Microlestes capensis, Motschulsky, *l. c.* p. 232, from the Cape.

Metabletus flavo-axillaris, Motschulsky, *l. c.* p. 231, from Algeria.

Blechrus hispanicus, Motschulsky, *l. c.* p. 231, from Andalusia.

Lionychus? versicolor, Motschulsky, *l. c.* p. 231, from Egypt.

Apristus tropicalis, Motschulsky, *l. c.* p. 232, from Panama; *A. fuscipennis*, Motsch. *l. c.* p. 233, from New Mexico; *A. æreus*, Motsch. ibid., from Algeria.

Sericoda cicatricosa, Motschulsky, *l. c.* p. 233, from Russian America.

Lia femorata, Motschulsky, *l. c.* p. 228, from Central America; *L.* 4-*maculata*, Motsch. ibid., from Panama.

Masoreus americanus, Motschulsky, *l. c.* p. 234, from North America; *M. orientalis*, Motsch. ibid., from Egypt.

Catascopus subquadratus, Motschulsky, *l. c.* p. 302, *C. æneus* and *C. arcinus* Motsch. *l. c.* p. 303, from the East Indies.

Parena plogiata, Motschulsky, *l. c.* p. 224, from the Cape of Good Hope.

Pentagonica americana, Motschulsky, *l. c.* p. 224, from Mobile.

Lamprias rufosutura, Motschulsky, *l. c.* p. 225, from Nicaragua; *L. chrysocephala*, Motsch. ibid., and *L. crassicornis*, Motsch. *l. c.* p. 226, from the south of France.

Lebia (? *Lebida*) *picipennis*, Motschulsky, *l. c.* p. 226, from the Cape; *L. sublimbata*, Motsch. ibid., from North America; and *Lebida subocata*, Motsch. *l. c.* p. 227, from the Kirghis steppes.

Lebia. Motschulsky (*l. c.* p. 227) gives a table of the species of this genus, including many which seem to be intended as new: namely, *L. biplagiata*, *bivulnerata*, *lytata*, *conjugata*, *semirufa*, and *unimaculata*, from the Cape; *L. subfigurata*, *flaviventris*, *brunnicollis*, and *flavolineata*, from North America; *L. guttata*, from Dutch Guiana; *L. basiguttata*, from Brazil; *L. submaculata*, from Panama; *L. infuscata*, from India; and *L. retrofasciata*, from Japan.

Tetragonoderus amazonus, Motschulsky, *l. c.* p. 221, and *T.? velutinus*, Motsch. *l. c.* p. 222, from the Amazons; *T. distigma*, Motsch. ibid., from Tennessee.

Coptodera. Five species are described by Motschulsky:—*C. spilota*, *l. c.* p. 222, and *C. fuscata*, p. 223, from the Cape; *C. deplanata*, *l. c.* p. 223, from Brazil; and *C. œnescens* and *chloroptera*, ibid., from Valdivia.

Anthiides.

Archer records the occurrence of *Hyperion schroetteri* (Schreb.) in Victoria. Trans. Roy. Soc. vol. vi. pp. 106, 107.

Dregus, g. n., Motschulsky, *l. c.* p. 195. Allied to *Aristus*; first four joints of anterior tarsi strongly dilated in ♂; antennæ slender; palpi with last joint acuminate. Sp. *D. nitidus*, sp. n., Motsch. *l. c.* p. 196, from Algeria.

Graniger, g. n., Motschulsky, *l. c.* p. 197. Allied to *Giagona*; form of *Stenomorphus*; mentum without a tooth! Sp. *G. algerianus*, sp. n., Motsch. *l. c.* p. 198, from Algeria.

Pachymorpha elliptica, Motschulsky, *l. c.* p. 216, from Tranquebar.

Apotomus madagascariensis, sp. n., Motschulsky, *l. c.* p. 195.

Scaritides.

MacLeay has published (Trans. Ent. Soc. N. S. W. vol. i. pp. 176–198) a third paper on the Australian *Scaritides*, in which he describes a considerable number of new species, and brings together the whole of the known Australian members of the group in a catalogue which is tabularly arranged as regards the species of *Carenum*, of which he enumerates 60. The number of species belonging to other genera are as follows:—

Euryscaphus (g. n.) 6, *Scaraphites* 9, *Scarites* 8, *Gnathoxys* 10, *Ceratoglossa* 2, *Clivina* 6, and *Dyschirius* 1. The author indicates the distinctive characters of ten species of *Carenum*, forming his first group (*l. c.* p. 179), and discusses the characters of the Australian species of *Scarites* (p. 194).

De Saulcy corrects his character of the genus *Reicheia*, which has the labium bilobed, and not trilobed. It may therefore be united with *Dyschirius*. Bull. Soc. Ent. Fr. 1865, p. xxxv.

Dyschirius elongatulus (Daws.) = *D. extensus* (Putz.), according to Rye, Ent. M. Mag. ii. p. 87.

New species :—

Euryscaphus, g. n., MacLeay, Trans. Ent. Soc. N. S. W. vol. i. p. 187. Allied to *Carenum*; antennæ longer and more filiform; abdomen nearly circular. Known sp. *Scaraphites obesus* and *S. waterhousei*. New sp. *E. angulatus* and *E. dilatatus*, MacLeay, *l. c.* p. 188; and *E. minor* and *E. bipunctatus*, MacLeay, *l. c.* p. 189.

Carenum. MacLeay has described (Trans. Ent. Soc. N. S. W. vol. i.) the following twenty species of this genus, from various parts of Australia:—*C. nigerrimum*, p. 176; *C. ambiguum* and *C. subquadratum*, p. 177; *C. striato-punctulatum* and *C. coracinum*, p. 178; *C. substriatulum*, p. 179; *C. subrugulosum*, *C. glaberrimum*, and *C. undulatum*, p. 180; *C. riverinæ* and *C. interruptum*, p. 181; *C. obscurum* and *C. simile*, p. 182; *C. murrumbidgense* and *C. laterale*, p. 183; *C. subporcatulum* and *C. striato-punctatum*, p. 184; *C. frontale*, p. 185; *C. subcostatum* and *C. campestre*, p. 186.

Scaraphites intermedius, MacLeay, *l. c.* p. 190, from Illawarra and Merimbula.

Scarites. Five new Australian species are described by MacLeay: namely, *S. approximatus*, *l. c.* p. 191; *S. waterhousei* and *S. subporcatulus*, *l. c.* p. 192; and *S. jacksoniensis* and *S. planiusculus*, *l. c.* p. 193.

Gnathoxys murrumbidgensis, MacLeay, p. 195, from Murrumbidgee.

Dyschirius stephensii, MacLeay, p. 195, from Sutton Forest, N.S.W.

Dschirius (sic) *rufilabris*, Motschulsky, *l. c.* p. 214, from the Banat.

Chlæniides.

Trichisia, g. n., Motschulsky, *l. c.* p. 331. Allied to *Craspedophorus*; antennæ with joint 3 as long as 1, 2 half the length and thickness of 1; elytra oval, convex, closely and rugosely punctate, and covered with long hairs. Sp. *T. cyanescens*, sp. n., Motsch. *l. c.* p. 332, from the East Indies.

Lorostoma, g. n., Motschulsky, *l. c.* p. 329. Allied to *Loricera*; joint 4 of antennæ nearly as long as 1; antennæ not furnished with long hairs; elytra destitute of pits. Sp. *L. alutacea*, sp. n., Motsch. *l. c.* p. 330, from Tranquebar.

Chlæminus, g. n., Motschulsky, *l. c.* p. 350. Allied to *Chlænius* (?); mentum with an obtuse tooth; last joint of palpi as long as the preceding, conically acuminate; prothorax convex, cordiform; elytra elliptical, scarcely wider than thorax, deeply striated, striæ indistinctly punctate, subscutellar stria wanting; 3 joints dilated in anterior tarsi of ♂. Sp. *C. biguttatus*, sp. n., Motsch. *l. c.* p. 351, from Tranquebar.

Oodinus, g. n., Motschulsky, *l. c.* p. 352. Allied to *Oodes*; form short and rounded; anterior tarsi of ♂ not much dilated; palpi long, last joint cylindrical, truncated; antennæ slender, joint 3 much shorter than 4; labrum not emarginate. Sp. *O. piceus*, sp. n., Motsch. *l. c.* p. 353, from Panama.

Epicosmus 4-*notulatus*, sp. n., Motsch. *l. c.* p. 332, from the Cape of Good Hope; *E. transversus*, Motsch. ibid., from Nepal.

Peronomus quadrinotatus, sp. n., Motsch. *l. c.* p. 333, from the East Indies.

Chlænius. Motschulsky (*l. c.* pp. 336–345) gives tables and descriptions of numerous species of this genus, among which the following appear intended as new:—*C. cordicollis*, *l. c.* p. 336, and *armeniacus*, *l. c.* p. 344, from Armenia; *C. abhasicus*, *l. c.* p. 343, from the Black Sea; *C. caspicus*, *l. c.* p. 343, from the Caspian and Aral Seas; *C. turcmenicus*, *l. c.* p. 345, from Turcomania; *C. confinis*, *l. c.* p. 338, and *cicatricosus*, *l. c.* p. 344, from Persia; *C. cæruleocephalus* and *punctatus*, *l. c.* p. 337, from Siberia; *C. semipurpureus*, *l. c.* p. 340, from the Amur; *C. nigricoxis*, *l. c.* p. 339, from Hong Kong; *C. viridanus*, *l. c.* p. 339, *binotulatus* and *maculipennis*, *l. c.* p. 341, and *fuscomarginatus*, *l. c.* p. 345, from the East Indies; *C. limbellus*, *l. c.* p. 342, and *pharaonis*, *l. c.* p. 345, from Egypt; *C. geniculatus*, *l. c.* p. 344, from Algeria; *C. quadrimaculatus*, *l. c.* p. 342, from Abyssinia; *C. nitidicollis*, *l. c.* p. 345, from the Cape of Good Hope; and *C. smaragdiger*, *l. c.* p. 338, from Pennsylvania.

Chlænites inderiensis, Motsch. *l. c.* p. 346, from South Russia; *C. nicanus* (? *incanus*), Motsch. ibid., from Hong Kong.

Oodes nepalensis, Motsch. *l. c.* p. 353, from Nepal.

Broscus crassimargo, Wollaston, Col. Atl. App. p. 6, from Gomera.

Zargus crotchianus, Wollaston, *l. c.* p. 7, from Gomera.

Harpalides.

Stenolophus derelictus (Daws.). A note on the characters of this species is published by Rye, Ent. M. Mag. ii. p. 63.

Acmastes haroldii (Schaum). Count Ferrari has indicated the evidence on which this species may be included in the European fauna. Wien. ent. Mon. Bd. viii. p. 235.

Harpalus. After the separation of *Ophonus*, *Pseudophonus*, *Platus*, and *Eurytrichus* from the old genus *Harpalus*, Motschulsky (*l. c.* pp. 208, 209) proposes to divide the remainder into the following genera:—

I. Thorax with posterior angles rounded.
  A. Elytra elongate, parallel, usually metallic ..... *Erpeinus* (Motsch.) (*obtusus*, Gebl. &c.).
  B. Elytra short, oval, black, or brown ..... *Actephilus* (Meg.) (*flavitarsis*, *vernalis*, &c.).

II. Thorax with posterior angles square, acute, or but slightly obtuse.
  A. Thorax nearly square, a little narrower than the elytra.
    * Elytra parallel ..... *Harpalus* (Latr.) (*æneus*).
    * Elytra more or less oval ..... *Amblystus* (Motsch.) (*rubripes*).
  B. Thorax nearly square, perceptibly narrower than the elytra.
    Ooistus (Motsch.) (*taciturnus*, *taphrioides*).

C. Thorax transverse, as broad as the elytra, or nearly so; posterior angles acute.
* Elytra of ♀ opaque or silky ..... *Pheuginus* (Motsch.) (*tardus*, Panz.).
* Elytra of ♀ nearly as shining as in ♂ ..... *Conicus* (Motsch.) (*optabilis*, Fald.).

Acupalpus. Motschulsky (*l. c.* pp. 205–207) remarks upon the confusion that has arisen in consequence of the diversity of opinion of different authors upon the constitution of this genus, which he proposes to break up into five genera, as follows:—

I. No tooth in the emargination of the mentum.
A. Posterior angles of thorax rounded..... *Manicellus* (Motsch.) (*A. elegans, lucasii*, &c.).
B. Posterior angles of thorax square or acute..... *Anthracus* (Motsch.) (*A. conspectus*, Gyll.).

II. Emargination of the mentum with a tooth.
A. Subscutellar stria distinct.
* Striæ of elytra strongly marked..... *Acupalpus* (Dej.) (*A. verbasci, collaris*, &c.).
* Striæ of elytra nearly effaced in the middle .. *Liocellus* (Motsch.) (*A. nitidus, obsoletus*, &c.).
B. Subscutellar stria wanting ..... *Bradycellus* (Erichs.) (*rufithorax, cognatus*, &c.).

Stenolophus. Motschulsky (*l. c.* p. 201) proposes the following division of the old genus *Stenolophus*:—

Last joint of maxillary palpi truncated at the extremity.
A. Labrum straight in front ..... *Stenolophus* (Meg.).
* B. Labrum arcuate in front ..... *Loxoncus* (Schm.-Göb.).
II. Last joint of maxillary palpi acuminate .... *Egadroma* (Motsch.) (type *smaragdulus*, Fab.).

Of the species of *Stenolophus* thus restricted Motschulsky gives an analytical table (*l. c.* pp. 201–204). *Loxoncus* (Schmidt-Göbel) includes *L. elevatus* of that author, figured and named, but not described, in the 'Faunula Birmannica (pl. 3. fig. 9), and also *Stenolophus alacer* (Dej.), and probably *S. velox*. The species of *Egadroma* are also tabulated (*l. c.* p. 205).

New species:—

Atranus virescens, Motsch. *l. c.* p. 335, from the Euphrates.

Harpalus intermedius, Desbrochers, Ann. Soc. Ent. Fr. 4e sér. tom. v. p. 207, from the south of France.

Hispalis capensis, Motschulsky, *l. c.* p. 233, from the Cape; *H. geniculatus*, Motsch. ibid., from Spain; *H. femoralis, æneseens, fuscescens, pallipes, flavipes*, Motsch. ibid., *biguttatus*, and *4-guttatus*, Motsch. *l. c.* p. 234, from the East Indies.

Stenolophus. Of this genus Motschulsky characterizes the following new species:—*S. nitidulus*, *l. c.* p. 201, from Lenkoran; *S. splendidulus*, *l. c.* p. 201, and *laticollis*, *l. c.* p. 202, from North America; *S. indistinctus*, *l. c.* p. 201, and *rotundicollis*, *l. c.* p. 202, from California; *S. irideus*, *l. c.* p. 201, from Cuba; *S. sinuatus*, *l. c.* p. 202, and *pallidus*, *l. c.* p. 203, from the Kirghise deserts; *S. dorsalis*, *l. c.* p. 203, from Hong Kong; *S. japanus*, ibid., from Japan; *S. flaviusculus*, *l. c.* p. 204, from Hungary; and *S. humeralis*, *l. c.* p. 202, hab. —?

Egadroma g. n., Motschulsky (see p. 420). *E. apicalis*, Motsch. *l. c.* p. 205, from Tranquebar; *E. nitens*, Motsch. ibid., from Bombay; and *E. splendida*, Motsch. ibid., from Burmah.

Cyclosomus marginatus, Motschulsky, *l. c.* p. 200, from the East Indies.

Cratognathus empiricus, Wollaston, Col. Atl. App. p. 10, from Gomera.

Pterostichus calathiformis, Wollaston, *l. c.* p. 9, from Gomera.

Calathus obliteratus, Wollaston, *l. c.* p. 8, and *C. laureticola*, Woll. *l. c.* p. 9, from Gomera.

Feroniides.

Chaudoir, in his Essay on the *Feroniæ* of Australia and New Zealand (Bull. Soc. Nat. Mosc. tom. xxxviii. pt. 2. pp. 65–112) proposes to break up this great genus, as represented in the Australian region, into the following groups, to which, however, he does not ascribe generic value:—

1. *Homalosoma* (= *Omalosoma*, Boisd. & Cast.), *l. c.* p. 66: *Feronia cyanea* (Lap.), *F. cyaneocincta* (Boisd.). 2. *Trichosternus*, *l. c.* p. 70: *Omalosoma vigorsii* (Gory), *Feronia capito* (White), *F. planiuscula* (White). 3. *Prionopterus*, *l. c.* p. 79: *Feronia flindersii* (White). 4. *Pachidius*, *l. c.* p. 82. 5. *Notonomus*, *l. c.* p. 83: *Feronia australasiæ* (Dej.), *F. chalybea* (Dej.), *F. sphodroides* (Dej.). 6. *Prosopogmus*, *l. c.* p. 92. 7. *Rhabdotus*, *l. c.* p. 94. 8. *Loxodactylus*, *l. c.* p. 95. 9. *Steropus* (Dej.), *l. c.* p. 97: *Pterostichus civilis* (Germ.). 10. *Halcaspis*, *l. c.* p. 101: *Omaseus sylvaticus* (Blanch.), *Feronia* (*Pterost.*) *vagepunctata* (White), *F.* (*Cophosus*) *elongella* (White). 11. *Rhytisternus*, *l. c.* p. 106. 12. *Cenens*, *l. c.* p. 108: *Pterostichus concinnus* (Erichs.). 13. *Chlænioidius*, *l. c.* p. 110: *Pterostichus prolixus* (Erichs.).

Putzeys publishes (Stett. ent. Zeit. 1865, pp. 332–344) an analysis of his memoir on the *Amaroid Carabidæ*, just completed for the Société Royale des Sciences de Liège. He gives a list of 176 species belonging to this group, several of which are new; and of these, short descriptions are given among the remarks on known species appended to the end of the catalogue. The number of genera admitted by Putzeys is 9, tabulated by him as follows (p. 332):—

A. Posterior tibiæ of ♂ pubescent within.
1. Tooth of mentum bifid.
a. Prothorax narrowed behind ..... 1. Bradytus.
b. Prothorax narrowed in front..... 2. Amara.
2. Tooth of mentum not bifid.
a. Prothorax narrowed behind ..... 3. Acrodon
b. Prothorax narrowed in front ..... 4. Amathitis.

B. Posterior tibiæ of ♂ not pubescent within.
I. Points of prosternum without hairs on their sides.
1. Metathoracic episterna long.
a. Intermediate tibiæ of ♂ not bi- or tridentate below.

† Prothorax narrowed at base ..... 5. Leiocnemis.
†† Prothorax narrowed at apex ..... 6. Celia.
b. Intermediate tibiæ of ♂ having 2 or 3 teeth below. 7. Curtonotus.
2. Metathoracic episterna short and broad ..... 8. Leibides.
II. Points of prosternum with 3 or 4 pilifers on each side. 9. Percosia.

Amara. Putzeys (Stett. ent. Zeit. 1865, pp. 339–340) remarks on the following known species:—*A. chaudoirii* (Hochh.); *A. vulgaris* (Panz.)=*lunicollis* (Schrödte); *A. persica* (Chaud.)=*trivialis* (Gyll.); *A. perplexa* (Dej.)=var. *familiaris* (Duft.); *A. anthobia* (Villa); *A. ruficornis* (Dej.)=var. *ingenua* (Duft.); *A. fusca* (Dej.) and *cursitans* (Zimm.); *A. obscuricornis* (Motsch.)=*municipalis* (Duft.).

Pristonychus reichenbachii (Schauf.)=*P. bæticus* (Ramb.), according to Gautier des Cottes, Bull. Soc. Ent. Fr. 1865, p. 35.

Schaufuss states that Perez-Arcas is mistaken in referring his *Platyderus varians* and *Haptoderus cantabricus* to *Feronia lusitanica* (Dej.) and *Argutor montanellus* (Graells) respectively. Stett. ent. Zeit. 1865, p. 403.

Zawadzki (Verh. naturf. Ver. in Brünn, Band iii. p. 32) indicates the habits of *Zabrus gibbus*, the larvæ of which were said to be very injurious to the wheat-crops, especially in Moravia, in the spring of 1864.

New genera and species:—

Sphodrides. Of this group Motschulsky gives a table of the following genera (*l. c.* p. 314):—

I. Trochanters prolonged into spines in ♂; joint 3 of antennæ as long as the two following together.

A. Last joint of max. palpi dilatato-ovate like the penultimate, but rather smaller ..... *Rhopalomelus* (Boh.).

B. Last joint of max. palpi elongate-ovate, penultimate obconical. *Sphodrus* (Dej.).

II. Trochanters obtuse and oval in both sexes; joint 3 of antennæ shorter than the two following together.

A. Tarsi smooth above.

* Intermediate tibiæ arcuate.

a. Four posterior tibiæ with a strong brush on their inner face. *Theraphus* (Motsch.) (*goliath*, Zoubk.).

b. Four posterior tibiæ weakly pilose on their inner face. *Lychnifugus* (Motsch.) (*cellarum*, Adams).

† Intermediate tibiæ straight ..... *Taphoxenus* (Motsch.) (*gigas*, Fisch.).

B. Tarsi rather densely pilose above; no wings; elytra usually soldered; eyes small ..... *Cryptoxenus* (Motsch.) (*schreibersii*, Schmidt).

Anchomenus. Motschulsky (*l. c.* pp. 316–317) proposes to break up this genus in the following manner:—

I. Body more or less depressed.

A. Wings wanting ..... *Platynus* (Bon.).

B. Wings well-developed.

* Posterior angles of thorax distinct.

a. Thorax widely margined.

1. Elytra not very convex, broad, more or less ovate, with prominent shoulders ..... *Limodromus* (Esch.).

2. Elytra elongate, narrow, nearly parallel. *Batenus* (Motsch.) (*livens*, Gyll.).

b. Thorax narrowly margined; elytra widened, parallel. *Anchodemus* (Motsch.) (*cyaneus*, Dej.).

† Posterior angles of thorax rounded.

a. Upper surface opaque ..... *Dolichodes* (Motsch.).

b. Upper surface shining.

1. Joint 3 of antennæ pubescent..... *Europhilus* (Chaud.).

2. Joint 3 of antennæ not pubescent .. *Agonothorax* (Motsch.) (*punctatus*, Linn.).

II. Body more or less convex.

A. Thorax nearly round ..... *Agonocyrthes* (Motsch.).

B. Thorax nearly square ..... *Tanystola* (Motsch.) (*striata*, Esch.).

C. Thorax heart-shaped ..... *Anchomenus* (Bon.).

Trigonomina, g. n., Motschulsky, *l. c.* p. 349. Allied to *Trigonotoma*; labrum not emarginate; joint 1 of antennæ scarcely longer than 3; posterior angles of thorax obtuse. Sp. *T. politocollis*, sp. n., Motsch. from North India.

Distrigodes, g. n., Motschulsky, *l. c.* p. 353. Allied to *Distrigus*; prothorax strongly cordiform; last joint of palpi acuminate; mentum without a tooth. Sp. *D. flavoguttatus* and *femoralis*, sp. n., Motsch. *l. c.* p. 354, from the East Indies; *D. bipunctatus*, Motsch. *l. c.* p. 355, from Ceylon.

Trichotarus, g. n., Motschulsky, *l. c.* p. 327=*Orthotrichus* (Peyr.). Type *Anchomenus cymindoides* (Dej.).

Pœciloistus, g. n., Motschulsky, *l. c.* p. 347. Allied to *Pœcilus*; thorax with a simple impression on each side at the base; subscutellar stria between the suture and the first stria. Type *P. quadricolor* (Fab.). New sp.: *P. prolongatus*, Motsch. *l. c.* p. 347, from the Senegal; *P. lævicollis, glabricollis*, and *dilatatus*, Motsch. *l. c.* p. 348, from the East Indies.

Pristosia, g. n., Motschulsky, *l. c.* p. 311. Allied to *Calathus*; form convex; prothorax nearly square; elytra with a row of large punctures on the eighth stria; head triangular; mentum with a simple tooth. Sp. *P. picea*, sp. n., Motsch. *l. c.* p. 312, from the East Indies.

Olisares, g. n., Motschulsky, *l. c.* p. 326. Allied to *Olisthopus*; prothorax convex, scarcely margined, with a rounded impression on each side at base; elytra rather convex, deeply striate, scutellar stria distinct; last joint of palpi nearly cylindrical, attenuated at apex. Sp. *O. picipes*, sp. n., Motsch. *l. c.* p. 326, from Caracas; *O. flavolimbatus*, Motsch. *l. c.* p. 327, from Mobile.

Omiastus, g. n., Motschulsky, *l. c.* p. 306. Allied to *Colpodes*; short, oval,

convex; prothorax oval; elytra with fine striæ, slightly sinuated at the apex, not covering the abdomen; joint 4 bilobed in all the tarsi, four posterior tarsi grooved on each side, silky beneath; anterior tibiæ distinctly grooved in front; last joint of palpi oval and truncated. Sp. *O. rutilans*, sp. n., Motsch. *l. c.* p. 306, from Caraccas; *O. æneus*, Motsch. *l. c.* p. 307, from Venezuela; *O.? mauroæneus*, Motsch. ibid., from the Cape of Good Hope.

Pachydesus, g. n., Motschulsky, *l. c.* p. 190. Allied to *Patrobus*; joint 3 of antennæ a little longer than 4; elytra with nine entire striæ. Sp. *P. crassipes*, sp. n., Motsch. *l. c.* p. 191, from the Cape of Good Hope.

Penetretus, g. n., Motschulsky, *l. c.* p. 328. Allied to *Patrobus*; form flattened; last joint of palpi elongate, nearly cylindrical, truncated at the end; joint 3 of antennæ shorter than 4 and 5 together. Type *Patrobus rufipennis* (Dej.).

Amblytelus vittatus, Motsch. *l. c.* p. 304, from Australia.

Catadromus cordicollis, Motsch. *l. c.* p. 350, from Australia.

Pterostichus inornatus, Bland, Proc. Ent. Soc. Phil. vol. iv. p. 381, and *P. agrestis*, Bland, ibid., from the Colorado Territory.

Feronia. Chaudoir (Bull. Soc. Nat. Mosc. tom. xxxviii. part 2) describes the following new species of this group from Australia and New Zealand:—*F. (Homalosoma) marginifera*, *l. c.* p. 68, from East Australia; *F. (H.) cordata*, *l. c.* p. 69, origin unknown; *F. (Trichosternus) renardi*, *l. c.* p. 71, from Moreton Bay; *F. (T.) subvirens*, *l. c.* p. 72, from Melbourne; *F. (T.) antarctica*, *l. c.* p. 73, and *F. (T.) rectangula*, *l. c.* p. 74, from New Zealand; *F. (T.) guerinii*, *l. c.* p. 75 = *australasiæ* (Guér.), *F. (T.) dilaticeps*, *l. c.* p. 76, from East Australia, and *F. (T.) curta*, *l. c.* p. 78, from North Australia; *F. (Prionophorus) crenatipes*, *l. c.* p. 79, from Melbourne; *F. (Pachidius) sulcata*, *l. c.* p. 82, from Moreton Bay; *F. (Notonomus) æneomicans*, *l. c.* p. 84, *F. (N.) triplogenioides*, *l. c.* p. 85, *F. (N.) subiridescens*, ibid., and *F. (N.) variicollis*, *l. c.* p. 86, from South Australia; *F. (N.) kingii*, ibid., from East Australia; *F. (N.) politula*, ibid., from Van Diemen's Land; *F. (N.) discodera*, *l. c.* p. 87, *F. (N.) ingrata*, ibid., *F. (N.) nitidicollis*, *l. c.* p. 88, *F. (N.) opacicollis*, ibid., *F. (N.) mediosulcata*, ibid., *F. (N.) molesta*, *l. c.* p. 89, *F. (N.) gravis*, *l. c.* p. 90, and *F. (N.) accedens*, *l. c.* p. 92, from South Australia; *F. (Prosopogmus) impressifrons*, *l. c.* p. 93, from New Zealand; *F. (Rhabdotus) reflexa*, *l. c.* p. 94, from New Zealand; *F. (Loxodactylus) carinulata*, *l. c.* p. 96, and *F. (L.) amæroptera*, *l. c.* p. 97, from Melbourne; *F. (Steropus) cyaneo-cincta* *, *l. c.* p. 97, from North Australia; *F. (S.) discopunctata*, *l. c.* p. 98, *F. (S.) obesula*, *l. c.* p. 99, *F. (S.) cyclodera*, *l. c.* p. 100, from Melbourne; and *F. (S.) indistincta*, ibid., from Swan River; *F. (Holcaspis) angustula*, *l. c.* p. 101 = *Omaseus elongatus* (Blanch.), and *F. (H.) ovatella*, *l. c.* p. 105, from New Zealand; *F. (Rhytisternus) liopleura*, *l. c.* p. 106, from Melbourne; *F. (R.) lævilatera*, *l. c.* p. 107, from Moreton Bay; *F. (R.) cyathodera*, ibid., from the river Parvo; *F. (R.) puella*, *l. c.* p. 108, origin not stated; *F. (R.) misera*, ibid., from Moreton Bay; *F. (Cneus) monochroa*, *l. c.* p. 110, from Melbourne; and *F. (Chlænioidius) herbacea*, *l. c.* p. 112, from North Australia.

* This name must be changed, as a *F. cyanocincta* (Boisd.) is described by Chaudoir himself at p. 69.

Amara. Putzeys describes the following new species of this genus:—*A. subconvexa*, Stett. ent. Zeit. 1865, p. 339, from Algeria, and indicates 5 more new species, to be described in his memoir.

Amara pygmea (sic), Couper, Canad. Nat. & Geol. n. s. vol. ii. p. 60, from Quebec.

Putzeys, in his Catalogue (*l. c.*), enumerates 2 new species of *Celia*, 4 of *Amathitis*, 1 of *Leirides*, 21 of *Curtonotus*, 1 of *Bradytus*, and 1 of *Percosia*, which will be described in his memoir.

Leiocnemis. The following new species are described by Putzeys (*l. c.*):—*L. ænescens*, p. 341, from Egypt; *L. corpulenta*, ibid., from Andalusia; *L. testudinea*, ibid., from Spain; *L. arcuata*, *l. c.* p. 342, from Carthagena; *L. ooptera*, ibid., from Spain; *L. diversa*, *l. c.* p. 343, from Dalmatia; *L. arenaria*, ibid., from Spain. He also enumerates 5 more new species in his Catalogue.

Zabrus consanguineus, Chevrolat, Rev. et Mag. Zool. 1865, p. 249, from the Asturias.

Sphodrus cordicollis, Motsch. *l. c.* p. 315, from the Caucasus; *S. siculus*, Motsch. ibid., from Sicily and the south of France.

Cryptoxenus (g. n.) *köppeni*, Motsch. *l. c.* p. 315, from the Kisilkoba Cavern in the Crimea.

Calathus orbicollis, Motsch. *l. c.* p. 312, from the Caucasus.

Taphria sylvalis, Motsch. *l. c.* p. 303 = *T. nivalis* (Schaum).

Dicrochile avicollis, Motsch. *l. c.* p. 316, from New Zealand.

Limodromus interstitialis, Motsch. *l. c.* p. 318, and *L. acuticollis*, Motsch. *l. c.* p. 319, from North America; *L. magnicollis*, Motsch. *l. c.* p. 318, from St. Petersburg.

Batenus? borealis, Motsch. *l. c.* p. 319, from Eastern Siberia; *B.? æneolus*, Motsch. *l. c.* p. 320, from Russian America; *B.? flavipes*, Motsch. ibid., from Kamtschatka.

Dolichodes (g. n.) *geniculatus*, Motsch. *l. c.* p. 321, from Brazil.

Europhilus iridipennis, Motsch. *l. c.* p. 321, and *E. dilutipennis*, Motsch. *l. c.* p. 322, from North America.

Agonocyrthes (g. n.) *orbicollis*, Motsch. *l. c.* p. 323, from Hong-Kong; *A. rotundicollis*, Motsch. *l. c.* p. 324, from the Amur.

Tanystola (g. n.) *tropica*, Motsch. *l. c.* p. 324, from Nicaragua.

Olisthopus? insularis, Motsch. *l. c.* p. 325, from New Zealand.

Metallosomus cuprescens, Motsch. *l. c.* p. 305, from St. Domingo.

Patrobus flavipes, Motsch. *l. c.* p. 191, from Japan.

Pogonus? hindustanus, Motsch. *l. c.* p. 192, from Tranquebar.

Stenocnemus versicolor, Motsch. *l. c.* p. 308, from Nicaragua.

Ophryodactylus purpureovarius, Motsch, *l. c.* p. 308, from Caraccas; *O. brevipennis*, Motsch. ibid., from Columbia.

Loxocrepis cordicollis, Motsch. *l. c.* p. 309, from Venezuela; *L. lugubris*, Motsch. ibid., from Australia; *L. cælestinus*, Motsch. *l. c.* p. 310, from Burmah; *L. nigriceps*, Motsch. ibid., from the East Indies.

Dyscolus aterrimus, Motsch. *l. c.* p. 310, from Nicaragua.

Abropus semirufus, Motsch. *l. c.* p. 311, from Nicaragua.

Callistides.

Callistoides, g. n., Motsch. *l. c.* p. 334. Allied to *Callistus*; dilated joints of anterior tarsi in ♂ nearly round; tooth of mentum obtuse. Sp. *C. malachinus*, Motsch. *l. c.* p. 335, from the East Indies.

Anchoderus concolor, sp. n., Motsch. *l. c.* p. 333, from Brazil; *A. infuscatus*, Motsch. ibid., and *A. transversus*, Motsch. *l. c.* p. 334, from Columbia; *A. submaculatus*, Motsch. ibid., from Pará.

Ega brasiliensis, sp. n., Motsch. *l. c.* p. 220, and *E. lævicepa*, Motsch. *l. c.* p. 221, from Brazil; *E. fusco-ænea*, Motsch. *l. c.* p. 220, and *femoralis* and *axillaris*, Motsch. *l. c.* p. 221, from Panama.

Bembidiides.

Motschulsky (Bull. Soc. Nat. Mosc. xxxvii. pt. 2, pp. 180–190) gives a tabular synopsis of the genera adopted by him in the subfamily *Bembidiides*, with lists of the species belonging to each. The following is an abstract of his table :—

I. Surface covered with a very close punctuation and finely pubescent.
Tachypus (Meg.).

II. Surface of the body smooth.

A. Elytra presenting on each 8 punctured striæ and 9 distinct interstices; body rather broad.

a. Striæ entire to the apex.

1. Striæ deep throughout, crenulate, 2 very small points on 3rd stria; mentum with a long tooth rounded at apex.
Odontium (Lec.).

2. Striæ finely punctured, 2 well-marked points on 3rd stria; mentum with a short truncate tooth; thorax narrowed to head.
Bembidium (Lat.).

3. Striæ strongly punctured, but not very deep, 2 well-marked points on 3rd stria; prothorax cordiform.
Princidium (Motsch.)
(type *ruficolle*, Ill.).

b. Striæ effaced towards extremity.

1. Elytra rather elongate, points on 3rd stria well marked, 7th stria obliterated ..... *Testedium* (Motsch.)
(type *glaciale*, Heer).

2. Elytra oval, points on 3rd stria small, 7th stria distinct, striæ deep and well punctured ..... *Chlorodium*, (Motsch.)
(type *contractum*, Say).

3. Elytra nearly square, points on 3rd stria small, 7th visible, striæ not deep, but distinctly punctured.. *Actedium* (Motsch.)
(type *küsterii*, Sch.).

B. Each elytron presenting 7 striæ and 8 interstices, 7th stria generally well developed; body elongate.

a. Striæ entire, strongly marked, finely punctured or without punctuation.

1. First three joints of tarsi armed beneath with a spine.
Cillenum (Curt.).

2. Fourth joint of tarsi only with a spine.
Lymnæum (Steph.).

3. Tarsi unarmed.

a. Elytra scarcely wider than thorax. *Eurytrachelus* (Motsch.)
(= *Eudromus*, Kirby *nec* Klug).

β. Elytra distinctly wider than thorax.

* Striæ fine and faintly punctured, deeper towards the apex and near the suture; prothorax square.
Plataphus (Motsch.)
(type *crenulatus*, Sahlb.).

† Striæ distinctly punctured, equal throughout; prothorax cordiform ..... *Notaphus* (Meg.).

b. Striæ effaced towards the extremity, but strongly punctured, deeper towards base.

1. Frontal sulci double throughout .... *Campa* (Motsch.)
(type *fumigata*, Duft.).

2. Frontal sulci simple, at least in front.

a. Base of elytra broadly truncate.

* Frontal sulci parallel ..... *Emphanes* (Motsch.)
(type *niger*, Say).

† Frontal sulci approaching in front. *Trepanes* (Motsch.)
(type *decipiens*, Duv.).

β. Base of elytra narrowly truncate.

* Posterior angles of thorax obtuse. *Philochthus* (Steph.).

† Posterior angles of thorax salient. *Hydrium* (Lec.).

‡ Prothorax elongate-cordate .... *Sinechostictus* (Motsch.)
(type *ruficornis*, Sturm).

c. Striæ effaced towards the extremity, finely punctured, not perceptibly deeper towards base.

1. Head and thorax impunctate; frontal sulci deep.
Metallina (Motsch.)
(type *nigricornis*, Gyll.).

2. Head and thorax punctured; frontal sulci not deep.
Talanes (Motsch.)
(type *aspericollis*, Gum.).

C. Each elytron presenting 6 striæ and 7 interstices.

a. Body convex and rather oval.

1. Striæ of elytra faintly impressed and finely punctured.
Neja (Motsch.)
(type *pygmæa*, Fab.).

2. Striæ strong, and strongly punctured.

a. Thorax transverse, post. angles square; 3rd interstice with one point ..... *Ocys* (Steph.)

β. Thorax nearly square, post. angles obtuse; 3rd interstice with two points ..... *Phila* (Motsch.)
(type *biguttata*, Fab.).

b. Body depressed and rather parallel.

1. Striæ strongly impressed and closely punctured.
Peryphus (Meg.).

2. Striæ faintly impressed and distinctly but not closely punctured. *Lopha* (Meg.).

D. Each elytron presenting 4–2 very fine and indistinctly marked striæ ..... *Nepha* (Motsch.)
(type *ménétriesi*, Kol.).

Dohrn (Stett. ent. Zeit. 1865, p. 61) describes a peculiar variety of *Bembidium egues* from Naples, in which the elytra are uniformly yellow, with a scarcely perceptible obscurity at the apex.

Illaphanus, g. n., MacLeay, Trans. Ent. Soc. N. S. W. vol. i. p. 155. Allied to *Anillus*; eyes wanting; antennæ with joints 3 and 4 turbinate; palpi terminated by setiform joints, preceding joints large; mentum without a tooth. Sp. *I. stephensii*, sp. n., MacLeay, *l. c.* p. 156, pl. 15, from the beach at Wollongong, under stones.

Bembidium quadrisignatum (Duft.) is recorded as British by Rye. Ent. M. Mag. ii. p. 155.

Bembidium fockii. On the occurrence of this Beetle near South Shields, see Bold, Ent. M. Mag. ii. p. 14.

Bembidium (Peryphus) adusticauda, sp. n., Costa, Ann. Mus. Zool. Nap. ii. p. 121, from Naples.

Dytiscidæ.

Altum has published (Stett. ent. Zeit. 1865, pp. 346–362 and 398–402) a detailed description of the species of the genus *Dytiscus* found in the vicinity of Münster, with especial reference to the sulcation of the elytra in the females and to some cases of abnormal structure and hermaphroditism observed by him in those insects. He describes the general character of the sulcation of the elytra, and states that the furrows vary both in number and distribution. His general results may be summed up as follows :—

	Area suturalis.	Area interno-media.	Area externo-media.
Marginalis-group (incl. *D. latissimus, marginalis, circumcinctus, circumflexus*, and *lapponicus*)	4 furrows.	3 furrows.	3 furrows.
Dimidiatus-group (incl. *D. dimidiatus* and *cordieri*)	5 „	2 „	3 „
Punctulatus-group (*D. punctulatus*)	3 „	3 „	3 „

Altum describes the habits of *D. latissimus*, mentions his having taken a *latissimus* ♂ in copulation with *dimidiatus* ♀, and gives a detailed description of an hermaphrodite of the former species. He also describes some curious malformations of the tarsi in *D. marginalis*, and indicates the characters of the probable larvæ of *D. circumflexus* and *D. dimidiatus*.

Schiödte (Naturh. Tidsskr. 3rd ser. vol. iii. pp. 154–161) gives an elaborate analysis of the general character of the larvæ of the *Dytiscidæ*, and describes those of the following species :—

Haliplus ruficollis (De G.), pp. 161–164, pl. 8. figs. 1–12; *H. variegatus* (St.), p. 164, pl. 8. figs. 13–15; *H. fulvus* (Fab.), p. 164, pl. 8. figs. 16–18;

Hydroporus parallelogrammus (Ahr.), p. 167, pl. 4. figs. 13–15, & pl. 5. figs. 10–15; *H. palustris* (Lin.), p. 168; *H. depressus* (Fab.), p. 168; *H. halensis* (Fab.), p. 168; *Hyphydrus ovatus* (Lin.), p. 169, pl. 5. figs. 1–9; *Agabus maculatus* (Lin.), pp. 172–174, pl. 6. figs. 1–8; *Ilybius fenestratus* (Fab.), pp. 174–177, pl. 6. figs. 9–15; *Colymbetes fuscus* (Lin.), pp. 177–179, pl. 2. figs. 6–16, & pl. 3. figs. 1–5; *C. dolabratus* (Payk.), p. 179, pl. 2. figs. 17–19; *Acilius sulcatus* (Nicol.), pp. 179–182, pl. 4. figs. 1–12; *Dytiscus marginalis* (Ahr.), pp. 182–185, pl. 3. figs. 6–17; *Cybister roeselii* (Fab.), pp. 185–187, pl. 7. figs. 10–16. He also indicates the larval characters of the groups *Haliplini* (*l. c.* p. 160), *Hydroporini* (p. 165), *Colymbetini* (p. 171), and *Dytiscini* (p. 179), and describes the characters of the pupæ in the different genera (pp. 188–189), several of which are figured with the larvæ.

The following species are recorded as new to Britain :—*Eunectes sticticus* (Lin.) by Crotch, Cat. Brit. Col., and Entomologist, ii. p. 210; *Hyphydrus variegatus* (Aubé) by Brown, Ent. M. Mag. i. p. 185.

Hyphydrus variegatus (Aubé), its occurrence in Lancashire noticed by Brown and Rye. Ent. M. Mag. i. p. 185.

Agabus mülleri, sp. n., Kirsch, Berl. ent. Zeitschr. 1865, p. 43, from Bogotá.

Hydroporus subaudus, sp. n., Fauvel, Bull. Soc. Linn. Norm. tome ix. p. 270, from Savoy.—*H. compunctus*, Wollaston, Col. Atl. App. p. 11, from Teneriffe.

Gyrinidæ.

Schiödte (Naturh. Tidsskr. 3rd ser. vol. iii. pp. 189, 190) indicates the characters of the larvæ of the *Gyrinidæ* and describes in detail those of *Gyrinus marinus* (Gyll.), p. 191, pl. 7. figs. 8 & 9, and *Orectochelus villosus* (Müll.), pp. 191–192, pl. 7. figs. 1–7.

Gyrinus fraternus, sp. n., Couper, Canad. Nat. & Geol. n. s. vol. ii. p. 60, from Quebec.

Dineutus iridescens, sp. n., Kirsch, Berl. ent. Zeitschr. 1865, p. 143, from Bogotá.

Palpicornia.

Count Ferrari (Wien. ent. Mon. Bd. viii. pp. 473–478) describes the known species of the genus *Calobius* (Woll.), of which he recognizes five, namely *C. (Ochth.) subinteger* (Muls.), *C. (O.) notabilis* (Ros.), *C. heerii* (Woll.), *C. (O.) quadricollis* (Muls.), which he regards as distinct from *C. notabilis* and *C. (O.) lejolisii* (Muls.). *C. subinteger* and *C. lejolisii* form a regular transition towards *Ochthebius*; and hence the author is inclined to adopt the opinion of De Marseul, according to which *Calobius* is only a section of *Ochthebius*.

De Mathan publishes a description of the larvæ of *Ochthebius lejolisii* (Muls. & Rey) with notes and figures by Fauvel. Ann. Soc. Ent. Fr. 4e sér. tome v. pp. 199–202.

Hydræna exarata, sp. n., Kiesenwetter, Berl. ent. Zeits. 1865, p. 375, note, from Cordova.

Limnebius evanescens, sp. n., Kiesenw. *l. c.* p. 375, note, from Cordova.

Staphylinidæ.

Schiödte (Naturh. Tidsskr. 3rd ser. vol. iii. pp. 193–195) describes the general characters of the larvæ of the insects of this family, and in detail those of the following species :—

Staphylinus maxillosus (Lin.), pp. 195–197 ; *Ocypus olens* (Müll.), pp. 197–199, pl. 9. figs. 1–5 ; *Philonthus nitidus* (Fab.), pp. 199–200, pl. 9. figs. 6–17 ; *P. atratus* (Grav.), p. 200 ; *Xantholinus lentus* (Grav.), pp. 201–203, pl. 9. fig. 18, and pl. 10. figs. 1–7 ; *Quedius dilatatus* (Fab.), pp. 203–204, pl. 10. figs. 9–16 ; *Q. fulgidus* (Fab.), p. 205, pl. 10. figs. 17–22 ; *Oxyporus maxillosus* (Fab.), pp. 208–209, pl. 11. figs. 1–14 ; *Platystethus morsitans* (Payk.), pp. 210–211, pl. 11. figs. 15–22 ; *Bledius hinnulus* (Erichs.), p. 212, pl. 12. figs. 15–19 ; *B. tricornis* (Herbst), p. 213, pl. 12. figs. 4–13 ; *B. fracticornis* (Payk.), p. 213, pl. 12. fig. 20 ; *B. pallipes* (Grav.), p. 214, pl. 12. figs. 21 & 22 ; and *B. talpa* (Gyll.), p. 214, pl. 12. figs. 23–32. The same author describes and figures the pupæ of *Staphylinus maxillosus*, p. 206, pl. 10. fig. 8 ; *Philonthus æneus* (Grav.), p. 206, pl. 12. fig. 1 ; *Quedius* (*scintillans*?), p. 206 ; *Xantholinus lentus*, p. 206, pl. 12. fig. 2 ; *Platystethus morsitans*, p. 214, pl. 12. fig. 3 ; and *Bledius tricornis*, p. 214, pl. 12. fig. 14.

Bland has commenced (Proc. Ent. Soc. Phil. vol. iv. pp. 391–425) a series of papers containing descriptions of the North American Staphylinidæ, copied and translated from the works of their original describers. The portion published includes only the *Aleocharini* ; the species are given as enumerated in Leconte's list of North American Coleoptera ; and the characters of the genera and higher groups are taken from the same author's classification of Coleoptera, and arranged in a tabular form.

Fauvel, in his remarks on the *Staphylinidæ* of Grenier's catalogue of the Coleoptera of France (Bull. Soc. Linn. Norm. tome ix. pp. 348–361), discusses in the first place the position of this family in the system, and the value of the characters on which this rests. He maintains that the true position of the *Staphylinidæ* is between the *Palpicornes* and the *Pselaphidæ*, and not between the latter and the *Histeridæ*, where they are placed by Grenier. Fauvel also objects to the position given in Grenier's catalogue to the genera *Heterothops* and *Oxyporus* (*l. c.* pp. 352, 353). The remainder of his paper is occupied by additions to the catalogue and corrections of nomenclature and synonyms in the *Staphylinidæ*.

On the species of this family inhabiting Ants' nests see Von Hagens's paper on Ants'-nest Beetles. Berl. ent. Zeits. 1865, pp. 105–110. (*Cf.* p. 399.)

The following known species of this family are recorded as newly discovered in this country :—*Borboropora kraatzii* (Fuss) by Power, Ent. M. Mag. i. p. 222 (as *B. sauleyi*, Kraatz, according to Rye, Ent. Ann. p. 63) ; *Myrmedonia plicata* (Erichs.) by Janson, Proc. Ent. Soc. Nov. 1865, Ent. M. Mag. ii. p. 169 ; *Lithocharis maritima* (Aubé) by Crotch, Proc. Ent. Soc. Nov. 1865, and Ent. M. Mag. ii. p. 169 ; *Olophrum fuscum* (Grav.) by Sharp, Ent. M. Mag. ii. p. 13 ; *Omalium lapponicum* (Zett.) by Sharp, *l. c.* p. 157 (as *O. pineti*, Thoms., according to Rye, Ent. Ann. p. 71).

Alæocharides.

Oxypoda umbrata (Erichs.) is distinct from Gyllenhal's species of the same name, according to Thomson. Kraatz proposes for it the name of *O. humidula*. Berl. ent. Zeits. 1865, p. 414.

Myrmedonia erratica (v. Hag.). Von Hagens discusses the characters of this species and *M. plicata*, and reproduces his descriptions of the former. Berl. ent. Zeits. 1865, pp. 112–113.

Fauvel states that *Ilyobates rufa* (Kraatz) is identical with *Calodera propinqua* (Aubé). Bull. Soc. Linn. Norm. tome ix. p. 287, note.

Fuss finds *Homalota brevicollis* (Baudi) in rotten fungi, and *H. corsaria* in decaying vegetable refuse. Berl. ent. Zeits. 1865, p. 411.

Atemeles emarginatus occurs sometimes in September and October, *A. inflatus* also in September. Berl. ent. Zeits. 1865, p. 411.

Kraatz notes on the occurrence of *Myrmedonia fussii*, *Homalota elegantula*, and *Oxypoda investigatorum* in Berl. ent. Zeits. 1865, p. 413. Kraatz does not regard *Homalota sinuaticollis* (Bris.) as distinct from *H. vernacula*, ibid.

Bold records *Schistoglossa viduata* as occurring in Northumberland. Ent. M. Mag. ii. p. 46.

New genera and species :—

Myrmecopora, g. n., Saulcy, Ann. Soc. Ent. Fr. 4e ser. tome iv. p. 429, pl. 10. figs. 16 & 17. Allied to *Falagria* and *Tachyusa* ; paraglossæ not prominent ; labrum rounded in front ; labial palpi triarticulate, second joint shortest ; tarsi very long. Sp. *M. publicana*, sp. n., Saulcy, *l. c.* p. 430, from Jerusalem, in nests of *Myrmica barbara*.

Dinusa, g. n., Saulcy, *l. c.* p. 433, pl. 10. figs. 14 & 15. Allied to *Oxysoma* ; labial palpi quadriarticulate ; ligula long and narrow, deeply bifid, acute, without paraglossæ. Sp. *D. hierosolymitana*, sp. n., Saulcy, *l. c.* p. 434, *D. davidica*, sp. n., Saulcy, *l. c.* p. 435, and *D. jebusæa*, sp. n., Saulcy, *l. c.* p. 436, from Palestine, in nests of *Myrmica barbara*.

Falagria lata, Saulcy, *l. c.* p. 629, from Jerusalem.

Aleochara carinata, Saulcy, *l. c.* p. 634, and *A. tuberculata*, Saulcy, *l. c.* p. 635, from Jerusalem.—*A. frigida*, Fauvel, Bull. Soc. Linn. Norm. tome ix. p. 284, from the Piedmontese Alps.

Myrmedonia endorica, Saulcy, *l. c.* p. 432, from near Endor.

Calodera (*Ilyobates*) *bonnairii*, Fauvel, *l. c.* p. 287, note, from Compiègne.

Callicerus (?) *hierosolymitanus*, Saulcy, *l. c.* p. 431, from Jerusalem, with *Myrmica barbara*.

Chilopora syriaca, Saulcy, *l. c.* p. 630, from Palestine.

Oxypoda salomonis, Saulcy, *l. c.* p. 437, from Jerusalem, with *Myrmica barbara* ; *O. fallaciosa*, Saulcy, *l. c.* p. 632, *O. collaris*, Saulcy, *l. c.* p. 633, and *O. judæa*, Saulcy, *l. c.* p. 634, from Jerusalem ; *O. gaillardoti*, Saulcy, *l. c.* p. 633, from Mount Nebo.

Oxypoda glabriventris, Rye, Ent. M. Mag. i. p. 212, from Surrey.

Oxypoda obscæna, Wollaston, *l. c.* p. 68, from Teneriffe.

Homalota glacialis, L. Miller, Wien. ent. Mon. Bd. viii. p. 200, from the Carinthian Alps.—*H. myrmicaria*, Saulcy, *l. c.* p. 437, *H. jezabel*, Saulcy, *l. c.*

p. 438, *H. athalia*, Saulcy, *l. c.* p. 439, and *H. rebecca*, Saulcy, ibid., from Jerusalem; all with *Myrmica barbara*.—*H. rachel*, Saulcy, *l. c.* p. 631, and *H. judith*, Saulcy, ibid., from Jerusalem, &c.—*H. depauperata*, Wollaston, Col. Atl. App. p. 68, from Gomera.

Placusa coronata, Solsky, Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 433, fig. 1 (abd.), St. Petersburg, under bark.

Tachyporides.

Tachyporus ruficollis. Sharp (Ent. M. Mag. ii. pp. 157–158) maintains that the so-called *T. ruficollis* of British authors is identical with *T. nitidicollis* (Steph.), which he regards as a variety of *T. obtusus*.

Leptacinus læviusculus, sp. n., Solsky, *l. c.* p. 442, from Sarepta.

Tachinus cingulatus, sp. n., Solsky, *l. c.* p. 435, figs. 2 & 3 (abd.), and *T. nigerrimus*, sp. n., Solsky, *l. c.* p. 437, figs. 4 & 5 (abd.), from Tiflis.

Coproporus orientalis, Solsky, *l. c.* p. 439, from Celebes.

Tachyporus abner, sp. n., Saulcy, *l. c.* p. 635, from Palestine.

Bolitobius cedronis, sp. n., Saulcy, *l. c.* p. 636, from Jerusalem.

Boletobius bimaculatus, sp. n., Couper, Canad. Nat. & Geol. n. s. vol. ii. p. 61, from Quebec.

Mycetoporus adumbratus, Wollaston, Col. Atl. App. p. 71, and *M. discoideus*, Woll. ibid., from Teneriffe.

Staphylinides.

A variety of *Quedius scintillans* (Grav.), with the antennæ nearly black, is mentioned as occurring at Venice. Wien. ent. Mon. Bd. viii. p. 105.

Xantholinus. Bethe (Stett. ent. Zeit. 1865, pp. 65–67) discusses the differences between *X. lincaris* (Oliv.) and *X. longicentris* (Heer), and gives brief diagnoses of the two species (p. 67). Bethe remarks (*l. c.* p. 184) that the differences indicated by him had previously been described by H. Fuss.

Xantholinus græcus (Kraatz) and *X. rufipennis* (Er.) are identified by Saulcy with specimens brought from Palestine. Ann. Soc. Ent. Fr. 4e sér. tome iv. p. 641.

New species:—

Ocypus sylvaticus, Wollaston, *l. c.* p. 72, from Gomera.

Dolicaon debilipennis, Wollaston, *l. c.* p. 73, from Gomera; *D. paivæ*, Woll. ibid., from the Salvages.

Belonuchus mexicanus, Solsky, *l. c.* p. 440, from Mexico.

Quedius josue, Saulcy, *l. c.* p. 636, *Q. macchabæus*, Saulcy, *l. c.* p. 637, and *Q. islamita*, Saulcy, *l. c.* p. 638, from Palestine.

Philonthus libanicus, Saulcy, *l. c.* p. 639, from Beirout; *P. pharao*, Saulcy, ibid., and *P. putiphar*, Saulcy, *l. c.* p. 640, from Egypt.

Xantholinus titus, Saulcy, *l. c.* p. 642, from Jerusalem.

Leptacinus jebusæus, Saulcy, *l. c.* p. 643, *L. triangulum*, Saulcy, ibid., from Palestine; and *L. berytensis*, Saulcy, ibid., from Beirout.

Xantholinus kraatzii, Kirsch, Berl. ent. Zeitschr. 1865, p. 44, from Bogotá.

Pæderides.

Dolicaon. Saulcy states (Ann. Soc. Ent. Fr. 4e sér. tome iv. p. 645) that Peyron and Truqui have described, under the name of *D. venustus*, a species distinct from that so named by Baudi di Selve, of which he gives a short description.

Lathrobium bicolor (Heer). According to Dietrich (Nouv. Mém. Soc. Helv. xxi. p. 72), *L. elongatum* (Heer) and *geminum* (Kraatz) are identical with this species.

Sunius neglectus (Märk.) is identical with *S. pulchellus* (Heer), according to Dietrich, *l. c.* p. 76.

New genera and species:—

Notobium, g. n., Solsky, Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 443, figs. 1–7 (p. 444). Allied to *Achenium*; labrum corneous, bilobed; mentum short, transverse, ligula bilobed, paraglossæ acuminate, passing the ligula, barbate within; labial palpi with first two joints cylindric, 2nd longest and stoutest, 3rd shorter and thinner. Sp. *N. australicum*, sp. n., Solsky, *l. c.* p. 447, fig. 1 (p. 444), from South Australia.

Lathrobium maurianense, Fauvel, *l. c.* p. 300, and *L. manueli*, Fauvel, *l. c.* p. 301, from Piedmont.

Dolicaon syriacus, Saulcy, *l. c.* p. 644, from Jerusalem; *D. truquii*, Saulcy, ibid. (=*D. venustus*, Peyr., Truq.), from Caramania.

Trogophlœus oculatus, Wollaston, Col. Atl. App. p. 74 (=*bilineatus*, Woll. Cat. Can. Col., nec Erichs.), from the Canaries.

Achenium sennacherib, Saulcy, *l. c.* p. 646, from Jerusalem, &c.

Lathrobium sisara, Saulcy, *l. c.* p. 647, *L. galilæum*, Saulcy, ibid., and *L. arabicum*, Saulcy, *l. c.* p. 648, from Palestine.

Lithocharis auranitica, Saulcy, *l. c.* p. 649, *L. pythonissa*, Saulcy, ibid., from Palestine; *L. maronita*, Saulcy, *l. c.* p. 650, from Sidon; *L. dido*, Saulcy, *l. c.* p. 651, from Tyre.

Stilicus arabs, Saulcy, *l. c.* p. 651, from Jerusalem.

Sunius fallax, Saulcy, *l. c.* p. 652, *S. thaboris*, Saulcy, *l. c.* p. 653, and *S. platynotus*, Saulcy, ibid., from Palestine.

Mecognathus ammonita, Saulcy, *l. c.* p. 654, from Palestine.

Pæderus (sic) *moses*, Saulcy, *l. c.* p. 654, from Mount Nebo.

Stenides.

Stenus ocellatus, sp. n., Fauvel, *l. c.* p. 305, note, from the Pyrenees and Portugal; *S. niveus*, Fauvel, *l. c.* p. 307, from Annecy and north of France.

Stenus insidiosus, sp. n., Solsky, *l. c.* p. 449, from the Pyrenees.

Stenus piscator, sp. n., Saulcy, *l. c.* p. 655, *S. splendens*, Saulcy, *l. c.* p. 656, *S. rutilans*, Saulcy, ibid., *S. longicornis*, Saulcy, *l. c.* p. 657, and *S. arabicus*, Saulcy, ibid., from Palestine.

Oxytelides.

Oxyporus. Fauvel has published an analytical table of the species of this genus, of which he enumerates twelve, all inhabitants of Europe or North America. Two of them are described as new. L'Abeille, i. pp. 369–372.

Oxytelus terrestris (Heer). Dietrich (*l. c.* p. 84) states that this is a variety of *O. sculpturatus* (Grav.), and calls attention to an error in Erichson's description of the latter.

Fauvel (Bull. Soc. Linn. Norm. tome ix. p. 309, note) tabulates the characters of *Bledius tricornis* (Herbst), of which he regards *spectabilis* (Kraatz) as a variety, *B. nuchicornis* (Muls. & Rey), and a new species, *B. graellsii*.

Bledius subterraneus. The habits of this species are referred to by Bold, Ent. M. Mag. ii. p. 89.

Oxyporus occipitalis, sp. n., Fauvel, L'Abeille, i. p. 371, and *O. bicolor*, Fauv. ibid., from North America.

Bledius graellsii, sp. n., Fauvel, *l. c.* p. 309, note, from the South of Europe and Algeria.—*Bledius atomus*, sp. n., Sauley *l. c.* p. 658, from Alexandria.

Bledius fuscipes, Rye, Ent. M. Mag. ii. p. 154, from the shores of the Firth of Forth.

Trogophlœus brebissonii, sp. n., Fauvel, *l. c.* p. 312, from Normandy, the Alps, and the Pyrenees.

Piestides.

Fauvel has published (Bull. Soc. Linn. Norm. tom. ix. pp. 8–66) a monographic revision of the species of this subfamily from Central America. The systematic arrangement of the genera and the geographical distribution of the species of *Leptochirus* are given by the author in tables at pp. 14–15. Of 22 species, 8 are found in Asia, 7 in Oceania (Java and New Zealand), 1 in Madagascar, and 6 in Central America; of the latter, 2 are described as new, and 1 new Indian species is described. Of the known species Fauvel figures the foreheads of *L. scoriaceus* (Germ.), *L. maxillosus* (Fab.), and *L. mexicanus* (Er.), pl. 1. figs. 1–3. Of *Piestus* the author describes 14 Central American species, of which 4 are new; he also characterizes 2 new Brazilian species. He also figures the foreheads of *P. bicornis* (Oliv.) and *P. spinosus* (Fab.), and the margin of the prothorax of *P. mexicanus* (Er.), pl. 1. figs. 5, 6, & 9. The described species of *Isomalus* (incl. *Eleusis*, Lap.), 11 in number, are distributed in Asia (3), Madagascar (2), Oceania (1), and America (5); to the latter list Fauvel adds 2 new species from Brazil and 3 from Central America, making the total of Central American forms 5. *Hypotelus* includes 3 species, 1 new. The genus *Lispinus* has 11 species described from Asia, 1 from Madagascar, and 1 from Tahiti; the American species described by Fauvel are 15 in number, of which 6 are new. The new genus *Ancœus* includes only a single species. *Glyptoma* has 1 European and 1 North American species; the author describes 5 species from Central America, only 1 of which is new.

Ancœus, g. n., Fauvel, *l. c.* p. 60, pl. 1. figs. 13–17 (details). Allied to *Lispinus*; mandibles unarmed, prominent; last joint of max. palpi equal in length to preceding; tibiæ spinulose at apex; tarsal claws denticulated; abdomen immarginate. Sp. *A. megacephalus* (Chevr. MS.), Fauv. *l. c.* p. 61, from Teapa.

New species:—

Leptochirus longicornis, Fauvel, *l. c.* p. 14, note, from India; *L. proteus*. Fauvel, *l. c.* p. 16, from Mexico, Columbia, and Brazil; and *L. bicornis* (Chevr. MS.), Fauv. *l. c.* p. 20, pl. 1. fig. 4 (forehead), from Mexico.

Piestus longipennis, Fauvel, *l. c.* p. 24, from Columbia; *P. niger* (Bonv. MS.), Fauv. *l. c.* p. 28, pl. 1. fig. 7 (1st joint of ant.), from Mexico; *P. pennicornis* (Chev. MS.), Fauv. *l. c.* p. 30, pl. 1. fig. 8 (forehead), from Columbia; *P. plagiatus* (Kraatz, MS.), Fauv. *l. c.* p. 30, note, from Brazil; *P. buquetii*, Fauv. *l. c.* p. 32, from Cayenne; and *P. angularis*, Fauv. *l. c.* p. 35, note, pl. 1. fig. 10 (thorax), from Brazil.

Isomalus adustus (Kraatz, MS.), Fauvel, *l. c.* p. 37, note, and *I. nigerrimus* (Kraatz, MS.), Fauv. ibid., from Brazil; *I. frater*, Fauv. *l. c.* p. 39, from Caraccas; *I. pallidipennis* (Chev. MS.), Fauv. *l. c.* p. 40, from Central and North America; and *I. tenuis*, Fauv. *l. c.* p. 41, from Caraccas and Venezuela.

Hypotelus hostilis, Fauvel, *l. c.* p. 43, from Mexico.

Lispinus sobrinus (Chev. MS.) Fauvel, *l. c.* p. 47, from Caraccas; *L. quadripunctulus*, Fauv. *l. c.* p. 49, from Caraccas and Columbia; *L. granadensis*, Fauv. *l. c.* p. 52, from New Granada and Nicaragua; *L. anguinus*, Fauv. *l. c.* p. 54, from Mexico and San Domingo; *L. opacus* (Bonv. MS.), Fauv. *l. c.* p. 55, from Columbia; *L. brevicollis* (Chevr. MS.), Fauv. *l. c.* p. 56, from Mexico; and *L. flavipennis* (Chevr. MS.), Fauv. *l. c.* p. 58, from Caraccas and Mexico.

Glyptoma ruficolle (Chevr. MS.), Fauvel, *l. c.* p. 65, from Mexico.

Omaliides:—

Bethe (Stett. ent. Zeit. 1865, pp. 185, 186) remarks upon the resemblance between *Deliphrum angustatum* (Er.) (= *Orochares angustatus*, Kraatz) and *Eusphalerum triviale*, and states that specimens received under the former name from Count Ferrari, the authority for the occurrence of the species in Austria, prove to belong to the second species. Bethe accordingly gives a differential diagnosis of the two Beetles.

Anthophagus æmulus (Ros.) = *A. cenisius* (Fairm.) is characterized by Fauvel (Bull. Soc. Linn. Norm. tome ix. p. 316), who states that he cannot detect its ocelli.

Anthobium. Fauvel (Bull. Soc. Linn. Norm. tome ix. p. 321, note) tabulates the distinctive characters of *A. torquatum* (Marsh.), *A. sorbi* (Gyll.), and *A. rhododendri* (Baudi) = *A. obliquum* (Muls. & Rey).

Renardia, g. n., Motschulsky, Bull. Soc. Nat. Mosc. xxxviii. pt. 1. p. 583. Allied to *Boreophilus*; elongated, much depressed; head rounded, eyes prominent; prothorax a little narrower than the head, nearly trapezoidal; elytra wider than prothorax, elongated and widening a little, like the abdomen, to the apex; legs short; antennæ slightly clavate, short. Sp. *R. jubilæa*, sp. n., Motsch. *l. c.* p. 584, fig. p. 583, from New York, under bark.

Omalium salzmanni, sp. n., Saulcy, Ann. Soc. Entom. Fr. iv. p. 658, and *O. escayraci*, Saulcy, *l. c.* p. 659, from Jerusalem.

Homalium tricolor, Wollaston, Col. Atl. App. p. 75, from Madeira.

Proteinides.

Megarthrus serrula, Wollaston, *l. c.* p. 76, from Gomera.

Pselaphidæ.

Kraatz has published a note on the structure of the palpi of *Machærites subterraneus*, to which some remarks by Lederer are appended. Wien. ent. Mon. Bd. viii. p. 58. This discussion is resumed by Kraatz and Lederer (*l. c.* pp. 86–92) at some length, but in a spirit which partakes rather too much of personality, especially on the part of the latter. Lederer, in reply to Kraatz, *l. c.* pp. 202–204.

On the *Pselaphidæ* of Ants' nests, see Von Hagens's papers, Berl. ent. Zeits. 1865, p. 111. (*Cf.* p. 408.)

New genera and species:—

Cyathiger, g. n., King, Trans. Ent. Soc. N. S. W. vol. i. p. 174. Antennæ 7-jointed, with the last join very large and cup-shaped. Sp. *C. punctatus*, sp. n., King, *l. c.* p. 174, pl. 14, from the Blue Mountains, &c.

Decarthron, g. n., Brendel, Proc. Ent. Soc. Phil. vol. v. p. 30 = *Bryaxis* pars. Antennæ of 10 joints; 4th joint of maxillary palpi fusiform. Sp. *Bryaxis abnormis, longula*, and *formiceti* (Leconte). New species: *Decarthron cornutum*, Brendel, *l. c.* p. 31, from Illinois and Pennsylvania; *D. stigmosum*, Brend. ibid., from New York; *D. exsectum*, Brend. *l. c.* p. 32, from New York and Pennsylvania; and *D. strenuum*, Brend. ibid., from Pennsylvania.

Tyrus corniger, King, Trans. Ent. Soc. N. S. W. vol. i. p. 167, and *T. speciosus*, King, *l. c.* p. 168, from the Clyde River; and *T. victoriæ*, King, ibid., from Melbourne.

Faronus punctatus, King, *l. c.* p. 168, from the Currajong.

Pselaphus clavatus, King, *l. c.* p. 169, pl. 14 (palpi), from the Clyde River; and *P. punctatus*, King, ibid., from Rockhampton.—*P. palpiger*, Wollaston, Col. Atl. App. p. 67, from Gomera.

Tychus obliquus, King, *l. c.* p. 170, from Paramatta and the Blue Mountains; *T. howittii*, King, ibid. pl. 14 (palpus), from Melbourne.

Batrisus. The following new Australian species are described by King:—*Batrisus nobilis*, *l. c.* p. 170, and *B. conspicuus*, *l. c.* p. 171, from Paramatta; *B. tibialis*, ibid., from Maitland; and *B. edwardsii*, *l. c.* p. 172, from Melbourne.

Bryaxis scabra, Brendel, *l. c.* p. 29, from Long Island; *B. minuta*, Brend. *l. c.* p. 30, from Louisiana and New York; and *B. cavicornis*, Brend. ibid., from Virginia.

Bryaxis insignis, King, *l. c.* p. 172, from the Currajong; *B. basalis*, King, ibid. pl. 14 (details), and *B. dominorum*, King, *l. c.* p. 173, from the Clyde River.

Bythinus impressifrons, King, *l. c.* p. 173, from the Clyde River.

Bythinus zonatus, Brendel, *l. c.* p. 28, from Louisiana and Virginia; and *B. carinatus*, Brend. *l. c.* p. 29, from Pennsylvania.

Bythinus armatus, Hampe, Wien. ent. Mon. Bd. viii. p. 336, from Agram.

Articerus syriacus (Chevr. MS.), Saulcy, Ann. Soc. Ent. Fr. 4e sér. tom. v. p. 15, from Saïda in Syria (with *Formica flava?*).

Machærites bonvouloiri, Saulcy, *l. c.* p. 16, from Bagnères-de-Bigorre.

Scydmænidæ.

Von Hagens expresses a doubt whether any *Scydmæni* are true guests in ants' nests, but Kraatz mentions several species which he has found in abundance in such situations. Berl. ent. Zeits. 1865, p. 111 and note.

Scotodytes, g. n., Saulcy, Ann. Soc. Ent. Fr. 4e sér. tom. v. p. 18. Allied to *Cephennium*; blind, apterous; 4th joint of maxillary palpi narrow, subulate; abdomen four times the length of the elytra, corneous, bent downwards, with the segments nearly equal. Sp. *S. paradoxus*, sp. n., Saulcy, *l. c.* p. 19, from Banyuls-sur-Mer.

Scydmænus castaneus, Wollaston, Col. Atl. App. p. 66, from the Canaries.

Silphidæ.

De Saulcy gives some additional characters of *Catops dorsiger* (Mars.), which is found in nests of *Myrmica barbara* at Jerusalem.

De Borre records the occurrence of *Choleva intermedia* (Kr.) in Belgium. Ann. Soc. Ent. Belg. tom. viii. p. 277.

Necrophorus. Power has published a revision of the British species of this genus, chiefly with the object of indicating the characters by which *N. microcephalus* (Thoms.) and *gallicus* (J. Duv.) may be separated from *N. ruspator* (Erichs.) and *interruptus* (Steph.)=*fossor* (Erichs.). Rye suggests that the two new species may only be varieties of those to which they are respectively allied.

G. R. Crotch (Entomologist, ii. p. 322) regards the four forms of *Choleva angustata* as defined by Murray as four distinct but subordinate species, and cites their characters from Brisout de Barneville's notice of them in Grenier's Catalogue of the Coleoptera of France.

The following known species of this family have been recorded as newly detected in Britain:—*Necrophorus microcephalus* (Thoms.) and *gallicus* (J. Duv.) by Power, Entom. ii. p. 190; *Choleva longula* (Kelln.) by Rye, Ent. M. Mag. i. p. 257.

Silpha atrata and its habits in the larval and perfect states are described by Taschenberg (Naturg. wirbell. Thiere, pp. 39–41, pl. 6. figs. 7 & 8).

New species:—

Catops pinicola, Wollaston, Col. Atl. App. p. 12, from Teneriffe.

Catopsimorphus. Of this genus De Saulcy (Ann. Soc. Ent. Fr. 4e sér. tom. iv.) describes four new species found in nests of *Myrmica barbara* in Palestine: namely, *C. judæus*, *l. c.* p. 423; *C. samaritanus*, *l. c.* p. 424; *C. michonis*, *l. c.* p. 425; and *C. incisipennis*, *l. c.* p. 426.

Choleva conjungens, Saulcy, *l. c.* p. 427, *C. cribrata*, Saulcy, ibid., and *C. mohammedis*, Saulcy, *l. c.* p. 428, from Jerusalem.

Necrophorus hecate, Bland, Proc. Ent. Soc. Phil. vol. iv. p. 382, from the Colorado Territory.

Silpha (*Oiceoptoma*) *golowatschowii*, Lindemann, Bull. Soc. Nat. Mosc. tom. xxxviii. pt. 2. p. 147, pl. 4. figs. 1 & 2, from Orel and Reval. Identical with *Silpha thoracica*, as indicated by Kraatz, Berl. ent. Zeits. 1865, p. 41.

Anisotomidæ.

The following new British species of this family are recorded:—*Anisotoma triepkii* (Schmidt) by Crotch, Cat., and Rye, Ent. M. Mag. i. p. 258; *Agathidium rhinoceros* (Schiödte) by Sharp, Proc. Ent. Soc. Nov. 1865, Ent. M. Mag. ii. p. 169. The latter is figured in Ent. Annual for 1866, fig. 8.

Agathidium mandibulare. The larva of this species is figured by Schiödte, Naturh. Tidsskr. 3rd ser. iii. pl. 2. fig. 1.

Agathidium polonicum, sp. n., Wankowicz, Ann. Soc. Ent. Fr. 4e sér. tom. v. p. 297, from Lithuania.

Corylophidæ.

Orthoperus punctatus, sp. n., Wankowicz, Ann. Soc. Ent. Fr. 4e sér. tome v. p. 299, and *O. kluki*, Wank. *l. c.* p. 300, from Lithuania.

Trichopterygidæ.

Matthews has published (Ent. M. Mag. i. pp. 173–178) a notice of several species of this family new to the British fauna, some of which are described as new. The known species here referred to are *Trichopteryx fucicola* (Fairm.), *T. lata*, *bovina*, and *brevis* (Motsch.), *T. picicornis* (Mann.), and *Ptenidium turgidum* (Thoms.).

Trichopteryx. Matthews describes the following new British species of this genus:—*T. kirbii*, *l. c.* p. 175; *T. dispar*, p. 176; and *T. ambigua*, p. 177. Also the following from the Canary Islands:—*T. wollastoni*, p. 248; *T. crotchii*, ibid.; *T. canariensis*, p. 249; and *T. anthracina*, Ent. M. Mag. ii. p. 35.

Scaphidiidæ.

Scaphisoma assimile. Rye records the occurrence of this species in Britain, and discusses its characters. Ent. M. Mag. ii. pp. 139–141.

Histeridæ.

De Marseul has published a revision of the *Histeridæ* of the Malayan region (L'Abeille, tom. i. pp. 271–341). The total number of species is 101, of which 26 are found elsewhere in Asia or Oceania. The new species only are described; but in the larger genera tables are given of all the known species, with the new Malasian forms introduced. *Platysoma* includes the largest number of the latter, namely 32; *Hister* has 16 species, and *Saprinus* only 9; *Abræus* is not represented.

Schiödte (Naturh. Tidsskr. 3rd ser. vol. iii. p. 150) indicates the general characters of the larvæ of this family, and describes particularly those of *Hister unicolor* (Müll.), p. 152, pl. 1. figs. 1–26, and *Platysoma depressum* (Fab.), p. 153, pl. 2. figs. 2–5.

G. R. Crotch has published (Entomologist, ii. pp. 307–311) a revision of the British species of the genus *Hister*, the characters of the species being derived from De Marseul's Monograph. He enumerates sixteen British species.

Hister succicola (Thoms.) and *H. 14-striatus* (Payk.) are recorded as British by Crotch, Entom. ii. pp. 308 & 311.

Saprinus ignobilis (Woll.). The name of this species is changed by De Marseul to *S. wollastoni*, but no reason is assigned by him for the alteration. L'Abeille, i. p. 353.

Dohrn (Stett. ent. Zeit. 1865, pp. 57–59) has discussed the question of the orthography of the generic name *Trypanæus*, which he maintains should be written *Tryponæus*, as originally published by Eschscholtz. The change from *Tryponæus* to *Trypanæus* was made by Erichson in the 'Nomencl. Zool.' of Agassiz; but Dohrn, curiously enough, represents him as reversing this process.

The *Histeridæ* found in ants' nests are referred to by von Hagens in Berl. ent. Zeits. 1865, pp. 110, 111. (*Cf.* p. 408.)

New genera:—

Teniotarsus, Marseul, L'Abeille, tom. i. p. 321, note. Allied to *Rhypochares*; antennal club of 4 joints; tibiæ very broad, truncated or sinuated at the end; anterior tridentate, with the tarsal pit deep, but not well marked externally; anterior tarsi with joint 1 long, 2–4 short; posterior tarsi short, attenuated towards the end, lodged in the extremity of the tibia. Sp. *T. remipes*, sp. n., Mars. *l. c.* p. 320, from Guinea.

Tylois, Marseul, *l. c.* p. 336, note. Allied to *Hetærius*. Legs very long, tibiæ angularly dilated in the middle, the anterior 5-denticulate; mesosternum biemarginate, extending far into the prosternum, with three smooth tubercles. Sp. *T. trilunatus*, sp. n., Mars. *l. c.* p. 336, note, from Cayenne.

New species:—

Hololepta menadia, Marseul, L'Abeille, tom. i. p. 279, from Celebes; *H. obtusipes*, Mars. *l. c.* p. 280, from Sumatra.

Trypanæus. De Marseul describes four new Malasian species of this genus, forming a group which he thinks may form a new genus under the name of *Trypeticus*:—*T. gilolous*, *l. c.* p. 282, from the Moluccas, Morty, New Guinea, and Dorey; *T. terebellus*, ibid., from New Guinea and Aru; *T. kalemantanus*, *l. c.* p. 283, and *T. cinctipygus*, *l. c.* p. 284, from Borneo.

Plesius pudicus, Marseul, *l. c.* p. 285, from Malacca, the Moluccas, Morty, and Batchian; and *P. cossyphus*, Mars. ibid., from the Moluccas, Mysol, New Guinea, and Dorey.

Macrosternus circularis, Marseul, *l. c.* p. 286, from Malacca, Singapore, and Borneo.

Apobletes. The following six new Malasian species are described by De Marseul:—*A. amphibius*, *l. c.* p. 288, from New Guinea; *A. correctus*, *l. c.* p. 289, from Dorey; *A. mysolicus*, ibid., from Mysol; *A. papuensis*, *l. c.* p. 290, from Banda; *A. mortycola*, ibid., from Morty; *A. aruensis*, *l. c.* p. 291, from Aru. De Marseul also describes *A. indocilis*, *l. c.* p. 288, note, from Ceylon, and *A. foveipygus*, *l. c.* p. 291, note, from Ceylon and Burmah.

Pachycræus wallacei, Marseul, *l. c.* p. 311, from Dorey.

Phelister. De Marseul describes the following new species of this genus:—*P. lunaticus*, *l. c.* p. 316, from Malacca; *P. pauli*, ibid. note, from Brazil; *P. maculipennis*, *l. c.* p. 317, from Borneo and Sarawak; *P. contusus*, ibid., from Salwatty; *P. leporinus*, *l. c.* p. 318, from New Guinea; *P. friburgius*, ibid. note, from Brazil; and *P. farctus*, *l. c.* p. 319, note, from Brazil.

Platysoma. The following new Malasian species of this genus are described by De Marseul:—*P. canalicola*, *l. c.* p. 297, from Celebes and Macassar; *P. ceramicola*, *l. c.* p. 298, from Ceram; *P. makassariense*, *l. c.* p. 299, from Celebes and Macassar; *P. sesquistriatum*, *l. c.* p. 300, from Mysol and New Guinea; *P. striale*, *l. c.* p. 301, from Celebes and Macassar; *P. querulum*, *l. c.* p. 302, from Batchian; *P. cribropygum*, ibid., from Celebes, New Guinea, &c.; *P. auroliferum*, *l. c.* p. 303, from Dorey; *P. emptum*, *l. c.* p. 304, from Batchian and New Guinea; *P. mirandum*, *l. c.* p. 305, from Ceram, Batchian, and Dorey; *P. moluccanum*, *l. c.* p. 306, from Ceram, Mysol, and Aru; *P. torpens*, *l. c.* p. 307, from Batchian; *P. conditum*, ibid., from Mysol and Dorey; *P. debile*, *l. c.* p. 308, from Borneo, Mysol, and New Guinea; *P. feles*, *l. c.* p. 309, from Celebes and Macassar; *P. timoriense*, *l. c.* p. 310, from Timor; and *P. dufali*, ibid., from Malacca. De Marseul also describes as new species:—*P. motschulsky*, *l. c.* p. 299, note, from Ceylon; *P. cambodjense*, *l. c.* p. 300, note, from the East Indies and Cambodia; *P. contiguum*, *l. c.* p. 303, note, from Australia; *P. alexandri*, *l. c.* p. 304, note, from Sierra Leone; *P. dohrni*, *l. c.* p. 306, note, from Ceylon and Burmah; and *P. bakewelli*, *l. c.* p. 309, note, from Australia.

Sphyracus anjubaulti, Marseul, *l. c.* p. 319, note, from the Amazons; *S. congruens*, Mars. *l. c.* p. 321, from Timor and Lombok; *S. rupestris*, Mars. *l. c.* p. 322, from Celebes and Tondano; *S. tabellio*, Mars. *l. c.* p. 323, from Celebes; *S. bellicus*, Mars. ibid., from Timor; and *S. rimifrons*, Mars. *l. c.* p. 324, note, from Natal.

Paromalus. De Marseul describes five new species of this genus from the Malayan region: namely, *P. victor*, *l. c.* p. 330; *P. mus*, *l. c.* p. 331; *P. sculptipygus*, *l. c.* p. 332; *P. despectus*, *l. c.* p. 333; and *P. musicus*, ibid.

Tribalus acceptus, Marseul, *l. c.* p. 334, from the Moluccas; *T. kænigius*, Mars. ibid., from Malacca, New Guinea, and Aru; *T. colombius*, Mars. *l. c.* p. 335, note, from Ceylon; and *T. egieri*, Mars. ibid., from China and Pulo-Penang.

Saprinus. The following Malasian species are described by De Marseul: namely, *S. cyaneocupreus*, *l. c.* p. 337, from Dorey; *S. condolens*, *l. c.* p. 338, and *S. brahminus*, *l. c.* p. 339, from Celebes and Macassar; and *S. hyla*, *l. c.* p. 339, from New Guinea.

Onthophilus hispidus, Marseul, *l. c.* p. 340, from the Moluccas.

Spathochus coyei, Marseul, *l. c.* p. 341, from Syria.

Hister ariasi, Marseul, *l. c.* p. 342, from Spain; *H. scytha*, Mars. *l. c.* p. 344, from the Caucasus; and *H. haroldii*, Mars. ibid., from Morocco.

Paromalus schaufussi, Marseul, *l. c.* p. 347, from Spain.

Eretmotes rayei, Marseul, *l. c.* p. 348, from Hungary.

Saprinus gemmingeri, Marseul, *l. c.* p. 349, from Palestine.

Teretrius quercus, Marseul, *l. c.* p. 362, origin not stated.

Acritus gemmula, sp. n., Wollaston, Col. Atl. App. p. 29, from Gomera.

Nitidulidæ.

The following known species of this family are recorded as newly detected in Britain:—*Epuræa diffusa* (Bris.) by Sharp, Ent. M. Mag. ii. p. 85; *E. angustula* (Erichs.) by Rye and Sharp, *l. c.* p. 50; and *Carpophilus sex-pustulatus* (Fab.) by Rye, ibid. i. p. 259.

The habits of *Meligethus æneus* are described by Taschenberg (Naturg. wirbell. Thiere, pp. 36–39), and the larva and imago figured (*l. c.* pl. 2. figs. 8 & 9).

Brachypterus æneomicans, sp. n., Wollaston, Col. Atl. App. p. 16, from Gomera.

Carpophilus tersus, sp. n., Wollaston, *l. c.* p. 16, from Gomera.

Colastus pectoralis, sp. n., Kirsch, Berl. ent. Zeitschr. 1865, p. 46, from Bogotá.

Camptodes micans, sp. n., Kirsch, *l. c.* p. 47, from Bogotá.

Meligethes rubripes, sp. n., Mulsant & Rey, Ann. Soc. Linn. Lyon, tom. x. p. 4, from Avignon and Marseilles; and *M. picipennis*, Muls. & Rey, *l. c.* p. 6, from Hyères.

Rhizophagus vagæ, sp. n., Wankowicz, Ann. Soc. Ent. Fr. 4e sér. tom. v. p. 290, from Lithuania.

Trogositidæ.

Hampe states (Wien. ent. Mon. Bd. viii. p. 193) that Sturm's specimen of *Nemosoma cornutum* has a ticket giving Simferopol as its locality. This species, therefore, belongs to the European fauna.

Nemosoma fascicolle, sp. n., Hampe, Wien. ent. Mon. Bd. viii. p. 193, from Kasan.

Colydiidæ.

Opostirus, g. n., Kirsch, Berl. ent. Zeitschr. 1865, p. 45. Allied to *Endophlæus*; eyes half divided by a keel; antennæ 10-jointed, club of two joints, last joint twice as large as preceding; tibiæ unguiculate at apex. Sp. *O. exsectus*, sp. n., Kirsch, *l. c.* p. 45, from Bogotá.

Colydium carinatum, sp. n., Kirsch, *l. c.* p. 46, from Bogotá.

Tarphius. Of this genus Wollaston describes the following new species:—*T. setosus*, Col. Atl. App. p. 17, *T. humerosus*, *l. c.* p. 19, *T. affinis*, ibid., *T. abbreviatus*, *l. c.* p. 20, and *T. monstrosus*, ibid., from Gomera; *T. wolfii*, *l. c.* p. 21, from Madeira.

Cucujidæ.

Læmophlæus abietis, sp. n., Wankowicz, Ann. Soc. Ent. Fr. 4e sér. tom. v. p. 298, from Lithuania.

Cryptophagidæ.

According to Perris, *Paramecosoma abietis* is abundant in the nests of *Bombyx pityocampa* in the department of the Landes, Bull. Soc. Ent. Fr. 1865, p. xviii.

Atomaria rubricollis (Bris.) = *A. ornata* (Heer), according to Kraatz, Berl. ent. Zeits. 1865, p. 414.

Latridius cordaticollis (Aubé) = *L. testaceus* (Steph.) according to G. R. Crotch, Entomologist, ii. p. 179.

Telmatophilus. G. R. Crotch (Entomologist, ii. pp. 209, 210) publishes a revision of the British species of this genus, five in number, including a newly discovered species, *T. brevicollis* (Aubé), and *T. schönherri* (Gyll.).

The following known species of this family are recorded as British:—*Monotoma quadrifoveolata* (Aubé) by Crotch, Entom. ii. p. 179; *Cryptophagus serratus* (Gyll.) by Crotch, *l. c.* p. 210; *Atomaria diluta* (Erichs.) by Hislop, Ent. M. Mag. ii. p. 139; *A. barani* (Bris.) by Rye, Ent. M. Mag. ii. p. 156; *A. impressa* (Erichs.) by Sharp, Ent. M. Mag. ii. p. 157; *Lathridius filiformis* (Gyll.) by Young, Ent. M. Mag. i. p. 260; and *Corticaria curta* (Woll.), under the name of *truncatella* (Mann.), by Brown, *l. c.* p. 244.

G. R. Crotch remarks on *Monotoma 4-foveolata* (Aubé) and *M. rufa* (Redt.) as British species. Entomologist, ii. p. 179.

Parfitt publishes some remarks on *Anommatus 12-striatus.* Ent. M. Mag. ii. p. 13.

Wollaston publishes some notes on the occurrence of *Anommatus 12-striatus* (Müll.) in Devonshire, and on its systematic position. Ibid. i. pp. 245–247.

Corticaria gibbosa (Hbst.). Dietrich (*l. c.* p. 112) records his having bred this species from heads of clover, containing also *Apion gracilipes* and a species of *Cecidomyia.* He could not ascertain whether its larvæ fed upon the plant or upon the larvæ of the other insects.

Power records the capture of *Atomaria ferruginea* in an old tree perforated by the larvæ of *Cossus* and inhabited by a colony of *Formica fuliginosa.* He thinks it may be an Ants'-nest Beetle, as he took other specimens by sweeping in the vicinity of an ants' nest. Entomologist, ii. p. 323.

Atomaria linearis (Steph.) is noticed by Taschenberg (Wirbell. Thiere, &c. p. 250) as injurious to Beet.

Brewer records the occurrence of *Corticaria truncatella* (Mann.) at Worthing. Proc. Ent. Soc. 1865, p. 81.

Setaria, g. n., Mulsant and Rey, Ann. Soc. Linn. Lyon, tom. x. p. 1. Allied to *Cryptophagus*; form more convex and cylindrical; club of antennæ of two joints. Sp. *S. sericea,* Muls. & Rey, *l. c.* p. 2, from Hyères.

Merophysia orientalis, sp. n. (Peyron, MS.), Saulcy, Ann. Soc. Ent. Fr. 4e sér. tom. iv. p. 422, from Caramania; *M. carmelitana,* sp. n., Saulcy, *l. c.* p. 423, from Palestine.

Cryptophagus impressus, sp. n., Wollaston, Col. Atl. App. p. 22, from Teneriffe.

Atomaria laticollis, sp. n., Wollaston, *l. c.* p. 22, from Teneriffe; *A. venusta,* Woll. *l. c.* p. 23, and *A. bulbosa,* Woll. *l. c.* p. 24, from Gomera.

Metophthalmus ferrugineus and *encaustus,* sp. n., Wollaston, *l. c.* p. 26, from the Canaries.

Dermestidæ.

Kiesenwetter maintains, in opposition to Gerstäcker, that *Byturus* belongs to the family *Nitidulidæ,* and indicates several tarsal characters, such as the small size of the fourth and considerable development of the terminal joints, and the presence of a broad sole upon the first joints, which are common to the *Byturides* and *Nitidulidæ,* but do not occur in the *Melyrides,* near which Gerstäcker would place them. Berl. ent. Zeitschr. 1865, pp. 357–358.

Kraatz states that *Horticola urbana* (Lindemann, Bull. Soc. Nat. Mosc. xxxviii. pt. ii. p. 148) is identical with *Byturus tomentosus.* Berl. ent. Zeits. 1865, p. 414.

Dermestes aurichalceus is stated by Perris to haunt the nests of *Bombyx pityocampa* in the Landes. Bull. Soc. Ent. Fr. 1865, p. xviii.

Trogoderma nigrum. Dietrich (Nouv. Mém. Soc. Helv. xxi. p. 114) thinks that this species is probably not distinct from *T. elongatulum.*

Smith describes a case in which larvæ of *Dermestes lardarius* in considerable numbers bored into a piece of mahogany upon which they lived. Entomologist, ii. pp. 301, 302.

Anthrenus minor, sp. n., Wollaston, Col. Atl. App. p. 28, from the Canaries.

Byrrhidæ.

Bothriophorus venetus, sp. n., Ferrari, Wien. ent. Mon. Bd. viii. p. 108, from the Lido (Venice).

Morychus metallicus, sp. n., Chevrolat, Rev. et Mag. Zool. 1865, p. 350, from the Asturias.

Syncalypta granulosa, sp. n., Wollaston, *l. c.* p. 28, from Gomera.

Parnidæ.

Clark records (Proc. Ent. Soc. 1865, pp. 97–98) the occurrence in Caffraria of a new form of this family, the habits of which he describes. It is most nearly allied to *Macronychus.*

Heterocerus guttatus (Kiesenw.) is described from Cuba by Chevrolat. Ann. Soc. Ent. Fr. 4e sér. tome iv. p. 407.

Heterocerus holosericeus. The habits of this species are referred to by Kiesenwetter. Berl. ent. Zeits. 1865, p. 373.

Elmis cupreus is recorded as British by Sharp, Ent. M. Mag. ii. p. 12.

Georyssus australis sp. n., King, Trans. Ent. Soc. N. S. W. vol. i. p. 158, pl. 14 (details), from Paramatta.

Lutochrus australis, sp. n., King, *l. c.* p. 159, pl. 14 (details), from the Paramatta River.—*L. geniculatus,* sp. n., Chevr. Ann. Soc. Ent. Fr. 4e sér. tome iv. p. 406, from Cuba.

Pelonomus gracilipes, sp. n., Chevr. *l. c.* p. 406, from Cuba.

Elmis. Five new Australian species are described by King:—*E. novemnotatus,* *l. c.* p. 159, *E. politus,* *l. c.* p. 160; and *E. punctulatus,* *l. c.* p. 161, from the Paramatta River; *E. metallicus,* *l. c.* p. 160, from the Murray River; and *E. montanus,* ibid., from Illawarra.

Limnius quatuor-maculatus, sp. n., King, *l. c.* p. 161, from Paramatta.

Heterocerus angustatus, sp. n., Chevr. *l. c.* p. 407, *H. 10-maculatus,* sp. n., Chevr. ibid., and *H. bilineatus,* sp. n., Chevr. ibid., from Cuba.

Heterocerus senescens, sp. n., Kiesenwetter, Berl. ent. Zeits. 1865, p. 368, note, from Seville.

LUCANIDÆ.

Chevrolat (Ann. Soc. Ent. Fr. 4e sér. tome iv. pp. 408–410) describes the following known species from Cuba:— *Passalus interstitialis* (Esch.), *convexus* (Dalm.), *pellicatus* (Perch.), *binominatus* (Perch.), and *affinis* (Perch.).

Platycerus cribratus, sp. n., Mulsant & Rey, Ann. Soc. Linn. Lyon. tome x. p. 7, from Beaujolais.

Passalus pentaphyllus, sp. n., Chevr. Ann. Soc. Ent. Fr. 4e sér. tome iv. p. 410, from St. Domingo and Cuba.

SCARABÆIDÆ.

Coprides.

Chevrolat (Ann. Soc. Ent. Fr. 4e sér. tome iv. p. 410) describes only *Onthophagus marginatus* (Lap.) and *Oniticellus cubiensis* (Lap.) as known species from Cuba.

A. Müller (Entomologist, ii. p. 252) records the occurrence, near Basle, of abundance of *Copris lunaris*, *Sisyphus schäfferi*, and *Geotrupes typhæus*, which have not been met with in that district for many years.

Onthophagus merdarius, sp. n., Chevrolat, Rev. et Mag. Zool. 1865, p. 350, from Valladolid.

Aphodiides.

Chevrolat (*l. c.* pp. 412–414) describes the following known species of this group from Cuba:—*Aphodius lividus* (Creutz.), *quadridentatus* (Harold), *Auperia stercorator* (Fab.), and *Psammodius gracilis* (J. Duv.).

Ægialia rufa (Fab.) is recorded as British by Crotch, Proc. Ent. Soc. Nov. 1865, Ent. M. Mag. ii. p. 109.

Aphodius cuniculus, sp. n., Chevr. *l. c.* p. 411, from Cuba.

Auperia rhyticephala, sp. n., Chevr. *l. c.* p. 413, *A. sulcatula*, sp. n., Chevr. ibid., and *A. terminalis* (Dej.), Chevr. *l. c.* p. 414, from Cuba.

Psammodius parvulus, sp. n., Chevr. *l. c.* p. 415, from Cuba.

Hybosorides.

Chevrolat (*l. c.* p. 415), describes *Apalonychus waterhousei* (Westw.)= *Trichops testaceus* (J. Duv.), from Cuba.

Geotrupides.

Chevrolat (*l. c.* p. 415) describes *Athyreus castaneus* (Guér.) as a Cuban species, and cites *A. angulatus* (Klug) as synonymous with it.

A species of *Bolboceras* found by Odewahn burrowing in a hard road at Gawler (South Australia) is stated to make "a noise like a Longicorn, by moving the small pulvilli beneath the hind coxæ." Proc. Ent. Soc. 1865, p. 88. This sound is said to be caused by the rotation of the hind coxæ in the cotyloid cavities, the surfaces both of the coxæ and cavities being striated. Ibid. p. 107.

Trogides.

Chevrolat (*l. c.* p. 416) describes *Trox crenatus* (Oliv.) as a known species from Cuba, and regards *T. punctatus* (Germ.) and *T. muricatus* (Dej.) as identical with it. Other known species are *Sphæromorphus chalceus* and *S. semistriatus* (Germ.), *l. c.* p. 417.

Trox insularis, sp. n., Chevr. *l. c.* p. 416, from Cuba.

Melolonthides.

Chevrolat (Ann. Soc. Ent. Fr. 4e sér. tome v.) describes the following known species of this group from Cuba:—*Anoplosiagum pallidulum* (Blanch.), *l. c.* p. 21; *Ancylonycha crenatocollis* (Blanch.), *l. c.* p. 23; *A. puberula* (Duv.), and *A. parallela* (Blanch.), *l. c.* p. 24; *A. confusa* (Duv.)=*signaticollis* (Burm.), *A. patruelis* (Dej.), and *A. angusta* (Blanch.), *l. c.* p. 25; *A. æruginosa* (Burm.), *l. c.* p. 26; *A. bifoveolata* (Duv.), and *A. subsericans* (Duv.), *l. c.* p. 27; and *A. analis* (Burm.), *l. c.* p. 28.

The metamorphoses of *Serica holosericea* (Scop.) are described by Piochard de la Brulerie. Ann. Soc. Ent. Fr. 4e sér. tome iv. pp. 663–667.

Hoplia palustris (Heer) is founded upon strongly developed females of *H. philanthus*, according to Dietrich, Nouv. Mém. Soc. Helv. xxi. p. 123.

Taschenberg (Naturg. wirbell. Thiere) describes the habits of *Melolontha vulgaris* and *hippocastani* (*l. c.* pp. 17–27), discusses their varieties and synonymy (*l. c.* pp. 256, 257), and figures the larva and pupa of *M. vulgaris* (pl. 1. figs. 1 & 2). He also refers to *Rhizotrogus solstitialis* (*l. c.* pp. 27–29, pl. 5. fig. 1, imago) and *R. assimilis* (*l. c.* pp. 29, 30, pl. 5. figs. 2 & 3, imago and larva).

The larva of a species of *Ancylonycha*, known as the "White Grub," ravages the coffee-plantations in Ceylon, according to Nietner, as noticed by Guérin. Rev. et Mag. de Zool. 1864, p. 93.

Bold (Nat. Hist. Trans. North. & Durh. i. p. 133) mentions a ♂ and ♀, probably of *Melolontha hippocastani*, in which the anal style is entirely wanting.

New species:—

Macrodactylus excellens, Kirsch, Berl. ent. Zeitsch. 1865, p. 47, and *M. pexus*, Kirsch, *l. c.* p. 48, from Bogotá.

Macrodactylus barbatus, Fitch, 8th Rep. Ins. New York, pp. 199–202. Injurious to roses and fruit-trees in New York.

Synnucla suturalis, Kirsch, Berl. ent. Zeitschr. 1865, p. 50, from Bogotá.

Chariodema bogotensis and *Ch. amœna*, Kirsch, *l. c.* p. 49, Bogotá.

Anoplosiagum variabile, Chevr. Ann. Soc. Ent. Fr. 4e sér. tome v. p. 22, from Cuba.

Clavipalpus (?) *rutilus*, Chevr. *l. c.* p. 22, from Cuba.

Ancylonycha tuberculifrons, Chevr. *l. c.* p. 23, *A. dissimilis*, Chevr. *l. c.* p. 26, *A. speculifera*, Chevr. *l. c.* p. 27, and *A. suturalis*, Chevr. (=*æraria*, Klug, MS.), *l. c.* p. 28, from Cuba.

Rhizotrogus geniculatus, Chevrolat, Rev. et Mag. Zool. 1865, p. 351, from the Escurial.

Rutelides.

Chevrolat describes *Rutela formosa* (Dej.), from Cuba.

Lucas describes varieties of *Plusiotis adelaida* (Hope) and *P. costata* (Blanch.). Ann. Soc. Ent. Fr. 4e sér. tome v. pp. 204, 205.

Cotalpa (*Areoda*) *lanigera* (Linn.). Walsh refers to this species, and states that its larva probably lives upon roots of plants in the ground. Proc. Bost. Soc. Nat. Hist. vol. ix. p. 287.

Anisoplia agricola and *fruticola* are noticed by Taschenberg (Wirbell. Thiere, &c. p. 246) among the insects injurious to rye.

Anomala calceata, sp. n., Chevr. Ann. Soc. Ent. Fr. 4e sér. tome v. p. 28, from Cuba.

Dynastides.

C. A. Dohrn (Stett. ent. Zeit. 1865, pp. 371–375) describes some specimens of *Trichogomphus martabani* (Guér.) received from Sylhet, from the examination of which he is led to introduce some modifications into the characters of that insect as given by Guérin and Burmeister: he states especially that instead of "elytris substriatis," we must read "elytris plus minusve punctato-striatis."

C. A. Dohrn publishes a note correcting and extending the characters of *Orsilochus cornutus* as given by Burmeister and Lacordaire. *L. c.* p. 187.

Chevrolat (Ann. Soc. Ent. Fr. 4e sér. tome v.) describes the following known species of this group from Cuba:—*Cyclocephala frontalis* (Chevr.), *l. c.* p. 30; *C. verticalis* (Burm.), *Chalepus picipes* (Burm.)=*geminatus* (Duv.), *C. trachypygus* (Burm.), and *Ligyrus* (*Heteronychus*) *tumulosus* (Burm.), *l. c.* p. 31; *Strategus titanus* (Fab.) and *Scatophilus sarpedon* (Burm.), *l. c.* p. 32; *Strategus anachoreta* (Burm.), *Phileurus valgus* (Fab.), and *P. cribratus* (Chevr.), *l. c.* p. 33; and *P. 4-tuberculatus* (Pal. B.), *l. c.* p. 34.

Xyloryctes satyrus (Fab.). Walsh describes the larva of this species, which lives in the ground and feeds upon roots of plants. Proc. Bost. Soc. Nat. Hist. vol. ix. p. 287.

Cyclocephala signata, sp. n., Chevrolat, *l. c.* p. 30, from Cuba.

Phileurus planicollis, sp. n., Chevr. *l. c.* p. 34, from Cuba.

Cetoniides.

Cetonia aurata. Becker has made some observations on the use of this Beetle as a remedy for hydrophobia (Bull. Soc. Nat. Mosc. xxxvii. part 1. p. 480). A powdered *Cetonia* was administered on a piece of bread to a cow in a rabid state; complete recovery speedily took place.

Chevrolat (Ann. Soc. Ent. Fr. 4e sér. tome v. p. 34) redescribes *Allorhina* (*Gymnetis*) *cornuta* (Gory & Perch.).

Goliathus kirkianus, sp. n., G. R. Gray, Proc. Zool. Soc. 1864, p. 34, pl. 4, from the Zambesi.

Schizorhina nortoni, sp. n., Butler, Ann. & Mag. Nat. Hist. 3rd ser. xvi. p. 161, from Sydney.

Gymnetis sternalis, sp. n., Chevrolat, *l. c.* p. 35, from Cuba.

Buprestidæ.

In his paper on the Danish *Sternoxi* (Naturh. Tidsskr. 3rd ser. iii.), Schiödte enters into an elaborate discussion of the structure of these insects both in the larval and perfect states, with especial reference to the characters to be derived from them for the purposes of classification. He divides the insects forming this group into two groups (families) denominated *Buprestes* and *Elateres*, the *Melasidæ* and *Eucnemidæ* of authors being included in the latter.

The characters given for these two primary groups are as follows:—

I. Buprestes. Epimera mesothoracica inter episterna et humeros elytrorum ad epimera prothoracis ascendentia et cum iis articulata. Prosternum mucrone saltatorio nullo, mesosterno receptum. Segmenta ventralia duo priora concreta. Procursus ventrales laterales epimera metathoracica attingentes, spiracula metathoracica in segmento mediali sita extrorsum cingentes; procursus ventralis medius inter coxas posticas ad mesosternum usque procedens. Mandibulæ tetragonæ, crassæ, cochleariformes. Alæ in longitudinem plicatæ. Pedes ambulatorii, trochanteribus posticis simplicibus, tarsis pulvillatis. Oculi oblongi.

Tracheæ vesiculosæ. Glandulæ salivales in capite sitæ, filiformes, fasciculato-ramosæ. Ventriculus chylificus bicornis, parte postica in spiram convoluta. Vasa malpighiana terna, apice intestino affixa. Folliculi testiculorum scroto inclusi, gracillimi, longissimi, apice conjunctim in spiram contorti; vesiculæ seminales binæ. Receptaculum seminis feminæ simplex, glandula appendiculari nulla. Systema nervorum: ganglion mesothoracis cum ganglio metathoracis concretum; ganglia abdominalia quinque, duo priora in thorace sita; ganglion abdominale primum a ganglio metathoracico discretum.—Wood-boring.

II. Elateres. Epimera mesothoracica epimera prothoracis non attingentia, articulo cum prothorace non conjuncta. Prosternum aut supra sub apicem mucrone armatum saltatorio, aut in mucronem saltatorium sensim transiens. Mesosternum fovea profunda mucronem excipiens. Procursus ventrales epimera metathoracica non attingentes; spiracula metathoracica extrorsum libera, inter epimera et procursus ventrales sita; procursus ventralis medius brevis, ad metasternum vix procedens. Mandibulæ triquetræ, formicatæ, apicem versus extenuatæ. Alæ in longitudinem et transverse plicatæ. Pedes cursorii, trochanteribus posticis fulcientibus. Oculi rotundati.

Tracheæ vesiculis carentes. Glandulæ salivales propriæ nullæ. Ventriculus chylificus simplex, subrectus. Vasa malpighiana bina, apice libera. Folliculi testiculorum scroto carentes, oblongi vel globosi; vesiculæ seminales ternæ, structura maxime variantes. Receptaculum seminis feminæ structura valde varians, sæpissime duplex aut multiplex, glandula appendiculari magna, sæpissime ramosa. Systema nervosum: ganglia thoracica discreta; ganglia abdominalia octo, duo priora in thorace sita; ganglion abdominale primum ganglio metathoracis applicatum.—Normally carnivorous.

The Buprestes include the tribes *Anthaxiini* (genera *Chrysobothris*, *Melanophila*, and *Anthaxia*), *Buprestini* (*Buprestis*, *Chalcophora*, and *Ancylochira*), and *Agrilini* (*Agrilus*, *Trachys*, and *Aphanisticus*).

The Elateres are divided into two sections, of which the first, including the tribes *Melasini* (*Melasis* and *Xylobius*) and *Eucnemidini* (*Eucnemis*, *Microrhagus*, and *Throscus*), approaches the Buprestes in some characters, such as the absence of fimbriæ

on the mandibles and the want of a labial process on the prosternum. The second section includes only the tribe *Elaterini*.

The total number of Danish Buprestidæ enumerated by Schiödte is seventeen. The parts of the mouth of the following species are figured by him, *l. c.* pl. 5. figs. 1–7 :—*Chrysobothris affinis, Anthaxia quadripunctata, Melanophila appendiculata, Ancylochira flavomaculata, A. rustica, Agrilus viridis, Trachys minuta,* and *Aphanisticus pusillus*.

Deyrolle, in his paper on the Buprestidæ collected by Wallace in the Malasian region (Ann. Soc. Ent. Belg. tome viii.), cites 355 species of this family, of which no fewer than 323 are described as new. These are distributed under 39 genera, 20 of which are also newly established by the author, in most cases for the reception of new species. The auther has also given tables of the genera forming the subfamilies *Chrysodemides, Agrilides,* and *Trachydes,* in which he establishes several other generic groups not represented in the Malasian region. The greater portion of the known species are among the larger and more striking forms of the family; the whole of the species of *Chrysobothris* (30) and *Trachys* (39) are new, and out of 112 species of *Agrilus* only 1 (*A. armatus,* Fab.) had been previously described. Very few of the species are widely distributed, most of them being confined to a single island or group of islands.

De Marseul (L'Abeille, tome iii.) has commenced the publication of a monograph of the European species* of this family, which he carried in 1865 as far as the *Polycestides*. The character given of the family (p. 4) appears to be a paraphrase of Lacordaire's, with the substitution of "epimères" for "trochantins" in the description of the four anterior limbs. The general remarks on the structure of the insects and on their metamorphoses seem equally to be derived from Prof. Lacordaire's great work. The summary of the history of the classification of the family contains tables of the subdivisions and genera adopted by Eschscholtz, Solier, Laporte and Gory, and by Lacordaire (pp. 15–23).

The principles of classification adopted by De Marseul are the same as those employed by Lacordaire, and the final results at which he arrives are much the same; that is to say, his "tribes" are very nearly identical with Lacordaire's "groupes;" but a considerable apparent change is made by his regarding the genus *Chalcophora* of authors as representing the restricted genus *Buprestis*, and altogether cancelling the three primary

* Under this term is to be understood not only strictly European species, but also those of the whole basin of the Mediterranean, of Western Asia, and of Egypt.

divisions of Lacordaire. In this way he arrives at eight tribes, as shown in the following table:—

I. Antennary pores diffused.
  A. Antennary pores concealed by a pubescence. 1. Julodides.
  B. Antennary pores visible and occupying the two surfaces of the antennæ ..... 2. Buprestides (=*Chalcophorides*, Lac.).

II. Antennary pores collected into a pit on each joint (=*Buprestides vrais*, Lac.).
  A. Scutellum wanting or small, never regularly triangular, or transverse and acuminate posteriorly.
1. Sternal cavity formed by meso- and metasternum. 3. Anthaxiides (=*Buprestides vrais*, Lac.).
2. Sternal cavity formed by mesosternum alone.. 4. Polycestides.
  B. Scutellum regularly triangular, or transverse and acuminate posteriorly.
1. Claws simple.
  * Antennary cavities always terminal; epistome narrow; antennæ not geniculate; third joint scarcely longer than second. 5. Sphenopterides.
  † Antennary cavities rounded, frontal, narrowing the very broad epistome at its base; antennæ geniculate, third joint long 6. Chrysobothrides.
2. Claws toothed or appendiculate.
  * Tarsi normal in length ..... 7. Agrilides.
  † Tarsi very short ..... 8. Trachydes.

The number of species described shows an advance upon that enumerated in the author's catalogue of European Coleoptera published in 1863; but this is due, to a certain extent, to the adoption of a somewhat wider boundary, the number of new species not being great.

Sternocera castanea (Fab.) is included as being an inhabitant of Egypt, and *B. irregularis* (Lat.) is described as a variety of it. *Julodis* contains 50 species against 39 in the catalogue, *J. pilosa, pubescens,* and *zablodtskyi* being altogether omitted, *J. floccosa, vermiculata,* and *deserticola* referred as varieties to *J. æquinoctialis* (Oliv.), and *J. algerica* to *J. albopilosa* (Chevr.). The following known species are added to the list:—*J. cloueti* (Buq.), *l. c.* p. 38, from Arabia; *J. audouini* (Lap. & Gory), *l. c.* p. 39, from Armenia; *J. bohemanni* (Mann.), *l. c.* p. 49, from Syria; *J. setosa* (Stev.), *l. c.* p. 63, from Armenia and Persia; *J. lævicostata* (Lap. & Gory), *l. c.* p. 68, from Persia; *J. punctato-costata* (Lap. & Gory), *l. c.* p. 70, from Persia; *J. spectabilis* (Lap. & Gory), *l. c.* p. 82, from Arabia; and *J. karelini* (Mann.), *l. c.* p. 84, from Turcomania. The following species, previously regarded by the author as varieties, are revived—*J. kanigi* (Mann.) and *J. tingitana* (Lap. & Gory); and *J. olivieri* (Lap.) includes as synonyms *J. brullei* (Lap. & Gory) and *J. onopordinis* (Brullé). Eight new species are described.

The genus *Steraspis* contains two species, *S. squamosa* (Klug), which has

been found in Algeria, and *S. speciosa* (Klug). The species of *Buprestis* (= *Chalcophora*, Lac. &c.) includes seven species, of which *B. lefebvrei* and *bagdadensis* (Lap. & Gory) appear here for the first time. *Psiloptera* (Sol.), including thirteen species, of which one is described as new, is divided by De Marseul into three sections or subgenera as follows:—

I. Striæ of the elytra well-marked and deep, and the interstices interrupted by punctured pits; sides of the pronotum rounded, with a small ridge near the base. 1. LAMPETIS: *P. mimosæ* (Kl.), *composita* (Pal. B.), *catenulata* (Kl.), and *argentata* (Mann.).

II. The punctured striæ wanting or indistinct, and the interstices regularly punctured; lateral margins of pronotum thin and trenchant.

A. Elytra obtuse at apex, separately rounded; sides of prothorax not sinuated; scutellum small and round. 2. PEROTIS: *P. tarsata* (Hbst.), *chlorana* (Lap. & Gory), *cuprata* (Kl.), *orientalis* (Lap. & Gory), *æreiventris* (Reiche), *lugubris* (Fab.), and one new sp.

B. Elytra terminated by a rather long point, which is truncate and furnished with two acute teeth; sides of pronotum sinuate; scutellum cordiform. 3. LATIPALPIS: *P. pisana* (Rossi) and *stellio* (Kies.).

Capnodis includes ten species, as in the catalogue, but *C. anthracina* (Fisch.) is described as a distinct species, and *C. porosa* (Kl.) and *hypocrita* (Gehin) are placed as synonyms of *C. mannerheimi*. One new species is described. *Cyphosoma* has four species.

Dicerca is divided into the sections *Dicerca* (prop.) and *Argante* (Gistl), the former including eight species (two new) and the latter three species. To the former *D. chlorostigma* (Mann.) and *fritillum* (Mén.) are added; to the latter *D. dumolini* (Lap. & Gory). *Poecilonota* with ten species (one new) is divided into the subgenera *Poecilonota* and *Lampra*. The latter includes nine species, *P. limbata* (Mann.) being restored to the rank of a species, and *P. nobilissima* and *pretiosa* (Mann.) introduced. *Ancylochira* includes eighteen species (four new). *A. bagdadensis* (Lap. & Gory) is referred by De Marseul to his genus *Buprestis*; *A. bertheloti* (Br.) and *variegata* (Kl.) are introduced; and *A. magica* (Lap. & Gory) and *A. bellemarei* (Luc.) are placed as varieties respectively of *A. 8-guttata* and *douei*. The species of *Eurythyrea* are as in the catalogue, except that *E. oblita* (Fald.) is placed as a synonym of *E. carniolica*, and *E. aurata* (Pall.) is introduced. From *Melanophila* (= *Phænops*, Lac.) *M. ariasi* is removed to form a new genus (or subgenus, for the author does not seem very clear as to the value he means to put upon the group), and six other species are described, namely *cyanea* (Fab.), *decastigma* (Fab.) incl. var. *consobrina* (Chevr.), *discopunctata* (Fald.) = *guttulata* (Gebl.), *appendiculata* (Fab.), *cuspidata* (Kl.), and *æqualis* (Mann.)

Of the great genus *Anthaxia* (Esch.) De Marseul records sixty species, five of which are described as new. The genus is divided into the subgenera *Cratomerus* and *Anthaxia*, the former including only four species, namely *cyanicornis* (Fab.), *diadema* (Fisch.), *sponsa* (Kies.), and *nupta* (Kies.). *A. divina* (Reiche) is synonymous with the latter. The following species included in De Marseul's catalogue do not appear in this genus in his monograph:—*hanaki* (Küst.), *tarsata* (Fab.), *griseo-cuprea* (Kies.), and *ephippiata* (Redt.). The following are introduced:—*congregata* (Kl.), *angustipennis* (Kl.), *pumila* (Kl.), *anatolica* (Chevr.), and *sendis* (Woll.). *A. viminalis* (Lap. & Gory) = *crœsus* (Kies. nec Vill.). *A. chlorocephala* (Luc.) = var. *cichorii*; *A. midas* (Kies.) = *crœsus* (Vill.); and *A. signaticollis* (Kryn.) = var. *nitidula*. *Polycesta* includes only *P. ægyptiaca* (Gmel.), found in Algeria; and *Ptosima* receives one new species. *Acmæodera*, according to the synoptical table, includes thirty-nine species, of which fourteen are described in detail; six of the species are new. Of thirteen species included in the catalogue of European Coleoptera the names do not appear in this table. Additional species are *A. cisti* and *fracta* (Woll.), *elevata* and *polita* (Klug), and *arabica* (Lap. & Gory).

Julodides.

Julodis. The following eight new species are described by De Marseul (L'Abeille, tome iii.):—*J. cupreocælata*, *l. c.* p. 53, from Armenia; *J. ruginota*, *l. c.* p. 54, from Anatolia; *J. lineigera*, *l. c.* p. 62, from the Caucasus and Syria; *J. ampliata*, *l. c.* p. 66, from Armenia; *J. luteogramma*, *l. c.* p. 67, from Syria; *J. ramifera*, *l. c.* p. 69, from Persia, *J. 4-costa*, *l. c.* p. 71, from Persia; *J. armeniaca*, *l. c.* p. 80, from Syria and Persia.

Chalcophorides.

Deyrolle (Ann. Soc. Ent. Belg. tome viii. p. 15) describes *Chrysodema aurifera* (Lap. & Gory), *C. impressicollis* (L. & G.), *Buprestis chrysocælis* (Boisd.), *Chalcophora stevensii* (Thoms.), and *C. arouensis* (Thoms.) as varieties of C. (*Buprestis*) *arrogans* (Boisd.). According to the same author, *C. arrogans* (L. & G) = *C. fucata* (Dej.), *l. c.* p. 17.

New genera:—

Chrysodemides. Deyrolle (Ann. Soc. Ent. Belg. p. 11) maintains, in opposition to Lacordaire, that the genus *Chrysodema* (Cast. & Gory) is not only distinct from *Chalcophora*, but really forms a subordinate group (*Chrysodemides*) consisting of seven genera, of the characters of which he gives the following tabular analysis:—

I. First segment of abdomen without a projecting lamina.
  A. Scutellum touching prothorax.
    1. Meso- and metasternum not gibbous.
      a. Tarsi and antennæ more or less metallic, never testaceous or light brown.
        * Prothorax with a smooth median line; first segment of abdomen depressed or slightly hollow in the middle; prosternum strongly furrowed ..... 1. CHRYSODEMA.
        † Prothorax finely furrowed in the middle; prosternum and first abd. segment not furrowed ..... 2. IRIDOTÆNIA, g. n.
        § Prothorax broadly furrowed; prosternum and first abd. segment finely furrowed ..... 3. CHALCOTÆNIA, g. n.[1]
      b. Tarsi and antennæ testaceous or light brown. 4. PARACUPTA, g. n.
    2. Meso- and metasternum gibbous between the intermediate legs; prosternum furrowed to its anterior margin. 5. PLEIONA, g. n.[2]

[1] Type *C. lamberti* (Hope) from Australia.
[2] Type *C. tayanti* (Guér.), from the Marquesas.

B. Scutellum surrounded by the elytra . . . . . 6. Periorisma, g. n.

II. First segment of abdomen with a gibbous lamina, enclosing a projection of the second segment; prothorax square, truncated at ant. angles; prosternum deeply furrowed, widened in front.

7. Cyphogastra, g. n.

Callopistus, g. n., Deyrolle, *l. c.* p. 9. Allied to *Chrysochroa*; antennæ short, with pores on the two lower surfaces of each joint; prothorax broad at base; sternum gibbous, prosternum broad, not furrowed in the middle. Type *Chrysochroa resplendens* (Lap. & Gory), pl. 4. fig. 2. New sp. *C. castelnaudii*, Deyr. *l. c.* pl. 1. fig. 2, & pl. 4. fig. 1, from Malacca and Borneo.

Philocteanus, g. n., Deyrolle, *l. c.* p. 10. Allied to *Chrysochroa*; epistoma notched; eyes distant; antennæ short, metallic above, of ten or eleven joints, serrated from the fifth, with pores as in preceding; prothorax trapezoidal, prosternum broad; anterior tibiæ curved, with a sharp ridge on the outer surface. Type *Chrys. leucophthalma* (Lap. et Gory). One sp., *Chalcophora flammea* (Thoms.).

Asemochrysus, g. n., Deyrolle, *l. c.* p. 47. Allied to *Chalcophora*; forehead and occiput flat, a short furrow behind the former; epistoma circularly emarginate; antennæ slender, joints decreasing from 4th to 7th, metallic above, antennary pores on the lower surface of last five joints; scutellum very small, obcordate. Sp. *A. rugulosus*, sp. n., Deyr. *l. c.* p. 48, pl. 2. fig. 1, and pl. 4. fig. 8 (head), from Malacca.

Epidelus, g. n., Deyrolle, *l. c.* p. 49. Allied to *Chalcophora*; forehead hollow, head deeply furrowed in the middle (pl. 4. fig. 9); epistoma separated from the forehead by a furrow; antennæ 11-jointed, 3rd joint long, the rest gradually diminishing, apical joints nearly square, antennary pores on the last five; prothorax much narrowed in front; scutellum very small, furrowed in the middle. Sp. *Chalcophora wallacei* (Thoms.), *l. c.* p. 50, pl. 2. fig. 2.

Aprosopus, g. n., Deyrolle, *l. c.* p. 50; allied to *Chalcophora*; forehead broad, traversed by a fine furrow; epistoma very short, broad, emarginate in the middle; antennary cavities very small; antennæ slightly flattened, second joint very short, last two subtransverse, last seven with pores beneath; prothorax subparallel; scutellum very small; prosternum short, flat, and very broad. Sp. *A. rugifrons*, sp. n., Deyr. *l. c.* p. 51, pl. 2. fig. 3, and pl. 4. fig. 10 (head), from Borneo.

Hypoprasis, g. n., Fairmaire and Germain, Rev. et Mag. de Zool. 1864, p. 260. Allied to *Capnodis*; antennæ dentate from joint 5; epistoma strongly emarginate; eyes large, approximated above; prothorax with posterior angles produced; elytra denticulate at apex; abdomen not channelled at base; prosternum flat, not striated. Sp. *H. harpagon*, sp. n., from Chili.

New species :—

Catoxantha nigricornis, Deyrolle, *l. c.* tome viii. p. 1, from Borneo, Sumatra, and Malacca; *C. mniszechii*, Deyr. *l. c.* p. 2, from Malacca.

Demochroa gratiosa, Deyr. *l. c.* p. 3, pl. 1. fig. 1, from Malacca.

Chrysochroa. Of this genus Deyrolle describes seven new Malasian species: namely, *C. weyersii*, *l. c.* p. 4, from Malacca; *C. wallacei*, *l. c.* p. 5, from Malacca and Borneo; *C. purpureiventris*, *l. c.* p. 6, from Malacca; *C. aurotibialis*, ibid., from Borneo; *C. kaupii*, *l. c.* p. 7, from Ceram and Amboyna; *C. chrysuroides*, *l. c.* p. 8, from Celebes; and *C. variabilis*, ibid., from Gilolo and Batchian.

Chrysodema. Deyrolle describes the following fourteen new species of this genus from Malasia:—*C. wallacei*, *l. c.* p. 15, from Amboyna; *C. mniszechii*, *l. c.* p. 16, pl. 1. fig. 4, & pl. 4. fig. 3, from Goram; *C. æneo-violacea*, ibid., from Key Island; *C. viridi-micans*, *l. c.* p. 17, from Borneo and Malacca; *C. purpureo-impressa*, *l. c.* p. 18, from Malacca and Siam; *C. robusta*, ibid., *C. rubrifrons*, *l. c.* p. 19, and *C. malacca*, *l. c.* p. 20, from Malacca; *C. westwoodii*, *l. c.* p. 21, from Bourou; *C. jansonii*, *l. c.* p. 22, from New Guinea; *C. auroplagiata*, ibid., from Banka and Borneo; *C. instabilis*, *l. c.* p. 23, from Gilolo; *C. incerta*, *l. c.* p. 24, from Waigiou; and *C. moluccana*, ibid., from Amboyna, Celebes, &c.

Iridotænia, g. n. (known species, *Chrysodema sumptuosa* [Lap. & Gory] and *C. mirabilis* [Gory]). The following nine new Malasian species are described by Deyrolle:—*I. auro-limbata*, *l. c.* p. 27, pl. 1. fig. 15, and pl. 4. fig. 4, and *I. curta*, *l. c.* p. 29, from Batchian; *I. cuprea*, *l. c.* p. 27, from Ceram; *I. callosicollis*, *l. c.* p. 28, from Amboyna; *I. chryso-limbata*, *l. c.* p. 29, from Celebes; *I. lineata*, *l. c.* p. 30, from Malacca; *I. chrysostoma*, *l. c.* p. 31, from Malacca and Siam; *I. chrysogramma*, *l. c.* p. 32, from Borneo; and *I. chrysifrons*, ibid., from Malacca and Sumatra.

Paracupta, g. n., *girardii*, Deyr. *l. c.* p. 34, pl. 1. fig. 6, and pl. 4. fig. 5 (Malasia) (known species *Chrysod. helopioides* [L. & G.] and *Bupr. xanthocera* [Boisd.]).

Periorisma (g. n.) *carinifrons*, Deyr. *l. c.* p. 35, pl. 1. fig. 7, and pl. 4. fig. 6, from Amboyna.

Cyphogastra, g. n. (known species *Chrysod. calepyga* [Thoms.], *Bupr. suturalis* [Fab.], *Chrysod. venerea* [Thoms.], and *Bupr. fovicollis* [Boisd.]). New species described by Deyrolle:—*C. angulicollis*, *l. c.* p. 39, pl. 1. fig. 8, and pl. 4. fig. 7, from Banda; *C. chevrolatii*, ibid., from Timor; *C. mniszechii*, *l. c.* p. 40, from Amboyna; *C. wallacei*, *l. c.* p. 41, from Batchian; *C. pisciformis*, *l. c.* p. 42, from Waigiou and New Guinea; *C. ignicauda*, ibid., from Batchian and Gilolo; *C. nigripennis*, *l. c.* p. 43, from Bourou; *C. punctipennis*, *l. c.* p. 44, from Morty, &c.; *C. cribrata*, *l. c.* p. 45, from Matabilla; *C. intrusa*, ibid., from Malacca; and *C. foveolata*, *l. c.* p. 46, from New Guinea.

Psiloptera fastidiosa, Fairmaire and Germain, Rev. et Mag. de Zool. 1864, p. 259, from Chili.—*Psiloptera xerces*, Marseul, *l. c.* p. 109, from Persia.

Capnodis semisuturalis, Marseul, *l. c.* p. 127, from Syria.

Buprestides.

De Borre (Ann. Soc. Ent. Belg. tome viii. p. 278) cites *Agrilus betuleti* (Ratz.) as a Belgian insect.

New genera :—

Agrilites. Deyrolle (Ann. Soc. Ent. Belg. tom. viii. pp. 113–116) gives the following general table of the genera, several of them new, into which he divides this tribe of *Buprestides* :—

I. Prosternum without a chin-lobe.

A. Prothorax more or less sinuous at base.

1. Antennæ serrated from the fourth joint.
   a. Prosternum and sternum of normal form.
      * Prothorax with two long lateral keels.
         α. Head hollow between the eyes, with a narrow and deep median furrow ..... 1. Ethon (L. & G.).
         β. Head nearly flat between the eyes, not furnished with a deep and narrow median furrow 2. Cisseis (L. & G.).
      † Prothorax with two short lateral keels, or none; lateral margins crenellated by a row of points.
         α. Head large; antennæ slender. 3. Coræbus (L. & G.).
         β. Head small; antennæ robust. 4. Eupristocerus [1] (g. n.).
      § Prothorax sometimes denticulated on the margins, but never crenellated by a row of points.
         α. First segment of abdomen narrowly channelled; head not tubercular ..... 5. Evimantius [2] (g. n.).
         β. First segment of abdomen narrowly channelled; head bitubercular ..... 6. Amorphosomus (L. & G.).
   b. Sternum much elevated; prosternum lower, vertically truncated in front, with the head resting on the truncature. 7. Amorphosternus [3] (g. n.).
2. Antennæ serrated from the fifth joint (except in a species of *Toxoscelus*).
   a. Anterior and intermediate tibiæ strongly arched at base. 8. Toxoscelus (g. n.).
   b. Tibiæ of normal form.
      * Sternal cavity formed chiefly by the metasternum; branches of mesosternum very small.
         α. Head hollow or flat, not deeply sulcated in the middle.
            a. Elytra never with more than one ridge.
               ** Body and elytra strongly squamose or villose. 9. Discoderes (Chevr.).
               †† Body and elytra smooth, or nearly so. 10. Corydon [4] (g. n.).
            b. Elytra with two or four ridges. 11. Alissoderus [5] (g. n.)
         β. Head with a narrow and deep furrow, which is divided in front ..... 12. Stenogaster (Sol.).
      † Sternal cavity formed only by the mesosternum, at least laterally.
         α. Prosternum separated from the metasternum by the branches of the mesosternum, which unite posteriorly. 13. Synechocera [6] (g. n.).

[1] Type *B. ignarus* (Fab.). [2] Type *E. rufopictus* (Laf.).
[3] Type *A. cucullatus* (Dej.).
[4] Types *C. nitidicollis* (Gory) and *C. striatus* (Gory).
[5] Types *A. leucogaster* (Wied) and *A. cornutum* (Thunb.).
[6] Type *S. deplana* (Gory).

      β. Prosternum resting on the metasternum; body short. 14. Alcinous [1] (g. n.).
   B. Prothorax straight at base .... 15. Mastogenius (Sol.).
II. Prosternum with a chin-lobe.
   A. Sternal cavity of ordinary size.
      1. Tibiæ dilated and sharp externally, furrowed within to receive the tarsi ..... 16. Cryptodactylus (g. n.).
      2. Tibiæ of ordinary form.
         a. Chin-lobe bilobed in front by a deep notch. 17. Melibœus (g. n.)
         b. Chin-lobe entire, or broadly emarginate.
            * Posterior thighs not enlarged; posterior tibiæ with no ciliated space.
               a. First tarsal joint short.
                  α. Antennæ never lodged in narrow lateral furrows of the prothorax.
                     ** Body straight above; no keels on the sides of the prothorax beneath.. 18. Pareumerus [2] (g. n.).
                     †† Body arched above; prothorax with longitudinal or transverse keels beneath.
                        αα. Scutellum of usual form and size. 19. Eumerus [3] (L. & G.).
                        ββ. Scutellum large, conically produced. 20. Eumerophilus [4] (g. n.).
               b. Antennæ during repose lodged in lateral furrows of prothorax.
                  ** Head small; abdomen rounded at apex. 21. Rhæboscelis [5] (Chevr.).
                  †† Head rather large, 4-tubercular; abdomen strongly bispinous at apex.. 22. Acanthopygus [6] (g. n.).
            β. First joint of tarsi, especially the posterior, very long. 23. Agrilus (Meg.).
         † Posterior thighs enlarged.
            a. Posterior thighs brilliant metallic red. 24. Pseudagrilus (g. n.).
            β. Posterior thighs of the same colour as the other legs, with a small subbasal tooth; posterior tibiæ with a ciliated space on the outer edge. 25. Sambus (g. n.).
   B. Sternal cavity deep, much prolonged behind the intermediate cotyloid cavities ..... 26. Clinocera [7] (g. n.).

Trachydes. Deyrolle (Ann. Soc. Ent. Belg. tom. viii. pp. 218, 219) gives the following table of the genera into which he divides this tribe:—

[1] Type *A. nodosus* (Laf.). [2] Type *P. imperator* (Gory).
[3] Type *E. chryselytrus* (Perty).
[4] Type *E. coreboides* (Deyr.). [5] Type *R. purpureus* (Chevr.).
[6] Type *Stenogaster furciventris* (Chevr.).
[7] Types *Agrilus lesueuri* (Chevr.), *A. modicus* (Gory), and *A. reichei* (Gory).

I. Epistoma broad, not much narrowed at base; body flattened, elongate-quadrangular ..... 1. ANTHAXOMORPHUS (g. n.).

II. Epistoma more or less strongly narrowed at base.

A. Antennæ free.

1. Body cylindrical; head subspherical.

2. CYLINDROMORPHUS (Motsch.).

2. Body more or less elongate, but never cylindrical.

a. Tibiæ received into a deep furrow of the femur.

* Antennæ with joints 8–11 denticulated and forming a flattened club ..... 3. APHANISTICUS (Lat.).

† Antennæ with joints 5 or 6–11 serrated, their apex sometimes received in a depression of the prothorax.

4. ENDELUS (g. n.).

b. Tibiæ free in repose.

* Body elongate; intermediate tibiæ curved.

5. TAPHROCERA (Sol.).

† Body not much elongated, more or less cuneiform; intermediate tibiæ straight ..... 6. TRACHYS (Fab.).

B. Antennæ in repose received in deep prothoracic furrows.

1. Prosternum deeply furrowed in the middle.

7. BRACHYS (Dej.).

2. Prosternum not furrowed.

a. Legs in repose received in impressions of the body.

* Tibiæ not flattened, middle ones strongly curved; sternal cavity deep ..... 8. LIUS[1] (g. n.).

† Tibiæ flattened and dilated in the middle; sternal cavity not deep ..... 9. PACHYSCHELUS (Sol.).

b. Legs free; tibiæ straight, not flattened.

* Body flattened ..... 10. LEIOPLEURA[2] (g. n.).

† Body subcylindrical..... 11. CALLIMICRA[3] (g. n.).

Dicercomorpha, g. n., Deyrolle, *l. c.* p. 52. Allied to *Dicerca*; antennary cavities large, with thin margins, carinated; eyes approximated above; last seven or eight joints of antennæ with poriferous pits at the extremity beneath; prosternum flat, not furrowed in the middle; elytra bi- or trispinous at the extremity. Sp. *D. subcincta*, Deyr. *l. c.* p. 54, from Bourou; *D. interrupta*, Deyr. *l. c.* p. 55, pl. 2. fig. 4, and pl. 4. fig. 11 (head), from Ceram and Amboyna; *D. multiguttata*, Deyr. *l. c.* p. 56, from Mysol, Dorey, &c.; *D. inæqualis*, Deyr. ibid., from Amboyna, Ceram, and Batchian; and *D. viridis*, Deyr. *l. c.* p. 57, from Sumatra. (Known sp. *Bupr. albosparsa* and *javanica* [Lap. & Gory]; *Chalcophora sex-spinosa* [Thoms.]).

Exagistus, g. n., Deyrolle, *l. c.* p. 65. Allied to *Melobasis*; prothorax narrow, subparallel, slightly furrowed on the disk, strongly biemarginate at base; scutellum pentagonal; elytra wider than thorax at base, strongly emarginate and bispinous at apex; prosternum wide and inflated in front. Sp. *E. ignicaps*, sp. n., Deyr. *l. c.* p. 65, pl. 2. fig. 5, from Borneo.

[1] Types *B. ignitus, aculeatus, exiguus* (Gory). [The generic name is preoccupied by a genus of Sharks.]

[2] Type *B. concinna* (Gory).

[3] Types *Coræbus bicolor, subcyaneus, taciturnus* (Gory).

Phrixia, g. n., Deyrolle, *l. c.* p. 66. Allied to *Melanophila*; epistoma angularly emarginate; antennary pits separated from the forehead by a keel; antennæ slender, 3rd joint as long as 1st, joints 4–11 with poriferous pits at the extremity within; prothorax elongated; elytra not denticulated. Sp. *P. filiformis*, sp. n., Deyr. *l. c.* p. 67, pl. 2. fig. 6, from Ceram.

Diceropygus, g. n., Deyrolle, *l. c.* p. 68. Allied to *Melobasis*, but the scutellum is six times as large as in that genus, with the sides straight and the apex rounded; and the margins of the elytra are strongly denticulated in their posterior half. Sp. *D. scutellaris*, sp. n., Deyr. *l. c.* p. 68, and *D. maculatus*, sp. n., Deyr. *l. c.* p. 69, pl. 2. fig. 7, from Mysol.

Philanthaxia, g. n., Deyrolle, *l. c.* p. 72. Allied to *Anthaxia*; prothorax much narrowed in front; eyes small, oval; antennæ with second joint as thick as the first, but very short, third slender, as long as the second; elytra with a flattened and finely-denticulated margin behind. Sp. *P. curta*, sp. n., Deyr. *l. c.* p. 73, pl. 2. fig. 8, and pl. 4. fig. 12 (head), from Malacca.

Trachykele, g. n., Marseul, L'Abeille, iii. p. 149. Allied to *Dicerca*, but without a scutellum. Sp. *T. blondeli*, sp. n., p. 150, from Lebanon.

Kisanthobia, g. n., Marseul, *l. c.* p. 200. Allied to *Anthaxia*; prosternum with a distinct chin-piece. Sp. *Anthaxia ariasi* (Robert).

Polyctesis, g. n., Marseul, *l. c.* p. 264. Allied to *Polycesta*, but with the pronotum nearly square and the epistome narrowed in front; metathoracic parapleuræ exposed. Sp. *P. rhois*, sp. n., p. 265, from Cyprus.

Ianthe, g. n., Marseul, L'Abeille, iii. p. 27. Allied to *Trachys*; femora and tibiæ strongly dilated; antennæ lodged in a deep sternal groove. (Characters given in table of genera; type not indicated.)

New species :—

Dicerca scabida, Marseul, *l. c.* p. 140, from Persia; *D. amphibia*, Marseul, *l. c.* p. 145, from Siberia.

Pœcilonota gloriosa, Marseul, *l. c.* p. 160, from Syria.

Pœcilonota. Of this genus Deyrolle describes the following eight new Malasian species:—*P. psilopteroïdes*, *l. c.* p. 59, *P. pantherina*, *l. c.* p. 60; *P. nigrogutta*, *l. c.* p. 62, and *P. leoparda*, ibid., from Borneo; *P. ænea*, *l. c.* p. 59, from Sumatra; *P. apicalis*, *l. c.* p. 61, from Malacca; *P. auricollis*, *l. c.* p. 63, from Morty; and *P. suturalis*, *l. c.* p. 64, from Gilolo.

Castalia cyanipennis, Deyrolle, *l. c.* p. 76, and *C. curta*, Deyr. *l. c.* p. 77, from Celebes.

Ancylochira araratica, Marseul, *l. c.* p. 174, from Mount Ararat; *A. tarsensis*, Mars. *l. c.* p. 178, from Persia and Syria; *A. ledereri*, Mars. *l. c.* p. 179, from Syria and Cyprus; *A. margaripicta*, Mars. *l. c.* p. 185, from Algeria.

Melobasis. Deyrolle describes the following five new species from Malasia:—*M. chrysobothroïdes*, *l. c.* p. 70, from Borneo; *M. intricatus*, ibid., and *M. coratus*, *l. c.* p. 72, from Aru; *M. æneipennis*, *l. c.* p. 71, from Batchian; and *M. viridiauratus*, *l. c.* p. 72, from Amboyna.

Anthaxia. Of this genus Deyrolle describes four new Malasian species: namely, *A. miranda*, *l. c.* p. 74, and *A. violaceiventris*, *l. c.* p. 75, from Singapore; *A. occipitalis*, ibid. and *A. sarawackensis*, *l. c.* p. 76, from Borneo.

Anthaxia. De Marseul describes the following new species of this genus:

—*A. kollari*, *l. c.* p. 214, from Mesopotamia; *A. cupricentris*, *l. c.* p. 215, from Syria; *A. arabs*, *l. c.* p. 216, from Arabia: *A. smaragdifrons*, *l. c.* p. 222 (= *viridifrons*, Luc.), from Algeria; *A. stupida*, *l. c.* p. 224, from Barbary; *A. kiesenwetteri*, *l. c.* p. 228 (= *melancholica*, Kraatz nec Lap. & Gory), from Greece; *A. mulsanti*, *l. c.* p. 243 (= *hilaris*, Muls.), from Syria; *A. biimpressa*, *l. c.* p. 248, from Algeria and Syria; *A. verecunda*, *l. c.* p. 256, from Asia Minor.

Anthaxia subæqualis, Fairmaire & Germain, *l. c.* p. 262, from Chili.

Stigmodera consobrina, Fairmaire & Germain, *l. c.* p. 284, from Chili.

Callisphyris testaceipes, Fairmaire & Germain, *l. c.* p. 286, and *C. odyneroides*, Fairm. & Germ. *l. c.* p. 385, from Chili.

Calodema wallacei, Deyrolle, *l. c.* p. 78, pl. 2. fig. 9, from New Guinea.

Calodema johannæ, Vollenhoven, Tijdschr. voor Ent. 1865, p. 61, pl. 1. figs. 1 & 2, from Waigiou. Very similar to *C. wallacei*, Deyrolle.

Sponsor nigritus, Deyrolle, *l. c.* p. 79, from Celebes; *S. cuneiformis*, Deyr. ibid., from Salwatty.

Acmæodera. De Marseul describes the following new species of this genus:—*A. guttifera*, *l. c.* p. 281, from Syria; *A. bijuga*, *l. c.* p. 282, from Cyprus; *A. præcox*, *l. c.* p. 284, from Turkey, Greece, and Syria; and in the analytical table, *A. philistina*, *l. c.* p. 270, *A. cerasina*, *l. c.* p. 271, and *A. decorata*, *l. c.* p. 272.

Acmæodera mimonti, Boieldieu, Ann. Soc. Ent. Fr. 4e sér. tom. v. p. 5, pl. 1. fig. 1, and *A. reichei*, Boield. *l. c.* p. 6, pl. 1. fig. 2, from Eubœa.

Ptosima cyclops, Marseul, *l. c.* p. 263, from Turkey.

Belionota. Eight new Malasian species are described by Deyrolle: namely, *B. mniszechii*, *l. c.* p. 81, from Morty; *B. ænea*, *l. c.* p. 82, from New Guinea, &c.; *B. gigantea*, *l. c.* p. 83, from Malacca; *B. bonneuilii*, ibid., *B. vuillefroyi*, *l. c.* p. 86, and *B. lacordairei*, *l. c.* p. 87, from Borneo; *B. bouvouloirii*, *l. c.* p. 85, from Gilolo; and *B. fallaciosa*, *l. c.* p. 84, from Malacca, Sumatra, Amboyna, and Manilla.

Chrysobothris. Of this genus Deyrolle describes 30 new Malasian species: namely, *C. cyanipennis*, *l. c.* p. 90, and *C. tristis*, *l. c.* p. 108, from Amboyna; *C. occipitalis*, *l. c.* p. 95, *C. collaris*, *l. c.* p. 98, *C. cupriceps*, *l. c.* p. 100, *C. æneicollis*, *l. c.* p. 101, *C. perplexa*, *l. c.* p. 103, *C. circulo-impressa*, *l. c.* p. 104, *C. confusa*, *l. c.* p. 105, and *C. nigripennis*, *l. c.* p. 107, from Borneo; *C. elongata*, *l. c.* p. 94, *C. unica*, *l. c.* p. 96, *C. basalis*, *l. c.* p. 103, and *C. delenifica*, *l. c.* p. 109, from Malacca; *C. cyanescens*, *l. c.* p. 97, and *C. insolata*, *l. c.* p. 102, from Singapore; *C. cavifrons*, *l. c.* p. 95, *C. cupricollis*, *l. c.* p. 105, and *C. chrysonota*, *l. c.* p. 110, from the Moluccas; *C. parallela*, *l. c.* p. 109, from Makian; *C. bistripunctata*, *l. c.* p. 111, from Timor; *C. nigro-violacea*, *l. c.* p. 106, *C. auropunctata*, *l. c.* p. 110, *C. arouensis*, *l. c.* p. 111, and *C. auricornis*, *l. c.* p. 112, from New Guinea and its islands; *C. superba*, *l. c.* p. 91, from Sumatra and Borneo; *C. militaris*, *l. c.* p. 93, *C. ellyptica* (sic), *l. c.* p. 94, and *C. lætifrons*, *l. c.* p. 98, from Malacca and Borneo; and *C. dissimilis*, *l. c.* p. 99, from Borneo and Singapore.

Cissus auriceps, Deyrolle, *l. c.* p. 117, from New Guinea; *C. brachyformis*, Deyr. ibid., from Mysol.

Corœbus. Of this genus Deyrolle describes ten new species: namely, *C.*

nigro-violaceus, *l. c.* p. 120, from Makian; *C. retrolatus*, ibid., from Malacca; *C. longipennis*, *l. c.* p. 121, from Sumatra; *C. bajulus*, *l. c.* p. 122, from Ceram; *C. rugosus*, *l. c.* p. 123, *C. semiviolaceus*, ibid., *C. conjunctus*, *l. c.* p. 125, and *C. piliferus*, *l. c.* p. 126, from Borneo; *C. cupricollis*, *l. c.* p. 124, from Dorey; and *C. cornutus*, *l. c.* p. 125, from Batchian.

Corœbus (sic) *æratus*, Mulsant & Rey, Ann. Soc. Linn. Lyons, tom. x. p. 10, from Provence and Languedoc.

Amorphosomus marmoreus, Deyrolle, *l. c.* p. 127, from Amboyna, &c.

Agrilus. Of this genus Deyrolle describes 111 new Malasian species collected by Wallace:—

I. No lateral keels on the upper surface of the prothorax.

Agrilus scutellaris, *l. c.* p. 148, from Borneo; *A. chrysicollis*, ibid., from Batchian; *A. dentipes*, *l. c.* p. 153, from Batchian and Waigiou; *A. punctifrons*, *l. c.* p. 149, and *A. spinipes*, *l. c.* p. 153, from Mysol; *A. cupripes*, *l. c.* p. 149, from Ceram; *A. ignifrons*, *l. c.* p. 150, from Bourou; *A. subvestitus*, ibid., from Makian; *A. vittatus*, *l. c.* p. 151, from Celebes; *A. elongatus*, ibid., from New Guinea, Waigiou, &c.; and *A. rectus*, *l. c.* p. 152, from Amboyna.

II. Pronotum with lateral keels.

A. Elytra spinous, truncate, or acuminate, but never rounded at apex.

1. Elytra unispinous or uniangular at apex.

Agrilus vestitus, *l. c.* p. 154, from Amboyna; *A. ornatus*, *l. c.* p. 155, from Celebes, Amboyna, New Guinea, &c.; *A. frater*, ibid., from Makian; *A. ignicollis*, *l. c.* p. 156, from Timor and Flores; *A. cœlestis*, ibid., from Flores; *A. semiæneus*, *l. c.* p. 157, *A. pilicentris*, ibid., *A. œdipus*, *l. c.* p. 160, *A. diadema*, *l. c.* p. 163, *A. purpurifrons*, ibid., *A. rubifrons*, *l. c.* p. 164, *A. sexpunctatus*, *l. c.* p. 166, *A. auripilis*, *l. c.* p. 167, *A. minos*, *l. c.* p. 168, and *A. sutura-alba*, ibid., from Borneo; *A. maculicentris*, *l. c.* p. 158, from Batchian; *A. ascanius*, *l. c.* p. 159, from Ceram; *A. cuprifrons*, ibid., from Celebes; *A. amicus*, *l. c.* p. 161, *A. trito*, *l. c.* p. 162, *A. insipidus*, ibid., and *A. albopunctatus*, *l. c.* p. 166, from Singapore; *A. indigaceus*, *l. c.* p. 161, from Dorey; *A. quadricolor*, *l. c.* p. 164, from Sumatra; *A. quadripunctatus*, *l. c.* p. 165, from Sumatra and Borneo; and *A. cupreo-violaceus*, *l. c.* p. 169, from New Guinea, &c.

2. Elytra with two spines or angles at apex.

Agrilus lancifer, *l. c.* p. 169, *A. incerticolor*, *l. c.* p. 170, *A. minor*, *l. c.* p. 171, *A. nigro-cyaneus*, *l. c.* p. 172, *A. ocularis*, *l. c.* p. 179, and *A. thalassinus*, ibid., from Borneo; *A. ciliatipes*, *l. c.* p. 170, *A. adonis*, *l. c.* p. 171, and *A. capitatus*, *l. c.* p. 179, from Singapore; *A. insularis*, *l. c.* p. 173, from Borneo, Singapore, Sumatra, and Makian; *A. tuberculicentris*, ibid., from Batchian and Kaissa; *A. cyanicollis*, *l. c.* p. 174, from Batchian and Morty; *A. celebiensis*, *l. c.* p. 175, from Celebes; *A. albogaster*, ibid., from Borneo and Singapore; *A. nigro-æneus*, *l. c.* p. 176, from Mysol and Waigiou; *A. æneo-maculatus*, *l. c.* p. 177, from Flores; *A. viridi-æneus*, ibid., from Bourou, Amboyna, &c.; *A. vulcanus*, *l. c.* p. 178, *A. auripes*, *l. c.* p. 180, and *A. dorsalis*, ibid., from Mysol.

3. Elytra acuminated posteriorly.

Agrilus tripartitus, *l. c.* p. 181, from Borneo; *A. æneipennis*, ibid., from Amboyna and Ceram; *A. taciturnus*, *l. c.* p. 182, from Batchian; and *A. incertus*, ibid., from Gilolo.

B. Elytra more or less broadly rounded at the apex, which is often very finely denticulated.

1. Vertex bituberculate.

Agrilus subcornutus, *l. c.* p. 182, from Singapore.

2. Vertex sometimes impressed, more mamillated or tuberculate at its margins.

* Form elongated.

a. Elytra traversed by bands, or having points or a design formed by their clothing.

Agrilus olympicus, *l. c.* p. 183, *A. anthracinus*, *l. c.* p. 186, and *A. cuneiformis*, *l. c.* p. 187, from Mysol; *A. paganus*, *l. c.* p. 184, *A. gentilis*, *l. c.* p. 185, *A. discicollis*, *l. c.* p. 189, and *A. bihamatus*, ibid., from Borneo; *A. grisescens*, *l. c.* p. 184, from Makian; *A. meticulosus*, *l. c.* p. 185, and *A. sepulchralis*, *l. c.* p. 186, from Celebes; *A. tristis*, *l. c.* p. 187, from Singapore; *A. funebris*, *l. c.* p. 188, from Aru and Dorey; *A. carbonarius*, ibid., from Ceram; *A. guttulatus*, *l. c.* p. 190, from Batchian; *A. parallelus*, *l. c.* p. 191, from Morty; *A. subtrifasciatus*, ibid., from Mysol and New Guinea; and *A. amethysticollis*, *l. c.* p. 192, from Dorey.

β. Elytra not traversed by bands, clothing uniform or nearly so, or wanting.

Agrilus validus, *l. c.* p. 192, from Celebes; *A. obscurus*, *l. c.* p. 193, and *A. hypocritus*, *l. c.* p. 198, from Batchian; *A. chalybeus*, ibid., from Mysol and New Guinea; *A. tricolor*, *l. c.* p. 194, from Mysol; *A. miserabilis*, ibid., *A. gracilis*, *l. c.* p. 197, from Makian; *A. albolatus*, *l. c.* p. 195, from Singapore; *A. nigro-violaceus*, *l. c.* p. 195, from Waigiou and Aru; *A. plebejus*, *l. c.* p. 196, from Sumatra; *A. æneolus*, *l. c.* p. 197, from Ceram and Flores; *A. pupillus*, *l. c.* p. 198, from Flores; *A. pauper*, ibid., from Morty; *A. perniciosus*, *l. c.* p. 199, *A. impopularis*, ibid., and *A. distinctus*, *l. c.* p. 200, from Borneo; and *A. chrysochloris*, ibid., from Bourou.

* Form not much elongated.

Agrilus marmoreus, *l. c.* p. 201, from Mysol and Batchian; *A. gratiosus*, *l. c.* p. 202, *A. suturalis*, *l. c.* p. 205, *A. agrestis*, *l. c.* p. 206, *A. parvulus*, *l. c.* p. 207, *A. melanarius*, ibid., and *A. puberulus*, *l. c.* p. 209, from Borneo; *A. ultramarina*, *l. c.* p. 208, from Borneo and Malacca; *A. concavus*, *l. c.* p. 203, from New Guinea; *A. pretiosus*, ibid., from Batchian; *A. hirsutulus*, *l. c.* p. 210, from Batchian and Waigiou; *A. nigerrimus*, *l. c.* p. 206, and *A. sylvestris*, *l. c.* p. 206, from Mysol; *A. campestris*, *l. c.* p. 205, from Ceram and Amboyna; and *A. auratus*, *l. c.* p. 209, from Aru.

Agrilus curtulus, Mulsant & Rey, *l. c.* p. 12, from Beaujolais; *A. elegans*, Muls. & Rey, *l. c.* p. 14, from Marseilles and Hyères; *A. prasinus*, Muls. & Rey, *l. c.* p. 17, from the Lyonnais; *A. antiquus*, Muls. & Rey, *l. c.* p. 19, from Nimes and Beaujolais.

Agrilus pulchellus, Bland, Proc. Ent. Soc. Phil. vol. iv. p. 382, from the Colorado Territory.

Cylindromorphus gallicus, Mulsant & Rey, *l. c.* p. 22, from Lyons and Provence.

Sambus, g. n., Deyrolle, *l. c.* p. 210. Deyrolle describes the following new species:—*S. lafertei*, *l. c.* p. 212, pl. 4. fig. 17 (head and leg), from Batchian;

S. amabilis, *l. c.* p. 215, from Batchian, Gilolo, and Salwatty; *S. parisii*, *l. c.* p. 213, from Ceram, Amboyna, and Bourou; *S. gautieri*, *l. c.* p. 214, from Waigiou; *S. lituratus*, ibid., and *S. subgrisescens*, *l. c.* p. 216, from Makian; *S. vermiculatus*, *l. c.* p. 215, from Dorey; *S. soricinus*, *l. c.* p. 217, *S. dives*, ibid. pl. 3. fig. 5, and *S. divisus*, *l. c.* p. 218, from Celebes.

Toxoscelus, g. n., Deyrolle, *l. c.* p. 127. Sp. *T. undatus*, Deyr. *l. c.* p. 129, pl. 3. fig. 2, and pl. 4. fig. 15 (feet), *T. centralis*, Deyr. ibid., and *T. funebris*, Deyr. *l. c.* p. 130, from Borneo.

Cryptodactylus, g. n., Deyr. *l. c.* p. 130. Sp. *C. lugubris*, Deyr. *l. c.* p. 131, pl. 3. fig. 3, and pl. 4. fig. 16 (foot), from Ceram; *C. tristis*, Deyr. *l. c.* p. 132, from Borneo.

Melibœus, g. n., Deyrolle, *l. c.* p. 132. (Known species: *Coræbus æneicollis* [Vill.], *episcopalis* [Mann.], and *robustus* [Küst.]). New sp.: *M. nigro-cæruleus*, Deyr. *l. c.* p. 133, pl. 3. fig. 4, from Waigiou; *M. æneifrons*, Deyr. *l. c.* p. 134, from Mysol; *M. nigripennis*, Deyr. ibid., and *M. æneiventris*, Deyr. *l. c.* p. 135, from Borneo; and *M. bipartitus*, Deyr. ibid., from Celebes.

Aphanisticus siculus, Mulsant & Rey, *l. c.* p. 24, from Sicily.

Trachys ahenata, Mulsant & Rey, *l. c.* p. 26, from the Crimea.

Trachys. Of this genus Deyrolle describes thirty-nine new Malasian species, namely:—

I. Elytra with no keels or cariniform ridges on their sides.

Trachys ventricosa, *l. c.* p. 242, *T. carbonaria*, *l. c.* p. 243, *T. varia*, *l. c.* p. 244, and *T. cupripyga*, *l. c.* p. 247, from Borneo; *T. mendica*, *l. c.* p. 244, from Singapore and Batchian; *T. undulata*, *l. c.* p. 245, from Celebes; *T. mellicula*, *l. c.* p. 246, from Makian; and *T. azurea*, *l. c.* p. 247, from Aru and Mysol.

II. Elytra with a lateral keel or ridge, at some distance from the margin.

A. A very strong humeral keel, descending somewhat obliquely two-fifths the length of the elytron.

Trachys carinata, *l. c.* p. 248, from New Guinea and Mysol.

B. A fine cariniform ridge parallel to the margin of the elytron.

1. Prothorax embracing the shoulders.

Trachys laticollis, *l. c.* p. 248, from Borneo.

2. Prothorax not wider than the elytra.

* Epistoma not so broad as long.

Trachys albographa, *l. c.* p. 249, from Aru; *T. resilla*, *l. c.* p. 250, *T. chromata*, *l. c.* p. 251, and *T. cupricauda*, *l. c.* p. 255, from Borneo; *T. picturata*, *l. c.* p. 251, from Ceram; *T. simplex*, *l. c.* p. 252, and *T. albomaculata*, *l. c.* p. 253, from Morty; *T. zebrina*, *l. c.* p. 253, and *T. nubila*, *l. c.* p. 254, from Mysol; and *T. setosula*, ibid., from Salwatty, Morty, and New Guinea.

* Epistoma transverse.

Trachys lepidoptera, *l. c.* p. 256, from Borneo and Salwatty; *T. popula*, *l. c.* p. 257, *T. æneopyga*, ibid., *T. murina*, *l. c.* p. 258, *T. decora*, ibid., *T. depressifrons*, *l. c.* p. 264, *T. vilis*, *l. c.* p. 265, and *T. variegata*, ibid., from Borneo; *T. decorata*, *l. c.* p. 259, from Salwatty; *T. notata*, *l. c.* p. 260, from Celebes; *T. acuminata*, *l. c.* p. 261, from Ceram; *T. basilica*, *l. c.* p. 262, from Batchian; *T. lacunosa*, ibid., from Gilolo; *T. confusa*, *l. c.* p. 263, *T. parallelicollis*, *l. c.* p. 267, and *T. pulicaria*, ibid., from Mysol; *T. irregularis*, *l. c.* p. 264,

from Ternate; *T. lubrica*, *l. c.* p. 266, from Java; and *T. humilis*, ibid., from Dorey.

Pachyschelus migneauxii, Deyr. *l. c.* p. 268, pl. 3. fig. 10, and pl. 4. fig. 25, from Singapore and Borneo; and *P. melas*, Deyr. *l. c.* p. 269, from Makian.

Anthaxomorphus, g. n., Deyrolle, *l. c.* p. 219. Deyrolle describes four new species: namely, *A. papuanus*, *l. c.* p. 221, from Dorey; *A. granulosus*, ibid., pl. 3. fig. 6, and pl. 4. fig. 18 (head and leg), from Gilolo; *A. femoralis*, *l. c.* p. 222, from Key Island; and *A. oblongus*, ibid., from Ceram.

Aphanisticus. Deyrolle describes six new species of this genus: namely, *A. satanas*, *l. c.* p. 223, and *A. confusus*, *l. c.* p. 225, from Singapore; *A. impressicollis*, *l. c.* p. 224, *A. diabolicus*, *l. c.* p. 225, pl. 4. fig. 19, from New Guinea; *A. cordicollis*, *l. c.* p. 226, from Java; and *A. paradoxus*, *l. c.* p. 227, pl. 4. fig. 20, from Makian.

Endelus, g. n., Deyrolle, *l. c.* p. 227. Deyrolle describes eleven new species: namely, *E. cupido*, *l. c.* p. 230, from Singapore; *E. empyreus*, *l. c.* p. 230, pl. 3. fig. 7, and pl. 4. fig. 21 (head), from Sumatra; *E. endymio*, *l. c.* p. 231, *E. marseulii*, *l. c.* p. 232, and *E. difformis*, *l. c.* p. 236, pl. 3. fig. 9, and pl. 4. fig. 22 (head and leg), from Borneo; *E. scintillans*, *l. c.* p. 232, pl. 3. fig. 8, from Celebes; *E. apicalis*, *l. c.* p. 233, from Dorey; *E. viridi-maculatus*, *l. c.* p. 234, from Gilolo; *E. intermedius*, ibid., from Mysol; *E. æthiops*, *l. c.* p. 235, from Java; and *E. brutus*, *l. c.* p. 236, from Makian.

Elateridæ.

Schiödte (Naturh. Tidsskr. 3rd scr. iii.) discusses the characters of this family (see *antè*, p. 447), which he considers to include the *Eucnemidæ*. His *Elaterini*, corresponding with the family as here understood, form the second section of his *Elateres*. The Danish species, 60 in number, are refefred to the following genera:—

Cardiphorus, *Cryptohypnus*, *Lacon*, *Lissomus*, *Adelocera*, *Melanotus*, *Adrastus*, *Elater*, *Athous*, and *Campylus*. *Elater* includes the following groups as subgenera:—*Agriotes*, *Sericosomus*, *Ampedus*, *Ludius*, *Ischnodes*, *Megapenthes*, *Pheletes*, *Hypolithus*, *Limonius*, and *Diacanthus*. The buccal organs of the following species are figured:—*Lissomus equestris*, *Elater æneus*, *Adrastus limbatus*, and *Elater lineatus*, *l. c.* pl. 15. figs. 13–16.

The two sexes of *Corymbites* (*Diacanthus*) *æratus* (Muls. & Guilleb.) are described by Desbrochers des Loges, Ann. Soc. Ent. Fr. 4e sér. tom. v. p. 209.

Kirsch has received *Elater* (*Ampedus*) *basalis* (Mann.) from Ilginsk, in the government of Perm. Mannerheim described the species from Mongolian specimens. Berl. ent. Zeitschr. 1865, p. 123.

Osten-Sacken states that the larva described by him in Proc. Ent. Soc. Phil. vol. i. p. 125, and figured plate 1. fig. 8, proves to be luminous, emitting a soft green light, and is probably that of *Melanactes*. Proc. Ent. Soc. Phil. vol. iv. pp. viii–ix.

On the habits of the Fireflies in the East, see John Cameron's work, 'Our Tropical Possessions in Malayan India,' p. 80, quoted in Zoologist 1865, pp. 9739–40.

The habits of the larvæ of *Agriotes* (Wireworms) are described by Taschenberg (Naturg. wirbell. Thiere, pp. 30–32); the species specially referred to are *Agriotes segetis* (*l. c.* pp. 32–35, pl. 1. figs. 3 & 4, larva and imago), and *A. obscurus* (*l. c.* pp. 35–36).

Agriotes pilosus (Panz.) has been taken near Manchester. See Power, Ent. M. Mag. i. p. 235.

Athous affinis, sp. n., Couper, Canad. Nat. & Geol. n. s. vol. ii. p. 61, from Quebec.

Athous proximus, sp. n., Hampe, Wien. ent. Mon. Bd. viii. p. 190, and *A. spectabilis*, sp. n., Hampe, *l. c.* p. 191, from Wallachia.—*Athous tibiellus*, sp. n., Chevrolat, Rev. et Mag. Zool. 1865, p. 351, from La Granja.

Corymbites nivicola, sp. n., Kiesenwetter, Berl. ent. Zeits. 1865, p. 391, note, from the Peñalara.

Megapenthes divaricatus, sp. n., Desbrochers, Ann. Soc. Ent. Fr. 4e sér. tom. v. p. 208, from the south of France.

Eucnemidæ.

Schiödte (Danmarks Buprestes og Elateres: Naturh. Tidsskr. 3rd ser. iii.) refers the Eucnemidæ to his family Elateres, of which they form the first section, including two subfamilies, *Melasini* and *Eucnemidini* (see *antè*, p. 447). The *Melasini* include two Danish species, *Melasis buprestoides* and *Xylobius alni*; the *Eucnemidini* 4 species, *Microrhagus pygmæus*, *Eucnemis capucinus*, and *Throscus dermestoides* and *obscurus*. The buccal organs of *Melasis buprestoides*, *Xylobius alni*, *Eucnemis capucinus*, *Microrhagus pygmæus*, and *Throscus dermestoides* are figured by Schiödte, pl. 15. figs. 8–12.

Throscus. Bethe has published (Stett. ent. Zeit. 1865, pp. 234–238) a revision of the German species of this genus, arranged in accordance with Bonvouloir's characters derived from the form of the eyes.

Throscus dermestoides is described by Lindemann under the new name of *Horticola* (g. n.) *urbana*. Bull. Soc. Nat. Mosc. tom. xxxviii. pt. 2. p. 149, pl. 4. figs. 3–5.

Throscus dermestoides. The copulation of this species is described by Fuss, Berl. ent. Zeits. 1865, p. 411.

Throscus latiusculus, sp. n., Wollaston, Col. Atl. App. p. 30, and *T. elongatulus*, Woll. ibid., from the Canaries.

Dascillidæ.

? *Helodes trilineatus*, sp. n., Chevrolat, Rev. et Mag. Zool. 1865, p. 352, from the Escurial.

Malacodermata.

Lycidæ.

The habits of the larva of *Eros aurora* are indicated by Sharp (Proc. Ent. Soc. 1865, p. 108). The larvæ in his possession fed chiefly on the pupæ of other insects contained in their place of confinement.

Cladoceras, g. n., Kirsch, Berl. ent. Zeitschr. 1865, p. 68. Allied to *Cænia*;

mandibles very prominent, arcuate; antennal joints 3–10 with two basal branches; tarsi with joints 1–3 nearly cylindrical, 4 deeply bilobed; head not rostrated. Sp. *C. apicalis*, sp. n., p. 69, from Bogota.

New species :—

Lycus. Kirsch (Berl. ent. Zeitschr. 1865) describes the following five new species of this genus from Bogota :—*L. lacordairei*, *l. c.* p. 51; *L. guerinii* and *L. buqueti*, *l. c.* p. 52; *L. miles* and *L. thoracicus*, *l. c.* p. 53.

Calopteron. Kirsch (Berl. ent. Zeitschr. 1865) describes the following thirty-four new species from Bogota, and gives a tabular synopsis of their general characters (pp. 54–55) :—*C. excellens*, *l. c.* p. 55; *C. fallax*, *C. conithorax* (Taf. iii. fig. 1, max. palp.), *C. basalis*, and *C. variegatus*, *l. c.* p. 56; *C. flavicauda* and *C. dichrous*, *l. c.* p. 57; *C. palpalis*, *C. unicolor*, and *C. costatulus*, *l. c.* p. 58; *C. gracilis*, *C. socius*, and *C. jucundus*, *l. c.* p. 59; *C. amœnus*, *C. suavis*, and *C. rete*, *l. c.* p. 60; *C. nubilosus*, *C. mesomelas*, and *C. delicatus* (Taf. iii. fig. 2, max. palp.), *l. c.* p. 61; *C. bicuspis*, *C. acroxanthus*, and *C. lætus*, *l. c.* p. 62; *C. gratus*, *C. illitus*, *C. xanthurus*, *l. c.* p. 63; *C. scutellaris* and *C. bellus* (Taf. iii. fig. 3, max. palp.), *l. c.* p. 64; *C. pusillus* and *C. dictyon*, *l. c.* p. 65; *C. pleioxanthus* (Taf. iii. fig. 4, max. palp.), *C. xanthomelas*, *C. pleiomelas*, and *C. sinuatus* (Taf. iii. figs. 5, 5 *a*, palpi), *l. c.* p. 66; and *C. excisus*, *l. c.* p. 67.

Eros bogotensis, Kirsch, *l. c.* p. 67, and *E. phœnicurus*, p. 68, from Bogota.

Lampyrides.

Cameron (Our Possessions in Malayan India) describes the light of the Fireflies as simultaneously intermittent, producing an alternation of light and darkness. This subject was discussed before the Entomological Society of London by Hamlet Clark, M'Lachlan, Bates, Saunders, and others. See Proc. Ent. Soc. 1865, pp. 94–95. The simultaneous emission and cessation of the light by great numbers of Fireflies is affirmed in a letter from A. Fry, as regards the species of *Aspidosoma*, *l. c.* pp. 101–102.

A Glow-worm with nine pairs of luminous spots is described as occurring in Ceylon. Letter in 'Ceylon Examiner,' cited by Clark, Proc. Ent. Soc. 1865, p. 101.

New species :—

Alychnus, g. n., Kirsch, Berl. ent. Zeitschr. p. 71. Allied to *Photinus*; head covered by prothorax; antennæ 11-jointed, somewhat compressed, attenuated at apex, half length of body, 2nd joint short, conical; elytra in ♂ equal to abdomen, shorter in ♀; 4th joint of tarsi deeply bilobed; claws with a strong tooth at base. Sp. *A. xanthorrhaphus*, sp. n., Kirsch, *l. c.* p. 72, from Bogota.

Photuris. Of this genus Kirsch describes eight new species from Bogota: namely, *P. gibbifera* and *P. didyma*, *l. c.* p. 75; *P. annulata*, *P. lurida*, and *P. lecontei*, *l. c.* p. 76; *P. seminigra* and *P. discoidalis*, *l. c.* p. 77; and *P. [illegible]nifera*, *l. c.* p. 78.

Lamprocera castelnaui, Kirsch, *l. c.* p. 69, from Bogota.

Cladodes solieri, Kirsch, *l. c.* p. 70, from Bogota.

Dryptelytra calocera, Kirsch, *l. c.* p. 70, from Bogota.

Cratomorphus latus, Kirsch, *l. c.* p. 72 (= *C. fuscipennis*, Motsch. ?), *C. discorufus*, ibid., *C. vittatus*, p. 73, and *C. pellucens*, ibid., from Bogota.

Aspidosoma blanchardi, Kirsch, *l. c.* p. 73, *A. brevicollis*, p. 74, and *A. binotata*, ibid., from Bogota.

Telephorides.

According to Becker (Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 482), *Malthodes auritus* (Motsch.) = *M. pulicarius* (Redt.); and *Dolichosoma femorale* is not identical with *Dasytes plumbeus* (Sturm), *l. c.* p. 483.

G. R. Crotch has published (Entomologist, ii. pp. 167–172) a revision of the British species of the genus *Telephorus*, founded chiefly on De Marseul's Monograph (see Zool. Record, pp. 392-393). *Telephorus*, as treated by Crotch, includes the following groups as subgenera :—*Podabrus*, *Amistronycha*, *Telephorus*, *Absidia*, and *Rhagonycha*. Of the genus thus constituted Crotch records 24 species, 2 of which appear as British for the first time, namely *T. nigricans* (Müll.), probably = *discoideus* (Steph. nec Ahrens), and *T. assimilis* (Payk.).—*Silis ruficollis* (Fab.) is described by Crotch, who likewise indicates the species which are most likely to be found in this country.

Malthinus and *Malthodes.* G. R. Crotch publishes (Entomologist, ii. pp. 181–183) the characters of the British species of these genera. Of *Malthinus* only 3 are known to occur in this country; of *Malthodes* 7 are recorded, the European fauna including about 36, and that of Sweden 16.

Trachelychnus, g. n., Kirsch, *l. c.* p. 82. Allied to *Telephorus* and *Silis*; head exserted, broad; eyes small, distant; antennæ frontal, distant; joints 1 & 3 equal, 2 obconical, half the size, the rest serrated; last joint of maxillary palpi securiform, of labial trapezoid. *T. docens*, sp. n., p. 83, from Bogota.

Telephorus. Kirsch describes the following seven new species of this genus from Bogota :—*T. anchorifer*, *l. c.* p. 79; *T. hieroglyphicus* and *T. bogotensis*, *l. c.* p. 80; *T. nudipennis*, *T. märkelii*, and *T. suffriani*, *l. c.* p. 81; and *T. columbicus*, *l. c.* p. 82.

Telephorus armiger, sp. n., Couper, Canad. Nat. & Geol. n. ser. vol. ii. p. 62, from Quebec.

Cantharis seidlitzii, sp. n., Kiesenwetter, *l. c.* p. 393, note, from Avila in Castile.

Cantharis (*Rhagonycha*) *patricia*, sp. n., Kiesenwetter, *l. c.* p. 375, note, from Andalusia; *C.* (*R.*) *querceti*, Kiesenw. *l. c.* p. 383, note, from Andalusia; *C.* (*R.*) *genistæ*, Kiesenw. *l. c.* p. 392, note, from Castile.

Silis foveolata, sp. n., Kirsch, *l. c.* p. 83, from Bogota.

Chauliognathus thermophilus, sp. n., Kirsch, *l. c.* p. 78, *C. brunnipennis*, Kirsch, *l. c.* p. 79, and *C. blanchardi*, Kirsch, ibid., from Bogota.

Podabrus simplex, sp. n., Couper, *l. c.* p. 62, from Quebec.

Polemius brevicornis, sp. n., Kirsch, *l. c.* p. 84, *P. venustus*, Kirsch, ibid., *P. melanurus*, Kirsch, *l. c.* p. 85, and *P. nobilis*, Kirsch, ibid., from Bogota.

Malthinus diffusus, sp. n., Kiesenw. *l. c.* p. 369, note, from Seville; *M. cincticollis*, Kiesenw. *l. c.* p. 393, note, from the Pyrenees; *M. vitellinus*, sp. n., Kiesenw. *l. c.* p. 374, note, and *M. longicornis*, Kiesenw. ibid., from Andalusia.

Malthesis. Of this genus Kirsch describes the following four new species from Bogota:—*M. lividus*, *l. c.* p. 86; *M. suturalis*, ibid.; *M. stenopteroides*, *l. c.* p. 87; and *M. lepturoides*, ibid.

Drilides.

Paradrilus, g. n., Kiesenwetter, Berl. ent. Zeits. 1865, p. 369. Allied to *Drilus*; mandibles simple; labial palpi 2-jointed; elytra narrowed towards the apex. Sp. *P. opacus*, sp. n., Kiesenw. *l. c.* note, from Seville.

Melyrides.

G. R. Crotch (Entomologist, ii. pp. 213–216) publishes the characters of the British species of the Malachiide group, and also those of *Apalochrus femoralis* (Erichs.), *Hypebæus flavipes*, and *Charopus flavipes* (Kies.), which may be expected to occur in this country. Two species of *Ebæus* occur in the older British collections, but have not lately been met with. The known British species belong to the following genera:—*Malachius* (5), *Axinotarsus* (2), *Anthocomus* (4), and *Attalus* (1).

G. R. Crotch also publishes a note on the synonymy of the British species of *Dasytes* (ibid. pp. 225–226). *D. æratus* (Steph.) = *æneus* (Oliv. nec Fab.) = *subæneus* (Schönh.); *D. flavipes* (Steph. nec Fab.) = *plumbeus* (Müll.).

According to Becker (Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 479) *Malachius bipustulatus* devours the smaller, and *M. cornutus* the larger of two species of *Simulia* at Sarepta, but also feed upon the pollen of *Tamarix pallasii*.

Anthocomus sanguinolentus. The sexual differences of this species are noted by Fuss, Berl. ent. Zeits. 1865, p. 411.

Haplocnemus ramicornis (= *pectinatus*) and *H. nigricornis* (= *croceicornis*) are ♂ and ♀ of the same species, according to Becker, *l. c.* p. 483.

A new species of *Cerallus* (*C. salviæ*, undescr.) and *Dasytiscus affinis* (Mor.) were observed by Becker feeding upon the pollen of *Salvia*, and *Dolichosoma femorale* upon that of *Triticum cristatum*. *L. c.* p. 478.

Apalochrus limbatus (Muls.) has been recaptured in France by Aubé, and is said by Grenier to be identical with *A. tricolor* (Kiesenw.). Bull. Soc. Ent. Fr. 1865. p. x.

New genera and species:—

Cryptotarsus, g. n., Kirsch, *l. c.* p. 88. Allied to *Brachidia* (Sol.); antennæ 11-jointed, serrated, inserted at margin of epistome; palpi filiform; clypeus transverse; tarsi 5-jointed, second and third joints bilobed, third much larger than second, fourth very minute; claws simple. Sp. *C. tropicus*, sp. n., Kirsch, *l. c.* p. 88, from Bogota.

Haplamaurus, g. n., Kirsch, *l. c.* p. 89. Between *Haplocnemus* and *Amauromia*; antennæ robust, moniliform; labrum transverse; palpi short, stout, last joint oval; tarsi shorter than tibiæ, joints 1 & 2 equal, last much shorter; claws with a free membrane. Sp. *H. kiesenwetteri*, sp. n., Kirsch, *l. c.* p. 90, and *H. andicola*, Kirsch, ibid., from Bogota.

Heteraerius, subg. nov. (*Arthrobrachus*), Kirsch, *l. c.* p. 90. Body elongate; antennæ more loosely serrated; elytra different in the two sexes. Sp. *H. flavomaculatus*, p. 91, *H. signatus*, ibid., *H. vittatus*, p. 92, and *H. decoratus*, from Bogota.

Hypebæus pius, Kiesenwetter, Berl. ent. Zeits. 1865, p. 375, note, from Cordova; *H. posticus*, Kiesenw. *l. c.* p. 393, note, from Castile.

Malachius curticornis, Kiesenwetter, *l. c.* p. 388, note, from Andalusia.

Malachius barnevillei, Puton, Ann. Soc. Ent. Fr. 4e sér. tome v. p. 131, from the Basses-Alpes.

Attalus gracilis, Kiesenwetter, *l. c.* p. 372, note, from Chiclana in Andalusia; *A. anticus*, Kiesenw. *l. c.* p. 393, note, from Castile.

Charopus glaber, Kiesenwetter, *l. c.* p. 371, note, and *C. multicaudis*, Kiesenw. *l. c.* p. 383, note, from Andalusia; *C. hamifer*, Kiesenw. *l. c.* p. 387, note, from the Sierra Nevada.

Antidipnis flavomaculata, Becker, Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 487, from Sarepta.

Dasytes croceipes, Kiesenwetter, *l. c.* p. 366, note, from Spain.

Haplocnemus limbipennis, Kiesenwetter, *l. c.* p. 383, note, and *H. pellucens*, Kiesenw. ibid., from Andalusia.

Cleridæ.

Mulsant and Rey have published (Ann. Soc. Linn. Lyon, tome x.) their natural history of the French *Cleridæ* (*Angusticolles*). They describe the general characters of the group and the mode of life of the larva and perfect insect, and analyze the different modes of treatment of the insects of this group by preceding authors. Their own classification is as follows. They divide their tribe *Angusticolles* into two groups:—

I. Abdomen of six apparent segments ..... *Clérides.*
II. Abdomen of five apparent segments ..... *Corynétides.*

The *Clérides* form three families, tabulated as follows (*l. c.* p. 277):—

I. Posterior tarsi distinctly pentamerous ..... *Tilliens.*
II. Posterior tarsi subpentamerous.
  A. Prothorax not margined at the sides ..... *Clériens.*
  B. Prothorax with a more or less distinct margin on each side. *Enopliens.*

Curiously enough, however, this third family drops out of the subsequent classification, taking its place only as a second "branch" of the *Clériens*, which appears under the title of "*Tarsosténaires*" at page 290 and under that of "*Enopliaires*" at page 347. If any proof were required of the vicious nature of these excessive subdivisions, and the injurious effects which their adoption must produce upon the study of entomology, it might be found in the readiness with which even their authors are thrown by them into confusion. The *Tilliens* include only the genera *Denops* (Fisch.) and *Tillus*. The *Clériens*, as already stated, are divided into two branches (p. 290):—

Cléraires, with five joints in the posterior tarsi, the first concealed above

by the second, and *Tarsosténaires* (=*Enopliaires*, p. 347), with the posterior tarsi subpentamerous, the fourth joint being rudimentary. The former group includes the genera *Thanasimus*, *Opilus*, and *Clerus*; the latter is subdivided into two "Rameaux" (p. 348)—

Tarsosténates, with the prothorax not margined and the club of the antennæ shorter than the rest of the joints, and *Enopliates*, with the prothorax margined at the sides and the club of the antennæ at least as long as the rest of the joints together. The first of these groups includes only the genus *Tarsostenus* (Spin.); the second is formed by the two genera *Enoplium* (Lat.), and *Orthopleura* (Spin.).

The *Corynétides*, again, form two families, characterized as follows (p. 355) :—

I. Claws with a basal tooth; first joint of tarsi concealed above by the second: *Corynétiens*.

II. Claws simple; first joint of tarsi visible above at its base: *Laricobiens* (=*Laricobius*, Rosenh.).

But it will hardly be believed that the characters of the two families, as given subsequently, are absolutely identical, word for word! The *Corynétiens* include the genera *Corynetes*, *Necrobia*, and *Opetiopalpus*, according to the table (p 355); but subsequently *Necrobia* becomes a subgenus of *Corynetes* (p. 362), whilst, to make up for this, a new genus, *Agonolia*, is introduced between the latter and *Opetiopalpus*. Such work as this seems to be specially designed to obscure the subject in hand; and such a relation between tables and text can only be a mockery, a delusion, and a snare for the unwary.

The following known species are figured by Mulsant and Rey (Ann. Soc. Linn. Lyon, tome x.):—*Denops albofasciatus* (Charp.), with its larva, *l. c.* pl. 1. figs. 1–4; *Tillus elongatus* (Linn.), *l. c.* pl. 1. fig. 5; *Opilus mollis* (Linn.), *l. c.* pl. 1. fig. 6; *Thanasimus mutillarius* (Fab.), *l. c.* pl. 1. fig. 7; *Tarsostenus univittatus* (Ross.), *l. c.* pl. 1. fig. 8; *Clerus apiarius* (Linn.), *l. c.* pl. 1. fig. 9; *Orthopleura sanguinicollis* (Fab.), *l. c.* pl. 1. fig. 10; *Enoplium serraticorne* (Oliv.), *l. c.* pl. 2. fig. 3; *Corynetes cæruleus* (De G.), *l. c.* pl. 2. fig. 4; *Corynetes ruficollis* (Fab.), called *Agonolia ruficollis* in description of plate, *l. c.* pl. 2. fig. 5; and *Laricobius erichsonii* (Rosenh.), *l. c.* fig. 6.

The larva of *Clerus alvearius* and the fore part of its head are also figured by these authors, pl. 2. figs. 1 & 2.

Agonolia, g. n., Mulsant & Rey, Ann. Soc. Linn. Lyon, tome x. p. 368. Allied to *Corynetes*; prothorax rounded at its posterior angles; last joint of max. palpi subfusiform or subconic, truncated at apex; elytra not marked with a short postscutellar stria. Sp. *Clerus rufipes* (De G.), *Corynetes defunctorum* (Waltl), *C. bicolor* (Lap.), and *C. sabulosus* (Motsch.).

Priocera femoralis, sp. n., Kirsch, *l. c.* p. 93, from Bogota.

Platynoptera lycoides, sp. n., Kirsch, *l. c.* p. 93, from Bogota.

Lymexylonidæ.

Mulsant and Rey describe the European species of this family, *Hylœcetus dermestoides* (Linn.) and *flabellicornis* (Schneid.) and *Lymexylon navale* (Linn.). They regard it as forming two families, the *Hylœcétiens* and *Lymexyloniens*. Ann. Soc. Linn. Lyon, tome x. pp. 381–404.

Ptinidæ.

Mulsant and Rey, in their "Essai sur les Anobides" (Ann. Soc. Linn. Lyon, tome x.), divide that group into the same genera as those composing the subfamily *Anobiaires* of their "Térédiles de France" (see Record, 1864, pp. 396–397). The subgenera of *Anobium*, *Dendrobium*, *Neobium*, and *Artobium* are proposed here. *L. c.* p. 58.

Anobium nigrinum (Sturm) is recorded as British by Power. Entom. ii. p. 271.

Xyletinus sericeus (Mor.)=*X. ornatus* (Germ.), according to Becker, Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 483.

New species:—

Ptinus cisti, Chevrolat, Rev. et Mag. Zool. 1865, p. 352, from the Escurial.

Casopus pedatus, Wollaston, Col. Atl. App. p. 32, from Gomera.

Sphæricus ambiguus, Wollaston, *l. c.* p. 33, from Madeira; *S. marmoratus*, Woll. ibid., from the Canaries.

Xyletinus flavicollis, Wollaston, *l. c.* p. 34, from Gomera.

Anobium impressum, Wollaston, *l. c.* p. 35, *A. lyctoides*, Woll. ibid., *A. oculatum*, Woll. *l. c.* p. 36, from the Canaries.

Anobium fagi (Chevr. MS.), Mulsant & Rey, *l. c.* p. 72, from Mont Pilat (changed to *A. fagicola*, Chevr. MS. in Téréd. de France, p. 89); *A. tomentosum* (Dej. Cat.), Muls. & Rey, *l. c.* p. 81, from Lyons.

Xestobium velutinum, Mulsant & Rey, *l. c.* p. 88, from the Grande-Chartreuse.

Liozoum, g. n., Mulsant & Rey, Ann. Soc. Linn. Lyon, tome x. p. 92 (see Zool. Record, I. p. 396). Allied to *Xestobium* (Motsch.), but with the intermediate coxæ approximated. Known sp. *An. abietinum* (Gyll.), *angusticolle* (Ratz.), *abietis* (Fab.), *molle* (Linn.), *pini* (Sturm), *longicorne* (Sturm), and *nigrinum* (Sturm). New sp.: *L. reflexum*, M. & R. *l. c.* p. 96; *L. pruinosum*, M. & R. *l. c.* p. 101; *L. lucidum*, M. & R. *l. c.* p. 109; *L. sulcatulum*, M. & R. *l. c.* p. 111; *L. gigas*, M. & R. *l. c.* p. 113; *L. consimile*, M. & R. *l. c.* p. 117; *L. parens*, M. & R. *l. c.* p. 118; *L. parvicolle*, M. & R. *l. c.* p. 121; *L. densicorne*, M. & R. *l. c.* p. 128; and *L. fuscum* (Perroud, MS.), M. & R. *l. c.* p. 131: from the south of France.

Amphibolus, g. n., Mulsant and Rey, *l. c.* p. 139 (see Record, 1864, pp. 397–398). Allied to *Oligomerus*; prothorax narrower than elytra, its disk not gibbous; scutellum large, square, submarginate at apex. Sp. *A. gentile* (Rosenh.).

Cissidæ.

Cis cucullatus, sp. n., Wollaston, *l. c.* p. 39, from Gomera.

Melasomata.

Kraatz has published a revision of the Melasomata of the Old

World belonging to the subfamilies *Erodiides*, *Tentyriides*, *Akisides*, and *Pimeliides* (see *ante*, p. 390). Curiously enough the Canarian species are nearly all omitted. The author also describes the truly European species of *Zophosis*, of which he admits only four.

Laboulbène records the occurrence of a monstrously trifurcate right posterior leg in a *Blaps*. Bull. Soc. Ent. Fr. 1865, p. xlix.

Erodiides.

Of this group all the known species are referred to by Kraatz (Revis. der Tenebr. pp. 4–67), as it is confined to the eastern hemisphere. The following genera are adopted by Kraatz :—

I. Eyes very long, free.
  A. Femora clavate, body large, somewhat convex. 1. *Anodesis* (Sol.).
  B. Femora simple.
    1. Anterior tibiæ strongly excised before the apex. 2. *Amnodeis* (Miller).
    2. Anterior tibiæ not excised ..... 3. *Diodontes* (Sol.).

II. Eyes oblong, concealed.
  A. Clypeus truncate, mandibles bidentate, anterior legs strong. 4. *Spyrathus*, g. n.
  B. Clypeus produced in the middle, mandibles dentate above.
    1. Clypeus generally tridentate, elytra not costate. 5. *Arthrodeis* (Sol.).
    2. Clypeus bidentate, elytra rather convex, with undulated rugæ. 6. *Histeromorphus*, g. n.

III. Eyes oblong, free.
  A. Mandibles dilated ..... 7. *Leptonychus* (Chev.).
  B. Mandibles simple..... 8. *Erodius* (Fab.).

Dirosus (Miller) is regarded by Kraatz as not distinct from *Erodius* (p. 15).

Erodius curtus and *obesus* (Brullé), from the Canaries, differ from the ordinary type of the genus in several respects indicated by Kraatz (p. 16).

Kraatz (*l. c.* pp. 21–54) submits Solier's species of *Erodius* to a full discussion, and comes to the following conclusions with regard to them (pp. 51–52) :—*E. olivieri=lævigatus* (Oliv.) ♂ ; *E. granulosus=bilineatus* (Oliv.) ♂ ; *E. maillei=punctícollis*, var. ; *E. latus=carinatus* ♀ ; *E. duponti =orientalis*, var. ? ; *E. longus=boyeri*, var. ; *E. europæus=tibialis* (Linn.) ; *E. curvipes=tibialis* ♂, var. ; *E. lusitanicus=tibialis* ♀, var. ; *E. nitidiventris =tibialis* ♀, min. ; *E. goryi=tibialis* ♀, maj. ; *E. tangerianus=tibialis* ♀ ; *E. chaveneti=africanus* ♀ *=emondi*, var. ; *E. audouini=chaveneti*, var.= *emondi*, var. ; *E. proximus=subcostatus* ♀ *=emondi*, var. ; *E. africanus= emondi*, var. ; *E. submitidus=africanus*, var.=*emondi*, var. ; *E. subcostatus= emondi*, var. ; *E. subparallelus=emondi* ♂, var ; *E. marginicollis=emondi*, var. ; *E. lævis=emondi*, var. ; *E. affinis=lævis* ♀ *=emondi*, var. ; *E. mittrei= emondi*, var. ; *E. peyrroleri=neapolitanus*, var. ; *E. siculus=neapolitanus*, var. ;

E. vicinus=neapolitanus, var. ; *E. syriacus=gibbus* (Fab.) ; *E. gibbus* (Sol.) *=quadrilineatus* (Kraatz).

Piestognathus (Lucas) is not sufficiently distinct from *Leptonychus* to form a separate genus (see Kraatz, *l. c.* p. 68).

Erodius. Allard (Ann. Soc. Ent. Fr. 4e sér. tome iv. pp. 389–398) has published an analytical table of the species of the genus *Erodius* belonging to Solier's second division, which includes all the species found in Europe and on the shores of the Mediterranean. He includes 52 species, four of which are described by him as new. This is reproduced by Kraatz. Rev. der Tenebr. pp. 377–384.

New species :—

Spyrathus, g. n., Kraatz, Revis. Tenebr. p. 9 (see. p. 470). *S. indicus*, sp. n., Kraatz, *l. c.* p. 10, from the East Indies.

Histeromorphus, g. n., Kraatz, *l. c.* p. 11 (see p. 470). *H. plicatus* (Buq. MS.), Kraatz, *l. c.* p. 12, from Abyssinia.

Arthrodes perraudieri, Wollaston, Col. Atl. App. p. 58, from the Canaries.

Erodius. Of this genus Allard describes four new species (Ann. Soc. Ent. Fr. 4e sér. tom. iv.) : namely, *E. zophosoïdes* (Dej.), *l. c.* p. 387, from Algeria and Spain ; *E. rugosus*, *l. c.* p. 387, and *E. granulosus*, *l. c.* p. 388, from Algeria ; and *E. duponchelii* (Sol.), ibid., from Syria.

Erodius opacus, Kraatz, *l. c.* pp. 25 & 65, from Egypt ; *E. lefrancii* (Deyr.), Kraatz, *l. c.* pp. 26 & 60, from Algeria ; *E. dimidiatipennis*, Kraatz, *l. c.* pp. 30 & 61, from Algeria and Morocco ; *E. rugosus*, Kraatz, *l. c.* pp. 32 & 57, from Andalusia ; *E. brevicollis*, Kraatz, *l. c.* pp. 50 & 64, from Algeria ; and *E. elegans*, Kraatz, *l. c.* pp. 51 & 62, from Algeria.

Akisides.

Akis parvicollis, Kraatz, *l. c.* p. 251, from the Himalayas.

Saurothropus, g. n., Kraatz, *l. c.* p. 268. Allied to *Cyphogenia* ; legs slender ; tarsi short, last joint with long hairs spread out like a fan. Type *Akis depressa* (Zoubkoff).

Tentyriides.

Kraatz discusses at great length (Rev. Tenebr. pp. 69–78) the classification of this subfamily. He indicates that of the six groups admitted by Lacordaire, the first three, namely the *Gnathosiides*, *Tentyriides vraies*, and *Hypéropides*, are formed of species belonging to the eastern hemisphere, with the exception of four genera, including ten species ; whilst the other three groups, the *Thinobatides*, *Tribolocarides*, and *Evaniosomides* are still more exclusively American, only the genus *Scelosodis* being an eastern form. These two series of groups are separated by Lacordaire in his table (Gen. Col. tom. v. p. 33) from characters presented by the intercoxal process of the base of the abdomen. Kraatz maintains that these characters are indefinite, and that Lacordaire, having perceived the existence of two great primary

groups of *Tentyriides*, failed to detect the character by which they might be distinguished. Kraatz discusses the characters of the exceptional genera, and maintains that *Triophorus* and *Trientoma*, referred by Lacordaire to his *Gnathosiides*, have their nearest allies among the *Tribolocarides*, the second of these genera being the analogue of the Gnathosiid genus *Capnisa*. *Stomion* (Waterh.), placed by Lacordaire among the *Tentyriides vraies*, is also to be classed with the *Tribolocarides*; and *Hylithus* (Guér.) must be removed from the *Hypéropides* to the *Thinobatides*. The Egyptian genus *Scelosodis* is transferred in the opposite direction, namely from the *Thinobatides* to the *Hypéropides*, where it will stand in the vicinity of *Stenosida* (Sol.). From the consideration of the constitution and characters of Lacordaire's groups, Kraatz comes to the conclusion that they are not sufficiently distinct from each other to be worth maintaining, and he accordingly proposes to divide the subfamily *Tentyriides* only into two groups, those of the Old and those of the New World. The character on which he relies for the distinction of these groups is derived from the tarsi, these organs being *ciliated* in the *Tentyriides* of America and simple in those of the eastern hemisphere. Of the latter he gives the following character:—

TENTYRIIDES SIMPLICIPEDES.

Gnathosiides, Tentyriides vraies, Hypéropides, Lac., *Thinobatides*, Lac. ex parte.

Metathoracic episterna narrow; intercoxal process of abdomen narrow, generally truncate, rarely acuminate; tarsi simple (that is to say, canaliculate), with a few spines, furnished with short spiniform hairs at the sides beneath. He gives the following analytical table of the genera belonging to the great group thus formed:—

I. Mandibles free, not concealed at the base beneath the sides of the epistome.
  A. Eyes transverse, nearly divided.
    1. Head above the eyes wrinkled; antennæ short, slender; body byrrhiform ..... *Capnisa* (Lac.).
    2. Head not wrinkled; eyes nearly covered by the posterior lamina; body oblong ..... *Dailognatha* (Stev.) (= *Gnathosia*, Lac.).
  B. Eyes not divided; body elongate ..... *Colposcelis* (Sol.).

II. Mandibles nearly always concealed beneath the epistome at the base.
  A. Mandibles not entirely concealed at base.
    1. Antennæ with joint 11 about equal to 10; eyes reniform; labrum distinct; clypeus strongly excised on each side; post. angles of thorax distinct ..... *Anatolica* (Esch.).
    2. Antennæ with joint 11 shorter than 10; head rugose; thorax scarcely punctate ..... *Prochoma* (Sol.).
  B. Base of mandibles concealed beneath the epistome.
    1. Body black, or pitchy black.

a. Mesosternum not produced.
  * Eyes not divided by a lamina; head keeled above the eyes.
    a. Head beneath transversely impressed, or sulcate.
      a. Elytra nearly always margined at base.
        ** Epistome somewhat retracted; labrum distinct.
          aa. Eyes transverse.
            aa. Body black; habit of *Anatolica*, but antennæ more slender, clypeus rotundate. *Scythis* (Schaum), g. n.
            bb. Body pitchy black, antennæ and legs paler. *Calobamon*, g. n.
          bb. Eyes subrotundate.
            aa. Coleoptera nearly smooth, widened, generally much wider than thorax; legs elongate. *Micipsa* (Luc.).
            bb. Coleoptera with large punctures; habit of *Microdera* ..... *Alcinoë* (Ménét.).
        †† Epistome not retracted; labrum concealed.
          aa. Antennæ with joint 3 twice or three times as long as 2 ..... *Tentyria* (Lat.).
          bb. Antennæ with joint 3 scarcely twice as long as 2; body less convex.
            aa. Sides of thorax slightly rounded.
              — Elytra much longer than head and thorax. *Rhytinota* (Esch.).
              = Elytra somewhat longer than head and thorax; posterior femora long. *Melarachnica*, g. n.
            bb. Sides of thorax subparallel. *Sphenariopsis*, g. n.
            cc. Thorax cordate; eyes covered by a plate; body rather flat ..... *Stegastopsis*, g. n.
          cc. Antennæ with joint 3 equal to or shorter than 2.
            aa. Elytra punctato-lineate.
              — Thorax broader than long; antennæ rather stout. *Mesostena* (Esch.).
              = Thorax longer than broad; antennæ slender. *Mesostenopa*, g. n.
            bb. Elytra costate ..... *Asphaltesthes*, g. n.
            cc. Elytra nearly smooth.. *Hionthis* (Mill.).
      b. Elytra not margined at base, the shoulders alone keeled.
        ** Mesosternum deflexed.
          aa. Femora unarmed.
            aa. Anterior tibiæ scarcely dilated towards the apex. *Microdera* (Esch.).
            bb. Anterior tibiæ dilated. *Pachychile* (Esch.).
          bb. Femora dentate ..... *Platomodes* (Ménét.).
        †† Mesosternum plane, median process sulcate, emarginate, or bifid; eyes constricted.. *Oxycara* (Sol.).
    β. Head beneath obliquely sulcate on each side.

a. Elytra not margined at base, smooth; thorax very narrowly margined at base .... *Homala* (Esch.).

b. Elytra carinated at base, sometimes pilose. *Thalpophila* (Sol.).

† Eyes not divided by a lamina; head not carinated above the eyes ..... *Hegeter* (Lat.).

‡ Eyes divided by a lamina.

α. Elytra immarginate at base .... *Dichomma* (Sol.).

β. Elytra margined ..... *Calyptopsis* (Sol.).

b. Mesosternum produced.

* Metasternum short.

α. Eyes divided by a lamina; elytra short. *Choristopsis*, g. n.

β. Eyes not divided.

a. Eyes suborbicular; body strongly punctate. *Gnophota* (Erichs.).

b. Eyes transverse; body very finely punctulate. *Œdenocera* (Reiche).

† Metasternum elongate.

a. Eyes not divided ..... *Stenosida* (Sol.).

β. Eyes divided ..... *Hyperops* (Esch.).

c. Mesosternum scarcely produced; antennæ slender, pitchy or pitchy red; elytra punctate-striate ..... *Psammocryptus*, g. n. (= *Stenosida*, Duv.).

2. Body reddish brown.

a. Thorax with its post. angles rather acute and prominent. *Scelosodis* (Sol.).

b. Thorax with its post. angles very obtuse and subrotundate. *Phœotribon*, g. n.

Calobamon (Kraatz). This name having been previously employed by Loew for a genus of Diptera, Kraatz proposes to replace it by the name *Thraustocolus*. Berl. ent. Zeits. 1865, p. 414.

Psammocryptus, g. n., Kraatz, *l. c.* p. 239. Type *Tentyria minuta* (Tausch.) = *Stenosida minuta* (J. Duv.).

New species :—

Anatolica undulata (Mann.), Kraatz, *l. c.* p. 98, from Dauria.

Scythis, g. n. (Schaum), Kraatz, *l. c.* p. 102 (see p. 473). *S. longipes*, Kraatz, *l. c.* p. 104, from Siberia.

Calobamon, g. n., Kraatz, *l. c.* p. 105 = *Thraustocolus*, Kraatz (see p. 473). *C. leptoderus*, sp. n., Kraatz, *l. c.* p. 106, from Egypt.

Micipsa grandis, Kraatz, *l. c.* p. 108, from Beyrout; *M. rotundicollis*, Kraatz, ibid., from Algeria.

Tentyria emarginata (Ramb.), Kraatz, *l. c.* p. 141, from Andalusia; *T. schaumii*, Kraatz, *l. c.* p. 142, from the Balearic islands; *T. andalusiaca*, Kraatz, ibid., from Andalusia; *T. sublævis*, Kraatz, *l. c.* p. 144, from Carthagena; *T. frivaldskii*, Kraatz, *l. c.* p. 150, from Hungary; *T. clavata* (Erichs.), Kraatz, *l. c.* p. 151, from the Caucasus; *T. haagii*, Kraatz, *l. c.* p. 155, from Egypt; *T. laticollis*, Kraatz, *l. c.* p. 158, from Cyprus; *T. latiuscula*, Kraatz, *l. c.* p. 159, from Sidon; *T. cypria*, Kraatz, *l. c.* p. 160, from Cyprus; *T. strauchii*, Kraatz, *l. c.* p. 166, from Algeria.—*Tentyria velox*, Chevrolat, Rev. et Mag. Zool. 1865, p. 390, from the Escurial.

Rhytinota plicata, Kraatz, *l. c.* p. 171, from Nubia; *R. pilicollis*, Kraatz, *l. c.* p. 173, *R. immarginata*, Kraatz, ibid., and *R. lineato-punctata* (Deyr.), Kraatz, ibid., from the East Indies.

Melarachnica, g. n., Kraatz, *l. c.* p. 174 (see p. 473). *M. westermanni*, sp. n., Kraatz, *l. c.* p. 175, from the East Indies.

Sphenariopsis, g. n., Kraatz, *l. c.* p. 175 (see p. 473). *S. tristis*, sp. n., Kraatz, *l. c.* p. 176, from the East Indies.

Stegastopsis, g. n., Kraatz, *l. c.* p. 176 (see p. 473). *S. babylonica*, sp. n., Kraatz, *l. c.* p. 177, from Bagdad.

Mesostenopa, g. n., Kraatz, *l. c.* p. 179 (see p. 473). Sp. n.:—*M. picea*, Kraatz, *l. c.* p. 180, from Egypt; *M. habessinica*, Kraatz, *l. c.* p. 181, from Abyssinia; *M. longicornis*, Kraatz, ibid., from Jerusalem.

Asphaltesthes, g. n., Kraatz, *l. c.* p. 181 (see p. 473). Type *Mesostena costata* (Erichs.).

Microdera subsulcata, Kraatz, *l. c.* p. 186, from Russia; *M. subglobosa* (Gebl.), Kraatz, *l. c.* p. 187, from Siberia?

Pachychile tumidifrons, Kraatz, *l. c.* p. 200, from Oran; *P. foveipennis*, Kraatz, *l. c.* p. 201, from Morocco; *P. brevis*, Kraatz, *l. c.* p. 202, from Algeria; *P. dissecta*, Kraatz, *l. c.* p. 204, from Boussada; *P. sardea*, Kraatz, *l. c.* p. 209 (= *P. arenaria*, Dahl, MS.), from Sardinia; *P. crassicollis*, Kraatz, *l. c.* p. 210, *P. haroldi*, Kraatz, *l. c.* p. 211, and *P. longipennis*, Kraatz, *l. c.* p. 212, from Algeria.

Thalpophila subcostata (Koll.), Kraatz, *l. c.* p. 219, from Cordofan.

Choristopsis, g. n., Kraatz, *l. c.* p. 227 (see p. 474). Sp. *C. caucasica*, Kraatz, *l. c.* p. 228, from the Caucasus.

Gnophota semirugosa, Kraatz, *l. c.* p. 231, from Benguela.

Œdenocera longula, Kraatz, *l. c.* p. 233, and *Œ. mellii*, Kraatz, ibid., from the East Indies.

Hyperops lata, Kraatz, *l. c.* p. 235, from the East Indies; *H. ægyptiaca*, Kraatz, *l. c.* p. 236; *H. algirica*, Kraatz, ibid. (= *H. tagenioides*, var. A, Sol.); *H. nitidula*, Kraatz, *l. c.* p. 237 (= *H. nana*, Deyr. MS.), from India; *H.*? *dubia*, Kraatz, *l. c.* p. 238 (= *Hegeter indicus*, Guér.).

Phœotribon, g. n., Kraatz, *l. c.* p. 242 (see p. 474). Sp. *P. pulchellus*, sp. n., Kraatz, *l. c.* p. 243, from Egypt.

Asidides.

Asida fairmairei, sp. n., Boieldieu, Ann. Soc. Ent. Fr. 4e sér. tom. v. p. 8, pl. 1. fig. 4, from Eubœa; and *A. mahonis*, Boield. *l. c.* p. 9, pl. 1. fig. 5, from Corsica (Mahon).

Asida perezi, sp. n., Chevrolat, Rev. et Mag. Zool. 1865, p. 390, from Valladolid.

Pimeliides.

Pachyscelis smyrnensis, sp. n., Kraatz, *l. c.* p. 309; *P. euphratica* (Kinderm.), Kraatz, *l. c.* p. 310; *P. rotundata*, Kraatz, *l. c.* p. 313, from Syria.

Pimelia cephalenica, sp. n., Kraatz, *l. c.* pp. 348 & 351, from Cephalonia; *P. robusta*, Kraatz, *l. c.* pp. 362 & 366, and *P. testudo* (Frivaldsky), Kraatz, ibid., from Anatolia; *P. laviuscula*, Kraatz, *l. c.* p. 367, *P. cordata*, Kraatz, *l. c.* p. 368, *P. grandicollis*, Kraatz, ibid., *P.* (*Amblyptera*) *fairmairei* (Harold), Kraatz, *l. c.* p. 369, and *P.* (*A.*) *rotundipennis*, Kraatz, *l. c.* p. 370, from Mogador.—*Pimelia euboica*, sp. n., Boieldieu, Ann. Soc. Ent. Fr. 4ᵉ sér. tom. v. p. 7, pl. 1. fig. 3, from Eubœa.

Diesia eversmanni, sp. n., Kraatz, *l. c.* p. 276, from Bucharia.

Lasiostola minuta, sp. n. (Karel.), Kraatz, *l. c.* p. 285, from Astrabad.

Ocnera habelmanni, sp. n., Kraatz, *l. c.* p. 292, from Arabia.

Thriptera pilipes, sp. n., Kraatz, *l. c.* p. 290, and *T. debilicornis*, Kraatz, *l. c.* p. 300, from Egypt.

Coniontides.

Crypticus calvus, sp. n., Wollaston, Col. Atl. App. p. 59, from Hierro; *C. nitidulus*, Woll. p. 60, from Gomera.

Pedinides.

Olocrates paludicola, sp. n., Chevrolat, Rev. et Mag. Zool. 1865, p. 391, from Valladolid.

Heliopathes cribratus, sp. n., Chevrolat, *l. c.* p. 391, from Reinosa; *H. simulans*, Chevr. ibid., from La Granja.

Cossyphides.

Pascoe remarks on the geographical distribution of the genus *Cossyphus*, which occurs in Southern Europe, Algeria, and the Canaries, but not in Madeira, and in India and Burmah, but not in the eastern islands. A species closely allied to the Burmese one has been taken in South Australia. Westwood states that he has received a large species from the Zambesi. Proc. Ent. Soc. 1865, p. 82.

Tenebrionides.

Nyctobates sublævis, sp. n., Bland, Proc. Ent. Soc. Phil. vol. iv. p. 382, from the Colorado Territory.

Tenebrio crotchii, sp. n., Wollaston, *l. c.* p. 62, from the Canaries.

Helopides.

Eubœus, g. n., Boieldieu, Ann. Soc. Ent. Fr. 4ᵉ sér. tom. v. p. 10. Very nearly allied to *Helops*; epistoma notched in front; elytra wider at base than thorax, epipleural fold obliquely truncated behind; last joint of antennæ equal to penultimate. *E. mimonti*, sp. n., p. 11, pl. 1. fig. 6, from Eubœa.

Helops marseulii, sp. n., Wollaston, *l. c.* p. 63, and *H. gomerensis*, Woll. p. 64, from the Canaries.

Cistelidæ.

Prionychus fairmairii. Fuss has a note on the occurrence of this species in Germany. Berl. ent. Zeits. 1865, p. 412.

Cistela quadristriata, sp. n., Couper, Canad. Nat. & Geol. n. s. vol. ii. p. 62, from Quebec.

Mycetochares bicolor, sp. n., Couper, *l. c.*, from Quebec.

Melandryidæ.

Phlœotrya rufipes (Steph. nec Gyll.) = *P. stephensii* (J. Duval). See G. R. Crotch, Entomologist, ii. p. 179.

Nothus bipunctatus. G. R. Crotch describes the characters of this species and retains the above name in preference to *præustus* (Oliv.). Ibid. pp. 261–263.

Anisoxya fuscula lives in branches of pear-trees near Rouen, according to Lebouteiller, Bull. Soc. Ent. Fr. 1865, p. xliv.

Hypulus quercinus. The larva of this species is described by Mulsant & Rey, Ann. Soc. Linn. Lyon, tom. x. pp. 245-246. It lives in old chestnuts and also in the oak.

Anthicidæ.

Notoxus monoceros. W. Tylden records his having found several specimens of this insect in the half-dried body of a *Proscarabæus*. Ent. M. Mag. ii. pp. 118, 119.

Anthicus versicolor, sp. n. Kiesenwetter, Berl. ent. Zeits. 1865, p. 383, note, from Andalusia.

Mecynotarsus semicinctus, sp. n., Wollaston, Col. Atl. App. p. 65, from Grand Canary.

Mordellidæ.

De Borre records the occurrence of *Mordella coarctata* in Belgium. Ann. Soc. Ent. Belg. tom. viii. p. 278.

Rhipiphoridæ.

Notes on the occurrence of large larvæ and pupæ of *Rhipiphorus paradoxus* in the cells of female wasps by Stone and Westwood, Proc. Ent. Soc. 1864, pp. 49 & 58. The habits of the larva of *Rhipiphorus* are particularly described by Stone, *l. c.* p. 64.

Cantharidæ.

Cantharis vesicatoria. Becker records the use of this insect as a remedy for the cattle-plague. The dose is 10 grains, repeated from day to day if necessary. Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 481.

Mylabris maldinesi, sp. n., Chevrolat, Rev. et Mag. Zool. 1865, p. 392; *M. inconstans*, Chevr. *l. c.* p. 393, and *M. 10-spilota*, Chevr. ibid., from Valladolid.

Curculionidæ.

Jekel (Ann. Soc. Ent. Fr. 4ᵉ sér. tome iv. pp. 537–566) discusses the mode of classification of the Rhynchophori, which he proposes to divide into eight primary groups or families :—

I. *Bruchidæ* (see Schönherr). II. *Anthribidæ* (see Schönherr). III. *Attelabidæ* (see Jekel, Insecta Saund. 1860). IV. *Curculionidæ* = *Gonatoceri* (Schönh.) : *Rhynchophorides, Cossonides,* and *Dryophthorides* + *Camarotus, Ithycerus, Rhamphus, Tachygonus,* and *Episus* (see Jekel, *l. c.*). V. *Calandridæ* = *Rhynchophorides* (Schönh.) + *Dryophthorides* and *Oxyrhynchus.* VI. *Cossonidæ* (see Schönherr). VII. *Scolytidæ* (see Erichson). VIII. *Breuthidæ* (as with Schönherr + *Ulocerus* (Dalm.), see Jekel, *l. c.*).

Thus the *Curculionidæ* occupy the central position among these families, the others leading by insensible gradations on the one hand through the *Bruchidæ* to the *Chrysomelidæ,* and on the other through the *Breuthidæ* to the *Longicornia.*

In the great family *Curculionidæ,* Jekel distinguishes certain aberrant types, namely the *Brachycerides, Byrsopsides,* and *Amycterides,* which he considers may be united into a single group, characterized by the absence of a spongy sole on the tarsi. The *true Curculionidi* are, with few exceptions, *Scopitarsi.* Jekel divides them into the following primary groups :—

1. Platygyni, in which the male is smaller and narrower behind than the female and generally smaller in all its parts. This group includes nearly the whole of the *Brachyrhynchi* and *Erirhinides* of Schönherr, the whole of the *Adélognathes* of Lacordaire, minus the *Brachycérides* and a part of his *Phanérognathes symmérides.*

2. Isogyni, in which the males are sometimes a little smaller than the females, but are always of precisely the same form. The typical subfamily is that of the *Lixides* (= *Cléonides,* Lac.); other groups are the *Lophotides, Aterpides, Rhinarides, Alcidides, Gonypterides,* &c.

3. Methiogyni, in which the males are never smaller, but often larger than the females. This group includes the greater part of the *Apostasimerides* (Schönh.) and some of his *Erirhinides.* The author divides them into *Cryptopyges* (*Orthorhinides, Cholides, Centrinides,* incl. *Dyorymerides, Conotrachelides, Cryptorynchides,* &c.), and *Gymnopyges* (*Magdalinides, Balaninides, Tychiides, Cionides, Centorhynchides, Baridides,* &c.).

The *Platygyni,* to the consideration of which Jekel's present paper is particularly devoted, are classified by him into—1. Platygyni homorhini (= *Curculionini,* seu *Brachyrhini*), and 2. Platygyni heterorhini (= *Rhynchæni,* seu *Mecorhini*).

Upon these groups and their constituent tribes and genera Jekel enters into considerable detail, with the special object of fixing the characters and position of the genera *Phytonomus* and *Listroderes,* and discussing the characters of the species included in those genera. The nature of these remarks, which are in reality a summary of a long series of observations, renders it impossible to do justice to them in any abstract; indeed the whole paper is full of valuable notes to which the same statement applies. Whilst doing full justice to the merits of the magnificent

work of Professor Lacordaire on the Rhynchophora, M. Jekel, as will have been seen from the preceding statements, considers his classification susceptible of improvement; and in some respects, especially the separation of the *Brachycérides* &c. from the true *Curculionini,* he seems to have made a step in the right direction. It will, however, require the lapse of years and the efforts of many entomologists before the classification of the vast and complicated group of the *Curculionidæ* can be placed on a satisfactory basis.

Thomson (Skand. Coleoptera, tom. vii.) adopts the following classification of the *Rhynchophori,* which differs in some respects, especially in the removal of the *Salpingidæ,* from that given in his first volume.

Stirps I. Isotoma.

Abdomen with the segments immoveable, second and third subequal, pygidium usually exposed; antennæ straight, 11-jointed; posterior coxæ contiguous or not very distant; claws usually bifid.

Families: *Bruchidæ, Anthribidæ* (*Urodontides, Anthribides,* [*Choragina, Brachytarsina, Anthribina*]), *Rhinomaceridæ, Attelabidæ* [*Attelabina, Rhynchitina.*]

Stirps II. Anisotoma.

Abdomen with the last three segments free, first two connate, second almost always much longer than third; antennæ most frequently geniculate and clavate; posterior femora generally greatly exceeding the margin of the elytra.

Families: *Apionidæ, Curculionidæ* (*Curculionides* [*Phyllobiina, Otiorhynchina*], *Rhynchænides* [*Hylobiina, Phytonomina, Bagoina, Lixina, Erirhina, Cryptorhynchina, Pissodina, Balanina, Coryssomerina, Ceuthorhynchina, Baridiina, Orchestina, Cionina, Tychiina, Gymnetrina, Elleschina, Anthonomina, Magdalinina*]), *Cossonidæ* [*Calandrina, Cossonina*], *Tomicidæ* (*Tomicides* [*Hylesinina, Tomicina, Scolytina*], *Platypodides*).

The following known species of this family are recorded as recently detected in Britain :—*Apion ononides* (Gyll.) by Sharp, Ent. M. Mag. ii. p. 119 (= *A. bohemanni,* according to Rye, Ent. Ann. p. 98); *Sitones gressorius* (Fab.) by Crotch, Entom. ii. p. 211; *Cœliodes exiguus* (Oliv.) by Crotch, *l. c.* p. 261.

Pascoe (Journ of Ent. ii.) describes the following new genera of Curculionidæ, upon the general classification of which he makes some observations. As he seems in most cases to be uncertain about the alliances of his proposed new genera, the Recorder has thought it safer to place them altogether here than to attempt, from somewhat imperfect data, to refer them to their subfamilies :—

Atychoria, g. n., Pascoe, p. 415. Allied to *Mythites*; rostrum short, thick bilobed above, deeply impressed at apex; scrobes oblique, curved, attaining the eye; antennæ inserted near end of scrobes, short, scape gradually thickened, funiculus 6-jointed, club shortly ovate. Sp. *A. funesta,* sp. n., p. 416, pl. 17. fig. 22, from South Australia.

Methypora, g. n., Pascoe, p. 416. Allied to *Plinthus*; prothorax oblong, subcylindrical, lobate at base; elytra flat above, abruptly sloped behind, dehiscent, each with the apex produced; femora unarmed, thickened in the middle; intercoxal process rounded. Sp. *M. postica*, sp. n., pl. 17. fig. 5, from Victoria.

Aphela, g. n., Pascoe, p. 416. Allied to *Iphipus*; rostrum stout, equal in length to head; scrobes deep, wider towards the eye; eyes small, round; scutellum wanting. Sp. *A. helopoides*, sp. n., p. 417, pl. 17. fig. 4, from Australia.

Ethemaia, g. n., Pascoe, p. 417. Allied to *Gonypterus*; rostrum stout, longer than head, carinate in front; scrobes oblique, curved, terminating below the eye; antennæ apical, scape slender; elytra much wider than thorax; intercoxal process subangulate; first two segments of abdomen very large, connate. Sp. *E. sellata*, sp. n., p. 418, pl. 17. fig. 25, and *E. adusta*, sp. n., ibid., from South Australia.

Myossita, g. n., Pascoe, p. 418. Allied to *Tranes*; eyes small, rather prominent, rounded, delicately granulated, distant beneath; antennal club elongate. Sp. *M. rufula*, sp. n., pl. 17. fig. 23, from South Australia.

Xynæa, g. n., Pascoe, p. 419. Allied to *Synaptonyx*; prothorax without ocular lobes; funiculus 7-jointed, with joints 1 and 2 very short; intercoxal process narrow, angulated in front. Sp. *X. saginata*, sp. n., p. 420, pl. 17. fig. 2, from South Australia.

Simallus, g. n., Pascoe, p. 420. Allied to *Episomus*; but prothorax lobed in front. Sp. *S. sulcicollis*, sp. n., pl. 17. fig. 8, from Burmah.

Hyomora, g. n., Pascoe, p. 421. Like *Tropiphorus*, but with narrow, linear tarsi, as in *Styliscus* and *Cladeyterus*. Sp. *H. porcella*, sp. n., pl. 17. fig. 17, from Dammara-land.

Aromagis, g. n., Pascoe, p. 421. Allied to *Atelicus*?; rostrum stout, straight, twice as long as head; scrobes oblique, deep, meeting below the rostrum at its base; eyes rounded; fourth joint of tarsi present, but very short. Sp. *A. echinata*, sp. n., p. 422, pl. 17. fig. 3, from South Australia and New South Wales.

Æsiotes, g. n., Pascoe, p. 422. Allied to *Leptops*; rostrum stout, not sulcate in the middle; scrobes oblique, deep; metasternum elongate; posterior corbels open. Sp. *Æ. notabilis*, sp. n., pl. 17. fig. 16, from Queensland.

Sigastus, g. n., Pascoe, p. 423. Allied to *Haplonyx*; rostrum robust, short, dilated towards apex; scrobes oblique, terminating below the eyes; club of antennæ shortly ovate, its last joint adpressed; scutellum ovate; shoulders of elytra not prominent; tarsi with last joint short, claws connate at base; interfemoral process triangular. Sp. *S. fasciculuris*, sp. n., pl. 17. fig. 6, from New South Wales and South Australia.

Syarbis, g. n., Pascoe, p. 423. Allied to *Gonipterus*?; antennæ rather short, subapical, scape short, clavate, club ovate; prothorax conical, emarginate in front, bisinuate at base; legs stout, tarsi 3-jointed; first two joints of abdomen very large, connate, third and fourth very short. Sp. *S. pachypus*, sp. n., p. 424, pl. 17. fig. 1, from Queensland.

Metatyges, g. n., Pascoe, p. 424. Resembling *Haplonyx*; anterior coxæ contiguous; rostrum stout, straight; scrobes oblique, terminating below the

margin of the eye; antennæ median, scape clavate, reaching the eye, funiculus 6-jointed, short, club larger; scutellum large, triangular; tarsi with first two joints small, third much wider, deeply bilobed; segments of abdomen nearly equal; interfemoral process narrowly rounded at apex. Sp. *M. turbidus*, sp. n., pl. 17. fig. 11, from Caffraria.

Physarchus, g. n., Pascoe, p. 425. Allied to the preceding genus; antennæ inserted before middle of rostrum; scape reaching middle of eye; funiculus 7-jointed. Sp. *P. pyramidalis*, sp. n., pl. 17. fig. 10, from the Fiji Islands.

Ilacuris, g. n., Pascoe, p. 425. Allied to *Sphadasmus*; rostrum elongate, nearly cylindrical, scarcely arcuate; antennæ median, scape slender, clavate, club slender; elytra subtriangular; legs elongate, second pair shortest; femora clavate; anterior coxæ somewhat distant, intermediate remote; first two segments of abdomen very large, connate; interfemoral process angulated at apex. Sp. *I. laticollis*, sp. n., pl. 17. fig. 7, from Queensland.

Asytesta, g. n., Pascoe, p. 426. Allied to *Rhyephenes*; prothorax with ocular lobes ciliated. Sp. *A. humeralis*, sp. n., p. 426, pl. 17. fig. 13, from the Moluccas; *A. vittata*, Pasc. p. 431, from the Moluccas and Aru; and *A. maura*, Pasc. p. 432, from the Moluccas.

Thyestetha, g. n., Pascoe, p. 426. Allied to *Arachnobas*, but with a pectoral canal extending between the posterior legs, anterior and intermediate coxæ contiguous, femora channelled beneath. Sp. *T. nitida*, sp. n., p. 427, pl. 17. fig. 20, from Aru.

Odoacis, g. n., Pascoe, p. 427. Allied to *Mecopus*; club of antennæ with basal joint short; anterior legs moderate, coxæ armed with an acute spine; posterior femora very long, incrassatad; propectus unarmed in ♂; posterior coxæ widely distant. Sp. *O. grallarius*, sp. n., pl. 17. fig. 24, from Siam.

Semio, g. n., Pascoe, p. 427. Allied to *Cryptorhynchus*; body broad, depressed; eyes small, lateral; antennæ subbasal, scape short; tibiæ curved, compressed; second segment of abdomen larger than third. Sp. *S. ricinoides*, sp. n., p. 428, pl. 17. fig. 21, from Brazil.

Egrius, g. n., Pascoe, p. 428. Allied to *Centorhynchus*; pectoral canal distinct; junction of prothorax and elytra forming a prominent ridge. Sp. *E. camelus*, sp. n., pl. 17. fig. 9, from Natal.

Isax, g. n., Pascoe, p. 429. Allied to *Cryptorhynchus*; rostrum slender, *straight*, almost perfectly cylindrical. Sp. *I. gallinago*, sp. n., pl. 17. fig. 14, from Queensland.

Mormosintes, g. n., Pascoe, p. 429. Allied to *Poropterus*; last joint of funiculus adpressed to the club; tarsi linear, penultimate joint entire; intercoxal process angulate in front. Sp. *M. rubus*, sp. n., pl. 17. fig. 15, from Queensland.

Blepiarda, g. n., Pascoe, p. 430. Allied to *Protopalus*; antennæ long, apical, scape long, first two joints of funiculus long, the rest short, ciliated; prothorax ciliated behind the eyes. Sp. *B. undulata*, sp. n., pl. 17. fig. 12, from Queensland; *B. lophotes*, Pasc. *l. c.* p. 432, from the Fiji Islands.

Myrtesis, g. n., Pascoe, p. 430. (*Cryptorhynchides*.) Sterna very short, the three pairs of coxæ close together, but those of each pair widely separated by a deep pectoral canal; interfemoral process very wide, emarginate. Sp. *M. caligata*, sp. n., p. 431, pl. 17. fig. 19, from Queensland.

Brachyderides.

Rye (Ent. M. Mag. vol. i.) has translated the analytical tables and some other parts of Allard's paper on *Sitones*, as far as they relate to British species. He has also added a few notes of his own.

Rye remarks on the minuteness of the differences between *Sitones cinerascens* (Schönh.) and *S. cambricus* (Steph.), ibid. p. 256.

Sitones medicaginis (Rædt.) is referred by Dietrich (*l. c.* p. 173) to *S. sulcifrons* (Thunb.).

Sitones bituberculatus (Motsch.) = *S. ocellatus* (Küster), according to Kirsch, Berl. ent. Zeitschr. 1865, p. 123.

Kellner (Berl. ent. Zeitschr. 1865, p. 124) calls attention to the distinctive characters of *Brachyderes incanus* and *lepidopterus*.

New species :—

Strophosomus curvipes, Thomson, *l. c.* p. 138, from Scania.

Strophosomus erinaceus, Chevrolat, Rev. et Mag. Zool. 1865, p. 394, from the Escurial; and *S. fagi*, Chevr. ibid., note, from Corsica.

Conotrachelus puncticollis, Walsh (Prairie Farmer, 1863), Proc. Bost. Soc. Nat. Hist. ix. p. 310, and *C. crataegi*, Walsh ibid., *l. c.* p. 311, from Illinois, and the second from Chicago.

Barypeithes meridionalis (Godart, MS.), Mulsant & Rey, *l. c.* p. 28, from Narbonne.

Homapterus affinis, Chevrolat, *l. c.* p. 395, from Reinosa.

Polydrusus kahrii, Kirsch, Berl. ent. Zeitschr. 1865, p. 122, from the Monte Baldo.—*P. pilosulus*, Chevrolat, *l. c.* p. 396, from Valladolid; *P. villosulus*, Chevr. ibid., from Viala.—*P.? elegans*, Couper, Canad. Nat. & Geol. n. s. vol. ii. p. 63, from Quebec.

Otiorhynchides.

Seidlitz, in the introduction to his monograph of the genus *Peritelus* (Berl. ent. Zeitschr. 1865), contrasts the general classifications of this family adopted by Schönherr and Lacordaire, and remarks upon the value of certain characters which have been regarded as of importance in distinguishing particular groups and genera. One of these is the union or separation of the tarsal claws, employed by Lacordaire for the separation of the *Peritelides* and *Laparocerides* from the true *Otiorhynchides* and the *Trachyphlæides*. Seidlitz states that in *Trachyphlæus* two species known to him have united claws, and in *Peritelus* six species have the claws separate. In a species of *Cathormiocerus* the claws of the four anterior tarsi are united, and those of the hind pair separate. The author gives the following schematic table of the thirty-three genera belonging to the tribe *Otiorhynchides* of Lacordaire.

1 *a*. Sutura inter segmenta abd. primum et secundum recta: *Calyptops, Sciobius, Phlyctinus, Isamiris, Caterectus, Holcorhinus, Glyptosomus.*

1 *b*. Sutura inter segmenta abd. primum et secundum plus minusve arquata.

2 *a*. Antennæ tenues: *Elytrodon, Laparocerus, Aomus, Aprepes, Pholicodes, Epiphaneus, Merimnetes, Hyphantus.*

2 *b*. Antennæ validæ.

3 *a*. Funiculus 6-articulatus: *Agraphus.*

3 *b*. Funiculus 7-articulatus.

4 *a*. Scrobes supernæ.

5 *a*. Apicem rostri attingentes.

6 *a*. Unguiculi connati, femora dentata: *Nastus.*

6 *b*. Unguiculi liberi, femora clavata, sæpe dentata: *Troglorhynchus, Tyloderes, Otiorhynchus.*

6 *c*. Unguiculi aut connati aut liberi, femora parum clavata, mutica.

7 *a*. Rostrum longius, parum arquatum, unguiculi liberi: *Cereopeus.*

7 *b*. Rostrum breve, rectum.

8 *a*. Pars intercoxalis segmenti abd. primi lata parallela.

9 *a*. Caput subtus haud striatum.

10 *a*. Antennæ robustæ: *Peritelus.*

10 *b*. Antennæ crassissimæ: *Meira.*

9 *b*. Caput subtus striatum, oculi in rostro siti: *Cænopsis.*

5 *b*. Scrobes in medio rostri sitæ, infundibuliformes: *Mylacus.*

4 *b*. Scrobes laterales: *Leichenophagus, Trachyphlæus, Cathormiocerus, Omias, Scoliocerus, Anemophilus, Asceparnus.*

The genus *Peritelus* is fully characterized by the author, *l. c.* pp. 283–289, and the genus is divided by him into the following subgenera :—

I. Funiculo robusto, articulo clavæ 1° 2° vix angustiore.
  A. Corpore elytrisque dense squamosis ..... *Peritelus.*
  B. Corpore elytrisque nudis, unguiculis inæqualibus connatis. *Gymnomorphus.*

II. Funiculo gracili, articulo clavæ 1° 2° multo augustiore, unguiculis basi connatis ..... *Leptosphærotus.*

The subgenus *Peritelus* is divided into eleven subordinate groups; and the total number of species, the distinctive characters of which are tabulated on pp. 290–291, is twenty-nine, or, including seven forms, the relation of which to this genus the author considers doubtful, thirty-six. The number of new species is nine. The known species described by the author as belonging to the genus are :—*P. leucogrammus* (Germ.), *l. c.* p. 292; *P. senex* (Boh.) = *marqueti* (Gaut. des Cottes), *l. c.* p. 295; *P. familiaris* (Boh.) = *famularis* (Gyll.), *l. c.* p. 300; *P. griseus* (Oliv.) = *sphæroides* (Germ.), *l. c.* p. 303; *P. noxius* (Boh.), *l. c.* p. 308; *P. ruficornis* (Brisout), *l. c.* p. 310; *P. necessarius* (Gyll.), *l. c.* p. 313; *P. prolixus* (Kiesenw.), *l. c.* p. 315; *P. subdepressus* (Muls. & Rey) = *flavipennis* (J. Duv.), *l. c.* p. 318; *P. rusticus* (Boh.), *l. c.* p. 320; *P. rusticornis* (Kiesenw.), *l. c.* p. 323; *P. sinuatus* (Chevr.), *l. c.* p. 335; *P. (Otiorh.) schönherri* (Boh.), *l. c.* p. 338; *P. (O.) cremieri* (Boh.), *l. c.* p. 339; *P. (Curc.) hirticornis* (Herbst) = *simo* (Oliv.) = *variegatus* and *depubes* (Boh.), *l. c.* p. 343: *P. (Otiorh.) astragali* (Stierl.), *l. c.* p. 346. Subgen. *Gymnomorphus*: *P. nigrans* (Fairm.), *l. c.* p. 349. Subgen. *Leptosphærotus*: *P. (Otiorh.) aquilus* (Chevr.) = *O. furinus* (Chevr.) = *P. gracilis* (Chevr.), *l. c.* p. 351;

and *P.* (*O.*) *intersetosus* (Chevr.), *l. c.* p. 353. *P. rudis* (Boh.) is described as a new species under the name of *P. bruckii* at p. 325; the author states that he has identified the species from specimens sent by Boheman. The plate accompanying this paper contains diagrammatic figures of characteristic parts in *Peritelus* and allied genera.

Phyllobius glycyrrhizæ = *Chloëbius immeritus*, according to Becker, Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 487

Otiorhynchus görgensis is said by Erber to gnaw the leaves and young buds of *Pinus halepensis* in Lesina. Verh. zool.-bot. Ges. in Wien, Bd. xv. p. 945 *bis*.

Otioryhnchus granulosus (Schönh.) occurs on the Lido at Venice, according to Ferrari in Wien. ent. Mon. Bd. viii. p. 113.

Arhines? *destructor*. The habits of this species as injurious to the coffee-plantations in Ceylon are described by Nietner, and noticed by Guérin, Rev. et Mag. de Zool. 1864, pp. 120–121.

New species :—

Peritelus. Seidlitz (Berl. ent. Zeitschr. 1865) describes the following nine new species of this genus:—*P. susanæ*, *l. c.* p. 298, from Andalusia; *P. kiesenwetterii*, *l. c.* p. 322, from Andalusia; *P. parvulus*, *l. c.* p. 327, from Tuscany; *P. echidna*, *l. c.* p. 328, from Tuscany; *P. platysomus*, *l. c.* p. 329, from the south of France; *P. grenierii*, *l. c.* p. 332, from the south of France; *P. gougeletii*, *l. c.* p. 334, from Malaga; *P. planidorsis*, *l. c.* p. 341, from the south of France; and *P. mononychus*, *l. c.* p. 347, from Catalonia.

Trachyphlœus rectus, Thomson, *l. c.* p. p. 132, from Halland.

Phyllobius brevitalus, Thomson, *l. c.* p. 114 (= *Phyllobius pyri*, var. Schönh.), from Sweden.—*Phyllobius ulmi*, Becker, *l. c.* p. 482, from Sarepta.

Laparocerus inflatus, Wollaston, Col. Atl. App. p. 51, *L. opacus*, Woll. p. 52, and *L. indutus*, Woll. p. 53, from Gomera; *L. debilis*, Woll. p. 53, from Teneriffe.

Lichenophagus buccatrix, Wollaston, *l. c.* p. 54, from Gomera; *L.* (*Amyntas*) *incomptus*, Woll. p. 55, from the Canaries.

Amycterides.

W. MacLeay has commenced a revision of the genera and species of the Australian subfamily *Amycterides* (Trans. Ent. Soc. N. S. W. vol. i. pp. 199–298). This paper is devoted entirely to that section of the group denominated *Amycterides vrais* by Lacordaire, in which the scape of the antennæ passes the eyes; the *Euomides* of Lacordaire being probably reserved for a future communication. Lacordaire recognizes four genera of this group, to which MacLeay adds three new ones in the present paper. The distinctive characters of the whole are given in the following table (p. 200) :—

1. Rostrum not cristate.

Rostrum with a transverse, sinuous impression at the base; male with anal forceps ..... *Psalidura*, MacL.
Rostrum excavated, with two oblique ridges in the middle; anus of male excavated ..... *Talaurinus*, g. n.

Rostrum with a straight central ridge ..... *Sclerorinus*, g. n.
Head and rostrum rather concave ..... *Amycterus*, Schönh.

2. Rostrum cristate.

Forehead concave ..... *Acantholophus*, MacL.
Forehead flat, with a transverse suture ..... *Cubicorhynchus*, Lac.
Forehead convex and rugose ..... *Hyborhynchus*, g. n.

Of these genera the author describes 176 species, of which 132 are new; the numbers in the different genera are in *Psalidura* 26, new 20; in *Talaurinus* 60, new 46; in *Sclerorinus* 41, new 36; in *Amycterus* 4, new 1; in *Acantholophus* 32, new 21; in *Cubicorhynchus* 9, new 5; and in *Hyborhynchus* 4, new 3; but the paper appears to be not yet completed.

New species and genera :—

Psalidura. Of this genus MacLeay (Trans. Ent. Soc. N. S. W. vol. i.) describes the following twenty new species from various parts of Australia :—*P. rufilineata* and *P. verrucosa*, *l. c.* p. 203; *P. coxii*, *l. c.* p. 204; *P. miracula*, *l. c.* p. 205; *P. mirifica* and *P. subcostata*, *l. c.* p. 206; *P. elongata*, *l. c.* p. 207; *P. wilcoxii* and *P. montana*, *l. c.* p. 209; *P. forficulata*, *P. caudata*, and *P. mitchellii*, *l. c.* p. 210; *P. howittii* and *P. subrittata*, *l. c.* p. 211; *P. squamigera*, *l. c.* p. 212; *P. helyi*, *P. foveata*, and *P. falciformis*, *l. c.* p. 213; *P. mastersii*, *l. c.* p. 214; and *P. abnormis*, *l. c.* p. 215.

Talaurinus, g. n., MacLeay, Trans. Ent. Soc. N. S. W. vol. i. p. 216. See p. 484. (Known sp. *Amyct. tomentosus* (Boisd.), *Curc. bucephalus* (Oliv.), *Amyct. excavatus* (Schönh.), &c.). MacLeay describes the following forty-six new species from various parts of Australia :—*T. howittii*, *l. c.* p. 217; *T. variegatus* and *T. riverinæ*, *l. c.* p. 218; *T. squamosus* and *T. griseus*, *l. c.* p. 219; *T. maculatus* and *T. tomentosus*, *l. c.* p. 220; *T. rayneri* and *T. incertus*, *l. c.* p. 221; *T. papulosus*, *l. c.* p. 222; *T. pulverulentus*, *T. nodulosus*, and *T. pallidus*, *l. c.* p. 223; *T. humeralis* and *T. parallelus*, *l. c.* p. 224; *T. euomoides* and *T. ambiguus*, *l. c.* p. 225; *T. dubius* and *T. camdencusis*, *l. c.* p. 226; *T. rudis* and *T. murrumbidgensis*, *l. c.* p. 227; *T. salebrosus* and *T. rugosus*, *l. c.* p. 229; *T. typicus*, *l. c.* p. 230; *T. alternans*, *l. c.* p. 231; *T. aberrans* and *T. tuberculatus*, *l. c.* p. 233; *T. mitchellii* and *T. catenulatus*, *l. c.* p. 234; *T. amycteroides*, *T. scabrosus*, and *T. sphærulatus*, *l. c.* p. 235; *T. simillimus* and *T. foveatus*, *l. c.* p. 237; *T. mastersii* and *T. inpressicollis*, *l. c.* 239; *T. lacunosus*, *T. scaber*, and *T. alternatus*, *l. c.* p. 240; *T. rugicollis* and *T. angustatus*, *l. c.* p. 241; *T. damelii* and *T. rugiceps*, *l. c.* p. 242; *T. dumosus* and *T. spinosus*, *l. c.* p. 243; and *T. incapiescens*, *l. c.* p. 244.

Sclerorinus, g. n., MacLeay, *l. c.* p. 245. See above. (Known species *Curc. bubalus* (Oliv.), *Amyct. elongatus* (Schönh.), &c.). MacLeay describes thirty-six new species from different parts of Australia :—*S. exilis*, *l. c.* p. 245; *S. angustus* and *S. riverinæ*, *l. c.* p. 246; *S. alternus* and *S. adelaidæ*, *l. c.* p. 247; *S. divaricatus*, *l. c.* p. 248; *S. vittatus* and *S. nodulosus*, *l. c.* p. 249; *S. rugicollis* and *S. conspersus*, *l. c.* p. 250; *S. confusus* and *S. waterhousei*, *l. c.* p. 251; *S. interioris* and *S. stewartii*, *l. c.* p. 252; *S. angasii* and *S. fuscus*, *l. c.* p. 253; *S. asper* and *S. sordidus*, *l. c.* p. 254; *S. acuminatus*, *S. obliteratus*, and *S. mucronatus*, *l. c.* p. 255; *S. tuberculosus* and *S. horridus*, *l. c.* p. 256; *S. howittii*, *l. c.* p. 257; *S. subcostatus*, *S. dilaticollis*, and *S. longus*, *l. c.* p. 258; *S. parvulus* and *S. apicalis*, *l. c.* p. 260; *S. squalidus* and *S. vermiculatus*, *l. c.* p. 261;

S. verrucosus, *l. c.* p. 262; *S. interruptus*, *S. subsequens*, and *S. irregularis*, *l. c.* p. 263; and *S. stutchburyi*, *l. c.* p. 264.

Hyborhynchus, g. n., MacLeay, *l. c.* p. 295. See p. 485. (Known species *Amyct. cœnosus* [Schönh.]). New species: *H. furcatus*, MacLeay, *l. c.* p. 296, *H. maculatus*, MacL. *l. c.* p. 297, and *H. rugosus*, MacL. *l. c.* p. 298, from King George's Sound.

Amycterus leichardtii, MacLeay, *l. c.* p. 269, from North Australia.

Acantholophus. MacLeay describes twenty-one new species of this genus from various parts of Australia: namely, *A. transitus* and *A. amycteroides*, *l. c.* p. 271; *A. spinosus*, *l. c.* p. 274; *A. crassidens* and *A. apicalis*, *l. c.* p. 276; *A. humeralis*, *l. c.* p. 278; *A. echidna*, *l. c.* p. 280; *A. denticollis* and *A. serraticollis*, *l. c.* p. 282; *A. approximatus*, *l. c.* p. 283; *A. spinifer*, *l. c.* p. 284; *A. howittii* and *A. squalidus*, *l. c.* p. 285; *A. truncaticornis* and *A. angasii*, *l. c.* p. 286; *A. scabrosus*, *A. mucronatus*, and *A. squamosus*, *l. c.* p. 287; *A. krefftii* and *A. tridentatus*, *l. c.* p. 288; and *A. crenaticollis*, *l. c.* p. 289.

Cubicorhynchus. Five new species of this genus are described by MacLeay: namely, *C. sepidioides*, *C. maximus*, and *C. calcaratus*, *l. c.* p. 294; *C. maculatus* and *C. piceo-setosus*, *l. c.* p. 295.

Tanyrhynchides.

Holyoak publishes some remarks on the habits of *Trachodes hispidus*. Ent. M. Mag. ii. p. 87.

Hyperides.

Phytonomus palumbarius (Germ.). The habits of the larvæ of this species are indicated by Dietrich, *l. c.* p. 177. The same author refers *P. trifolii* (Gyll.) to *P. meles* (Fab.) and considers the latter distinct from the species described by Redtenbacher under the same name (*l. c.* p. 178).

Alophus alternans, sp. n., Wollaston, Col. Atl. App. p. 50, from Gomera.

Aterpides.

Rhinaria stellio, sp. n., Pascoe, Journ. of Entom. ii. p. 419, from Swan River; *R. faceta*, Pasc. ibid., from South Australia.

Cleonides.

Larinus serratula, sp. n., Becker, *l. c.* p. 481, and *L. volgensis*, Beck. *l. c.* p. 483, from Sarepta.

Lixus atriplicis, sp. n., Becker, *l. c.* p. 483, from Sarepta.

Erirhinides.

Halophagus, g. n., Becker, Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 484. Intermediate between *Dorytomus* and *Hydronomus*, agreeing with the former in the structure of the antennæ, with the latter in that of the legs. Sp. *H. halimocnemis*, sp. n., Beck. *l. c.* p. 484, from Sarepta, on *Halimocnemis*.

Grypidius vittatus, sp. n., Couper, Canad. Nat. & Geol. ii. p. 63, from Quebec.

Bagous caudatus, sp. n., Thomson, *l. c.* p. 188, from Malmö; *B. nigritarsis*, Thoms. *l. c.* p. 190.

Apionides.

Apion. Taschenberg (Naturg. wirbell. Thiere) describes the appearance and habits of the following species of this genus:—*A. apricans* (*l. c.* pp. 49–50, pl. 6. figs. 12–14), *A. assimile* (Kirby), and *A. trifolii* (*l. c.* p. 50).

Apion heterocerum, sp. n., Thomson, Skand. Col. vii. p. 62, *A. hadrops*, Thoms. *l. c.* p. 72, and *A. pedicellare*, Thoms. *l. c.* p. 78, from Scania.

Apion ergenense, sp. n., Becker, *l. c.* p. 482, from Sarepta.

Attelabides.

Lucas calls attention to the fact that Imhoff and Labram in 1858 adopted the name of *Dœdycorhynchus*, in place of *Diodorhynchus* (Germ.). Ann. Soc. Ent. Fr. 4e sér. tome v. p. 206.

Attelabus atricornis (Muls.). Stierlin discusses the characters of this species and their variations, and gives a reformed diagnosis. Berl. ent. Zeitschr. 1865, pp. 117–118.

Rhynchites uncinatus, sp. n., Thomson, Skand. Col. vii. p. 36, from Scania.

Anthonomides.

Kirsch records the capture of an *Anthonomus* near Dresden, which appears to be *A. elongatulus*, but differs in some respects from Schönherr's description of that species, which has not hitherto been met with in Germany. Berl. ent. Zeitschr. 1865, p. 122.

Orchestes. Of the European and Algerian species of this genus Brisout de Barneville has published a monograph (Ann. Soc. Ent. Fr. 4e sér. tome v. pp. 253–296). He admits 34 species of *Orchestes*, including *Tachyerges* as a subgenus: 4 of these are characterized as "*species invisæ*;" and of the remaining 30, *Orchestes* proper includes 25 and *Tachyerges* 5. *O. tomentosus* (Gyll.) is said to be synonymous with *O. pratensis* (Germ.), and *O. fœdatus* (Gyll.) with *O. erythropus* (Germ.); *O. crinitus* (Schönh.) and *O. melanarius* (Kies.) = *O. sparsus* (Schönh.); *O. rhodopus* (Marsh.) = *O. fagi* (Linn.); and *O. carnifex* (Germ.) probably = *scutellaris* (Fab.). Of the species enumerated by De Marseul, 2 are altogether omitted, namely, *O. longulus* (Schauf.), from Greece, and *O. monedula* (Herbst), from Germany; but these are compensated for by the introduction of *O. hirtellus* (Miller), from Cephalonia, and *O. mutalilis* (Schönh.), from Dauria. One new species is described.

Anthonomus? prunicida, sp. n., Walsh (Prairie Farmer, 1863), Proc. Bost. Soc. Nat. Hist. ix. p. 309, from the Mississippi valley.

Orchestes quedenfeldtii, sp. n., Gerhardt, Stett. ent. Zeit. 1865, p. 214, from Silesia.—*Orchestes flavidus*, sp. n., Brisout de Barneville, *l. c.* p. 280, from Algeria.

Tychiides.

Tychius mitratus, sp. n., Costa, Ann. Mus. Zool. Nap. ii. p. 128, pl. 1. fig. 1, from Southern Italy.—*Tychius morawitzi*, sp. n., Becker, *l. c.* p. 487; *T. flavus*,

Beck. *l. c.* p. 488; *T. staticis*, Beck. *l. c.* p. 490; *T. glycyrrhizæ*, Beck. *l. c.* p. 486; *T. dohrni*, Becker, *l. c.* p. 483: all from Sarepta.

Sibines stierlini, sp. n., Becker, *l. c.* p. 484, from Sarepta.

Cionides.

Cionus fraxini (De Geer) is said by Peragallo to do much mischief to the olive-trees near Nice. Bull. Soc. Ent. Fr. 1865, p. xli.

Gymnetrides.

Gymnetron. G. R. Crotch publishes (Entomologist, ii. pp. 216–221) a translation of the analytical table of the species of this genus given by Brisout de Barneville, with characters of the British species, 13 in number.

Gymnetron schaumi, sp. n., Becker, *l. c.* p. 486, from Sarepta.

Cryptorhynchides.

Acalles. Brisout de Barneville has published (Ann. Soc. Ent. Fr. 4e sér. tome iv. pp. 441–482) a monograph of the species of *Acalles* found in Europe, Algeria, and the Atlantic islands. The total number of species cited by the author is 41, of which 24 occur in Europe, 8 in Algeria, 2 in Teneriffe, 14 in Madeira, and 1 on the Salvages. The descriptions of most of the latter are borrowed from Wollaston. The number of new species described is 2. *Acalles æonii*, described by Wollaston as having received its MS. name from Chevrolat (Cat. Can. Col. p. 285), appears here as a new species (*l. c.* p. 452) named by Wollaston *in litt.* The other Canarian species recorded is *A. argillosus* (Schönh.); but the 11 new species described by Wollaston (Cat. Can. Col.) are not referred to.

Torneuma orbatum, sp. n., Wollaston, Col. Atl. App. p. 48, from Gomera. (Genus characterized in full.)

Acalles pulchellus, sp. n., Brisout, *l. c.* p. 455, from the south of France; and *A. capiomonti*, sp. n., Bris. *l. c.* p. 459, from Milan.—*A. validus*, sp. n., Hampe, Wien. ent. Mon. viii. p. 193, from Hermannstadt.

Ceuthorhynchides.

Ceuthorhynchideus minimus. Rye publishes Walton's description of this species, no example of which is known. Ent. M. Mag. ii. p. 11.

Goureau communicated to the French Entomological Society a note on the habits of *Ceutorhynchus assimilis* (Gyll.), which he regards as identical with the *Grypidius brassicæ* of Focillon, of which the larvæ feed upon the seeds of the Colza. The larvæ found in the gall-like excrescences of the root are those of *C. sulcicollis* (Gyll.). Laboulbène coincided with Goureau in these opinions. Bull. Soc. Ent. Fr. 1865, pp. ii–iii.

Ceuthorhynchideus. Rye publishes a note on the synonymy of the species of this genus. Ent. M. Mag. ii. p. 63.

Ceuthorhynchus, &c. G. R. Crotch publishes (Entomologist, ii. pp. 259–261) some remarks on the synonymy of the British species of *Ceuthorhynchus*, *Ceuthorhynchidius*, and *Cœliodes* derived from determinations of British specimens by Brisout de Barneville.

Ceuthorhynchus inornatus (Wat.) = *C. alliariæ* (Bris.), according to G. R. Crotch, Entomologist, ii. p. 179.

Ceuthorhynchus. Taschenberg refers to the following injurious species:—*C. sulcicollis* (*l. c.* pp. 57–59, pl. 2. figs. 10–12), *C. assimilis* (*l. c.* pp. 59–61), *C. napi* (*l. c.* pp. 61–62, pl. 2. fig. 13), and *C. macula alba* (*l. c.* pp. 62–63).

Ceutorhynchus rinderæ, sp. n., Becker, Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 481, from Sarepta, on *Rindera tetraspis*.

Ceutorhynchus granulicollis, sp. n., Thomson, *l. c.* p. 268, from Lapland.

Baridiides.

Typhloporus, g. n., Hampe, Wien. ent. Mon. Bd. viii. p. 191. Allied to *Baridius*; eyes wanting; rostrum dilated at apex, antennæ inserted before its middle, antennary furrow ascending in a straight line; prosternum with a deep furrow for the reception of the rostrum; anterior coxæ approximate. Sp. *T. deplanatus*, sp. n., Hampe, *l. c.* p. 192, from Sicily.

Baridius. Of this genus Taschenberg refers to the following species:—*B. chloris* (*l. c.* pp. 51–54, pl. 2. figs. 14–16), *B. lepidii* (*l. c.* pp. 54–55), and *B. picinus* (*l. c.* pp. 55–56).

Calandrides.

Sitophilus granarius. The characters and habits of this species are described by Taschenberg (*l. c.* pp. 63–65, pl. 4. figs 1–3).

Cossonides.

Raymondia aubei, sp. n., Marquet, L'Abeille, i. p. 372, from Toulouse.

Bruchidæ.

The following species of *Bruchus* are described as injurious to agriculture in Germany by Taschenberg (Naturg. wirbell. Thiere):—*B. pisi* (*l. c.* pp. 42–44, pl. 6. fig. 1), *B. rufimanus* (*l. c.* pp. 44–45, pl. 6. fig. 2), *B. granarius* (*l. c.* pp. 45–46, pl. 6. figs. 3, 4), and *B. lentis* (*l. c.* pp. 46–48).

Bostrichidæ.

Chapuis, in his Monographie des Platypides, has raised the number of known species belonging to that subfamily from 16 to 202, the new forms being chiefly derived from the Malasian region (collected by Wallace) and from tropical America. The greater part of the species are referred by Chapuis to the old genus *Platypus*, which includes 148 species (8 previously described); *Crossotarsus*, a dismemberment of *Platypus*, includes 29 species, of which 26 are new; *Tesserocerus*, with 15 species, includes 4 previously described; the remaining 6 new genera are all formed of new species, varying in number from 1 to 4. The following is a table of the characters of the genera:—

I. Maxillary palpi membranaceous, depressed.

A. Mentum in ♂ coarctate at base; pygidium exposed in both sexes ..... 1. *Crossotarsus*, g. n.

B. Mentum in ♂ dilated at base or linear; pygidium concealed. 2. *Platypus* (Herbst).

II. Maxillary palpi corneous, cylindrical.
A. Anterior coxæ widely separated ..... 3. *Diapus*, g. n.
B. Anterior coxæ contiguous.
* Eyes oblong-oval ..... 4. *Tesserocerus*(Saund.).
† Eyes broadly reniform.
a. Sides of prothorax emarginate ..... 5. *Periommatus*, g. n.
b. Sides of prothorax entire, sinuate.... 6. *Spathidicerus*, g. n.
‡ Eyes rotundate.
a. Sides of prothorax emarginate..... 7. *Mitosoma*, g. n.
b. Sides of prothorax, entire, sinuate.
1. Mentum subcircular, transverse .. 8. *Symmerus*, g. n.
2. Mentum oblong, narrowed towards base. 9. *Cenocephalus*, g. n.

Upon the geographical distribution of the group the author indicates that the only well-known European species is *Platypus cylindrus*, which occurs likewise in Algeria, Java, and Carolina. A second European species was discovered by Léon Dufour; but the third species, *Platypus linearis* (Dej.), belongs to the American genus *Tesserocerus*; and as only a single specimen is in existence, there is room to believe that its European habitat was a mistake. The chief home of the species seems to be tropical America, and next to this comes the Asiatic and Malasian region. It seems probable, however, that further researches in the latter countries, and in the tropical parts of Australia, will furnish a large number of new forms of a group whose chief function in nature seems to be the rapid destruction of woody vegetation. The number of species found in Africa is also very small.

Xyloterus quercus (Eichh.) is the commonest species of *Bostrichidæ* on the Rhine. Fuss, Berl. ent. Zeits. 1865, p. 412.

Dendroctonus pinæ (Schaum, MS.) is enumerated by Erber among the enemies of *Pinus halepensis* on the island of Lesina. Verh. zool.-bot. Ges. in Wien, Bd. xv. p. 945 *bis*.

Cryphalus tiliæ (Fab.) is recorded as occurring in Britain by Power. Ent. M. Mag. i. p. 212.

The natural history of *Hylesinus trifolii* (Müll.) is described by Taschenberg. Naturg. wirbell. Thiere, pp. 272–273.

Crossotarsus. Chapuis (*l. c.*) describes and figures the following known species as belonging to this genus:—*Platypus wallacei* (Thoms.), p. 53, fig. 1 ♂ ♀; *P. minax* (Walker), p. 71, fig. 14 ♂ ♀; and *P. externe-dentatus* (L. Fairm.), p. 81, fig. 20 ♂ ♀. *Platypus apicalis* (White) belongs to this genus, see appendix, p. 337.

Platypus. Chapuis (*l. c.*) describes and figures the following known species of this genus as restricted by him:—(In group 4) *Bostrichus flavicornis* (Fab.), p. 154, fig. 70 ♂ ♀; (in group 5) *Platypus compositus* (Say), p. 163, fig. 75 ♂ ♀; *Bostrichus parallelus* (Fab.), p. 164, fig. 76 ♂ ♀; *Platypus poeyi* (Guér.), p. 208, fig. 117 ♂ ♀; and *P. subcostatus* (J. Duv.), p. 210, fig. 118 ♂ ♀; (in group 11) *Bostrichus cylindrus* (Fab.), p. 246, fig. 147 ♂ ♀; (in

group 15) *Platypus oxyurus* (L. Duf.), p. 263, fig. 158 ♂ ♀; and *P. solidus* (Walk.), p. 267, fig. 160 ♂; (in group 21) *Platypus longipennis* (Montrouzier), p. 286, fig. 176 ♀.—*Platypus linearis* (Steph.) is probably a Brazilian species of group 5.—*Platypus quadridentatus* (Olivier?, Leconte) is described in the appendix, p. 338.

Tesserocerus. The following know species are described and figured by Chapuis (*l. c.*) as belonging to this genus:—(In group 1) *T. retusus* (Guér.), incl. *T. affinis* (Guér.), p. 294, fig. 178 ♂ ♀; and *Platypus procer* (Erichs.), p. 305, fig. 189 ♂; (in group 2) *T. insignis* (Saund.)=*Damicerus agilis* (Spin.), p. 308, fig. 191 ♂ ♀; (in group 3) *T. inermis* (Guér.), p. 310, fig. 192 ♀.

The genus *Genyocerus* (Motsch.) is regarded by Chapuis as a very doubtful member of the group of Platypides, *l. c.* p. 339.

New species:—

Crossotarsus, g. n., Chapuis, *l. c.* p. 44. (See antè p. 489). Chapuis (*l. c.*) describes 26 new species of this genus: namely, *C. bonvouloiri*, p. 55, fig. 2 ♂ ♀ and details, from Cambodia; *C. piceus*, p. 56, fig. 3 ♂ ♀, from the Moluccas and Aru; *C. cinctipennatus*, p. 57, fig. 4 ♂, *C. penicillatus*, p. 64, fig. 8 ♀, *C. wollastoni*, p. 74, fig. 15 ♀, *C. trepanatus*, p. 75, fig. 16 ♂, from Borneo; *C. saundersi*, p. 80, fig. 19 ♂ ♀, from Borneo and Celebes; *C. comatus*, p. 59, fig. 5 ♂, *C. intermedius*, p. 69, fig. 12 ♂, from Celebes; *C. lecontei*, p. 60, fig. 6 ♂ ♀, and details, from Luçon; *C. mniszechi*, p. 62, fig. 7 ♂ ♀, from New Guinea and Celebes; *C. barbatus*, p. 66, fig. 9 ♂ ♀ and details, *C. lævigatus*, p. 70, fig. 13 ♂, and *C. indomitus*, p. 84, fig. 22 ♂, from the Moluccas; *C. minusculus*, p. 68, fig. 10 ♀, *C. inornatus*, p. 68, fig. 11 ♂, *C. lacordairei*, p. 85, fig. 23 ♂ ♀, from New Guinea; *C. nitens*, p. 77, fig. 17 ♀, from Sula; *C. fairmairei*, p. 79, fig. 18 ♀, from India; *C. terminatus*, p. 83, fig. 21 ♀, from Singapore; *C. squamulatus*, p. 87, fig. 24 ♂, from Java; and *C. venustus*, p. 88, fig. 25 ♂, from Ceylon. (African species) *C. crinitus*, p. 90, fig. 26 ♂ ♀, from Senegal and the White Nile; *C. exilis*, p. 92, fig. 27 ♂ ♀, from the White Nile; *C. bohemani*, p. 93, fig. 28 ♀, from Caffraria; and *C. erichsoni*, p. 95, fig. 29 ♂ ♀, from Natal.

Platypus. Chapuis (*l. c.*) describes 140 new species of this genus, which he divides into 7 sections and 21 groups:—Section I. ♀ Intervals of elytra alternate nearly throughout and separated by broad furrows. (Groups 1–3) *Platypi truncati, coronati*, and *plicati*. Sp.: *P. abbreviatus* (Dej.), p. 106, fig. 30 ♂ ♀, *P. concavus*, p. 108, fig. 31 ♀, *P. fuscifrons*, p. 110, fig. 33 ♂, *P. digitalis*, p. 111, fig. 34 ♀, *P. luridus*, p. 122, fig. 41 ♂, *P. fossulatus*, p. 123, fig. 42 ♂, *P. auricularis*, p. 125, fig. 44 ♀, *P. sexcostatus*, p. 126, fig. 45 ♀, *P. binodulis*, p. 130, fig. 48 ♂, *P. olivieri*, p. 132, fig. 50 ♀, *P. marginatus*, p. 133, fig. 51 ♀, *P. fuscus*, p. 134, fig. 52 ♀, *P. mutatus*, p. 136, fig. 54 ♂, *P. sulcatus* (Dej.), p. 137, fig. 55 ♂ ♀, and *P. batesi*, p. 139, fig. 56 ♂, from Brazil; *P. lobatus* (Dej.), p. 109, fig. 32 ♀, *P. pacificus* (Dej.), p. 118, fig. 40 ♂, *P. tuberculatus*, p. 131, fig. 49 ♀, *P. diductus*, p. 139, fig. 57 ♂, *P. subsulcatus* (Dej.), p. 140, fig. 58 ♀, and *P. schmidti* (Buq.), p. 150, fig. 66 ♀, from Cayenne; *P. distinctus*, p. 111, fig. 35 ♀, from Pará; *P. springi*, p. 112, fig. 36 ♂ ♀, *P. reichei*, p. 135, fig. 53 ♂ ♀, *P. lafertei*, p. 144, fig. 61 ♀, *P. parysi*, p. 145, fig. 62 ♀, *P. contractus*, p. 148, fig. 64 ♀, and *P. porrectus*,

p. 150, fig. 67 ♂, from Columbia; *P. dohrni*, p. 115, fig. 37 ♂ ♀, *P. filiformis*, p. 116, fig. 38 ♂, *P. putzeysii*, p. 117, fig. 39 ♂, *P. auritus*, p. 123, fig. 43 ♂ ♀, *P. deyrollei*, p. 127, fig. 46 ♂ ♀, *P. latreillei*, p. 143, fig. 60 ♂ ♀, and *P. quinque-costatus*, p. 149, fig. 65 ♂, from Mexico; *P. koninckii*, p. 128, fig. 47 ♂ ♀, from New Granada and Bahia; *P. elongatus*, p. 141, fig. 59 ♂, from Caraccas; and *P. robustus*, p. 146, fig. 63 ♂, from Venezuela.

Section II. Intervals of the elytra alternate only on the posterior third, separated either by striæ or furrows. Groups 4 & 5, *Platypi caudati* and *trispinati*. Sp.: *P. dimidiatus*, p. 153, fig. 68 ♂, from Cayenne; *P. mulsanti*, p. 154, fig. 69 ♀, *P. apertus*, p. 169, fig. 81 ♂ ♀, and *P. lævicollis*, p. 212, fig. 120 ♂ ♀, from Guadeloupe; *P. alternans*, p. 156, fig. 71 ♀, from Venezuela; *P. angustatus*, (Dej.), p. 157, fig. 72 ♀, *P. longulus*, p. 158, fig. 73 ♀, *P. poriferus*, p. 168, fig. 80 ♀, *P. haagi*, p. 173, fig. 84 ♂ ♀, *P. viduus*, p. 178, fig. 89 ♂, *P. rudifrons*, p. 179, fig. 90 ♂, *P. rugulosus*, p. 192, fig. 103 ♂ ♀, *P. reticulatus*, p. 194, fig. 104 ♂ ♀, *P. rotundatus*, p. 195, fig. 105 ♂ ♀, *P. emarginatus*, p. 199, fig. 109 ♀, from Mexico; *P. pulicaris*, p. 165, fig. 77 ♂ ♀, *P. hians*, p. 167, fig. 79 ♂ ♀, *P. proximus*, p. 188, fig. 98 ♀, *P. marseuli*, p. 188, fig. 99 ♂ ♀, *P. patulus*, p. 190, fig. 100 ♀, and *P. regularis*, p. 192, fig. 102 ♀, from Brazil; *P. dejeani*, p. 186, fig. 97 ♂ ♀, and *P. difficilis*, p. 204, fig. 114 ♂ ♀, from Brazil and Guiana; *P. kraatzi*, p. 196, fig. 106 ♂ ♀, and *P. mæklini*, p. 207, fig. 116 ♂ ♀, from Brazil and Columbia; *P. perpusillus*, p. 171, fig. 83 ♂ ♀, from Brazil and Caraccas; *P. melanurus*, p. 180, fig. 92 ♀, *P. subæqualis*, p. 200, fig. 111 ♀, and *P. prævius*, p. 205, fig. 115 ♂ ♀, from Columbia; *P. pertusus*, p. 170, fig. 82 ♀, and *P. compressus*, p. 191, fig. 101 ♀, from Caraccas; *P. segnis*, p. 166, fig. 78 ♀, from New Granada; *P. areolatus*, p. 179, fig. 91 ♂, from Cuba; *P. schaumi*, p. 181, fig. 93 ♂ ♀, from Porto Rico; *P. lebasi*, p. 197, fig. 107 ♂, from Carthagena; *P. sinuosus*, p. 198, fig. 108 ♀, from Varinas; *P. oblongus*, p. 203, fig. 113 ♂ from Cumana; *P. erichsoni*, p. 211, fig. 119 ♂ ♀, from St. Thomas; *P. subcavifrons*, p. 177, fig. 88 ♂, and *P. trispinosus*, p. 187, fig. 95 ♀, from Rio Janeiro; *P. wesmaeli*, p. 201, fig. 112 ♂ ♀, from Buenos Ayres; *P. tremiferus*, p. 174, fig. 85 ♂ ♀, *P. perfossus*, p. 176, fig. 86 ♂ ♀, *P. rugosus*, p. 176, fig. 87 ♂ ♀, *P. blanchardi*, p. 185, fig. 96 ♀, and *P. punctulatus*, p. 199, fig. 110 ♀, from North America; and *P. madagascariensis* (Dej.), p. 161, fig. 74 ♂ ♀, and *P. roberti*, p. 183, fig. 94 ♀, from Madagascar.

Section III. Intervals of the elytra alternate only towards the posterior extremity, separated by series of points more or less effaced outwardly. Groups 6–10, *Platypi gemmati, filiformes, bicornuti, terminati*, and *costellati*. Sp.: (group 6) *P. selysi*, p. 215, fig. 121 ♂ ♀, from New Guinea; (group 7) *P. sallei*, p. 218, fig. 122 ♂ ♀, *P. macroporus*, p. 220, fig. 124 ♂, and *P. quadrispinatus*, p. 221, fig. 125 ♀, from Columbia; and *P. disciporus*, p. 219, fig. 123 ♂, from Tennessee; (group 8) *P. armatus*, p. 222, fig. 126 ♀, from Columbia; (group 9) *P. ustulatus*, p. 224, fig. 127 ♂ ♀, and *P. excisus*, p. 225, fig. 128 ♂ ♀, from Mexico; *P. petersi*, p. 226, fig. 129 ♂ ♀, *P. brunneus*, p. 228, fig. 132 ♀, from Brazil; *P. ratzeburgi*, p. 227, fig. 130 ♂ ♀, from Brazil, Cayenne, and Columbia; *P. obsoletus*, p. 228, fig. 131 ♂ ♀, from Columbia; and *P. humilis*, p. 229, fig. 133 ♀, from Caraccas; (group 10) *P. pulchellus*, p. 230, fig. 134 ♀, from Mexico; *P. carinulatus*, p. 231, fig. 135 ♀, and *P. pusillimus*, p. 232, fig. 136 ♀, from Brazil.

Section IV. Intervals of the elytra subsimilar, separated by furrows.

Groups 11–13, *Platypi sulcati, discoïdales*, and *bisulcati*. Sp.: (group 11) *P. setaceus*, p. 234, fig. 137 ♀, and *P. turbatus*, p. 242, fig. 144 ♀, from the Philippines; *P. signatus*, p. 235, fig. 138 ♀, *P. westwoodi*, p. 236, fig. 139 ♀, and *P. politus*, p. 249, fig. 148 ♂, from Sarawak; *P. lucasi*, p. 243, fig. 145 ♀, from New Guinea; *P. jansoni*, p. 244, fig. 146 ♂ ♀, from New Guinea, Celebes, and the Moluccas; *P. gerstaeckeri*, p. 240, fig. 143 ♂ ♀, from the Fiji Islands; *P. douei* (Reiche), p. 237, fig. 140 ♂ ♀, from New Zealand; *P. geminatus*, p. 239, fig. 141 ♂, and *P. australis*, p. 240, fig. 142 ♂, from Australia; and *P. pulcher*, p. 249, fig. 149 ♂, *P. laticollis*, p. 250, fig. 150 ♀, and *P. obtusus*, p. 251, fig. 151 ♀, from Brazil; (group 12) *P. limbatus*, p. 253, fig. 152 ♂ ♀, from Mexico; *P. discicollis* (Dej.), p. 254, fig. 153 ♂ ♀, from Columbia; and *P. biformis*, p. 255, fig. 154 ♂, from India; (group 13) *P. candezei*, p. 257, fig. 155 ♂ ♀, from Borneo and Malacca.

Section V. Intervals of the elytra similar, separated by punctate striæ. Groups 14–16, *Platypi hirtelli, oxyuri*, and *platyuri*. Sp. (group 14) *P. perrisi*, p. 260, fig. 156 ♂ ♀, and *P. curtus*, p. 261, fig. 157 ♀, from Singapore and Sarawak; (group 15) *P. pilifrons*, p. 265, fig. 159 ♂, from India and the Eastern archipelago; (group 16) *P. truncatus* (Dej.), p. 269, fig. 161 ♀, from the Mauritius; *P. striatus* (Reiche), p. 270, fig. 162 ♀, from Brazil; and *P. dissimilis* p. 271, fig. 163 ♂, from New Granada.

Section VI. Intervals subsimilar, separated by series of points becoming more or less effaced outwardly. Groups 17–20, *Platypi punctato-sulcati, asperati, cupulati*, and *quadrifissi*. Sp.: (group 17) *P. occipitalis*, p. 273, fig. 164 ♂ ♀, from Guatemala; (group 18) *P. cordiger*, p. 275, fig. 165 ♂, from Singapore and Sarawak; and *P. excedens*, p. 276, fig. 166 ♀, from Dorey; (group 19) *P. cupulatus*, p. 278, fig. 167 ♂ ♀, and *P. aduncus*, p. 283, fig. 173 ♀, from Sarawak; *P. excavatus*, p. 280, fig. 168 ♀, from Ceylon; *P. caliculus*, p. 280, fig. 169 ♂ ♀, from Siam; *P. chevrolati*, p. 281, fig. 170 ♂ ♀, from New Guinea and Waigiou; *P. pallidus*, p. 284, fig. 174 ♂, from Dorey; *P. lepidus*, p. 282, fig. 171 ♂ ♀, from Celebes, the Moluccas, and Philippines; and *P. forficula*, p. 283, fig. 172 ♀, from the Moluccas; (group 20) *P. circularis*, p. 285, fig. 175 ♀, from Waigiou.

Section VII. Intervals very irregular, neither alternate nor similar, separated by furrows of greater or less depth. Group 21, *Platypi dorso-sulcati*. Sp. *P. crenatus*, p. 287, fig. 177 ♀, from Moreton Bay.

Tesserocerus (= *Damicerus*, Spin. MS., Dej. Cat.). Of this genus Chapuis (*l. c.*) describes the following new species. He divides the genus into three groups, of which the distinctive characters are given below:—

Group 1. Tesseroceri genuini: forehead convex, densely covered with hairs; first joint of antennæ at least half the length of the whole organ, gently curved, prismatic. Sp.: *T. elegans*, p. 295, fig. 179 ♂ ♀, from Columbia; *T. dejeani*, p. 303, fig. 187 ♂ ♀, from Columbia and Mexico; *T. rudis*, p. 297, fig. 180 ♂ ♀, from Venezuela and Caraccas; *T. contractus*, p. 298, fig. 181 ♂, *T. guerini*, p. 299, fig. 183 ♂ ♀, *T. decalquei*, p. 300, fig. 184 ♂ ♀, *T. aubei*, p. 301, fig. 185 ♂ ♀, and *T. linearis* (Dej.), p. 302, fig. 186 ♂, from Brazil; *T. morsi*, p. 298, fig. 182 ♂, from Cayenne, and *T. obtusus*, p. 304, fig. 188 ♂ ♀, from Cayenne and Brazil.

Group 2. Tesseroceri clavati: forehead not convex in ♂, nearly as convex as in preceding in ♀; first joint of antennæ in ♂ excessively elongate. Sp. *T. spinolæ*, p. 307, fig. 190 ♂ ♀, from Mexico.

Group 3. Tesseroceri tortiles. (No new species).

Spathidicerus (g. n.) *thomsoni*, Chapuis, p. 314, fig. 193 ♂, from the East Indies; and *S. nobilis*, Chap. p. 315, fig. 194 ♀, from New Guinea.

Periommatus (g. n.) *longicollis*, Chapuis, p. 318, fig. 195 ♀, from the Cape of Good Hope.

Symmerus (g. n.) *tuberculatus*, Chapuis, p. 321, fig. 196 ♀, from Guinea.

Mitosoma (g. n.) *crenulata*, Chapuis, p. 324, fig. 197 ♀, from Madagascar.

Cenocephalus (g. n.) *thoracicus*, Chapuis, p. 327, fig. 198 ♂ ♀, from Brazil.

Diapus (g. n.) *quadrispinatus*, Chapuis, p. 332, fig. 199 ♂ ♀, and *D. molossus*, Chap. p. 333, fig. 200 ♂, from the East Indies; *D. quinquespinatus*, Chap. p. 334, fig. 201 ♂ ♀, from Celebes, Borneo, Morty, and New Guinea; and *D. pusillimus*, Chap. p. 335, fig. 202 ♂ ♀, from Dorey.

Xylopertha ficicola, Wollaston, Col. Atl. App. p. 36, from Gomera.

Aphanarthrum tuberculatum, Wollaston, *l. c.* p. 40, *A. canescens*, Woll. p. 41, and *A. pygmæum*, Woll. p. 42, from the Canaries.

Liparthrum nigrescens, Wollaston, *l. c.* p. 44(=*bituberculatum*, Woll. Cat. Can. Col. nec Ins. Mad.), from Teneriffe; *L. bicaudatum*, Woll. ibid., from Gomera.

Hylurgus destruens, Wollaston, *l. c.* p. 45 (=*H. piniperda*, Woll. Ins. Mad. nec Lin.), from Madeira.

Longicornia.

Pascoe has continued his descriptions of the Longicorns of the Malayan region (Ent. Trans. 3rd ser. vol. iii. pp. 97–224; see Zool. Record i. p. 415), which he carries as far as the *Dorcadioninæ*, the ninth subfamily of his *Lamiidæ*. The new species and genera established by him will be referred to below; the known species and genera characterized in this part are the following:—

(Mesosinæ) *Æmocia ichthyosomoides* (Thoms.), p. 97; *Mesosa* (*Anancylus*, Th.) *griseata* (Pasc.), p. 99; *Planodes* (Newm.), p. 100; *Ereis anthriboides* (Pasc.), p. 106, the generic name changed from *Eris*, the latter being preoccupied by Koch in Arachnida; *Saperda vanikorensis* (Boisd.)=*Corethrophora semiluctuosa* (Blanch.)=*Cacia anthriboides* (Pasc.)=*C. histrionica* (Pasc.) is described by Pascoe under the new name of *C. instabilis*, p. 108; *Cacia inculta* (Pasc.), p. 109; *C. confusa* (Pasc.), p. 110; *C. picticornis* (Pasc.), p. 111; *C. (Elelea) concinna* (Pasc.), p. 113, pl. 6. fig. 7; *C. (Ipocregyes) newmanni* (Pasc.), p. 114, pl. 7. fig. 2; *Coptops* (*Clyzomedus*) *nanus* (Pasc.), p. 116, pl. 8. fig. 4; *Coptops* (Serv.), p. 116; *Abryna* (*Coptops*) *pardalis* (Pasc.), p. 119; *Agelasta callizona* (White), p. 125; *A. wallacei* (White), ibid.; *A. polynesus* (White), p. 126; *A. newmanni* (White), ibid.; *A. amicus* (White), p. 127; *A. irrorata* (Pasc.), p. 128; *Æsopida malaciaca* (Thoms.), p. 133; *Golsinda corallina* (Thoms.), ibid.; *Golsinda* (*Palimna*) *tessellata* (Pasc.), p. 135, pl. 6. fig. 2; *Golsinda* (*Goniages*) *infausta* (Pasc.), ibid., pl. 6. fig. 3; *Phemone frenata* (Pasc.), p. 136; (Apomecyninæ) *Cenodoches* (Thoms.), p. 142; *Synelasma bufo* (Pasc.), p. 143; *Moron distigma* (Pasc.), p. 146; *Euclea* (Newm.), p. 149; *Saperda* (*Atmodes*) *marmorea* (Schönh.) =*irrorata* (Fab.), p. 151; *Lamia* (*Apomecyna*) *histrio* (Fab.), p. 153; *Atimura* (Pasc.), p. 157; *Lamia* (*Sthenias*) *grisator* (Fab.); *Xylorhiza venosa*, (Lap.),

p. 162; *Praonetha* (=*Prioneta*) *albo-signata* (Blanch.), p. 164; *Praonetha melanura* (Pasc.), p. 167; *P. undulata* (Pasc.), p. 172; *P. costalis* (Pasc.), p. 177; *Lamia* (*Praonetha*) *crassipes* (Wied.), p. 178; *Notolophia* (*Praonetha*) *variabilis* (Pasc.), p. 181; *Ropica piperata* (Pasc.), p. 188; *R. variipennis* (Pasc.), p. 191; *Ropica* (*Sybra*) *stigmatica* (Pasc.), p. 199, pl. 9. fig. 2; *R.* (*S.*) *incana* (Pasc.), p. 110.

Burmeister has added to the enormous mass of literature on Longicorn Beetles a revision of the species of this family found in the region of the La Plata (Stett. ent. Zeit. 1865, pp. 156–181). The total number of species here recorded is 81, of which 7 belong to the *Prionides*, 63 to the *Cerambycides*, and 10 to the *Lamiides*, whilst the *Lepturides* are represented only by a single known species. Of the species, 43 are described as new, and several others under names borrowed from Dejean's Catalogue.

Burmeister combines *Orthostoma* and *Compsocerus* (Serv.) in a single genus under the former name (*l. c.* p. 169).

The groups completing Léon Fairmaire's classification of his fourth division of Longicorns are as follows:—Group 31. *Obriites*; 32. *Necydalites*; 33. *Vesperites*; 34. *Stenocorites*; and 35. *Lepturites*. The following known species of this family are figured by him (Genera des Coléopt. d'Europe, livr. 128–131):—

Exocentrus adspersus (Muls.), pl. 47. fig. 217; *Hoplosia fennica* (Payk.), fig. 218; *Acanthoderes kruperi* (Kraatz), fig. 219; *Pogonocherus perroudi* (Muls.), fig. 220; *P. decoratus* (Fairm.), fig. 221; *Belodera troberti* (Muls.), pl. 48. fig. 222; *Monohammus gallo-provincialis* (Oliv.), fig. 223; *Lamia textor* (Lin.), fig. 224; *Morimus lugubris* (Fab.), fig. 225; *Dorcatypus fairmairei* (Thoms.), fig. 226; *Dorcadion glycyrrhizæ* (Pall.), pl. 49. fig. 227; *D. quadrinaculatum* (Waltl) ♂ ♀, figs. 228–229; *D. annulicorne* (Chevr.), fig. 230; *Parmena algirica* (Lap.), fig. 231; *Albana M-griseum* (Muls.), pl. 50. fig. 232; *Niphona picticornis* (Muls.), fig. 233; *Mesosa curculionoides* (Linn.), fig. 234; *Anæsthetis testacea* (Fab.), fig. 235; *Hippopsis gracilis* (Creutz.) fig. 236; *Agapanthia irrorata* (Fab.), pl. 51. fig. 237; *A. leucaspis*, (Stev.), fig. 238; *Compsidia populnea* (Linn.), fig. 239; *Anærea carcharias* (Linn.), fig. 240; *Saperda phoca* (Fröhl.), fig. 241; *S. perforata* (Pall.), pl. 52. fig. 242; *S. punctata* (Linn.), fig. 243; *Menesia bipunctata* (Zoubk.), fig. 244; *Tetrops præusta* (Linn.), fig. 245; *Stenostola ferrea* (Schr.), fig. 246; *Oberea pupillata* (Gyll.), pl. 53. fig. 247; *Phytœcia jourdani* (Muls.), fig. 248; *P. balcanica* (Friv.), fig. 249; *P. baccueti* (Br.), fig. 250; *Cardoria scutellata* (Fab.), fig. 251; *Opsilia virescens* (Fab.), pl. 54. fig. 252; *Orylia duponcheli* (Br.), fig. 253; *Pilemia tigrina* (Muls.), fig. 254; *Helladia flavescens* (Br.), fig. 255; *Conizonia vittigera* (Fab.), fig. 256; *Coptosia languida* (Mén.), pl. 55. fig. 257; *Mallosia græca* (St.), fig. 258; *Obrium cantharinum* (Lin.), fig. 259; *Necydalis major* (Lin.), fig. 260; *Vesperus luridus* (Rossi), fig. 261; *Xylosteus spinolæ* (Friv.), pl. 56. fig. 262; *Stenocorus bifasciatus* (Fab.), fig. 263; *Rhamnusium bicolor* (Schr.), fig. 264; *Oxymirus cursor* (Linn.), fig. 265; and *Toxotus quercus*, fig. 266.

Lamiides.

Pascoe changes the generic name *Hebecerus* (Thoms.) into *Hebesecis*, the former having been employed for a genus of Rhynchota. Journ. of Ent. ii. p. 353, note.

Microtragus (White). This genus is characterized by Pascoe, *l. c.* p. 360.

Lygesis (Pasc.) and *Bebius* (Pasc.) are described by Pascoe, *l. c.* p. 369.

Batocera rubus. The habits of this Beetle are described by F. M. Alexander, Ent. M. Mag. ii. p. 23.

Pogonocherus. Reiche notices the occurrence of *Pogonocherus hispidus* in dead branches of the ivy. Bull. Soc. Ent. Fr. 1865, p. xxxv. According to Desbrochers des Loges the ivy harbours not only *P. hispidus* but also *P. ovalis* and *pilosus*. Bull. Soc. Ent. Fr. 1865, p. xliv.

Leiopus nebulosus. The variations of this species as regards the colouring of the elytra are referred to by Mulsant and Rey. Ann. Soc. Linn. Lyon, tome x. pp. 161–162. The same authors describe *Mallosia scowitsii* (Fald.), *l. c.* p. 165, and also the genus *Apatophysis* (Chevr.), *l. c.* p. 173, and sp. *A. toxotoides* (Chevr.), *l. c.* p. 175.

The edible larva called "Bardé" in Swan River belongs to a species of *Macrotoma* and not to *Bardistus cibarius* (Newm.), according to Pascoe, Proc. Ent. Soc. 1865, p. 99.

New genera :—

The *Apomecyninæ* of Pascoe include 164 Malasian species, belonging to 28 genera, 17 of which are defined as new. They are tabulated by the author as follows (*l. c.* pp. 140–141) :—

Antennæ with terminal joints plumose.
- Basal 3 joints more or less plumose ..... 1. *Cenodocus*, Thoms.

Basal joints not plumose.
- Scape as long as third joint ..... 2. *Zosmotes*, g. n.
- Scape shorter than third joint ..... 3. *Synelasma*, Pasc.

Antennæ not plumose.
Prothorax toothed at the sides.
- Propectus elongate ..... 4. *Euclæa*, Newm.
- Propectus short.
  - Middle tibiæ toothed within ..... 5. *Moron*, Pasc.
  - Middle tibiæ not toothed.
    - Tarsi as long as their tibiæ ..... 6. *Atmodes*, Thoms.
    - Tarsi shorter than their tibiæ ..... 7. *Zacera*, g. n.

Prothorax unarmed.
Prothorax not broader than head.
- Elytra narrowly trigonate ..... 8. *Epilysta**, g. n.
- Elytra nearly parallel-sided.
  - Body narrowly cylindrical.
    - Apex of elytra rounded ..... 9. *Zorillispe*, g. n.
    - Apex of elytra abruptly declivous .... 10. *Atimura*, Pasc.
  - Body robust; elytra much broader than prothorax.
    - Prothorax irregular, constricted ..... 11. *Xylorhiza*, Lap.

* Spelt *Epelysta* in table, *Epilysta* at p. 148.

- Prothorax cylindrical ..... 12. *Sthenias*, Lap.

Prothorax broader than head.
- Antennæ with basal 5 joints incrassate .... 13. *Dymascus*, g. n.
- Antennæ setaceous or linear.
  - Scape very robust, rugosely punctured.... 14. *Æthalopus*, g. n.
  - Scape of moderate size or small.
    - Terminal joints of antennæ short, obsoletely articulated.
      - Eyes large, extending to base of mandibles. 15. *Phesates*, g. n.
      - Eyes moderate or small.
        - Pro- and mesosterna declivous .... 16. *Apomecyna* (Serv.).
        - Pro- and mesosterna elevated.
      - Eyes completely divided.
        - Third and fourth joints of antennæ equal. 17. *Etaxalus*, g. n.
        - Third joint much longer than fourth. 18. *Sesiosa*, g. n.
      - Eyes not divided ..... 19. *Cobria*, g. n.
    - Terminal joints of antennæ longer, and not obsoletely articulated.
      - Antennæ linear { glabrous ..... 20. *Meximia*, g. n. / fringed beneath.... 21. *Gemylus*, g. n.
      - Antennæ setaceous, robust, third and fourth joints curved and thickened to apex.
        - Body compressed..... 22. *Praonetha*, Blanch.
        - Body depressed ..... 23. *Sterilea*, g. n.
      - Antennæ setaceous, slender.
        - Tibiæ not longer than their tarsi.
          - Elytra short, convex ..... 24. *Ropica*, Pasc.
          - Elytra depressed and elongate.... 25. *Sybra*, g. n.
        - Tibiæ longer than their tarsi.
          - Scape cylindrical ..... 26. *Bityle*, g. n.
          - Scape oblongo-pyriform ..... 27. *Pithodia*, g. n.
          - Scape oblong-ovate ..... 28. *Mynonoma*, g. n.

Therippia, g. n., Pasc. *l. c.* p. 107, note. Allied to *Cacia*; antennæ shorter than body, with the first and third joints nearly equal to fourth; mesosternum broad, nearly flat, horizontally produced in front. Sp. *T. decorata*, sp. n., Pasc. *l. c.* p. 107, note, from Ceylon.

Mnemea, g. n., Pascoe, *l. c.* p. 114. Allied to *Ipocregyes* (Pasc., see Record, 1864, p. 427); mandibles elongate, antennæ with the first joint short, much produced and cicatricose at apex. Sp. *M. phalerata*, sp. n., Pasc. *l. c.* p. 115, pl. 7. fig. 8, from Sarawak.

Dissosira, g. n., Pascoe, *l. c.* p. 124, note. Allied to *Agelasta*; third joint of antennæ longer than scape; prothorax suboblong, cylindric, transversely impressed in front; legs nearly equal. Type *Agelasta catenata* (Pasc.).

Helicæa, g. n., Pascoe, *l. c.* p. 124, note. Allied to *Agelasta*; third joint of antennæ much longer than scape; prothorax small, not wider behind; mesosternum dentate; legs nearly equal. Type *Agelasta rupta* (Pasc.).

Xynenon, g. n., Pascoe, *l. c.* p. 159, note. Allied to *Sthenias*; antenniferous

tubercles very short; head short; antennæ short, stout, indistinctly articulated. Sp. *Sthenias bondii* (Pasc.).

Anaches, g. n., Pascoe, *l. c.* p. 160, note. Allied to *Sthenias*; head prominent in front; antenniferous tubercles strong, produced at the apex externally; antennæ elongate, slender, scape subcylindric, as long as the third joint. Sp. *Sthenias dorsalis* (Pasc.).

Desisa, g. n., Pascoe, *l. c.* p. 163, note. Allied to *Praonetha*; eyes moderately emarginate; antennæ longer than body, tubercles distant, joints cylindrical. Sp. *Praonetha subfasciata* (Pasc.).

The *Dorcadioninæ* are represented in Wallace's Collections only by two species, each the type, according to Pascoe, of a new genus. He tabulates them as follows (*l. c.* p. 223) :—

Prothorax toothed on each side anteriorly ..... *Dasyerrus*, g. n.
Prothorax unarmed ..... *Bybe*, g. n.

Dasyerrus, g. n., allied to *Parmena*. *D. pilosus*, Pascoe, *l. c.* p. 224 [pl. 10. fig. 8], from Flores and Timor.

Ameipsis, g. n., Pascoe, Journ. of Ent. ii. p. 354. Allied to *Probatodes* (Thoms.); elytra short, deflexed perpendicularly and keeled at the sides. Sp. *A. marginicollis*, sp. n., Pasc. *l. c.* p. 354, from New South Wales?

Corrhenes, g. n., Pascoe, *l. c.* p. 355. Allied to *Niphona*; joint 3 of antennæ longer than 4; prothorax narrow, with a single tooth on each side. Type *Saperda paulla* (Germ.). N. sp. *C. guttulata*, Pascoe, *l. c.* p. 355, from New South Wales?

Iphiastus, g. n., Pascoe, *l. c.* p. 357. Allied to *Symphyletes*; head transverse in front, dilated below the eyes, antenniferous tubercles approximate at base; prothorax as long as broad, turgid, constricted in front; elytra subtrigonate, shoulders prominent. Sp. *Symphyletes heros* (Pasc.), pl. 16. fig. 4.

Depsages, g. n., Pascoe, *l. c.* p. 359. Allied to *Penthea*; head narrower than prothorax, which is much widened at base; antenniferous tubercles approximate at base; elytra granuliferous, not keeled. Type *Lamia granulosa* (Guér.).

Sysspilotus g. n., Pascoe, *l. c.* p. 359. Allied to *Penthea*; mesosternum toothed; fourth joint of antennæ longer than third. Sp. *S. macleayi*, sp. n., Pasc. *l. c.* p. 360, from New South Wales?

Mulciber, g. n., Thomson, Syst. Ceramb. p. 493. Allied to *Crinotarsus*; third joint of antennæ much longer than fourth; prothorax transverse; elytra strongly bispinose; legs nearly similar; pro- and mesosternal appendages distant, the latter conical. Sp. *M. linnei*, sp. n., Thoms. *l. c.* p. 494, from Java? *M. maculicollis*, Thoms. *l. c.* p. 546, from the Fiji Islands.

Anapansa, g. n., Thomson, *l. c.* p. 494. Allied to preceding genus; anterior femora in ♂ compressed, dilated into a flattened club, armed with a spine; pro- and mesosternal appendages laminar. Sp. *A. armata*, sp. n., Thoms. *l. c.* p. 495, from Morty.

Drascalia, g. n., Fairmaire & Germain, Rev. et Mag. de Zool. 1864, p. 387. Allied to *Stenidea*; eyes deeply emarginate, coarsely granulated; anterior acetabula narrowly angulate, slightly gaping behind; prothorax with a strong spine on each side. Sp. *D. prælonga*, Fairm. & Germ. *l. c.* p. 388, from Chili.

Xylomimus, g. n., Bates, Ann. & Mag. Nat. Hist. 3rd ser. xv. p. 308. Allied to *Eudesmus*; antenniferous tubercles prominent and angular; joint 1 of antennæ forming a thick, oblong club, joint 3 one-third longer than 1, thickened nearly from base, with a fringe of long bristles beneath; lateral tubercles of thorax inconspicuous; form narrow and cylindrical; legs very short; last joint of tarsi as long as the rest united. Sp. *X. baculus*, sp. n., Bates, *l. c.* p. 308, from the Tapajos.

Peritrox, g. n., Bates, *l. c.* p. 313. Allied to *Trestonia*; basal joint of antennæ gradually thickened from the base, joint 3 one-fourth longer than 1, fringed beneath with fine hairs; last joint of tarsi longer than the other three taken together. Sp. *P. denticollis*, sp. n., Bates, *l. c.* p. 313, from Santarem.

New species :—

Oreodera. The following new species are described by Thomson, Syst. Ceramb. p. 542 :—*O. tenebrosa* (Dej.), from Brazil; *O. tuberculata*, from Columbia; *O. jacquieri* (Dej.), from Cayenne; *O. costaricensis*, from Costa Rica; *O. corticina* (Dej.) and *O. fasciculosa* (Chevr. MS.), from Mexico.

Polyrhaphis fabricii, Thomson, Syst. Ceramb. p. 542, and *P. olivieri*, Thoms. *l. c.* p. 543, from Cayenne.

Steirastoma thumbergii (sic), Thomson, *l. c.* p. 543, from Brazil.

Hedypathes albus, Thomson, *l. c.* p. 543, from Brazil.

Acanthoderes congener (Dej.), Burm. Stett. ent. Zeit. 1865, p. 178, and *A. nodosus*, Burm. ibid., from La Plata.

Psapharochrus. The following new species are described by Thomson :—*P. fuliginosus* (Dej.), *P. contaminatus* (Dej.), *l. c.* p. 543, and *P. consentaneus* (Dej.), *l. c.* p. 544, from Brazil; *P. lugens* (Dej.), and *P. sallei*, *l. c.* p. 543, from Mexico.

Symperasmus affinis (Dej.), Thomson, *l. c.* p. 544, from Cayenne.

Pteridotelus contaminatus (Dej.), Thomson, *l. c.* p. 544, from Brazil, and *P. lacrymans*, Thoms. ibid., from Mexico.

Alcidion adjunctum, Thomson, *l. c.* p. 544, from Costa Rica.

Anisopodus acutus, Thomson, *l. c.* p. 544, from Brazil.

Anisopodus variegatus, Burm. Stett. ent. Zeit. 1865, p. 178, from Tucuman.

Leiopus constellatus, Mulsant & Rey, *l. c.* p. 159, from Batoum, and *L. punctulatus*, Muls. & Rey, *l. c.* p. 162, from Northern Europe (vär. of *L. nebulosus*?).

Microplia signifer (Dej.), Thomson, *l. c.* p. 544, from Brazil.

Lagocheirus funestus, Thomson, *l. c.* p. 545, from Mexico.

Leptostylus liliputanus, Thomson, *l. c.* p. 545, from Columbia.

Carterica basalis (Dej.), Thomson, *l. c.* p. 545, from Cayenne.—*C. cincticornis*, Bates, Ann. & Mag. Nat. Hist. 3rd ser. xv. p. 214, from Ega.

Colobothea. Bates (*l. c.*) describes the following new Amazonian species :—*C. lignicolor*, p. 215; *C. velutina*, p. 216 (also from Cayenne); *C. decemmaculata*, p. 217 (also from Cayenne); *C. flavomaculata*, p. 218; *C. dioptica*, p. 220; *C. pictilis*, p. 221; *C. pulchella*, ibid.; *C. obtusa*, p. 222; *C. humerosa*, p. 223; *C. destituta*, p. 383; *C. seminalis*, ibid.; *C. paulina*, p. 384 (also from French Guiana); *C. varica*, p. 385; *C. propinqua*, ibid.; *C. nævia*, p. 386;

C. juncea, ibid.; *C. securifera*, p. 387; *C. sejuncta*, ibid.; *C. bisignata*, p. 389; *C. latevittata*, p. 390; *C. styligera*, p. 391; *C. grallatrix*, ibid.; *C. olivencia*, p. 392; *C. pura*, ibid.; *C. carneola*, p. 393; *C. forcipata*, p. 394; *C. nævigera*, Ann. & Mag. Nat. Hist. 3rd ser. vol. xvi. p. 101; *C. lucaria*, p. 102; *C. crassa*, p. 103; *C. ordinata*, p. 104; *C. subtessellata*, ibid.; *C. octolineata*, p. 105; *C. geminata*, p. 106; *C. concreta*, ibid.; and *C. bilineata*, p. 107. Also the following species from other parts of America:—*C. biguttata*, vol. xv. p. 219, note; *C. strigosa* (Mann.), p. 224, note; and *C. lateralis*, vol. xvi. p. 108, note, from Brazil; *C. schmidtii*, vol. xv. p. 225, note, and *C. fasciata*, vol. xvi. p. 108, note, from Rio Janeiro; *C. ligneola*, vol. xv. p. 216, note, and *C. linea-tocollis* (Dej.), vol. xvi. p. 103, note, from Cayenne; *C. maculicollis*, vol. xv. p. 217, note; *C. lineola* (Chevr.), p. 222, and *C. mosaica* (Deyr.), p. 384, note, from Venezuela; *C. leucophæa* (Chevr.), p. 223, note; *C. vidua*, p. 224, note, and *C. hebraica* (Chevr.), vol. xvi. p. 108, note, from Mexico.

Blapsilon montrouzieri, Thomson, *l. c.* p. 545, from New Caledonia.

Polyxo patricius, Thomson, *l. c.* p. 545, from Celebes.

Ichthyosomus. Thomson describes the following new species of this genus:—*I. phaleratus*, *l. c.* p. 545, *I. mortyanus*, ibid., from Morty; *I. ruficornis* (Dej.), *l. c.* p. 545, from Timor; *I. 4-fasciatus*, ibid., *I. vagus*, *l. c.* p. 546, from Batchian; *I. viridipes*, ibid., from Mysol and Dorey; *I. griseus* and *I. dejeanii*, ibid., from Aru.

Trigonoptera bimaculata, Thomson, *l. c.* p. 546, from Waigiou.

Enicodes tapeinoïdes, Thomson, *l. c.* p. 546, and *E. schreibersii*, Thoms. ibid., from New Caledonia.

Iresioïdes kraatzii, Thomson, *l. c.* p. 547, and *I. brunnea*, Thoms. ibid., from Ceylon.

Phantasis. Thomson (*l. c.* p. 547) describes the following new species of this genus:—*P. spectrum*, from Lake Ngami; *P. avernica*, from the Zambesi; *P. tuberculifera*, from Natal; and *P. brachyderoïdes*, from the Cape.

Phrissoma terricolum, Thomson, *l. c.* p. 547, and *P. reichei* (Dej.), Thoms. ibid., from the Cape.

Microtragus arachne, Pascoe, Journ. of Ent. ii. p. 361, from Western Australia; *M. mormon*, Pasc. ibid., and *eremita*, Pasc. *l. c.* p. 362, from South Australia. Pascoe also indicates three allied new species, of which his specimens are too imperfect for full descriptions, *l. c.* p. 362, note.

Dorcadion. The following nine new species of this genus are described by Thomson:—*D. ledereri* (Kinderm. MS.), *l. c.* p. 548, from Russia and Turkey; *D. abakumovii* (Gebl. MS.), ibid., from Russia; *D. triste*, ibid., *D. saulcyi*, *l. c.* p. 549, from Syria; *D. sanguinolentum*, *l. c.* p. 548, from Armenia; *D. niveisparsum*, ibid., from the Caucasus; *D. serotinum* (Fairm. MS.), *l. c.* p. 549, from Smyrna; *D. apicale* (Waltl), ibid., from Asia Minor; and *D. labyrinthicum*, ibid., from the Crimea.

Dorcadion. Mulsant and Rey have described the following eight new species of this genus from Eastern Europe and Western Asia:—*D. stanchardi*, Ann. Soc. Linn. Lyon, x. p. 147, *D. hampii*, *l. c.* p. 157, and *D. infernale*, *l. c.* p. 158, from Persia; *D. pelleti*, *l. c.* p. 149, and *D. segne*, *l. c.* p. 155, from Smyrna; *D. interruptum*, *l. c.* p. 150, *D. sparsum*, *l. c.* p. 152, and *D. frontale*, *l. c.* p. 154, from Constantinople.

Dorcadion cretosum, Ferrari, Wien. ent. Mon. Bd. viii. p. 479, and *D. suturatum*, Ferrari, *l. c.* p. 481, from the Caucasus (Grusia).

Euclea cynthia (Newm. MS.?), Thomson, *l. c.* p. 549, from the Philippines; *E. bizonata*, Thoms. ibid., and *E. casta*, Thoms. ibid., from Malasia.

Cenodocus adustus, Pascoe, Ent. Trans. 3rd ser. iii. p. 142 [pl. 10. fig. 3], from Sumatra.

Synelasma stellio, Pascoe, *l. c.* p. 144, *S. anolius*, Pasc. ibid., and *S. scincus*, Pasc. *l. c.* p. 145, from Sarawak.

Zosmotes (g. n.) *plumula*, Pascoe, *l. c.* p. 145, pl. 9. fig. 3, from Sarawak.

Zæera (g. n.) *cretata*, Pascoe, *l. c.* p. 147, pl. 8. fig. 5, from Batchian.

Phœapate albula, Pascoe, Journ. of Ent. ii. p. 363, from Queensland.

Cobria (g. n.) *albisparsa*, Pascoe, Ent. Trans. 3rd ser. iii. p. 148, pl. 8. fig. 1, from Dorey.

Epilysta (g. n.) *mucida*, Pascoe, *l. c.* p. 149, pl. 9. fig. 7, from Sarawak.

Euclea capito, Pascoe, *l. c.* p. 149, note, and *E. mesoleuca*, Pasc. *l. c.* p. 150, note, from Manilla; *E. illecebrosa*, Pasc. *l. c.* p. 150, pl. 8. fig. 3, from Celebes; and *E. nigritarsis*, Pasc. ibid., from Amboyna.

Etaxalus (g. n.) *iliacus*, Pascoe, *l. c.* p. 153, pl. 9. fig. 4, from Sarawak.

Sesiosa (g. n.) *subfasciata*, Pascoe, *l. c.* p. 154, pl. 8. fig. 2, from Singapore.

Phesates (g. n.) *ferrugatus*, Pascoe, *l. c.* p. 155, pl. 8. fig. 8, from Sarawak.

Dymascus (g. n.) *porosus*, Pascoe, *l. c.* p. 156, pl. 8. fig. 7, from Singapore.

Zorilispe (g. n.) *fulvisparsa*, Pascoe, *l. c.* p. 157, pl. 9. fig. 8, from Sarawak; and *Z. acutipennis*, Pasc. ibid., from Macassar.

Atimura bacillina, Pascoe, *l. c.* p. 158, and *A. punctissima*, Pasc. ibid., from Sarawak, Sumatra, &c.

Etholopus (g. n) *exutus*, Pascoe, *l. c.* p. 161, and *E. scalaris*, Pasc. ibid., pl. 9. fig. 6, from Ceram.

Stesilea (g. n.). Pascoe describes five new Malayan species of this genus:—*S. scutellaris*, *l. c.* p. 185, pl. 9. fig. 5, from Bouru; *S. prolata*, *l. c.* p. 186, and *S. inornata*, ibid., from Tondano; *S. feriata*, *l. c.* p. 187, from Ceram; *S. honesta*, ibid., from Mano.

Praonetha (=*Prionota*, Blanch.). Pascoe (*l. c.*) describes the following forty-eight new Malayan species of this genus:—*P. obdusta*, p. 165, from Ceram and Bouru; *P. montana*, ibid., and *P. albicenosa*, p. 171, from Mount Ophir; *P. detersa*, p. 166, *P. secuta*, p. 167, *P. quadraticollis*, p. 168, *P. punctigera*, p. 171, *P. scopulifera*, p. 175, *P. propinqua*, p. 177, *P. fractilinea*, p. 178, *P. ferrugata*, p. 179, and *P. annulitarsis*, p. 185, from Sarawak; *P. iliaca*, p. 178 (=*Lamia crassipes*, Wied?), from Sarawak and Java; *P. similata*, p. 166, *P. pilosella*, p. 178, and *P. capreola*, p. 180, from Flores; *P. reducta*, p. 166, *P. concreta*, p. 167, *P. conjecta*, p. 172, *P. sobrina*, p. 173, and *P. deducta*, p. 176, from Tondano; *P. grisescens*, p. 168, from Goram; *P. ministrata*, ibid., *P. sordidata*, p. 174, from Batchian; *P. uniformis*, p. 169, and *P. subtincta*, p. 170, from Java; *P. terrea*, p. 169, *T. frustrata*, p. 181, and *P. scoriacea*, p. 184, from Aru; *P. torpida*, p. 169, *P. villaris*, p. 174, *P. duplicata*, p. 179, *P. strumosa*, p. 180, and *P. disjuncta*, p. 182, from Dorey; *P. ephippiata*, p. 171, from Menado; *P. satrapa*, p. 173 [pl. 10. fig. 6], *P.

medifusca, p. 182, from Ternate; *P. privata*, p. 174, from Amboyna; *P. subsellata*, p. 175, from Ké; *P. pituitosa*, p. 176, from Kaioa; *P. conformis*, p. 181, from Saylee; *P. ignara*, p. 183, from Mysol; *P. crispata*, p. 184, from Waigiou; *P. illicita*, p. 169, and *P. restricta*, p. 184, from Mysol and Aru; *P. infima*, p. 175, from Morty and Batchian; *P. palliata*, p. 183, from Dorey and Aru; and *P. vicinalis*, ibid., from Batchian and Ternate. Also *P. boeringii*, p. 170, note, from Hong Kong.

Ropica. Pascoe (*l. c.*) describes twenty-one new species from the Malayan region: namely, *R. illepida*, p. 189, and *R. rivulosa*, p. 191, from Dorey; *R. pluviata*, p. 189, *R. stolata*, p. 191, and *R. lachrymosa*, p. 193, from Batchian; *R. angusticollis*, p. 189, and *R. illiterata*, p. 195, from Sarawak; *R. evitata*, p. 190, from Amboyna; *R. analis*, ibid., from Morty; *R. fusicollis*, p. 192, from Aru; *R. vetusta*, p. 193, and *R. irritata*, p. 195, from Tondano; *R. puncticollis*, p. 194, from Sula; *R. tentata*, ibid., from Waigiou; *R. didyma*, p. 196, from Bouru; and *R. indigna*, p. 188, *R. honesta*, p. 190, *R. cunicularis*, p. 192, *R. viduata*, p. 193, *R. vinacea*, p. 194, and *R. servilis*, p. 195, from various islands.

Maximia (g. n.) *decolorata*, Pascoe, *l. c.* p. 196 [pl. 10. fig. 2], from Batchian; *M. perfusa*, Pasc. *l. c.* p. 197, from Dorey.

Gemylus (g. n.) *albipictus*, Pascoe, *l. c.* p. 198, pl. 9. fig. 1, from Morty.

Mynonoma (g. n.) *cunidioides*, Pascoe, *l. c.* p. 219 [pl. 10. fig. 1], from Batchian and Tondano.

Pithodia (g. n.) *tessellata*, Pascoe, *l. c.* p. 220 [pl. 10. fig. 4], from Macassar.

Bityle (g. n.) *bicolor*, Pascoe, *l. c.* p. 221 [pl. 10. fig. 5], from Manado.

Sybra (g. n.). *Ropica geminata* (Pasc.), from New South Wales, belongs to this genus, and its name is changed by Pascoe, *l. c.* p. 199, note, to *Sybra acuta*, as *Saperda geminata* (Klug) is congeneric with it. Pascoe describes the following fifty new Malayan species:—*S. chloropoda*, p. 200, and *S. violata*, p. 210, from Waigiou; *S. contigua*, p. 201, and *S. porcellus*, p. 211, from Ceram; *S. jejuna*, p. 201, *S. luteicornis*, p. 204, *S. desueta*, p. 206, *S. destituta*, p. 211, and *S. refecta*, p. 219, from Dorey; *S. arcifera*, p. 201, from Timor; *S. fervida*, p. 202, *S. cretifera*, p. 205, *S. palliata*, p. 212, and *S. odiosa*, p. 218, from Sarawak; *S. notatipennis*, p. 202, *S. venosa*, p. 203, *S. putida*, p. 206, *S. grammica*, ibid., from Mysol; *S. inanis*, p. 204, from Salwatty; *S. herbacea*, ibid., and *S. consputa*, p. 217, from Morty: *S. triangularis*, p. 205, *S. exigua*, p. 208, *S. invia*, p. 211, *S. devota*, p. 216, *S. purpuraria*, p. 205, *S. cens*, p. 217, and *S. furtiva*, p. 218, from Batchian; *S. petulans*, p. 205, *S. ustulata*, p. 213, and *S. mucronata*, p. 214, from Gilolo; *S. repudiosa*, p. 207, *S. collaris*, p. 214, and *S. irrorata*, p. 215, from Tondano; *S. internata*, p. 207, *S. egregia*, p. 208, *S. strigina*, p. 212, from Bouru; *S. modesta*, p. 209, and *S. discreta*, p. 216, from Saylee; *S. patrua*, p. 209, from Amboyna; *S. arator*, p. 210, from Singapore; *S. nubila*, p. 212, and *S. rufula*, p. 217, from Aru; *S. erratica*, p. 213, from Menado; *S. marcida*, p. 200, from Dorey and Saylee; *S. connexa*, p. 202, from Ternate and Sula; *S. primaria*, p. 209, from Bouru and Ceram; *S. lineata*, p. 214, from Dorey and Batchian; *S. pulverea*, p. 215, from Dorey and Mysol; and *S. umbratica*, p. 203, and *S. iconica*, p. 207, from several islands.

Sthenias franciscana, Thomson, *l. c.* p. 550, from Malasia.

Mycerinus humerosus, *M. variegatus*, and *M. varipennis*, Thomson, *l. c.* p. 550, from India.

Atmodes schoenherri, Thomson, *l. c.* p. 550, from Malasia.

Rhytiphora sospitalis, Pascoe, Journ. of Ent. ii. p. 358, and *R. saga*, Pasc. ibid., from Western Australia.

Penthea sectator, Pascoe, *l. c.* p. 358, from South Australia.

Symphyletes arctos, Pascoe, *l. c.* p. 356, and *S. satelles*, Pasc. *l. c.* p. 357, from Western Australia; *S. vicarius*, Pasc. *l. c.* p. 356, from New South Wales.

Hebesecis germari, Pascoe, *l. c.* p. 352, from South Australia; *H. antennata*, Pasc. *l. c.* p. 353, from Port Denison.

Æmocia farinosa, Pasc. Ent. Trans. 3rd ser. iii. p. 98, and *Æ. balteata*, Pasc. ibid., from Ceram.

Anancylus socius, Pasc. *l. c.* p. 99, from Sarawak; *A. simulans*, Pasc. ibid., from Batchian; and *A. lotus*, Pasc. *l. c.* p. 100, from Saylee.

Planodes. Pascoe describes the following eight new Malayan species:—*P. satelles*, *l. c.* p. 101, from Malacca; *P. vicarius*, *l. c.* p. 102, from Salwatty; *P. deterrens*, ibid., from Singapore; *P. leporinus*, ibid., and *P. turbatus*, *l. c.* p. 104, from Sarawak; *P. papulosus*, *l. c.* p. 103, pl. 6. fig. 1, and *P. luctuosus*, ibid., from Ceram; and *P. encaustus*, *l. c.* p. 104, from Saylee.

Ereis ventralis, Pasc. *l. c.* p. 105, note, from Cambodia.

Cacia. Pascoe describes the following five new Malayan species:—*C. intricata*, *l. c.* p. 110, gen. dist.; *C. scenica*, ibid., from Menado; *C. plagiata*, *l. c.* p. 111, from Saylee and Aru; *C. capito*, *l. c.* p. 112, from Singapore; and *C. compta*, ibid., pl. 7. fig. 4, from Sarawak. Also *Cacia incensa*, *l. c.* p. 112, note, from Pegu.

Coptops. Of this genus Pascoe describes eight new species from the Malayan region: namely, *C. illicita*, *l. c.* p. 117, from Saylee; *C. lichenea*, *l. c.* p. 118, from Malacca; *C. tabida*, ibid., from Macassar; *C. polyspila*, ibid., and *C. lacertosa*, *l. c.* p. 121, from Pulo Penang; *C. auguralis*, *l. c.* p. 120, from Timor; *C. lecideosa*, ibid., and *C. undulata*, *l. c.* p. 121, from Sarawak. Also *C. petechialis*, *l. c.* p. 119, note, from Cambodia.

Samia (g. n.) *albidorsalis*, Pascoe, *l. c.* p. 122, from Sarawak and Singapore; *S. revoluta*, Pasc. ibid., and *S. diversa*, Pasc. *l. c.* p. 123, from Sarawak.

Agelasta. Pascoe describes the following four new Malayan species:—*A. lar*, *l. c.* p. 124, note, from Malacca; *A. sobrina*, *l. c.* p. 127, from Sarawak, Banca, and Malacca; *A. sulphurea*, *l. c.* p. 128, pl. 7. fig. 6, from Macassar; and *A. basalis*, *l. c.* p. 129, from Menado.

Syrrhopeus (g. n.) *agelastoides*, Pascoe, *l. c.* p. 130, pl. 7. fig. 3, from Sarawak.

Sorbia (g. n.) *tarsalis*, Pascoe, *l. c.* p. 131, pl. 6. fig. 5, from Sarawak.

Ale (g. n.) *agraria*, Pascoe, *l. c.* p. 132, pl. 6. fig. 6, from Batchian.

Sodus (g. n.) *verticalis*, Pascoe, *l. c.* p. 137, pl. 7. fig. 5, from Singapore.

Diexia (g. n.) *punctigera*, Pascoe, *l. c.* p. 138, pl. 7. fig. 1, from Singapore.

Phosphorus gabonator, Thomson, *l. c.* p. 550, origin not stated.

Tragocephala daphnis, Thomson, *l. c.* p. 550, from Natal; *T. chloë*, Thoms. ibid., from the Zambesi; and *T. delia*, Thoms. *l. c.* p. 551, from Angola.

Tragiscoschema tenuicornis, Thomson, *l. c.* p. 551, from South Africa.

Callimation castelnaudii, Thoms. *l. c.* p. 551, from Lake Ngami.

Batocera. Thomson describes: *B. proserpina*, *l. c.* 551, from Aru; *B. plutonica*, ibid., from New Guinea; *B. leonina*, ibid., from Menado; *B. lacordairii*, ibid., from Malasia; *B. gerstaeckerii*, ibid., from Sulee; and *B. helena*, *l. c.* p. 552, from Siam.

Celosterna. The following new species are described by Thomson, *l. c.* p. 552:—*C. fabricii*, from Madras; *C. maculicornis*, from Bengal; *C. pardalis*, from Assam; *C. maculosa*, from Siam; *C. combusta*, from Java; *C. umbrosa*, from Sumatra; *C. approximator*, from Malasia; and *C. clathrator* (Blanch. MS.), origin not stated.

Calloplophora. The following new species of this genus are described by Thomson, *l. c.* p. 553:—*C. lacrymans*, from Laos; *C. afflicta*, *C. sepulcralis*, *C. luctuosa*, and *C. macularia*, from China; *C. abbreviata*, from Manchuria; and *C. malasiaca*, from Malasia.

Hammoderus hoefneri (Dej.), Thomson, *l. c.* p. 554, from Mexico.

Deliathis pulchra (Aud. & Br. MS.), Thomson, *l. c.* p. 554, origin not stated.

Tæniotes marmoratus, Thomson, *l. c.* p. 554, from Quito; and *T. leucogrammus* (Chevr. MS.), Thoms. ibid., from Martinique.

Epicedia bigemmata, Thomson, *l. c.* p. 554, from India; *E. triangularis*, Thoms. ibid., from Siam.

Archidice cordifer, Thomson, *l. c.* p. 554, from Siam; *A. quadrinotata* (Chevr. MS.), Thoms. ibid., from India.

Anhammus conspersus (Dej.), Thomson, *l. c.* p. 555, from Malasia.

Potemnemus olivieri, Thomson, *l. c.* p. 555, from Malasia.

Imantocera acmocerοïdes, Thomson, *l. c.* p. 555, from Malacca; *I. olivieri*, Thoms. ibid., from Siam.

Gnoma sticticollis (Dej.), Thomson, *l. c.* p. 555, and *G. subfasciata* (Dej.), Thoms. ibid., from Java; and *G. confusa*, Thoms. ibid., from Borneo.

Pelargoderus lacordairei, Thomson, *l. c.* p. 556, from Java.

Ptychodes dejeanii, Thomson, *l. c.* p. 556, from Mexico; *P. tæniotοïdes*, Thoms. ibid., from Brazil; and *P. fairmairei*, Thoms. ibid., from Tahiti.

Cereopsius whitei, *C. sexnotatus*, and *C. mysticus*, Thomson, *l. c.* p. 556, from Malasia.

Compsosoma mannerheimi, Thomson, *l. c.* p. 557, from Cayenne.—*C. albigena*, Burmeister, Stett. ent. Zeit. 1865, p. 179, from Buenos Ayres.

Pachypeza lanuginosa, Bates, *l. c.* p. 314, from Ega and S. Paulo.

Hypselomus. Bates, Ann. & Mag. Nat. Hist. 3rd ser. xvi., describes the following new species of this genus from the Amazons Valley:—*H. picticornis*, p. 111; *H. dimidiatus*, p. 112; *H. rodens*, ibid.; *H. paganus* (Pasc.), p. 167; *H. scniculus*, ibid.; *H. crassipes*, p. 168; *H. simplex*, ibid.; *H. lignicolor*, p. 169; and *H. obscurellus*, ibid. Also *Hypselomus syrinx*, p. 170, from Rio Janeiro.

Hesycha maculosa, Bates, *l. c.* p. 173, and *H. cretacea*, Bates, ibid., from Ega; *H. jaspidea*, Bates, *l. c.* p. 172, note, and *H. lituvata*, Bates, ibid., from Cayenne; and *H. xylina*, Bates, ibid., from Rio Janeiro.

Trachysomus santarensis, Bates, *l. c.* p. 174, from Santarem.

Oncideres. The following new species are described by Bates:—*O. callidryas*, *l. c.* p. 175, *O. satyrus*, *l. c.* p. 176, *O. fulvus*, ibid., *O. crassicornis*,

l. c. p. 177, *O. dignus*, *l. c.* p. 178, *O. pulchellus*, ibid., *O. cephalotes*, ibid., from the Amazons; *O. limpidus*, *l. c.* p. 179, note, from Bahia; *O. bouchardii*, ibid., from New Granada.

Eudesmus. Bates describes three new Amazonian species:—*E. rubefactus*, *l. c.* p. 180; *E. caudalis*, ibid.; and *E. scxvittatus*, p. 181.

Trestonia ramuli, Bates, *l. c.* p. 311, from Ega; *T. coarctata*, Bates (=*terminata*, Buq.), *l. c.* p. 312, from the Tapajos and Ega.

Hypsioma bonaëriensis (Dej.), Burmeister, Stett. ent. Zeit. 1865, p. 179, from Buenos Ayres.

Ptericoptus adustus, Burm. *l. c.* p. 179, from Tucuman.

Onocephala nodipennis, Burm. *l. c.* p. 181, from Bahia Blanca.

Exocentrus signatus, Mulsant & Rey, *l. c.* p. 163, from Constantinople.

Emphytœcia niveopicta, Fairmaire & Germain, Rev. et Mag. Zool. 1864, p. 390, from Chili.

Phytœcia sanguinicollis, Burm. *l. c.* p. 180, from the Banda oriental.

Phytœcia annulipes, Mulsant & Rey, *l. c.* p. 165, from Caramania; *P. manicata*, Muls. & Rey, *l. c.* p. 167, from Syria; and *P. fuscicornis*, Muls. & Rey, *l. c.* p. 168, from Greece and Turkey.

Astathes. Thomson (*l. c.*) describes the following twenty-five new species of this genus: *A. cyanipes* and *gemmula*, p. 557, from Celebes; *A. velata*, p. 557, *A. lemoïdes*, p. 558, *A. rufescens* (Dej.), and *pallida*, p. 559, from Java; *A. gallœcoïdes*, p. 557, *A. bigemmata* and *illigeri*, p. 558, *A. kraatzii*, p. 559, from Mindanao; *A. basalis*, p. 557, *A. casta*, p. 558, and *A. punctipennis*, p. 559, from the Philippines; *A. posticalis*, p. 558, from Borneo; *A. nigriventris*, p. 559, and *A. nigricornis*, p. 560, from Malacca; *A. bipartita* and *apicalis*, p. 558, *A. gibbicollis*, *discoidalis*, and *punctata*, p. 559, from Malasia; *A. fabricii*, p. 558, from Siam; *A. pallidiventris*, p. 559, and *A. agrota*, p. 560, from Cochin China; and *A. ignita*, p. 557, from India.

Stibara lateralis, Thomson, *l. c.* p. 560, from Sylhet; *S. humeralis*, Thoms. ibid., from Malasia; and *S. dichroma*, Thoms. ibid., from Cochin China.

Glenea. Of this genus Thomson (*l. c.*) describes fifty-four new species, Syst. Ceramb. pp. 560–567: *Glenea diana*, p. 561, from Assam; *G. maculifera*, p. 566, from Sylhet; *G. peria*, p. 562, and *G. candida*, p. 566, from India; *G. homonospila*, p. 565, from Eastern Asia; *G. cancellata*, p. 565, *G. nigromaculata*, and *G. sulphurea*, p. 566, from Cambodia; *G. mouhotii*, p. 567, from Laos; *G. galathea*, p. 566, from Japan; *G. montrouzieri*, p. 563, from New Caledonia; *G. buquetii*, p. 564, from Guinea; *G. arida*, p. 565, from Natal; *G. calabarica*, p. 567, from Calabar; and *G. psylla*, p. 562, origin not stated. The remainder of the species are from the Malasian region, including the Philippines; namely, from "MALASIA":—*G. juno* and *nympha*, p. 560; *G. proserpina*, *cybele*, *hebe*, *numerifera*, and *mima*, p. 561; *G. malasiana*, p. 562; *G. vaga*, and *G. signifera*, p. 565; and *G. scalaris*, p. 567. From MINDANAO:—*G. aphrodite*, p. 561; *G. kraatzii*, *varifascia*, *colobotheoïdes*, and *astarte*, p. 562; *G. lycoris*, *linella*, *magica*, and *coryphœa*, p. 563; and *G. severa*, p. 565. From the PHILIPPINES:—*G. cylindrepomoïdes*, p. 564; *G. cinerea*, p. 565. From BATCHIAN:—*G. venus*, p. 560; *G. boisduvalii* and *sparsa*, p. 564. From CELEBES:—*G. maculipennis*, p. 562, and *G. basalis*, p. 563. From CERAM:—*G. lugubris*, p. 562, and *G. diversa*, p. 564. From BORNEO:—*G. stellata* and *guttigera*, p. 563, and *G. ochraceovittata*, p. 565. From JAVA:—*G. amœna* (Dej.) and

G. pustulata, p. 564; *G. angerona* (Dej.), p. 565, and *G. citrina*, p. 566. From PENANG:—*G. regina*, p. 566. From the MOLUCCAS:—*G. celestis*, p. 567.

Hastatis? femoralis, Burm. *l. c.* p. 181, from Mendoza.

Amphionycha petronæ, Burm. *l. c.* p. 180, from Tucuman.

Lepturides.

Leptura rufa (Dej.) is recorded as British by Sharp, Ent. M. Mag. ii. p. 157.

Fallacia, g. n., Mulsant and Rey, Ann. Soc. Linn. Lyon, tom. x. p. 180. Allied to *Grammoptera*; prothorax with obtuse posterior angles, with transverse furrows near the anterior and posterior margins, between which it is subglobose; head narrowed behind the eyes, eyes entire, frontal suture straight; postepisterna narrowed behind; 1st tarsal joint a little shorter than the rest taken together. Sp. *F. longicollis* (*Grammoptera l.* Reiche, MS.), Muls. & Rey, *l. c.* p. 180, from Batoum.

Æthiora, g. n., Pascoe, Journ. of Ent. ii. p. 369. Allied to *Uracanthus*; scape long, attenuated, remaining joints of antennæ cylindrical; sides of prothorax straight, not angulated. Sp. *Uracanthus fuligineus* (Pasc.).

New species:—

Psilomorpha lusoria, Pascoe, *l. c.* p. 367, from New South Wales?

Ametrocephala mira, Pascoe, *l. c.* p. 367, from Western Australia.

Leptura nigro-lineata, Bland, Proc. Ent. Soc. Phil. iv. p. 383, and *L. propinqua*, Bland, p. 384, from the Colorado Territory.—*Leptura montana*, Muls. & Rey, *l. c.* p. 179, from Cyprus.—*Leptura bonaëriensis*, Burm. *l. c.* p. 177, from Buenos Ayres.

Vadonia grandicollis, Muls. & Rey, *l. c.* p. 182, from Smyrna.

Strangalia lanceolata, Muls. & Rey, *l. c.* p. 177, from Spain.

Anthophylax? mirificus, Bland, *l. c.* p. 382, and *A.? venustus*, Bland, p. 383, from the Colorado Territory.

Grammoptera auricollis, Muls. & Rey, *l. c.* p. 183, from Algeria.—*G. kiesenwetteri*, Beçker, Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 481, from Sarepta.

Vesperus flaveolus, Muls. & Rey, *l. c.* p. 169, from Algeria, and *V. ocularis*, Muls. & Rey, *l. c.* p. 172, from Smyrna.

Necydalopsis iridipennis, Fairmaire & Germain, Rev. et Mag. Zool. 1864, p. 386, from Chili.

Pterostenus pseudocupes, Fairmaire & Germain, *l. c.* p. 393, Chili.

Callimus egregius, Muls. & Rey, *l. c.* p. 146, from Caramania.

Cerambycides.

Burmeister (Stett. ent. Zeit. 1865) remarks upon the habits, variation, or distribution of the following known species of this group:— *Trachyderes variegatus* (Perty), *l. c.* p. 163; *Oxymerus rivulosus* (Dej., Germ.), *l. c.* p. 164; *Sphærion* (*Myopteryx*) *spinigerum* (Blanch.), *l. c.* p. 167; *Mallosoma elegans* (Serv.), *l. c.* p. 168; *Plocæderus batus* (Linn.), ibid.; *Listroptera perforata* (Klug ?), *l. c.* p. 173; *Tomopterus vespoides* (White), ibid.; *Hylotrupes bajulus* (Linn.), *l. c.* p. 177, introduced with European timber.

Clytus. Lederer (Wien. ent. Mon. Bd. viii. p. 484) states that *C. bruckii* (Kraatz) = *C. caucasicus* (Motsch.), and refers to the synonymy of *C. arvicola* and *C. heydeni* (pp. 484–485).

Obrida (White) is characterized by Pascoe, Journ. of Ent. ii. p. 360.

New genera:—

Aposites, g. n., Pascoe, *l. c.* p. 363. Allied to *Neostenus*; 3rd and 4th joints of antennæ dilated; posterior angles of prothorax produced; anterior acetabula angulated and coxæ exserted. Sp. *A. macilentus*, sp. n., Pasc. *l. c.* p. 364, pl. 16. fig. 6, from South Australia.

Lysestia, g. n., Pascoe, *l. c.* p. 364. Allied to preceding; 3rd and 4th joints of antennæ elongate and subcylindrical; prothorax unarmed; posterior angles not produced; elytra with the suture excavated. Sp. *L. rotundicollis*, sp. n., Pasc. *l. c.* p. 365, pl. 16. fig. 5, from South Australia; and *L. morio*, Pasc. ibid., from Western Australia.

Exæreta, g. n., Pascoe, *l. c.* p. 368. Allied to *Isalium*; legs short; penultimate joint of tarsi dilated. Sp. *E. unicolor*, sp. n., Pasc. *l. c.* p. 369, pl. 16. fig. 2, from South Australia.

Chaodalis, g. n., Pascoe, *l. c.* p. 366. Allied to *Eroschema*; head produced in front; antenniferous tubercles prominent, protuberant externally; elytra gaping at the suture. The true position of this genus and *Eroschema* is doubtful and is discussed by Pascoe. Sp. *C. macleayi*, sp. n., Pasc. *l. c.* p. 367, pl. 16. fig. 1, from New South Wales?

Æsiotyche, g. n., Pascoe, *l. c.* p. 370. Antennæ elongate, attenuate at apex, joints cylindrical, unarmed, 4th shorter than 3rd or 5th; prothorax unarmed; legs elongate, femora almost linear; anterior coxæ globose, exserted. Sp. *Æsiotyche favosa*, sp. n., Pasc. *l. c.* p. 370, pl. 16. fig. 3, from South Australia.

Homæmota, g. n., Pascoe, *l. c.* p. 371. Allied to *Euderces* (Leconte); 3rd joint of antennæ unarmed at apex. Sp. *H. basalis*, sp. n., Pasc. *l. c.* p. 372, from Western Australia.

Thersalus, g. n., Pascoe, *l. c.* p. 372. Allied to *Phacodes*; antenniferous tubercles nearly obsolete; antennæ with 1st joint short and thick, last joint elongated. Type *Phacodes bispinus* (Pasc.).

Brachyrhopala, g. n., Burm. *l. c.* p. 171. Allied to *Rhopalophora*; pronotum even, unarmed, scarcely tubercular; legs shorter, femora abruptly clavate. Sp. *M. semirubra*, sp. n., Burm. *l. c.* p. 172, from Paraná; *M. ænescens*, sp. n., Burm. ibid., from Banda oriental; and *M. aurivitta*, sp. n., Burm. ibid., from Tucuman.

Phantazoderus, g. n., Fairmaire & Germain, Rev. et Mag. Zool. 1864, p. 391. Allied to *Pteroplatys*; antennæ shorter than body, compressed, joint 4 shorter than 3; prothorax with sides biangulate; elytra very slightly dilated behind the middle, rounded at apex; anterior coxæ contiguous, acetabula gaping behind. Sp. P. *frenatus*, Fairm. & Germ. p. 392, Chili.

New species:—

Holopterus cujanus (Gay ?), Burm. *l. c.* p. 174, from Mendoza (=*Stenophantes longipes*, Burm. Reise, Bd. i. p. 314).

Eroschema atricolle, Pascoe, *l. c.* p. 365, from Western Australia.

Callichroma corvina, Burm. *l. c.* p. 169, from Paraná.

Callideriphus transversalis, Fairmaire & Germain, *l. c.* p. 389, Chili.

Mecosaspis aurata and *M. chalibeata* (sic), Thomson, Syst. Ceramb. p. 567, from India.

Phyllocnema remex, Thomson, *l. c.* p. 568, from the Zulu country.

Chloridolum alcmene, Thomson, *l. c.* p. 568, from India; *C. cyanipes*, Thoms. *l. c.* p. 569, from Java; and *P. batchianum*, Thoms. ibid., from Batchian.

Chelidonium polyzonoïdes and *C. venereum*, Thomson, *l. c.* p. 568, from Cambodia.

Pachyteria voluptuosa, Thomson, *l. c.* p. 568, from Cambodia.

Anubis bipustulatus, Thomson, *l. c.* p. 569, from Laos.

Compsomera remipes (Bohem. MS.), Thomson, *l. c.* p. 569, from the Cape.

Leontium cæruleipennis, Thomson, *l. c.* p. 569, from Eastern Asia; *L. thalassinum*, Thoms. ibid., from Mindanao.

Clytus multiguttatus, Burm. *l. c.* p. 176, from Mendoza; *C. famelicus*, Burm. ibid., from Tucuman.

Ozodera farinosa (Gerst.), Burm. *l. c.* p. 161, from La Plata.

Trachyderes sulcatus (Mus. Berol.), Burm. *l. c.* p. 162; *T. aurulentus*, Burm. ibid.; and *T. sanguinolentus*, Burm. ibid., from La Plata.

Oxymerus obliquatus (Mus. Berol.), Burm. *l. c.* p. 163; and *O. lateriscriptus*, Burm. *l. c.* p. 164, from La Plata.

Ancylocera fulvicornis (Mus. Berol.), Burm. *l. c.* p. 172, from Paraná.

Rhinotragus tenuis, Burm. *l. c.* p. 173, from Paraná.

Trichophorus albomaculatus (Dej.), Burm. *l. c.* p. 167, from Buenos Ayres.

Ibidion. Thomson describes 21 new species of this genus, namely:—From Brazil:—*I. spinipenne* (Chevr. MS.), *cylindricum* (Dej.), *gnomoides* (Dej.), *signatum* (Dej.), and *fulvipes* (Blanch. MS.), *l. c.* p. 570; *I. flavicorne* (Dej.), *geniculatum* (Dej.), and *dimidiatum* (Dej.), *l. c.* p. 571; *I. sex-signatum* (Dej.), and *fenestratum* (Chevr. MS.), *l. c.* p. 572; *I. sommeri* (Chevr. MS.), *l. c.* p. 573; *I. truncatum* (Blanch. MS.), and *albocinctum* (Dej.), *l. c.* p. 574. From Cayenne:—*I. ruficaudatum*, *l. c.* p. 571. From Bogota:—*I. brunniceps* (Dej.), ibid. From Venezuela:—*I. signaticolle* (Chevr. MS.), *l. c.* p. 572. From Monte Video:—*I. bonariense*, ibid. From Chili:—*I. fairmairei*, ibid., and *I. pallidipennis*, *l. c.* p. 573. From Costa Rica:—*I. textile* (Chevr. MS.), *l. c.* p. 573. And from Mexico:—*I. mexicanum*, ibid.

Ibidion. Of this genus Burmeister describes the following three new species from the La Plata region:—*I. argentinum*, *l. c.* p. 174; *I. plagiatum*, ibid.; and *I. tenellum*, *l. c.* p. 175.

Ibidion pallidicornis, Fairmaire and Germain, *l. c.* p. 387, from Chili.

Octoplon quadrisignatum (Chevr. MS.), *cleophile*, and *lineatocolle* (Dej.), Thomson, *l. c.* p. 574, and *O. affine* (Dej.), Thoms. *l. c.* p. 575, from Brazil.

Gnomidolon nympha, Thomson, *l. c.* p. 575, from Brazil.

Hexoplon X littera (Chevr. MS.), and *H. juno*, Thomson, *l. c.* p. 575, from Brazil.

Hoploceramby.x aramis, Thomson, *l. c.* p. 575, from Malasia; and *H. nitidus*, Thoms. ibid., from Bouru.

Pachydissus achilles, Thomson, *l. c.* p. 576, from Borneo; *P. velutinus* and *P. inclemens*, Thoms. ibid., from India.

Rhytidodera grandis, Thomson, *l. c.* p. 576, from Laos.

Elaphidium collare, Burm. *l. c.* p. 166, from the Banda oriental.

Phoracantha flavopicta, Pascoe, *l. c.* p. 371, from South Australia.

Eburia 4-lineata (Dej.), Burm. *l. c.* p. 165, and *E. sordida*, Burm. ibid., from La Plata.

Cerambyx nodosus, Mulsant and Rey, Ann. Soc. Linn. Lyon, tome x. p. 144, from Greece and Asia Minor.

Aëchryson undulatum (Dej.), Burm. *l. c.* p. 175, *A. maculatum*, Burm. ibid., and *A. lutarium*, Burm. ibid., from La Plata.

Sphærion rusticum, Burm. *l. c.* p. 167, from the Banda oriental.

Malacopterus quadriguttatus, Burm. *l. c.* p. 168, from Tucuman.

Torneutes lansbergi, Thomson, *l. c.* p. 576, from Surinam.

Pteroplatus adustus, sp. n., Burm. *l. c.* p. 165, from Rozario.

Orthostoma parviscopa, Burm. *l. c.* p. 169, from Tucuman; *O. thyrsophora*, Burm. ibid., from Buenos Ayres.

Cosmisoma. Burmeister (*l. c.* p. 170) remarks upon the characters distinguishing this genus from *Orthostoma*, and describes the following four new species:—*Cosmisoma basalis*, *l. c.* p. 170, *C. gracilion*, *l. c.* p. 171, and *C. nudicollis* (Mus. Berol.), ibid., from Paraná; and *C. equestris* (Dej.?), from Buenos Ayres.

Phacodes elusus, Pascoe, *l. c.* p. 373, *P. fuscus*, Pasc. ibid., and *P. distinctus*, Pasc. ibid., from South Australia.

Saphron eburatus, Pascoe, *l. c.* p. 374, from South Australia.

Prionides.

Burmeister (Stett. ent. Zeit. 1865) gives some account of the distribution and habits of the following known species of this group, found in the La Plata region:—*Mallodon bonariense* (Dej.); *Navisoma triste* (Blanch.), *l. c.* p. 159; and *Calocomus hamatiferus* (Lac.), *l. c.* p. 160. He refers *Torneutes pallidipennis* to this group (*l. c.* p. 158).

New genera:—

Dendroblaptus, g. n., Chevrolat, Rev. et Mag. de Zool. 1864, p. 179. Allied to *Callipogon*; antennæ slender, joint 1 strongly clavate, 2 short, remainder about as long as 1, 7–11 with longitudinal channels; mandibles simple, acute; prothorax transverse, sides slightly arched, each with five teeth; femora clavate. Sp. *D. barbiflavus*, sp. n., p. 180, Cuba.

Micropsalis, g. n., Burmeister, Stett. ent. Zeit. 1865, p. 157. Allied to *Psalidognathus*; mandibles small, edentate; palpi very long, apical joint securiform; both sexes apterous. Sp. *M. heterogama*, sp. n., Mendoza.

Prionidium, g. n., Burm. *l. c.* p. 159. Very nearly allied to *Prionus*; antennæ serrated; prothorax very small, unarmed; elytra coriaceous; tibiæ arcuate; tarsi long and slender, with first three joints narrow, elongate-trigonate. Sp. *P. molle*, sp. n., p. 160, from the Banda oriental.

New species:—

Mesosclisus servillei, Thomson, Syst. Ceramb. p. 577, from Brazil.

Cyrthognathus aquilinus, Thomson, *l. c.* p. 577, from Chinese Tartary.

Hephialtes badius (Dej.), Thomson, *l. c.* p. 577, from Brazil.

Anacanthus aquilus, Thomson, *l. c.* p. 577, from Columbia.

Eurypoda nigrita, Thomson, *l. c.* p. 577, from Malacca.
Olethrius scabripennis, Thomson, *l. c.* p. 577, from the Fiji Islands.
Opheltes obesus, Thomson, *l. c.* p. 578, from India.
Aplagiognathus serratus, Thomson, *l. c.* p. 578, from Mexico.
Calocomus coriacmus, Burm. *l. c.* p. 160, from Catamarca.

Phytophaga.

Baly has commenced the publication, in the Entomological Transactions, of a revision of the Malayan species of Phytophaga, with reference chiefly to the results of Wallace's investigations. The Entomological Society has set aside a volume for the reception of this memoir (3rd series, vol. iv.), as in the case of the Longicornia described by Pascoe. Of this, the first part, including the Criocerides and a part of the Chrysomelides (*Clythridæ* and part of the *Cryptocephalidæ*), was published last year. The author describes or characterizes all the species, but gives no characters of the genera except of the new ones. The descriptions of species in many cases are quoted from Lacordaire. The *Chlamydeæ* of Lacordaire are raised by the author to the rank of a distinct family, equivalent to, and intermediate between, the *Clythridæ* and *Cryptocephalidæ*.

Hamlet Clark has also commenced the publication of a Catalogue of Phytophaga, with descriptions of many new species by himself and H. W. Bates. The first part includes only the *Criocerides*.

Criocerides.

The following known species of this subfamily are described by Baly, Ent. Trans. 3rd ser. vol. iv.:—Sagra *buquetii* (Less.), p. 1; *S. chrysochlora* (Lac.), ibid.; *S. druryi* (Lac.), p. 2; *S. speciosa* (Lac.), ibid.; *S. mutabilis* (Baly), p. 3; *S. superba* (Lac.), p. 4, incl. *S. fabricii* (Lac.); *S. quadraticollis* (Lac.), p. 5; *S. pfeifferæ* (Baly), ibid.; *S. petelii* (Lac.), p. 7. Lema *goryi* (Guér.), p. 8; *L. palpalis* (Lac.), ibid.; *L. femorata* (Guér.), *L. quadripunctata* (Oliv.), *L. hæmatomelas* (Lac.), p. 10; *L. lacertosa* (Lac.), p. 11; *L. papuana* (Lac.), p. 12; *L. hebe* (Baly), p. 14; *L. militaris* (Baly), p. 15, pl. 1. fig. 4; *L. variolosa* (Baly), p. 16; *L. togata* (Lac.), *L. unicincta* (Guér.), *L. torulosa* (Lac.), p. 19; *L. rufina* (Swartz), p. 20; *L. bowringii* (Baly), ibid.; *L. abdominalis* (Oliv.), p. 21; *L. striatopunctata* (Lac.), *L. cyanoptera* (Lac.), *L. cyanipennis* (Fab.)=*L. cherubim* (Lac.), p. 22; *L. cyanesthis* (Boisd.), p. 23; *L. coromandeliana* (Fab.), incl. var. *C. cyanipennis* (Oliv.), *L. malayana* (Lac.), *L. melanocera* (Lac.), *C. dichroa* (Blanch.), *L. bretinghami* (Baly), *L. fulvula* (Lac.), and *L. cyanea* (Fab.), p. 24; *L. javana* (Lac.), p. 25; *Crioceris?* (*Lema?*) *semilimbata* (Blanch.), p. 28. Criocerris *quadripustulata* (Fab.), p. 28; *C. semipunctata* (Fab.), p. 29, pl. 1. fig. 1; *C. compressa* (Fab.), incl. *crassicornis* (Oliv.), and *castanea* and *omophloides* (Lac.), p. 32; *C. clarkii* (Baly), p. 33, pl. 1. fig. 7; *C. nucea* (Lac.), *C. unipunctata* (Oliv.), p. 35; *C. dimidiata* (Lac.), p. 36; *C. pfeifferæ* (Baly), p. 37; *C. doryca* (Boisd.), ibid.; *C. obesa* (Baly), *C. terminata* (Baly), p. 38; and

C. nigrozonata (Blanch.), p. 39. Brachydactyla *discoidea* (Guér., Lac.), p. 39, pl. 1. fig. 8. Temnaspis *javana* (Guér.), p. 40; *T. bipartita* (Lac.), ibid.; *T. fervida* (Lac.), ibid.; *T. rubens* (Klug), ibid.; *T. cumingii* (Westw.), and *T. arida* (Westw.), p. 42. Pœcilomorpha *gerstaeckeri* (Westw.), p. 43.

Guérin-Méneville indicates a variety of *Lema merdigera* found eating the leaves of *Solanum dulcamara*. Bull. Soc. Ent. Fr. 1865, p. xxi.

Crioceris asparagi. The habits of this species are described by Fitch, 8th Rep. Ins. New York, pp. 177–186. The insect appears to have been introduced since 1860.

Crioceris cyanella and *melanopa* are mentioned by Taschenberg as injurious to grasses (Wirbell. Thiere, p. 228).

New species:—

Psathyrocerus fusco-ornatus, Clark, Cat. Phyt. App. p. 20, from Venezuela; *P. cyanipennis*, Clark, ibid., from Rio Janeiro.

Donacia indica, Clark, *l. c.* p. 1, from Calcutta.

Donacia æraria (=*D. javana*, Germ. ?), Baly, Ent. Trans. 3rd ser. vol. iv. p. 7, from Tringanee, Ceylon, and India; Java?

Zeugophora kirbyi, Baly, Ent. M. Mag. i. p. 183, from North America.

Megascelis. The following new species are described in the appendix to Clark's Cat. of Phytoph.:—*M. princeps*, Bates, p. 1, *M. briseis*, Bates, p. 3, *M. socialis*, Bates, p. 5, *M. obscurevittata*, Bates, p. 6, *M. lævicoma*, Bates, p. 7, *M. quadrimaculata*, Bates, p. 9, *M. nigripennis*, Bates, p. 10, *M. decora*, Bates, ibid., *M. cleroïdes*, Bates, p. 11, *M. dispar*, Bates, ibid., *M. rubricollis*, Bates, p. 19, and *M. corcula*, ibid., from the Amazons; *M. purpureipennis*, Clark, p. 2, from Cayenne; *M. sacerdotalis*, Clark, p. 3, *M. rufotestacea*, Clark, p. 4, *M. viridipallens*, Clark, ibid., *M. grayii*, Clark, p. 7, *M. viridi-simplex*, Clark, p. 8, *M. dorsalis*, Clark, p. 12, *M. purpureotincta*, Clark, p. 13, *M. crucifera*, Clark, ibid., *M. larvata* (Chevr.), Clark, p. 14, *M. exclamationis*, Clark, ibid., *M. ambigua*, Clark, p. 15, *M. semipurpurea*, Clark, p. 16, *M. dryas*, Clark, p. 17, *M. brunnipennis*, Clark, p. 18, and *M. titan*, Clark, ibid., from Brazil; *M. postica*, Clark, p. 5, from Bolivia; *M. dilecta*, Clark, p. 8, and *M. humeronotata*, Clark, p. 19, from Mexico; *M. frontalis*, Clark, p. 17, from Carthagena.

Lema. The following new species of this genus are described by Clark and Bates. By Bates, from the Amazons:—*L. mimula*, p. 35; *L. picticornis*, p. 44; *L. tunantina*, ibid.; *L. venilia*, p. 55; *L. tæniata*, p. 56; *L. nigrella*, p. 57; *L. æneipennella*, p. 58; *L. apioides*, p. 62; *L. hetærina*, p. 63; and *L. hebraica*, ibid. By Clark, from South Africa:—*L. pallida*, p. 21; *L. rufo-adumbrata*, p. 22; *L. corinthia*, p. 27; *L. angustata*, p. 28; and *L. punctatipennis*, p. 52. From West Africa:—*L. indeterminata*, p. 22; *L. senegalensis*, p. 24; *L. clavipennis*, ibid.; *L. latipennis*, p. 25; *L. mitis*, ibid.; *L. inconstans*, p. 26; *L. nigro-azurea*, p. 27; *L. rufo-femorata*, p. 32; *L. affinis*, p. 33; *L. chalybea*, ibid.; *L. angulicollis*, p. 36; *L. calabarica*, p. 39; and *L. constricta*, ibid. From India:—*L. pallide-testacea*, p. 28; *L. rufo-testacea*, p. 29; *L. histrio*, ibid.; *L. semivittata*, p. 31; *L. atro-cærulea*, p. 32; *L. nigro-suturalis*, p. 37; *L. præclara*, p. 38; and *L. nigro-frontalis*, p. 40. From Ceylon:—*L. rufo-ornata*, p. 30; *L. sinuato-vittata*, p. 31; and *L. chylabeo-notata*, p. 37. From China:—

L. unicolor, p. 23. From Australia:—*L. rufo-tincta*, p. 36, and *L. immaculata*, p. 38. From Brazil:—*L. simplicipennis*, p. 34; *L. picipes* (Chevr.), ibid.; *L. flavo-marginata*, p. 40; *L. antennata*, p. 42; *L. nigro-ornata*, p. 46; *L. innotata*, p. 47; *L. nigro-sparsa*, p. 48; *L. immaculata*, p. 51; *L. vicina*, ibid.; *L. latefasciata*, p. 53; *L. rufo-zonata*, ibid.; *L. sinuato-notata*, p. 54; *L. æneo-picta*, p. 56; *L. purpureo-ænea*, p. 57; *L. nigro-cærulea*, p. 58; *L. picipennis*, p. 59; *P. tuberculosa*, p. 61; *L. bizonata*, p. 62. From Columbia:—*L. divalis*, p. 45. From Cayenne:—*L. infecta*, p. 47. From Guadeloupe:—*L. nigro-arcuata*, p. 45. From Panama:—*L. flavo-fasciata*, p. 43. From Guatemala:—*L. biannularis*, p. 46. From Costa Rica:—*L. maculifrons*, p. 59. From Mexico:—*L. bituberculata*, p. 35; *L. cingulata*, p. 41; *L. violaceo-fasciata*, p. 42; *L. reticulosa*, p. 43; *L. crucifera*, p. 49; *L. bisbivittata*, ibid.; *L. quinquenotata*, p. 50; *L. maculipennis*, p. 54; *L. fryii*, p. 60; and *L. exarata* (Chevr.), ibid. From North America:—*L. circum-vittata*, p. 41, and *L. pubipes*, 52.

Lema. Baly describes 15 new species of this genus: namely, *L. quadriplagiata*, Ann. & Mag. Nat. Hist. 3rd ser. vol. xvi. p. 155, from Pachybouri; *L. adamsii*, *l. c.* p. 156, from Chusan; *L. concinnipennis*, *l. c.* p. 157, from Northern China; *L. downesii*, *l. c.* p. 156, from Bombay and Bengal; *L. suturella*, ibid., from Bengal; *L. psyche*, *l. c.* p. 157, from Northern India; *L. globicollis*, *l. c.* p. 158, from India; *L. bipunctata*, *l. c.* p. 157, from Natal; *L. ornata*, *l. c.* p. 158, from Guatemala; and *L. dia*, ibid., *L. præclara*, *l. c.* p. 159, *L. pithys*, ibid., *L. idalia*, *l. c.* p. 160, *L. pulchra*, and *L. latona*, ibid., from the Upper Amazons.

Lema. Baly also describes the following 13 new Malayan species of this genus:—*L. pectoralis*, Trans. Ent. Soc. 3rd ser. iv. p. 9, pl. 1. fig. 3, from Singapore; *L. mutabilis*, *l. c.* p. 11, from Macassar; *L. boisduvalii*, *l. c.* p. 12, from Mysol and Ceram; *L. connectens*, *l. c.* p. 13, from Aru and New Guinea; *L. atriceps*, *l. c.* p. 14, from Mysol; *L. monstrosa*, *l. c.* p. 16, pl. 1. fig. 5, and *L. ferox*, *l. c.* p. 17, from Sarawak and Borneo; *L. constricta*, *l. c.* p. 18, *L. sumatrensis*, *l. c.* p. 26, and *L. quadrinotata*, *l. c.* p. 27, from Sumatra; *L. cæruleata*, *l. c.* p. 21, from Tonda; *L. smithii*, *l. c.* p. 25, from Celebes; and *L. atripennis*, *l. c.* p. 26, from Gilolo.

Lema lacordairii, Baly, p. 23, from India = *L. cyanipennis* (Lac. nec Fab.).

Lema contigua, Kirsch, Berl. ent. Zeitschr. 1865, p. 93, and *L. signata*, Kirsch, *l. c.* p. 94, from Bogota.

Crioceris. Hamlet Clark describes the following 12 new species of this genus:—*C. callizona*, *l. c.* p. 64, from Mexico; *C. locuples*, ibid., *C. inconspicua*, *l. c.* p. 68, *C. pusilla*, ibid., and *C. nigro-picta*, *l. c.* p. 70, from India; *C. crassipennis*, *l. c.* p. 65, from Java; *C. sanguinea*, *l. c.* p. 65, *C. æstivalis*, *l. c.* p. 66, and *C. consobrina*, *l. c.* p. 67, from West Africa; *C. fusco-punctata*, *l. c.* p. 68, *C. constricticollis*, *l. c.* p. 69, and *C. rufo-sanguinea*, *l. c.* p. 70, from South Africa.

Crioceris. The following 6 new Malayan species are described by Baly:—*C. ornata*, *l. c.* p. 28, pl. 1. fig. 2, *C. binotata*, *l. c.* p. 29, *C. eximia*, *l. c.* p. 30, from Borneo and Sarawak; *C. obliterata*, *l. c.* p. 30, from Dorey and New Guinea; *C. biplagiata*, *l. c.* p. 31, from Morty; *C. saundersi*, *l. c.* p. 35, from the Sooloo Islands.

Crioceris scabrosa, Baly, Ann. & Mag. Nat. Hist. 3rd ser. xvi. p. 153, from Mexico; *C. rugata*, Baly, *l. c.* p. 154, from Japan; *C. ruficollis*, Baly, *l. c.* p. 155, from Northern China.

Mastostethus. The following new species of this genus are described by Clark:—*M. duplocinctus*, *l.c.* p. 71, from Mexico; *M. sexnotatus*, *l.c.* p. 80, from Mexico?; *M. stramineus*, *l. c.* p. 73, *M. robustus*, *l. c.* p. 74, *M. notaticollis*, *l. c.* p. 75, *M. bizonatus*, *l. c.* p. 77, from Brazil; *M. frontali-notatus*, *l. c.* p. 76, from Cayenne?—And the following by Bates from the Amazons region:—*M. plato*, *l. c.* p. 72; *M. vexillarius*, ibid.; *M. inornatus*, *l. c.* p. 73; *M. monostigma*, ibid.; *M. pullatus*, *l. c.* p. 76; *M. suavis*, ibid.; *M. sigma*, *l. c.* p. 78; *M. fecialis*, ibid.; *M. sejunctus*, *l. c.* p. 79; and *M. cyclostigma*, ibid.

Mastostethus tricolor, Kirsch, *l. c.* p. 94, from Bogota.

Temnaspis westwoodii, Baly, *l. c.* p. 41, pl. 1. fig. 6, from Manilla.

Megalophus melipona, Bates, *l. c.* p. 84, *M. servittatus*, Bates, *l. c.* p. 85, *M. dentipes*, Bates, *l. c.* p. 86, *M. impictus*, Bates, ibid., from the Amazons; and *M. flavo-fasciatus*, Clark, *l. c.* p. 87, from Guiana.

Agathomerus incomparabilis, Clark, *l. c.* p. 81, from Espiritu Santo; *A. notaticollis*, Clark, *l. c.* p. 82, from Bahia; *A. nigricollis*, Clark, ibid., from Brazil; *A. rubri-notatus*, Clark, *l. c.* p. 83, from Mexico; *A. cyaneus*, Clark, *l. c.* p. 84, from the Rio Negro; *A. viduus*, Clark, ibid., from Rio Janeiro; *A. pauper*, Bates, *l. c.* p. 80, *A. cæruleus*, Bates, *l. c.* p. 81, and *A. lautus*, Bates, *l. c.* p. 83, from the Amazons.

Poecilomorpha mutillaria, Clark, *l. c.* p. 87, from Natal.

Pedrillia murrayii, Clark, *l. c.* p. 87, from Ceylon.

Chrysomelides.

Stål has completed his monograph of the American Chrysomelides (Nova Acta Upsal. ser. 3. vol. v. pp. 177–365), the third part, published last year containing descriptions of 246 species of *Chrysomela*, as here defined by Stål, 1 *Gastræidea*, 1 *Stenomela*, 1 *Prasocuris*, 4 of *Microtheca*, 7 of *Pyxis*, 1 *Trochalonota*, 43 of *Plagiodera* (incl. *Lina*), 1 *Limenta*, 2 of *Lioplacis*, 7 of *Gavirga*, 11 of *Phædon*, and 1 *Aulacoscelis* (g. n.). This gives a total of 326 species in the present part, which, added to those previously described by the author, brings the whole number of American Chrysomelides known to him to 655. In addition to these, 36 species described by various authors, but with which he is unacquainted, are cited, with the original descriptions, in the appendix.

The following genera are regarded by Stål as more or less synonymous with sections of *Chrysomela*:—*Leptinotarsa* (Stål), *Myocoryna* (Stål), *Eugonycha* (Stål), *Elytrophæra* (Stål), *Strichosa* (Blanch.), *Prosecicela* (Erichs.), *Dorysterna* (Guér.), *Cryptostetha* (Baly), *Labidomera* (Chevr.), *Deuterocampta* (Erichs.), *Stilodes* (Baly), *Calligrapha* (Dej.), *Doryphora* (Ill.), *Leucocera* (Stål), *Desmogramma* (Erichs.), *Cosmogramma* (Erichs.), *Zygogramma* (Erichs.), *Polyspila* (Hope).

Baly (Journ. of Ent. ii. p. 433) characterizes the group *Myochroinæ* and tabulates its constituent genera as follows (*l. c.* p. 434):—

I. Apterous; elytra soldered at suture ..... 1. *Dictyneis*, g. n.
II. Winged; elytra not united at suture.
A. Prosternum separated from episterna by sutural grooves.
1. Sides of thorax often interrupted at base and apex, always armed with irregular teeth ..... 2. *Myochrous*.
2. Sides of thorax entire, unarmed.
a. Four hinder tibiæ simple ..... 3. *Glyptoscelis*.
b. Four hinder tibiæ notched at apex..... 4. *Pachnephorus*.
B. Prosternum continuous with episterna, sutural grooves obsolete. 5. *Eryxia*, g. n.

Dictyneis (g. n.) is confined to Chili and the Argentine Republic; its type is *Myochrous pulvinotus* (Blanch.).

The group *Bromiinæ* is also characterized and has its genera tabulated by Baly (*l. c.* p. 438). The genera adopted by him are the following :—

I. Claws bifid.
A. Lateral border of thorax entire; club of antennæ 5-jointed. 1. *Bromius*.
B. Lateral border of thorax obsolete in front; club of antennæ 6-jointed ..... 2. *Syricta*.
II. Claws appendiculate.
A. Joints of tarsus of equal width; body metallic.. 3. *Acrothinium*.
B. Basal joint of tarsus narrower than the two following joints; body not metallic ..... 4. *Lophea*.

Bromius (Chevr. part.)=*Trichochrysea* (Baly), characterized *l. c.* p. 439, is employed by the author for a section of the species to which it was applied by Chevrolat, the typical section, including *B. vitis*, having been made into a genus under the name of *Adoxus* by Kirby. The type of the genus as established by Baly is *B. hirtus* (Fab.); other described species are *B. philippinensis* (Baly), *B. hebe* (Baly), *B. evanescens* (Baly), *Trichochrysea vestita* (Baly), *T. mouhoti* (Baly), *Heteraspis japana* (Motsch.), and *Calomorpha imperialis* (Baly). *Syricta* (Baly), *l. c.* p. 440, is proposed as a substitute for *Calomorpha* (Stål), the latter name, approaching in the author's opinion, too nearly to *Callimorpha*. *Acrothinium* (Marsh.), *l. c.* p. 441, is removed here from the Corynodinæ; and *Lophea* (g. n.), *l. c.* p. 441, is founded on a new species.

Fairmaire has continued his translation of Suffrian's Monograph of the European *Chrysomelæ* in Ann. Soc. Fr. 4e sér. tome v. pp. 37–82. He gives the descriptions of the species belonging to groups 11–13 of Suffrian and adds descriptions of *C. nigriceps* (Fairm.), *l. c.* p. 69, *C. commutata* (Suff.) =*melanocephala* (Suff. nec Dufts.) and *C. plagiata* (Suff.), *l. c.* p. 70. He also adds descriptions of 21 other species detected since the publication of Suffrian's monograph, including the following known species :—*C. afra* (Fairm.), *l. c.* p. 71; *C. mactata* (Fairm.), *l. c.* p. 75; *C. porphyrea* (Fald.)=*cupreo-punctata* (Reiche), *l. c.* p. 76; *C. thalassina* (Reiche) and *C. crassipes* (Luc.), *l. c.* p. 78; *C. limitata* (Küst.) and *C. luteo-cincta* (Fairm.), *l. c.* p. 79; *C. angelica* (Reiche) and *C. ægyptiaca* (Oliv.), *l. c.* p. 80. Fairmaire also states that *C. pelagica* (Chevr.)=*obscurella* (Suff.), *C. schotti* (Suff.)=*erythromera* (Luc.), *C. gaubilii* (Luc.)=*gypsophilæ*, var.; *C. aurocuprea* (Fairm.)=*viridana*, var.

Clythra. Allard has published (Ann. Soc. Ent. Fr. 4e sér. tome iv. pp. 385, 388) an analytical table of the species belonging to the subgenus *Lachnæa* of the genus *Clythra*. He recognizes 12 species, one of which is described as new. The known species are *C. paradoxa, vicina, palmata, macrodactyla, longipes, tripunctata, hirta, tristigma, cylindrica, punctipollis*, and *variolosa*.

Baly proposes the name *Corysthea* for his genus *Coryeia*, the latter term being preoccupied in Lepidoptera. Ent. Trans. 3rd ser. vol. ii. p. 336.

Grenier indicates the sexual distinctions of *Cryptocephalus lobatus* and *C. cyanipes*. Bull. Soc. Ent. Fr. 1865, p. x.

Grenier regards *Pachybrachys azureus* and *viridissimus* (Suff.) as identical. Bull. Soc. Ent. Fr. 1865, p. xvii.

Gonioctena affinis (Gyll.) is recorded as a new British species by C. O. Waterhouse, Ent. M. Mag. i. p. 278.

Cryptocephalus 10-*punctatus* (Linn.) and two of its varieties are described and figured by Rye, Entom. Ann. 1866, pp. 114–115, figs. 5–7.

Chappell records the occurrence of *Cryptocephalus bipustulatus* upon *Eriophorum* at Chat Moss; and Rye remarks upon the relations of this form with *C. bipunctatus* and *lineola*. Ent. M. Mag. ii. pp. 85, 86.

Doryphora 10-*lineata* (Say). The habits of this Beetle, which is injurious to the potato both in the larval and perfect states, are described by Fitch, 9th Rep. Ins. New York, pp. 229–234. The Beetle is figured pl. 4. fig. 6.

Cryptocephalus lateralis (Suff.) and *C. æneus* (Stierl.) are ♂ and ♀, according to Becker, Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 484.

Gonioctena 5-punctata (Fab.). The larva of this species was found by Dietrich on *Prunus padus*, the imago only on *Sorbus aucuparia*. *L. c.* p. 218.

Phædon betulæ. The natural food-plants of this species, according to Dietrich (*l. c.* p. 219), are *Veronica beccabunga* and *V. anagallis*.

The following known species of the groups *Clythridæ*, *Chlamydæ*, and *Cryptocephalidæ* are described by Baly, Ent. Trans. 3rd ser. vol. iv :—Clythra *succincta* (Luc.), *l. c.* p. 47, *C. 12-maculata* (Fab.), *l. c.* p. 48, and *C. egregia* (Boh.), *l. c.* p. 57. Diapromorpha *dejeanii* (Luc.), *l. c.* p. 49. Aspidolopha *buquetii* (Luc.), *l. c.* p. 50, pl. 2. fig. 2. Damia *canaliculata* (Luc.), *l. c.* p. 56. Ceratobasis *nair* (Luc.), *l. c.* p. 56. Hymetes *javana* (Luc.), *l. c.* p. 61. Melixanthus *intermedius* (Suff.), *l. c.* p. 64. Cryptocephalus *colon* (Suff.), *l. c.* p. 69, pl. 2. fig. 1, *C. tetrastigma* (Suff.), *C. billardierii* (Fab.), *C. lævissimus* (Suff.), and *C. pilularius* (Suff.), *l. c.* p. 70, *C. cinnabarinus* (Suff.), *l. c.* p. 71, and *C. dapsilis* (Boh.), *l. c.* p. 76.

New genera :—

Dictyneis, *Eryxia*, and *Lophea*, Baly (see p. 514).

Cyno, g. n., Marshall, Journ. of Ent. ii. p. 350. Allied to *Pseudocolaspis*; head and mandibles very large, the latter bidentate at apex; thorax flat, subquadrate; femora unarmed; tibiæ straight. Sp. *C. mordicans*, sp. n., Marshall, *l. c.* p. 350, from South Africa.

Thaumastomerus, g. n., Clark, Ent. Trans. 3rd ser. vol. ii. p. 418. Allied

to *Edusa*; palpi with apical joint turgid; intermediate femora much thickened, short, arcuate. Sp. *T. viridis*, sp. n., p. 419, from Western Australia.

Ocnus, g. n., Clark, *l. c.* p. 420. Allied to *Edusa*; head porrect; labrum emarginate; body elongate. Sp. *O. viridis*, sp. n., p. 421, from Western Australia.

Carystea, g. n., Baly, Ann. & Mag. Nat. Hist. xv. p. 33. Allied to *Australica*; claws simple; head short; form narrow, parallel-sided; lateral margins of thorax not incrassate. Known sp. *Australica waterhousii* (Baly) and *A. fulvilabris* (Germ.). New sp. *C. inornata*, Baly, *l. c.* p. 33, and *C. jansoni*, Baly, ibid., from Swan River.

Chalcoplacis, g. n. (Chevr. MS.), Baly Ent. Trans. 3rd ser. vol. iii. p. 338 = *Lamprosphærus* (Baly) ex parte. Body semiglobose; lateral margins of thorax thickened, unarmed; antennæ little more than half length of body. Type *Lamprosphærus abdominalis* (Baly); sp. n. *Chalcoplacis sumptuosa*, Baly, *l. c.* p. 338, from the Amazons.

Chalcophyma, g. n., Baly, *l. c.* p. 339=*Lamprosphærus* (Baly) ex parte. Body ovate-rotundate or rounded; antennæ about equal in length to body; lateral margins of thorax thickened and usually dentate or emarginate. Type *Lamprosphærus æruginosa* (Baly). New species:—*C. cretifera*, Baly, *l. c.* p. 339, *C. læta*, Baly, *l. c.* p. 340, *C. tarsalis*, Baly, ibid., and *C. tuberculosa*, Baly, *l. c.* p. 341, from the Amazons.

Nicea, g. n., Baly, Ent. Trans. 3rd ser. iv. p. 36. Allied to *Doryxena*; but metasternum not produced in front. Sp. *N. imperialis*, *bella*, and *dimidiatipennis*, sp. n., Baly, *l. c.* p. 37, from New Guinea.

Eumæa, g. n., Baly, *l. c.* p. 37. Allied to preceding, but with the antennæ slender, the elytra costate on the disk, and the transverse furrow of the pronotum more distinctly marked, but terminating on each side in a large deep pit within the margin. Sp. *E. pulchra*, sp. n., p. 38, from New Guinea.

Bucharis, g. n., Baly, *l. c.* p. 61. Eyes distant, notched; antennæ with five or six last joints compressed; prothorax lobate behind, lobe entire, received into base of scutellum; scutellum flat; prosternum concavo-emarginate or truncate behind. Sp. *B. suffriani*, sp. n., p. 62, pl. 3. fig. 8, from New Guinea and Mysol; *B. fulvipes*, sp. n., p. 63, from Morty.

Corynoeides, g. n., Clark, Ann. & Mag. Nat. Hist. xv. p. 139. Allied to *Corynodes*; antennæ longer than body in ♂, nearly as long in ♀*, in the latter joints 7–11 compressed and a little enlarged but not dilated; eyes notched. Sp. *C. tuberculata*, sp. n., Clark, *l. c.* p. 140, from Pulo Penang.

New species:—

Titubæa laportei, Baly, Ent. Trans. 3rd ser. vol. iv. p. 44, pl. 2. fig. 8, from Tringanee, Penang, and Siam; *T. delectabilis*, Baly, *l. c.* p. 45, pl. 2. fig. 7, and *T. suspiciosa*, Baly, *l. c.* p. 46, from Penang.

Clythra distinguenda, Baly, *l. c.* p. 47, pl. 2. fig. 6, from Penang; *C. bella*, Baly, *l. c.* p. 48, from Timor.

Clythra (*Lachnæa*) *hirtipes*, Allard, Ann. Soc. Ent. Fr. 4e sér. tome iv. p. 383, from Madrid.

---

* This character is reversed in the description, p. 139, but given correctly on p. 140 in the remarks on the genus.

Clythra (*Pantocometes*) *downesii*, Baly, Ent. Trans. 3rd ser. vol. ii. p. 333, from Bombay.

Aspidolopha imperialis, Baly, *l. c.* p. 50, from Borneo and Penang.

Gynandrophthalma malayana, Baly, *l. c.* p. 51, pl. 2. fig. 4, from Batchian, Ké, Ternate, and Ceram; *G. lacordairii*, Baly, *l. c.* p. 52, from Morty; *G. ornatula*, Baly, *l. c.* p. 53, from Singapore.

Ætheomorpha curtisii, Baly, *l. c.* p. 53, generally distributed; *Æ. oblita*, Baly, *l. c.* p. 54, from Morty; *Æ. pygidialis*, Baly, *l. c.* p. 55, from Ceram.

Chlamys wallacei, Baly, *l. c.* p. 58, pl. 2. fig. 3, from Amboyna; *C. celebensis*, Baly, *l. c.* p. 59, from Celebes.

Exema malayana, Baly, *l. c.* p. 60, from Malacca, Macassar, and Flores.

Melixanthus coctus (Suff. MS.), Baly, *l. c.* p. 65, from Borneo and Flores; *M.? bimaculiclolis*, Baly, ibid., pl. 3. fig. 1, from Penang.

Cadmus chlamyoides, Baly, *l. c.* p. 66, pl. 3. fig. 5, from Morty; *C. squamulosus*, Baly, *l. c.* p. 67, pl. 3. fig. 2, from Batchian; and *C. submetallescens*, Baly, *l. c.* p. 68, pl. 3. fig. 9, from Ternate.

Cryptocephalus. Of this genus Baly describes six new Malayan species:—*C. apicipennis*, *l. c.* p. 71, from Penang; *C. annulipes* (Suff. MS.), *l. c.* p. 72, from Borneo; *C. octospilotus*, *l. c.* p. 73, from Tringanee; *C. suspectus* (Suff. MS.), *l. c.* p. 73, pl. 3. fig. 4, from Borneo and Tringanee; *C. wallacei*, *l. c.* p. 74, pl. 3. fig. 3, from Timor; and *C. discrepans*, *l. c.* p. 75, from Morty.

Cryptocephalus elegans, Becker, Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 438, from Sarepta (=*C. ergenensis*, Beck.).—*C. viridiflavus*, Marguet, L'Abeille, i. p. 373, from Toulouse.—*C. bardus*, Chevrolat, Rev. et Mag. de Zool. 1864, p. 181, and *C. distensus*, Chevr. ibid., from Cuba.

Dioryctus grandis, Baly, *l. c.* p. 64, pl. 2. fig. 5, from Sumatra and Penang.

Paropsis. Hamlet Clark (Ent. Trans. 3rd ser. vol. ii.) describes 17 new species of this genus from Western Australia: namely, *P. mediovittata*, *l. c.* p. 404; *P. apicata* and *P. amœna*, *l. c.* p. 405; *P. captiosa*, *l. c.* p. 406; *P. maculicollis* and *P. purpureo-aurea*, *l. c.* p. 407; *P. tessellata*, *l. c.* p. 407; *P. nigroconspersa* and *P. sanguineotincta*, *l. c.* p. 409; *P. transversomaculata*, *l. c.* p. 410; *P. intertincta* and *P. nigritula*, *l. c.* p. 411; *P. nigropicta* and *P. incurva*, *l. c.* p. 412; *P. perparvula* and *P. nervosa*, *l. c.* p. 413; and *P. verrucipennis*, *l. c.* p. 414.

Chalcolampra undulatipennis, Clark, *l. c.* p. 415, and *C. laticollis*, Clark, *l. c.* p. 416, from Western Australia.

Chalcolampra marmorata, Baly, Ann. & Mag. Nat. Hist. xv. p. 35, from Moreton Bay.

Australica æneonitens, Clark, *l. c.* p. 416, from Western Australia.

Australica digglesii, Baly, *l. c.* p. 34, from Moreton Bay.

Lamprolina discoidalis, Baly, *l. c.* p. 34, from Moreton Bay.

Chalcomela subpunctata, Clark, *l. c.* p. 417, from Western Australia.

Pseudocolaspis. The following seven new species of this genus are described by Marshall:—*P. sericata*, Journ. of Ent. ii. p. 347, *P. puberula*, *l. c.* p. 349, and *P. servula*, ibid., from the Cape of Good Hope; *P. haliporphyra*, *l. c.* p. 348, *P. aureovillosa*, ibid., and *P. semipurpurea*, ibid., from Natal; and *P. azurea*, *l. c.* p. 349, from Senegambia.

Eriphyle. Marshall describes the following four new species of this genus:—*E. rufovittata*, *l. c.* p. 351, from the Amazons; *E. bipartita*, ibid., of unknown origin; *E. circumcincta*, ibid., and *E. rectilineata*, *l. c.* p. 352, from Cayenne.

Rhyparida atripennis, Clark, Ann. & Mag. Nat. Hist. xv. p. 141, from Penang; and *R. rufa*, Clark, ibid., from Pulo Penang.

Colaspoides pulchella, Clark, *l. c.* p. 142, from Pulo Penang.

Colasposoma æneo-viride, Clark, *l. c.* p. 142, and *C. metallicum*, Clark, ibid. from Pulo Penang.

Colasposoma. Four new species of this genus are described by Baly:—*C. igneicolle*, Journ. of Ent. ii. p. 428, *C. fulvicorne*, ibid., and *C. viridiæneum*, *l. c.* p. 429, from Siam; and *C. viridivittatum*, *l. c.* p. 430, from the Niger.

Endocephalus spilotus, Baly, Ent. Trans. 3rd ser. iii. p. 341, from the Amazons.

Colaspis elegantula, Baly, *l. c.* p. 341, from the Amazons.

Colaphus bowringii, Baly, Ann. & Mag. Nat. Hist. xv. p. 35, from North China.

Plagiodera cognata, Baly, *l. c.* p. 36, from Old Calabar, and *P. walleri*, Baly, ibid., from the Zambesi.

Geloptera duboulayi, Clark, Ent. Trans. 3rd ser. ii. p. 417, and *G. nodosa*, Clark, *l. c.* p. 418, from Western Australia.

Glyptoscelis æneipennis, Baly, Ent. Trans. 3rd ser. iii. p. 334, from Venezuela and Trinidad; *G. fascicularis*, Baly, ibid., from Columbia; and *G. albicans*, Baly, ibid., of unknown origin.

Myochrous sallei, Baly, *l. c.* p. 335, from Mexico; *M. explanatus*, Baly, ibid., from Caracas; *M. armatus*, Baly, ibid., from Brazil.

Corysthea (= *Corycia*) *ferox*, Baly, *l. c.* p. 336, from Cayenne.

Lamprosphærus hebe, Baly, *l. c.* p. 337, *L. 5-pustulatus*, Baly, ibid., and *L. scintillaris*, Baly, *l. c.* p. 338, from the Amazons; *L. lateralis*, Baly, ibid., from Brazil.

Scelodonta murrayi, Baly, Journ. of Ent. ii. p. 427, from Old Calabar.

Eryxia (g. n.) *baikii*, Baly, *l. c.* p. 437, from the Niger.

Lophea (g. n.) *melancholica*, Baly, *l. c.* p. 442, from Burmah.

Edusa. Of this genus Clark describes four new species from Western Australia:—*E. aureoviridis* and *E. setosa*, *l. c.* p. 419; *E. hispidula* and *E. nigro-ænea*, *l. c.* p. 420.

Plagiodera flavilimbia, Stål, *l. c.* p. 300, from Rio Janeiro.

Phædon vafrum, Stål, *l. c.* p. 316, from Peru.

Chrysomela. Fairmaire (Ann. Soc. Ent. Fr. 4e sér. tome v.) describes the following new European and Algerian species of this genus:—*C. tortipennis*, *l. c.* p. 72, from Algeria; *C. pertusa*, *l. c.* p. 73, from Boghar; *C. turca*, *l. c.* p. 74, from Constantinople; *C. pseudo-ænea*, ibid., from Tangier; *C. blanchei* (Chevr.), *l. c.* p. 75, from Syria; *C. confossa*, *l. c.* p. 76, from Boussada and Lambessa; *C. opacicollis*, *l. c.* p. 77, from Morocco; *C. bigorrensis*, ibid., from the Pyrenees; *C. dohrnii*, *l. c.* p. 81, from Syria; and *C. splendidula*, ibid., from the Pyrenees.

Chrysomela. Stål (Nova Acta Upsal. ser. 3. tom. v.) has described the following new American species of this genus (see p. 513):—*C. scutaria*, p. 179, *C. peltasta*, p. 180, *C. ochrostacta*, p. 193 (= *Stilodes guttata*, Baly), from Brazil; *C. luteola*, p. 182, of unknown origin; *C. nydia*, p. 203, origin unknown; *C. ida*, p. 232 = *Cosmogramma decora*, Stål, from Brazil; *C. connexa*, p. 237, from Brazil and Bolivia; *C. flavivittis*, p. 238, from Bolivia and Chiquitos; *C. vittosa*, p. 241, from Brazil; *C. personata*, p. 242, from Columbia; *C. rustica*, ibid., from Bolivia; *C. novem-virgata*, ibid., from Bolivia and Brazil; *C. satrapa*, p. 244, from Minas Geraes; *C. penelope*, p. 334, from Peru; *C. cynthia*, p. 335, from Bogota; *C. cisseis*, ibid., from Peru; *C. sugillata*, p. 336, from Peru; *C. pallido-cincta*, p. 337, from New Granada; *C. nympha*, ibid., from Peru; *C. adippe*, p. 338, from Bahia; *C. faceta*, ibid., from New Granada; *C. graphiptera*, p. 339, from New Granada; *C. thalia*, ibid., from Brazil; *C. fuscolineata*, p. 340, from Central America; *C. motschulskyi*, ibid., from Central America; *C. mäklini*, p. 341 (= *C. biplagosa*, Stål, olim), from Brazil.

Mastacanthus arcustriatus, Chevrolat, *l. c.* p. 181, from Cuba.

Dachrys fasciata, Kirsch, *l. c.* p. 94, from Bogota.

Calliaspis nigricornis, Kirsch, *l. c.* p. 95, from Bogota.

Chelymorpha semifasciata, Kirsch, *l. c.* p. 95, from Bogota.

Charidotis reticulata, Kirsch, *l. c.* p. 95, from Bogota.

Gallerucides.

L. de Joannis has commenced (L'Abeille, ii. pp. 1–144) a monograph of the European species of the *Gallerucides* proper—that is to say, exclusive of the *Halticides*. He reckons the total number of species previously described at 84, arranged in 8 genera; 44 new species are added by the author, raising the number to 128, which he now distributes in 9 genera. He gives a table of the genera (*l. c.* pp. 7–8), which it may be useful to reproduce, as follows:—

I. Claws furnished with a round or pointed tooth; elytra entire or slightly abbreviated, not strongly and obliquely truncated (except in *Adim. brevipennis* and *brachyptera*).

A. First joint of post. tarsi shorter than the 3 following united; tooth of the claws more or less pointed or prominent.

1. Last segment of abdomen incised or emarginate in the middle in ♂.

* Body broad, smooth, or scarcely pubescent; elytra with the sides more or less curved, widened behind..... 1. *Adimonia.*

† Body elongate, with a thick pubescence; elytra parallel. 2. *Galleruca.*

2. Last segment bisinuate, biemarginate or deeply biincised in ♂.

* Last segment very deeply biincised at the end (♂).

a. Pronotum with a deep transverse furrow near the base; 2nd abdominal segment without appendages in ♂. 3. *Raphidopalpa.*

b. Pronotum without a transverse furrow; 2nd abdominal segment with 2 appendages in ♂ ..... 6. *Phyllobrotica.*

† Last segment bisinuate or not very deeply biemarginate (♂).

a. Body ovoid, widened behind..... 5. *Agelastica.*

b. Body elongate, parallel.
a. Supra-antennary callus deeply emarginate above near the eyes ..... 4. *Malacosoma.*
b. Supra-antennary callus not emarginate above. 7. *Luperus.*
B. First joint of posterior tarsi longer than the 3 following united; tooth of the claws rounded ..... 8. *Monolepta.*
II. Tarsal claws not toothed; elytra much abbreviated, obliquely truncated, forming a reentrant sutural angle ..... 9. *Marseulia*, g. n.

Of these genera the monograph of the first 6 is here completed, and the greater part of the species of *Luperus* are also described. The numbers are, of *Adimonia* 57, of *Galleruca* 15, of *Raphidopalpa* 1, of *Malacosoma* 5, of *Agelastica* 2, of *Phyllobrotica* 3, and of *Luperus* 35; of the latter 25 are described. Apparently elaborate tables of the species are given under each genus; but these are sometimes defective, a striking instance of which is to be found at p. 103, where the table of species of *Malacosoma* shows only 3, whilst 5 species are afterwards described; and one of those omitted, *M. triumphans* (Fald.) is said by the author himself (p. 105) to be "the largest and finest species."

Kutschera has completed his revision of the European species of *Halticides* (Wiener ent. Monatsschr. Bd. viii. 1864). He commences (*l. c.* p. 33) with the fortieth species of the genus *Longitarsus*, of which he here describes 35 species (11 new), and refers to several other species described by various authors, which he believes to belong to the genus, although his imperfect acquaintance with them leaves him in uncertainty upon this point. To the genus *Plectroscelis* (Redt.) = *Plectroscelis* and *Chætocnema* (Foud.) he refers 22 species (2 new), to *Psylliodes* (Lat.) = *Macrocnema* (Steph.) 41 species (6 new), to *Dibolia* 9 species, to *Apteropeda* 4 species, to *Hypnophila* (Foud.) = *Minota* (Kutsch.) 2 species, to *Mniophila* 1 species, to *Sphæroderma* 3 species, and to *Argopus* 5 species. The new species described will be noticed further on.

Luperus flavipennis (Luc.), an Algerian species, has been taken at Nice by Peragallo. Bull. Soc. Ent. Fr. 1865, p. xli.

Taschenberg describes the following injurious species of this group:—*Psylliodes chrysocephala* (Naturg. wirbell. Thiere, pp. 69–73, pl. 2. figs. 1, 2), *Haltica nemorum* (*l. c.* pp. 737–4, pl. 2. figs. 3–5), and *H. oleracea* (*l. c.* pp. 74–76, pl. 2. fig. 7).

The habits and metamorphoses of *Psylliodes napi* are described by Colonel Goureau. Ann. Soc. Ent. Fr. 4ᵉ sér. tome iv. p. 668.

New genera:—

Clark has subjected the species referred to Dejean's genus *Cœlomera* to a thorough examination, and comes to the conclusion that the group of insects generally placed under this title includes no fewer than 14 genera (Ann. & Mag. Nat. Hist. xvi. p. 257), of which he gives the following synopsis:—

Antennæ robust, short, incrassated; body ovate .. 1. *Cerochroa* (Gerst.) (type *C. ruficeps*, Gerst.).
Antennæ incrassated, cylindrical, joints 3, 4, and 5 equal; body subcylindrical, subovate ..... 2. *Alphidia* (g. n.) (type *A. comitata*, Kl.).
Antennæ incrassated, joint 3 longer than 4, joints 5–11 broadly compressed, body ovate ..... 3. *Clitena* (Baly) (type *C. limbata*, Baly).
Antennæ incrassated, joints 1–4 subequal, 9 and 2 minute and equal; body subparallel ..... 4. *Hymenesia* (g. n.) (type *H. tranquebarica*, Fab.).
Antennæ incrassated, serrated, joints 3–7 the broadest and equal in length; body ovate ..... 5. *Orthoxia* (g. n.).
Antennæ incrassated in ♂, joints 4–7 dilated and compressed, joint 3 shorter than 4; body ovate ..... 6. *Pyesia* (g. n.) (type *P. laticornis*, Germ.).
Antennæ incrassated in ♂, very long, joints gradually diminishing in thickness from 1–11 ..... 7. *Procalus* (g. n.).
Antennæ robust, filiform, joints 3–5 subequal; body robust, subparallel. 8. *Pachytoma* (g. n.).
Antennæ filiform, robust, joints 1 and 3 equal, and 4–6 equal and somewhat shorter; body short, parallel ..... 9. *Sphenoraia* (g. n.).
Antennæ filiform, joints 4 and 5 equal and shorter than 1 and 3; body parallel; thorax much constricted at base .. 10. *Dircema* (g. n.) (type *D. nigripenne*, Fab.).
Antennæ filiform, moderate in length, joints 4 and 5 subequal; body robust or broadly ovate ..... 11. *Monocesta* (g. n.) (type *M. coryli*, Say).
Antennæ filiform, moderate in length, joint 3 very long; body generally broadly ovate ..... 12. *Cœlomera* (Erichs.) (type *C. cayennensis*, Fab.).
Antennæ filiform, robust, nearly as long as the body, joints 3 and 5–10 nearly equal; body parallel ..... 13. *Coraia* (g. n.).
Antennæ filiform, slender, nearly as long as the body; body subparallel. 14. *Nestinus* (g. n.).

Rhombopala, g. n. (Chevr.), Clark, Ann. & Mag. Nat. Hist. xv. p. 143. Differing from *Adorium* in having a more broadly ovate form, shorter and stouter antennæ, and the maxillary palpi globose at apex. Sp. *R. duodecimpunctata*, sp. n. (Chevr.), Clark, *l. c.* p. 143, and *R. pectoralis* (Chevr.), Clark, *l. c.* p. 144, from Siam.

Ochralea, g. n. (Chevr.), Clark, *l. c.* p. 144. Allied to *Adorium*; form longer and narrower; apical joint of max. palpi elongate and pointed; claws appendiculate. Sp. *O. nigricornis*, sp. n., from Penang.

Dercetis, g. n., Clark, *l. c.* p. 146. Body ovate, broad, depressed, head subporrect; eyes oval; antennæ slender; max. palpi long, penultimate joint short, last joint long, acuminate; thorax much narrower than elytra; legs slender, claws appendiculate. Sp. *D. depressa* and *bifasciata*, sp. n., Clark, *l. c.* p. 147, from Penang.

Hyphænia, g. n., Baly, *l. c.* p. 410. Allied to *Luperus*; head exserted,

face perpendicular; antennæ filiform, slender; eyes large, prominent; thorax transverse, quadrate, sides straight, each angle with a setiferous tubercle, back rather flattened, transversely sulcate in the middle; tibiæ unarmed; claws appendiculate. Type *Luperus pilicornis* (Motsch.).

Hylaspes, g. n., Baly, Ent. Trans. 3rd ser. vol. ii. p. 436. Allied to *Doryxena*; antennæ rather longer than body, serrated, 1st joint curved, thickened to the apex, 2nd and 3rd minute, equal, remainder elongated, compressed, dilated at their apices. Sp. *H. longicornis*, sp. n., Baly, *l. c.* p. 436, from the Himalayas.

Buphonida, g. n., Baly, *l. c.* p. 437. Allied to *Galleruca*; head exserted, tumid above. Sp. *B. evanida*, sp. n., Baly, *l. c.* p. 437, from Southern India.

Cneorane, g. n., Baly, Ent. M. Mag. ii. p. 97. Elongate; head exserted, perpendicular; joint 1 of antennæ thickened to apex; thorax with the sides rounded, the disk not impressed; anterior coxæ contiguous; tibiæ with an acute spine at the apex; claws appendiculate. Sp. *C. fulvicollis*, sp. n., Baly, *l. c.* p. 97, from India.

Doryida, g. n., Baly, *l. c.* p. 97. Body oblong; head exserted, subperpendicular; antennæ short, slender, joint 1 scarcely thickened; thorax transverse, sides rounded, disk not impressed; elytra much wider than thorax; anterior coxæ not contiguous; 4 posterior tibiæ with an acute apical spine; claws appendiculate; prosternum elongate. Sp. *D. mouhoti*, sp. n., Baly, *l. c.* p. 98, from Siam.

Berecyntha, g. n., Baly, *l. c.* p. 98. Oblong; head exserted; antennæ robust, shorter than body, joints 2 and 3 very short; thorax transverse, sides slightly sinuated, disk transversely impressed on each side; anterior coxæ contiguous; 4 posterior tibiæ with acute spine; claws appendiculate; prosternum nearly obsolete. Sp. *B. tibialis*, sp. n., from Cambodia.

Mesodonta, g. n., Baly, *l. c.* p. 99. Allied to *Clitena* (Baly); intermediate tibiæ alone armed with an acute spine at the apex. Type *Clitena limbata*.

Bonesia, g. n., Baly, *l. c.* p. 100. Oblong, narrow; head exserted, perpendicular; antennæ robust, distinctly thickened at apex, very short, joints 2 and 3 short; thorax short, transverse, sides angulated in the middle; anterior coxæ contiguous; 4 posterior tibiæ spined at apex; prosternum nearly obsolete. Sp. *B. clarkii*, sp. n., Baly, *l. c.* p. 100, from Sierra Leone.

Æthonea, g. n., Baly, *l. c.* p. 100. Allied to preceding, but antennæ nearly as long as the body and serrated, with joint 3 elongate. Sp. *Æ. murrayi*, sp. n., Baly, *l. c.* p. 101, from Old Calabar.

Sarda, g. n., Baly, *l. c.* p. 101. Allied to *Adorium*; thorax much narrower than elytra, its sides angulated, with their anterior portion parallel. Sp. *S. tetraspilota*, sp. n., Baly, *l. c.* p. 101, from the New Hebrides.

Iphidea, g. n., Baly, *l. c.* p. 127. Allied to *Luperodes*; joint 2 of posterior tarsi nearly twice as long as 3, joint 1 longer than the rest taken together. Sp. *I. discrepans*, sp. n., Baly, *l. c.* p. 127, from Japan.

Astena, g. n., Baly, *l. c.* p. 127. Allied to preceding, but basal joint of posterior tarsi not forming more than half the tarsus. Sp. *A. atripes*, sp. n., Baly, *l. c.* p. 128, from India.

Arcastes, g. n., Baly, *l. c.* p. 147. Allied to *Luperodes*; antennæ stout, narrowed at base and apex. Sp. *A. biplagiata*, sp. n., Baly, *l. c.* p. 147, from Singapore and Malacca.

Emathea, g. n., Baly, *l. c.* p. 147. Antennæ slender, attenuate at apex, joint 3 twice as long as 2; anterior coxæ distant; tibiæ unarmed at apex; prosternum distinct, elevated in the middle. Sp. *E. æneipennis*, sp. n., Baly, *l. c.* p. 148, from Sumatra.

Cynorta, g. n., Baly, *l. c.* p. 249. Elongate, narrow, parallel-sided; head exserted, face elongated, subporrect; mandibles stout, produced in front. Sp. *C. porrecta*, sp. n., Baly, *l. c.* p. 250, from Java.

Nadrana, g. n., Baly, *l. c.* p. 250. Allied to *Luperodes*; thorax short, transverse, margined at the sides, with a slight transverse furrow on the disk; antennæ slender, as long as the body, joint 3 nearly twice as long as 2. Sp. *N. pallidicornis*, sp. n., Baly, *l. c.* p. 251, from Tringanee.

Antipha, g. n., Baly, *l. c.* p. 251. Body ovate, widened behind; antennæ very slender, shorter than the body, joint 1 curved, thickened at apex; thorax smooth; legs slender, tibiæ unarmed, claws appendiculate. Sp. *A. picipes*, sp. n., Baly, *l. c.* p. 251, from India.

Momæa, g. n., Baly, *l. c.* p. 252. Allied to *Nicæa* and *Eumæa*; antennæ about as long as body, filiform, joint 3 elongate, longer than 4; disk of prothorax transversely concave, longitudinally excavated in the middle, transversely sulcate on each side. Sp. *M. viridipennis*, sp. n., from Mysol.

Mimastra, g. n., Baly, *l. c.* p. 253. Allied to preceding; flattened above; joint 3 of antennæ shorter than 4; prosternum obsolete. Sp. *M. arcuata*, sp. n., Baly, *l. c.* p. 253, from India.

Sastra, g. n., Baly, *l. c.* p. 253. Allied to *Momæa*; head smaller; face shorter, transverse; upper surface densely pubescent. Sp. *S. placida*, sp. n., Baly, *l. c.* p. 254, from Mysol; *S. limbata*, Baly, ibid., from New Guinea.

Hamlet Clark, in his memoir on the South-American *Halticidæ* (Journ. of Ent. ii. pp. 375–412), commences with a list of the genera adopted in Dejean's Catalogue (3rd edit. 1837) for these insects, many of which he afterwards characterizes. The first four genera, *Octogonotes*, *Œdionychis*, *Ptena*, and *Omophoita* have already been treated by him in a previous part of the Journal of Entomology, and the second of these includes *Leiopomis*; of the remainder, some have been published under new names by various authors, the result being as follows (including some new generic forms), as shown in a tabular form on pp. 377–378:—

1. *Asphæra* (Chevr.). Sides of thorax rounded and broadly marginate, anterior angles produced in front, not laterally; 3rd, 4th, and 5th joints of antennæ subequal; claws simple or appendiculate (p. 379).

2. *Aspicela* (Dej.). As in *Asphæra*, but the claws almost bifid. Perhaps only a Columbian type of *Asphæra*. Known species: *A. cretacea*, *unipunctata*, *albomarginata*, and *scutata* (Lat.), *A. osculatii*, *rugosa*, *bourcieri*, and *nigro-viridis* (Guér.) (p. 380).

3. *Litosomycha* (Chevr.). Thorax rectangular, the sides straight and narrowly margined; other characters as in *Asphæra*.

4. *Sophræna* (Baly) = *Axiotheata* (Chevr.). Form ovate; antennæ short and thickened, joints 1 and 11 elongated (p. 382). *Vide infrà*, p. 525.

5. *Clamophora* (Chevr.). Allied to *Aspicela*; thorax smaller; elytra more ovate; maxillary palpi elongate, last joint rather long; antennæ slender, filiform; joints 3–6 equal (p. 383).

6. *Pedilia* (g. n.). Form ovate, very depressed; antennæ incrassated, joints 1 and 3 elongate; posterior femora short and very thick (p. 384).

7. *Ora* (Dej. MS). Ovate, very depressed; posterior femora short and very thick (p. 385).

8. *Cyrtosphærus* (g. n.). Rotundate; antennæ incrassate, joints 1 and 3 elongate (p. 386).

9. *Diphaulaca* (Chevr.). Thorax narrower than elytra, sides rotundate, base with transverse fovea; antennæ with joints 3–5 subequal; maxillary palpi with terminal joint produced (p. 386).

10. *Psilapha* (g. n.). Parallel, robust; thorax large and foveolate at base; anterior femora incrassated (p. 389).

11. *Oxygonus* (= *Oxygona*, Chevr.). Thorax with posterior angles rounded and marked with a small projection or elbow; elytra not punctate-striate; antennæ with joints 3–11 elongate and subequal. Type *O. acutangula* (Chevr.) (p. 390).

12. *Rhopalotoma* (g. n.). Form depressed; antennæ filiform; anterior tibiæ incurved (p. 394).

13. *Lactica* (Erichs.) = *Camæna* (Baly), *Monomacra*, *Lacpatica*, and *Strabala* (Chevr.). Short, subovate; thorax subrectangular, base transversely foveolate; joint 3 of antennæ scarcely longer than 2 (p. 395).

14. *Tenosis* (g. n.). Elongate; antennæ filiform; posterior femora in ♂ with a strong median angle (p. 397).

15. *Cæporis* (Dej.). Parallel; thorax transverse and foveolated at base (p. 398).

16. *Pelonia* (g. n.). Oval; thorax rectilateral, anterior angles somewhat rounded; elytra thickly punctate; antennæ filiform, joints 4–6 subequal (p. 399).

17. *Disonycha* (Chevr.). Parallel; thorax transverse, nearly as broad as elytra, sides depressed; antennæ with joints 4–7 subequal; claws simple (p. 401).

18. *Systena* (Chevr.). Parallel; thorax acute-angled and quadrate, narrower than elytra; elytra punctate (rarely punctate-striate); antennæ with joints 4 and 5 subequal, 3 shorter; claws appendiculate (p. 402).

19. *Cacoscelis* (Chevr.). Parallel; thorax narrower than elytra, sides not depressed; claws appendiculate (p. 406).

20. *Caloscelis* (g. n.). Short, robust; antennæ filiform; posterior legs very long (p. 408).

21. *Notozona* (Chevr.). Subparallel; thorax broad; elytra punctate-striate (p. 409).

The genera enumerated, but not characterized, in this paper are *Graptodera* (Chevr.), *Romalocera* (Dej.) = *Phrynocepha* (Baly), *Crepidodera*, *Phyllotreta*, *Aphthona*, *Teinodactyla* (Chevr.),

Dibolia and *Psylliodes* (Latr.), and *Plectroscelis*, *Balanomorpha*, and *Podagrica* (Chevr.).

Simæthea, g. n., Baly, Ann. & Mag. Nat. Hist. 3rd ser. xvi. p. 247. Allied to *Podagrica*; thorax without short perpendicular basal grooves. Sp. *S. lapponei*, sp. n., Baly, *l. c.* p. 248, from Tringanee.

Xisthea, g. n., Baly, *l. c.* p. 248. Allied to *Diplaulaca*; thorax transverse, narrowly margined at the sides, which are nearly parallel, anterior angles with a setiferous tubercle, a transverse furrow near the base, terminating on each side in a perpendicular fossa; elytra regularly punctate-striate. Sp. *X. orientalis*, sp. n., Baly, *l. c.* p. 249, from India.

Sophræna, g. n., Baly, Ent. Trans. 3rd ser. vol. ii. p. 342. Narrowly oval, convex; antennæ short, robust, thickened, 2nd joint short, 3rd somewhat elongate, 4th short, 11th subovate, nearly equal to 1st; thorax transverse, narrower than elytra, which are ovate, narrowly margined, with the inflexed limb nearly longitudinal; anterior coxæ scarcely elevated, transverse; posterior femora channelled beneath; posterior tibiæ tricarinate, with a short spine at apex; posterior tarsi apical. Sp. *S. ornata*, sp. n., from the Amazons.

Aulacophora, g. n. (Chevr.), Clark, *l. c.* p. 145. Allied to *Diacantha*, but antennæ slender, simple; claws bifid. Sp. *A. simplicipennis*, sp. n., Clark, *l. c.* p. 145, from Pulo Penang.

New species :—

Adimonia. The following new European species of this genus are described by Joannis (L'Abeille, tom. ii.) :—*A. macchoi*, p. 28, from Portugal; *A. luctuosa*, p. 30, from Spain; *A. obscura*, p. 31, from Greece; *A. dispar*, p. 34, from Central France; *A. rufescens*, ibid., from the south of France; *A. dahlii*, p. 36, from France, Austria, and Hungary; *A. rugosa*, p. 37, from Croatia; *A. pelleti*, p. 38, from Turkey; *A. reichei*, p. 40, from Sicily; *A. gredleri*, p. 41, from the Tyrol; *A. goudoti*, p. 42, from Morocco; *A. confinis* (Mann.), p. 35, from Siberia; *A. corsica* (Reiche), p. 43, from Corsica; *A. lobata*, p. 46, from Turkey; *A. fuliginosa*, p. 48, from Greece and the Caucasus; *A. declivis*, p. 49, from Servia; *A. daurica* (Motsch.), p. 52, from Dauria; *A. sedakovi* (Mann.), p. 54, from Eastern Siberia; *A. haagi*, p. 63, from Spain; *A. javeti*, p. 64, of unknown origin; *A. bonvouloiri*, p. 65, from Sarepta; *A. abbreviata*, p. 66, from Piedmont; *A. brevis*, p. 68, from Illyria; *A. erratica*, p. 69, from the Pyrenees; and *A. pallida*, p. 77, from the Banat.

Galleruca damascena (Miller), Joannis, *l. c.* p. 96, from Damascus; and *G. grisescens*, Joannis, *l. c.* p. 98, from Sicily.

Luperus. Of this genus Joannis (*l. c.*) describes the following new species :—*L. suturalis*, p. 119, from Spain; *L. nigritarsis*, p. 122, and *L. fallax*, p. 123, from Algeria; *L. lividus*, p. 125, from Syria; *L. chevrolati*, p. 128, from the Caucasus; *L. cyaneus*, p. 129, from Dalmatia; *L. fossulatus*, p. 131, from the Crimea; *L. costalis*, p. 134, from Dalmatia; and *L. pygmæus*, p. 140, from Italy.

Orthoria (g. n.) *boisduvallii* (Dej.), Clark, Ann. & Mag. Nat. Hist. 3rd ser. xvi. p. 258, from Java.

Procalus (g. n.) *mutans*, Clark, *l. c.* p. 261, from Brazil and Bolivia.

Pachytoma (g. n.) *westermanni* (Dej.), Clark, *l. c.* p. 261, from Western Africa; *P. flava*, Clark, *l. c.* p. 262, from Natal.

Sphenoraia (g. n.) *flavicollis*, Clark, *l. c.* p. 262, and *S. nigripennis*, Clark, ibid., from North India.

Clitena cyanea, Clark, *l. c.* p. 259 (= *C. indica*, Dej.), from Java.

Clitena igneipennis, Baly, Ent. M. Mag. ii. p. 99, from Northern India.

Dircema (g. n.) *cinctipenne*, Clark, *l. c.* p. 263, from Pará and Columbia; *D. ruficrus* (Chevr.), Clark, *l. c.* p. 264, from Cayenne.

Dircema. Baly states that *D. cinctipenne* (Clark) includes several distinct species, which he describes, with some new ones, under the following names:—*D. discoidale*, *l. c.* p. 406, *D. laticolle*, ibid., *D. pulchrum*, *l. c.* p. 407, and *D. sordidum*, *l. c.* p. 409, from the Amazons; *D. columbicum*, *l. c.* p. 408, from Bogotá; *D. lætum*, ibid., from Ecuador; and *D. modestum*, *l. c.* p. 409, from Columbia.

Monocesta (g. n.). Clark (*l. c.*) describes the following new species:—From Brazil (including Amazons):—*M. splendida*, p. 266; *M. consularis* (Dej.), ibid.; *M. depressa*, p. 267; *M. balyi*, ibid.; *M. elegantula*, ibid; *M. obliquenotata*, p. 315; *M. cincta*, ibid.; *M. flavocincta*, p. 316; *M. circumcincta* (Dej.), ibid.; *M. carbonaria*, ibid.; *M. nigriventris*, ibid.; *M. klugii* (Dej.), p. 317; and *M. rubiginosa*, ibid. From Brazil and Bolivia:—*M. sanguinicollis*, p. 268. From New Granada and Bolivia:—*M. glauca* (Dej.), p. 317. From New Granada:—*M. nigricornis*, p. 318. From Bolivia:—*M. fuscescens*, p. 318. From Campeachy:—*M. frontalis*, p. 317. From Mexico:—*M. ducalis*, p. 265; *M. hopfneri* (Dej.), p. 267. From Columbia:—*M. imperialis*, p. 264. From Cayenne:—*M. equestris* (Dej.), p. 265; *M. illustris*, p. 266; and *M. spectanda*, p. 315. Also *M. atricornis*, p. 318, origin not stated.

Cœlomera. Clark (*l. c.*) describes the following new species of this genus as restricted by him:—*C. modesta*, p. 319, *C. rufo-fusca*, ibid., *C. induta*, p. 321, and *C. binotata* (Dej.), p. 323, from Brazil (incl. Amazons); *C. tibialis* (Dej.), p. 321, from Cayenne; *C. maculicollis*, ibid., from Honduras? *C. ærata*, p. 322, *C. submetallica*, ibid., and *C. violacipennis*, ibid., from Columbia; *C. parallela*, ibid., from New Granada; and *C. tenuicornis*, p. 323, from Bolivia.

Cœlomera ruficornis, Baly, *l. c.* p. 343, from Brazil; *C. læta*, Baly, *l. c.* p. 344, from Rio Grande; *C. bipustulata*, Baly, ibid., from Ega.

Diabrotica. Baly describes fourteen new species of this genus: namely, *D. coccinea*, *l. c.* p. 345, *D. pulchra*, ibid., *D. deyrollei*, *l. c.* p. 347, and *D. subsulcata*, *l. c.* p. 351, from New Granada; *D. puncticollis*, *l. c.* p. 346, and *D. hebe*, *l. c.* 348, from Columbia; *D. sublimbata*, *l. c.* p. 347, from the Amazons; *D. tenella*, *l. c.* p. 348, and *D. tetraspilota*, *l. c.* p. 351, from Mexico; *D. suturalis*, *l. c.* p. 348, from Cayenne; *D. discoidalis*, *l. c.* p. 349, from Ecuador; *D. 4-vittata*, ibid., from Brazil; *D. dimidiatipennis*, *l. c.* p. 350, from Peru; and *D. saundersi*, ibid., from Quito.

Coraia (g. n.) *maculicollis*, Clark, *l. c.* p. 324, from Mexico.

Nestinus (g. n.) *bimaculatus*, Clark, *l. c.* p. 325, from Guatemala; *N. regalis*, Clark, ibid., from Mexico; and *N. incertus*, Clark, ibid., from Brazil.

Goniopleura viridipennis, Clark, *l. c.* p. 146, from Penang.

Œdecerus rufo-fuscus, Clark, *l. c.* p. 146, from Pulo Penang.

Adorium tarsatum, Baly, *l. c.* p. 435, and *A. sordidum*, Baly, ibid., from Northern China.

Agetocera lobicornis, Baly, *l. c.* p. 437, and *A. hopii*, Baly, *l. c.* p. 438, from India.

Cœlomera batesii, Baly, *l. c.* p. 439, and *C. cinxia*, Baly, *l. c.* p. 440, from the Amazons; *C. ornata*, Baly, ibid., from Brazil.

Longitarsus. Of this genus Kutschera (Wien. ent. Mon. Bd. viii.) describes the following new species:—*L. atriceps*, *l. c.* p. 38, from Styria; *L. substriatus*, *l. c.* p. 43, from the Austrian Alps; *L. monticola*, *l. c.* p. 44, from Styria; *L. minimus*, *l. c.* p. 144, from Austria and Spain; *L. seriatus*, *l. c.* p. 154, from the Austrian Alps; *L. helvolus*, *l. c.* p. 269, *L. vitreus*, *l. c.* p. 270, from near Vienna; *L. brevicollis*, *l. c.* p. 271, from Bertholdsdorf; *L. fusculus*, *l. c.* p. 273, *L. waterhousei*, *l. c.* p. 274; and *L. gracilis*, *l. c.* p. 275, England.

Plectroscelis scheffleri, Kutschera, *l. c.* p. 315, from Lower Austria; and *P. subcærulea*, Kutsch., *l. c.* p. 346, from Styria and England.

Psylliodes. Kutschera describes six new European species of this genus (Wien. ent. Mon. Bd. viii.): namely, *P. laticollis*, *l. c.* p. 388, from Sicily; *P. milleri*, *l. c.* p. 390, from Cephalonia; *P. luridipennis*, *l. c.* p. 393, from Lundy Island; *P. pyritosa*, *l. c.* p. 396, from Carinthia (?); *P. subænea*, *l. c.* p. 407, from Siebenbürgen; and *P. lævifrons*, *l. c.* p. 414, from Sicily.

Psylliodes amplicollis, Wollaston, Col. Atl. App. p. 56, from Madeira.

Asphæra decipiens, Clark, Journ. of Ent. ii. p. 380, and *A. fallax*, Clark, ibid., from Brazil; *A. subfasciata*, Clark, ibid., from Pará; *A. marginata*, Clark, ibid., from Ega.

Aspicela balyii, Clark, *l. c.* p. 381, from Columbia; *A. discoidalis*, Clark, ibid., from New Granada.

Litosonycha nigripennis, Clark, *l. c.* p. 381, and *L. quadrimaculata*, Clark, *l. c.* p. 382, from Santarem; *L. adumbrata*, Clark, ibid., from New Granada; *L. bifasciata*, Clark, ibid., from Ega.

Sophræna fasciolata, Clark, *l. c.* p. 383, from Cayenne; *S. simplex*, Clark, ibid., from Santarem and Villa Nova.

Clamophora generosa (Dej.), Clark, *l. c.* p. 384, *C. sanguinicollis* (Dej.), Clark, ibid., and *C. clypeata* (Chevr.), Clark, ibid., from Brazil.

Pedilia (g. n.) *rufa*, Clark, *l. c.* p. 385, from Pará.

Ora grayii, Clark, *l. c.* p. 385, from Rio Janeiro; *O. chevrolatii*, Clark, ibid., from Mexico.

Cyrtosphærus (g. n.) *ferrugineus*, Clark, *l. c.* p. 386, from Pará.

Diphaulaca. Of this genus Clark describes nine new species: namely, *D. sulcata*, *l. c.* p. 386, and *D. nigro-apicata*, *l. c.* p. 388, from Rio Janeiro; *D. viridipennis*, *D. costulata*, *D. rubens*, and *D. erythrodera* (Dej.), *l. c.* p. 387, from Brazil; *D. marginata* and *D. apicalis*, *l. c.* p. 388, from Ega; and *D. dimidiata*, ibid., from Guiana.

Psilapha (g. n.) *flava*, Clark, *l. c.* p. 389, from New Granada.

Oxygonus (= *Oxygona*, Chevr.). Of this genus Clark describes the following eleven new species:—*O. violacipennis*, *O. exornatus*, *l. c.* p. 391, and *O. luridulus*, *l. c.* p. 393, from Brazil; *O. interruptus* and *O. succinctus* (Dej.), *l. c.* p. 391, from Cayenne; *O. rubidus*, *O. adumbratus*, *l. c.* p. 392, *O. nigripennis*, *O. simplex*, *l. c.* p. 393, *O. fusco-maculatus*, and *O. sex-notatus*, *l. c.* p. 394, from the Amazons.

Rhopalotoma (g. n.) *tuberculatum*, Clark, *l. c.* p. 394, and *R. viridipenne*, Clark, *l. c.* p. 395, from New Granada.

Lactica. Clark describes the following seven new species of this genus:—*L. quadrimaculata*, *l. c.* p. 395, *L. azureipennis*, *L. marginata*, *l. c.* p. 396, *L. basalis*, *L. seminigra*, and *L. pallida*, *l. c.* p. 397, from the Amazons; and *L. sponsa* (Dej.), *l. c.* p. 396, from the Amazons, Cayenne, and Brazil.

Tenosis (g. n.) *purpureipennis*, Clark, *l. c.* p. 398, from Rio Janeiro.

Cœporis subcostata, Clark, *l. c.* p. 399, from Mexico; and *C. marginata*, Clark, ibid., from Buenos Ayres.

Pelonia (g. n.) *nigripennis*, *nigro-violacea*, *vittata*, and *rubra*, Clark, *l. c.* p. 400, from the Amazons; *P. rufotestacea*, Clark, *l. c.* p. 401, from Rio Janeiro.

Disonycha trifasciata, Clark, *l. c.* p. 401, from Venezuela; *D. adumbrata*, Clark, ibid., from Pará; and *D. viridipennis*, Clark, *l. c.* p. 402, from Rio Janeiro.

Systena. Of this genus Clark describes fourteen new species: namely, *S. interrogationis* (Dej.) = *S. connexa*? (Boh.), *l. c.* p. 402, from Brazil; *S. discicollis*, *S. pectoralis*, *l. c.* p. 403, from Mexico; *S. sinuato-vittata*, *S. marginicollis*, ibid., *S. humeralis*, *l. c.* p. 404, *S. tincta*, and *S. suturalis*, *l. c.* p. 405, from Venezuela; *S. plagiata*, *l. c.* p. 403, *S. testaceo-vittata*, *S. lugubris*, *S. brunnipennis*, *l. c.* p. 404, *S. mustela*, and *S. novem-maculata*, *l. c.* p. 405, from Rio Janeiro.

Cacoscelis. The following eight new species of this genus are described by Clark:—*C. cæruleipennis* (Dej.), *C. clythræformis*, *C. cæruleipennis* (Dej.)! *l. c.* p. 407, and *C. nigripennis*, *l. c.* p. 408, from Brazil; *C. testacea*, *l. c.* p. 407, from St. Martha; *C. flava*, *l. c.* 407, and *C. bicolorata*, *l. c.* p. 408, from Mexico; and *C. fimbriata* (Chevr.), *l. c.* p. 408, from Bolivia.

Caloscelis (g. n.) *azureipennis*, Clark, *l. c.* p. 409, from Pará.

Notozona. Clark describes eleven new species of this genus: namely, *N. macularia*, *l. c.* p. 410, and *N. novem-maculata*, *l. c.* p. 411, from Cayenne; *N. 14-maculata*, *l. c.* p. 410, *N. transverse-notata*, *l. c.* p. 411, and *N. sanguinea*, *l. c.* p. 412, from Brazil; *N. marmorata*, *l. c.* p. 410, from Pará; *N. sparsa*, *N. elegans*, *l. c.* p. 411, *N. humilis*, and *N. tenella*, *l. c.* p. 412, from Mexico; and *N. rufo-fusca*, ibid., from Honduras.

Notozona histrionica, Baly, *l. c.* p. 433, from Mexico; *N. flavipustulata*, Baly, *l. c.* p. 434, from Brazil; *N. batesii*, Baly, ibid., from the Amazons.

Diamphidia vittatipennis, Baly, *l. c.* p. 402, from Damara Land; *D. flexuosa*, Baly, *l. c.* p. 403, from the Zulu country.

Podontia. The following new species of this genus are described by Baly:—*P. evanida*, *l. c.* p. 403, *P. marmorata*, ibid., *P. nigrotessellata*, *l. c.* p. 404, and *P. reticulata*, ibid., from South Africa; *P. flava*, ibid., from Sarawak; *P. dalmani*, *l. c.* p. 405, from Siam; *P. rufo-castanea*, ibid., from India; *P. congregata*, ibid., of unknown origin.

Podontia scaphoides, Baly, *l. c.* p. 430, from North China; *P. maculatissima*, Baly *l. c.* p. 431, from Port Essington; and *P. mouhoti*, Baly, ibid., from Siam.

Blepharida chiliensis, Baly, *l. c.* p. 432, from Chili.

Blepharida irrorata, Chevrolat, *l. c.* p. 182, from Cuba.

Crepidodera elegantula, Baly, *l. c.* p. 342, and *C. brasiliensis*, Baly, *l. c.* p. 343, from Brazil.

Aphthona mœrens, Baly, *l. c.* p. 343, from Brazil.

Sphæroderma fuscicornis, Baly, Ent. M. Mag. i. p. 184, from Chinese Tartary.

Sebœthe flava, Clark, *l. c.* p. 147, from Pulo Penang.

Argopus angulicollis, Clark, *l. c.* p. 148, from Pulo Penang.

Hispides.

Uroplata. Baly describes six new Amazonian and Brazilian species: namely, *U. 12-maculata*, *l. c.* p. 351; *U. walkeri*, *l. c.* p. 352; *U. stevensi*, *l. c.* p. 353; *U. grayi*, *l. c.* p. 354; *U. terminalis*, *l. c.* p. 355; and *U. 16-guttata*, *l. c.* p. 356.

Microrhopala interrupta, sp. n., Couper, Canad. Nat. & Geol. p. 63, from Quebec.

Cassidides.

Dr. Morsbach recommends the application of a drop or two of glycerine under the elytra of metallic *Cassididæ*, for the purpose of preserving their lustre. Stett. ent. Zeit. 1865, p. 114.

Taschenberg describes *Cassida nebulosa* as injurious to the Mangold Wurzel (Naturg. wirbell. Thiere, pp. 66–68, pl. 6. figs. 9–11).

Coptocycla lindigi, sp. n., Kirsch, Berl. ent. Zeits. 1865, p. 96, *C. affinis*, Kirsch, ibid., *C. conspersa*, Kirsch, ibid., and *C. resplendens*, Kirsch, ibid., from Bogota.

Erotylidæ.

Brisout de Barneville describes his finding *Eugis sanguinicollis* in the forest of Marly, and believes that it is developed in subterranean Fungi. Bull. Soc. Ent. Fr. 1865, p. xxx.

Tapinotarsus, g. n., Kirsch, Berl. ent. Zeitschr. 1865, p. 100. Allied to *Priotelus* and *Zonarius*; antennal club 3-jointed; prosternum acutely carinated in front; femora very short, deeply channelled within, 1st joint of posterior tarsi much longer than the two following together. Sp. *T. maculatus*, sp. n., Kirsch, *l. c.* p. 101, from Bogota.

Mycotretus punctiveps, sp. n., Kirsch, *l. c.* p. 97, from Bogota.

Lybas cruentatus, sp. n., Kirsch, *l. c.* p. 97, from Bogota.

Cyclomorphus variegatus, sp. n., Kirsch, *l. c.* p. 98, from Bogota.

Brachysphanus quadrifasciatus, sp. n., Kirsch, *l. c.* p. 98, from Bogota.

Ægisthus bicolor and *Æ. sexmaculatus*, sp. n., Kirsch, *l. c.* p. 99, from Bogota.

Erotylus stillatus, sp. n., Kirsch, *l. c.* p. 100, from Bogota.

Priotelus ignobilis, sp. n., Kirsch, *l. c.* p. 102, from Bogota.

Bacis femoralis, sp. n., Kirsch, *l. c.* p. 102, from Bogota.

Omoiotelus trimaculatus, Kirsch, *l. c.* p. 102, and *O. emarginatus*, Kirsch, *l. c.* p. 103, from Bogota.

Xestus fungicola, sp. n., Wollaston, Col. Atl. App. p. 57, from Gomera.

Endomychidæ.

Lindemann has described *Throscus dermestoides* as a new species of Endomychidæ, forming a new genus, under the name of *Horticola urbana*. Bull. Soc. Nat. Mosc. tome xxxviii. pt. 2. p. 149, pl. 4. figs. 3–5.

Corynomalus separandus, sp. n., Kirsch, Berl. ent. Zeitschr. 1865, p. 103, from Bogotá.

Coccinellidæ.

Bulæa. Kraatz states that *B. pallida* (Muls.) is only a variety of *B. 19-notata* (Gebl), and that *B. lividula* is a still paler form. *B. bocandei*, from Senegal, may also be a mere variety of the same species. The author illustrates this opinion by references to similar variations in well-known species of *Coccinella* (such as *C. 22-punctata* and *C. 16-punctata*). *Adonia corsica* is a variety of *A. mutabilis*, and *Coccinella obliquata* of *C. variabilis*. Berl. ent. Zeitschr. 1865, pp. 119, 120.

On the metamorphosis of *Coccinella 7-punctata*, see Lindemann, Bull. Soc. Nat. Mosc. xxxvii. part 2. pp. 528–531. (See p. 386.)

The habits of the *Coccinellæ* as aphidivorous insects are briefly described by Taschenberg (Wirbell. Thiere, &c. p. 203), who also figures *C. septempunctata* in its various stages, *l. c.* pl. 7. fig. 3.

HYMENOPTERA.

A. *Work in progress.*

Holmgren, A. E. Ichneumonologia Suecica. Tomus primus. 8vo, pp. 213. Stockholm, 1864.

In this valuable work Holmgren extends his investigations into a new group of Ichneumonidæ, that of the *Ichneumonides oxypygi* of Wesmael, including the restricted genus *Ichneumon* and some allied genera. The descriptions, which are entirely in Latin, are most elaborate, both sexes, and in some cases long series of varieties, being characterized. Like Thomson's 'Skandinaviens Coleoptera,' this work will be indispensable to British entomologists working upon the group of which it treats. The terminology employed is illustrated by a plate.

B. *Separate Work.*

Mayr, G. L. Formicidæ der Reise der Œsterreichischen Fregatte Novara um die Erde. 4to, pp. 119, Taff. 4. Wien, 1865.

The collections made during the voyage of the 'Novara' included 110 species of Formicidæ, many of which were new species, and have been briefly described by Mayr in the Verhandl. zool.-bot. Gesellsch. in Wien for 1862. In the present work we have a complete list of the species, with detailed descriptions

of the new forms and a complete analysis of the genera of the family, rendered necessary by the numerous new groups of this value established by the author. Many of the new species are beautifully illustrated on the four plates accompanying the volume. The author's systematic views will be indicated further on.

C. *Publications in Journals, &c.*

* *Zoological.*

Brischke, C. G. A. Die Hymenopteren der Provinz Preussen. Dritte Fortsetzung. Schrift. phys.-ökon. Gesellsch. Königsberg, Jahrg. v. pp. 177–212.

This paper contains additions to the list of Hymenoptera detected in the province of Prussia, with occasional notes on their characters, habits, and synonymy, and descriptions of several new species.

Costa, A. See Insecta, p. 381.

Cresson, E. T. Catalogue of Hymenoptera in the Collection of the Entomological Society of Philadelphia, from the Colorado Territory. Proc. Ent. Soc. Philad. vol. iv. pp. 242–313, 426–488: May and June 1865. (*Tenthredinidæ* to *Fossores*.)

——. Descriptions of some new species of *Mutilla* from California. Ibid. pp. 358–390: June 1865.

——. Monograph of the Philanthidæ of North America. Ibid. vol. v. pp. 85–132: (9th) October 1865.

——. On the Hymenoptera of Cuba. Proc. Ent. Soc. Philad. vol. iv. pp. 1–200: (16th) March 1865.

In this paper the author gives a complete revision of the Hymenoptera of Cuba, with the exception of the smaller *Chalcididæ*, the *Proctotrupidæ*, and the *Formicidæ*, which, on account of the difficulty attending their investigation, he reserves for future papers. The total number of species here cited amounts to 329, of which about 250 are described as new. The species may be distributed in the larger groups as follows:—*Securifera* 3, *Cynipidæ* 5, *Entomophaga* 153, *Chrysididæ* 12, *Mutillidæ* 6, *Fossores* 74, *Vespidæ* 21, *Anthophila* 45.

Esterno, Comte d'. Note sur l'Apparition d'un grand nombre de Cynips aptères rencontrés vivants sur la neige, au milieu du mois de janvier. Guérin's Rev. et Mag. de Zoologie, 1865, p. 137: May 1865.

Frauenfeld, G. von. Zoologische Miscellen. V. Eine Galle auf den Blättern von *Tilia grandifolia*, Ehrb. Verh. zool.-bot. Gesellsch. in Wien, Bd. xv. pp. 535–536.

Gerstäcker, A. Ueber die Artgrenzen der Honigbiene. Bestätigung der Parthenogenesis bei den Honigbienen. Sitzungsber. Gesellsch. naturf. Freunde Berlin, 1865; Müller's Archiv für Anat. &c., 1865, pp. 762–764.

Guérin-Méneville, F. E. Note sur un Chalcidite sorti des pépins d'une pomme. Ann. Soc. Ent. Fr. 4e série, tome v. pp. 83–85: August 23, 1865.

——. Quelques observations sur le groupe d'Hyménoptères auquel appartient le *Cynips aptera*. Rev. et Mag. de Zoologie, 1865, pp. 135–141: May 1865.

Lowne, B. T. Contributions to the Natural History of Australian Ants. Entomologist, vol. ii. pp. 275–280, and 331–336.

This paper contains a list, with remarks on the habits, of thirty-three species of ants obtained by the author in the vicinity of Sydney. Eighteen are described as new.

Morawitz, A. Verzeichniss der um St. Petersburg aufgefundenen Crabroninen. Bull. Acad. St. Pétersb. tome vii. pp. 451–463: August 19, 1864 (read May 6, 1864).

——. Ueber eine neue, oder vielmehr verkannte Form von Männchen unter den Mutillen, nebst einer Uebersicht der in Europa beobachteten Arten. Ibid. tome viii. pp. 82–139: January 15, 1865 (read September 1, 1864).

——. Ueber *Vespa austriaca*, Panzer: drei neue Bienen. Bull. Soc. Nat. Moscou, xxxvii. part 2. pp. 439–449: 1865.

Osten-Sacken, R. Contributions to the Natural History of the *Cynipidæ* of the United States and of their Galls. Article 4th. Proc. Ent. Soc. Philad. vol. iv. pp. 331–380: May 1865.

Packard, A. S., Junr. Notes on two Ichneumons parasitic on *Samia columbia*. Proc. Boston Soc. Nat. Hist. vol. ix. pp. 345, 346: March 1865. (*Cryptus*.)

Radochkoffsky, O. Les Mutilles Russes. Bull. Soc. Imp. Nat. de Moscou, tome xxxviii. part 1. pp. 422–464, pls. 7–9: August 11, 1865.

Reinhard, H. Die Hypothesen über die Fortpflanzungsweise bei den eingeschlechtigen Gallwespen. Berliner entom. Zeitschrift, 1865, pp. 1–13.

——. Beiträge zur Kenntniss einiger Braconiden-Gattungen. Drittes Stück. Ibid. pp. 243–267, Tafel 3.

Shortt, J. A brief account of the *Myrmica kirbii* as found in Southern India. Proc. Linn. Soc. vol. viii. pp. 100–102: January 13, 1865.

Sichel, J. Études Hyménoptérologiques. Premier fascicule. Annales Soc. Entom. de France, 4e série, tome v. pp. 331–348 (incomplete), pls. 9 & 10 (not published): Dec. 13, 1865.

Includes an "Essai d'une Monographie du genre *Oxæa*, Klug," and an "Essai d'une Monographie des genres *Phasganophora*, Westwood, et *Conura*, Spinola, Hyménoptères de la famille des Chalcidides."

——. Essai Monographique sur le *Bombus montanus* et ses variétés. Annales Soc. Linn. Lyon, tome xi. pp. 421–443.

Smith, F. Descriptions of new species of Hymenopterous Insects from the islands of Sumatra, Gilolo, Salwatty, and New Guinea, collected by Mr. A. R. Wallace. Proc. Linn. Soc. vol. viii. pp. 61–94, pl. 4: January 13, 1865.

This paper contains a list of the species of Hymenoptera collected by Wallace in the islands mentioned in its title and some neighbouring ones. Many of them are described as new; and of these some are particularly interesting.

——. Descriptions of some new species of Hymenopterous Insects belonging to the families *Thynnidæ*, *Masaridæ*, and *Apidæ*. Trans. Ent. Soc. London, 3rd series, vol. ii. pp. 389–399, pl. 21: September 1865 (read May 1, 1861, and August 7, 1865.)

——. On the species and varieties of the Honey-Bees belonging to the genus *Apis*. Ann. & Mag. Nat. Hist. 3rd series, vol. xv. pp. 372–380, pl. 19: May 1, 1865.

——. Observations on the genus *Dorylus*, and upon a new genus of *Apidæ*. Ent. Monthly Mag. vol. ii. pp. 3–5.

——. Notes on British Formicidæ. Ibid. pp. 28–30.

——. Notes on Hymenoptera. Ent. Annual for 1866, pp. 122–137.

In this paper Smith remarks on the additions made during 1865 to the list of British Aculeate Hymenoptera, and especially on the habits and mode of occurrence of various species of ants.

Stone, S. Wasps and their parasites in 1864. Proc. Ent. Soc. London, 1865, pp. 62–67.

Taschenberg, E. L. Die Schlupfwespenfamilie Cryptides (Gen. v. *Cryptus*, Gr.) mit besonderer Berücksichtigung

der deutschen Arten. Zeitschr. für die gesammten Naturwiss. 1865, pp. 1–142.

This paper contains an elaborate revision of the group of genera formed at the expense of Gravenhorst's genus *Cryptus*, constituting a subfamily of *Ichneumonidæ*.

Vollenhoven, S. C. Snellen van. De inlandsche Bladwespen, in hare gedaanteverwisselingen en levenswijze beschreven. Elfde Stuk. Tijdsch. Entom. 1865, pp. 73–93, pls. 3–6.

Winchell, A. Notes on *Selandria cerasi* (Harris) as it occurs at Ann Arbor, Michigan. Proc. Boston Soc. Nat. Hist. vol. ix. pp. 321–325 : February 1865.

† *Anatomical and Physiological.*

Leuckart, R. Ueber Bienenzwitter. [On Hermaphrodite Bees.] Amtl. Bericht der 39sten Versammlung deutsch. Naturf. &c. in Giessen, September 1864, pp. 173–175 : 1865.

Reinhard, H. Zur Entwickelungsgeschichte des Tracheensystems der Hymenopteren mit besonderer Beziehung auf dessen morphologische Bedeutung. [On the developmental history of the Tracheary System of the Hymenoptera, with especial reference to its morphological significance.] Berlin. entom. Zeitschr. 1865, pp. 187–218, Taf. i. & ii.

The author has made a series of careful researches upon the structure and arrangement of the respiratory organs in various Hymenoptera, chiefly belonging to the groups *Cynipidæ* and *Chalcididæ*. The larvæ were examined after being rendered transparent by means of a mixture of gelatine and glycerine, which leaves the tracheæ visible for some time in consequence of its penetration into them being resisted by the contained air. He describes the structure of the tracheary system in these little larvæ and the changes which they undergo during transformation, and indicates the differences presented by it as compared with that of the larvæ of other forms of Hymenoptera. From these details the author proceeds to certain morphological considerations, especially with regard to the disputed nature of the hinder part of the thorax in the perfect Hymenoptera. From his examination of the structure he comes to the conclusion that the thorax in the Hymenoptera consists of four segments.

General remarks upon the Order.

Cresson has published (Proc. Ent. Soc. Phil. vol. iv. pp. 242–313 & pp. 426–488) the greater part of a systematic catalogue of the Hymenoptera from the Colorado territory in the Rocky Mountains, contained in the collection of the Entomological Society of Philadelphia. The specimens were chiefly collected in the summer of 1864 by Mr. James Ridings. Commencing with the *Tenthredinidæ* the catalogue extends to the end of the Fossorial Hymenoptera, and contains citations of 294 species, of which 181 are described as new. The largest family is that of the *Ichneumonidæ*, which includes 131 species; of these 68 are described as new, and many of the others were described by Cresson in 1864. Of the smaller species there is an almost total absence, the *Cynipidæ* and *Chalcididæ* being represented each by a single species, whilst no *Proctotrupidæ* are referred to; of the *Formicidæ* also we find only 5 species, 3 of which are described as new. Of *Chrysididæ* there are 16 new species; and of *Mutillidæ* 22 species, 19 new. The Fossores of all families number 93, of which 69 are described as new; the *Scoliidæ* include 12 species, the *Sphegidæ* (*sens. lat.*) 45, the *Crabronidæ* 24, and the *Pompilidæ* 11.

In an appendix to a paper on some new Australian Hymenoptera containing a description of a species of Bee with singularly clavate antennæ, Smith refers to some other Hymenopterous insects in which those organs are of peculiar structure (Ent. Trans. 3rd ser. vol. ii. pp. 396–399). The species mentioned will be cited further on.

Girard called attention to a statement by Hartmann as to the sound produced by *Pronæus instabilis* (Savi) as observed by him in Sennaar; he describes it as a "sharp cry." Sichel referred to the sounds produced by aculeate Hymenoptera generally, the buzzing of which he considers to be sharper and more intense in proportion to the fierceness of the species. Sichel also refers to the stridulation of *Mutilla*. Goureau maintains that the Hymenoptera produce two different kinds of sounds—the buzzing caused by the wings, and a sharper piping due to a vibration of the thoracic segments. Bull. Soc. Ent. Fr. 1865, pp. xxiv–xxv.

Bold states (Nat. Hist. Trans. North. & Durh. i. p. 127) that Hymenoptera generally were rare in his district in 1864, not having yet apparently recovered from the effects of the bad seasons of 1860 and 1862. Some of the common *Bombi* were becoming plentiful, but some rare and local species appeared to have become extinct.

Anthophila.

The analytical table of the genera of German Bees given by Taschenberg (Hym. Deutschl.) includes 30 genera. No division into subfamilies is recognized by him. The species are also described.

Brischke gives notes on several species of this family found in Prussia. Schr. phys.-ökon. Ges. zu Königsb. v. pp. 211–212.

Sichel (Ann. Soc. Ent. Fr. 4e sér. tome v. pp. 331–344) publishes a monographic revision of the genus *Oxæa* (Klug), to which he adds one new species, making the whole number 3. The true position of the genus he considers to be in the family *Apidæ* at the end of the tribe of *Xylocopites*, near *Lestis*, but

by the structure of the posterior legs forming a passage towards the *Anthophorites*. The generic characters are described at great length and illustrated with figures of the details (*l. c.* pp. 333–338, pl. 9. figs. 1–3). The author points out an error into which Klug has fallen in describing the labial palpi as 3-jointed and sessile, whereas these organs have four joints, of which the first is very long. Of known species Sichel describes and figures *Oxæa flavescens* (Klug) = *Centris chlorogaster* ♀ and *aquilina* ♂ (Ill.), *l. c.* p. 338, pl. 9. fig. 5, and *Oxæa festiva* (Smith), *l. c.* 342.

The nest of *Megachile poeyi* (Guér.) is "formed of cuttings of leaves, under stones." It is attacked by *Leucaspis poeyi* (Guér.). Cresson, Proc. Ent. Soc. Phil. vol. iv. p. 177. Cresson also furnishes brief notes on the habits of *Calioxys rufipes* (Guér.), *l. c.* p. 186, and *Melissa rufipes* (Perty), *l. c.* p. 188; and on the synonymy of *Xylocopa morio* (Fab.), *l. c.* p. 190.

Cresson describes *Agapostemon poeyi* (Luc.) and a variety of *A. femoralis* (Guér.). Proc. Ent. Soc. Phil. vol. iv. pp. 171 & 173.

Bombus montanus (St. Farg.). Sichel has published (Ann. Soc. Linn. Lyon, xi. pp. 421–443) an elaborate monograph of a supposed species of *Bombus*, to which he applies the above name and refers, as varieties, a great number of species of other authors. The typical form, according to Sichel=? *B. nivalis* (Dahlb.) and *B. trifasciatus* (Smith); and the following are referred to as varieties and subvarieties :—? *B. tricolor* (Dahlb.), ? *B. balteatus* (Dahlb.), *B. tunicatus* (Smith), *B. viduus* (Erichs.), *B. sichelii* (Radochk.), and *B. caucasicus* (Radochk.). Under var. 4, subvar. *o*, Sichel describes a *B. fairmairii* as probably a new species (*l. c.* p. 441), a course the adoption of which is hardly justifiable. The whole of Sichel's conclusions as to this sweeping suppression of supposed species are open to considerable doubt, as he adduces no structural characters whatever in support of his views. Smith, in a letter quoted by the author (p. 443), states that, after examining specimens of two so-called varieties sent to him, he is of opinion that they belong to a species distinct from *B. montanus* (St. Farg.), and which may be *B. balteatus* (Dahlb.). His *B. trifasciatus* has a much longer head.

Smith (Ann. & Mag. Nat. Hist. 3rd ser. vol. xv. pp. 372–380) discusses the question raised by Gerstäcker as to the number of known species of Honey-Bees. He agrees with Gerstäcker as to the necessity of a considerable reduction in their number, but differs from him as to the extent to which this should be carried. Gerstäcker appears to have had only workers of most of the forms of these Bees; and Smith justly maintains that in these, as in several other genera of *Apidæ*, it is necessary to have all the sexes, or at events males and females or workers, in order that the specific characters may be ascertained. By following this mode of investigation Smith reduces the number of species recognized by him from 20 to 7 (or 8, including a drone described by him with doubt as a new species). The characters of these and their varieties are discussed by

Smith and illustrated with outline figures of the posterior legs. The following is a note of the described species :—

1. *Apis dorsata*, Fab., India,=*A. nigripennis* (Latr.)? Vars. *A bicolor* (Klug), *zonata* (Guér.), and *testacea* (Smith).
2. *Apis zonata* (Smith), Celebes,=*A. dorsata* (Gerst.).
3. *Apis mellifica* (Lin.). Vars. *A. ligustica* (Spin.), *fasciata* (Latr.), *cerifera* (Scop.).
4. *Apis adansonii* (Latr.), Africa. Vars. *A. scutellata* (St. Farg.), *nigritarum* (St. Farg.), *caffra* (St. Farg.), *unicolor* (Latr.) ? (=*mellifica*, var., Gerst.).
5. *Apis indica* (Fab.). Vars. *A. peronii* (Latr.), *delessertii* (Guér.), *perottetii* (Guér.), *socialis* (Latr.), *dorsata* (St. Farg.).
6. *Apis nigrocincta* (Smith), Celebes (=*A. indica*, var. Gerst.).
7. *Apis florea* (Fab.), India, &c. (=*A. andreniformis*, Smith, ☿, *A. lobata*, Smith, ♂, *A. indica*, Latr. ☿).

Gerstäcker records the fecundation of ♀ Egyptian Honey-Bees by German Drones, and describes the products, which he regards as favourable to the theory of the specific identity of the two races, and also to the doctrine of the parthenogenesis of the drones. Sitzungsber. Ges. nat. Freunde Berl. 1865; Müller's Archiv, 1865, pp. 762–764.

Siebold's paper on hermaphrodite Bees is translated into French by Blanchard, Ann. Sci. Nat. sér. 5. tome iii. pp. 197–206, and noticed by Guérin, Rev. et Mag. de Zool. 1864, p. 63.

Lucas records the occurrence, in a young Queen Bee, of a complete coalescence of the compound eyes. Bull. Soc. Ent. Fr. 1865, p. xlix.

Leuckart (Amtl. Ber. 39 Versamml. deutsch. Naturf. in Giessen, pp. 173–175) describes the characters of some gynandromorphous Bees from Engster's hives in Constance. These Bees have the ♀ characters of workers, and are to be regarded as workers which have acquired a certain number of male characters. He ascribes their production to the insufficient impregnation of the ova.

Paris publishes the details of a case in which death was supposed to have been caused in five days by the sting of a bee. He is not inclined to consider the case proved. Bull. Soc. Ent. Fr. 1865, pp. xi–xii.

The production of honey in Corsica is described in an extract from the 'Times,' read by Pascoe to the Entomological Society (Proc. 1865, p. 90).

Guérin-Méneville cites a paper by Lukomski in 'L'Abeille Médicale,' on the curative effects of the stings of bees. Rev. et Mag. de Zool. 1864, p. 367.

Lamprocolletes cladocerus and *Chalicodoma calocera* (Smith) are described and figured by Smith on account of their peculiarly constructed antennæ. Ent. Trans. 3rd ser. ii. pp. 397 & 399, pl. 21. figs. 3 & 7.

On the present scarcity of insects of this family in Britain, see Smith, Ent. Annual, 1866, pp. 134–135.

New genus and species :—

Thaumatosoma, g. n., Smith, Ent. Trans. 3rd ser. ii. p. 394. Allied to *Megachile*, but with the antennæ long, slender, and terminated by a 2-jointed club. Sp. *T. duboulaii*, Smith, *l. c.* p. 395, pl. 21. fig. 1, from Swan River. See also Ent. M. Mag. ii. p. 4.

Apis sinensis, Smith, Ann. & Mag. Nat. Hist. 3rd ser. xv. p. 380, pl. 19. fig. 4 (post. leg), from North China. Perhaps ♂ of *A. nigro-cincta* (Smith).

Trigona planifrons, Smith, Proc. Linn. Soc. viii. p. 93, and *T. atricornis*, Smith, *l. c.* p. 94, from New Guinea.

Oxæa fuscescens, Sichel, Ann. Soc. Ent. Fr. 4e sér. v. p. 342, pl. 9. figs. 2 & 3, from Caraccas.

Centris æthiops, Cresson, Proc. Ent. Soc. Phil. iv. p. 193, *C. fulviventris*, Cress. ibid., and *C.? cornuta*, Cress. *l. c.* p. 194, from Cuba.

Anthophora borealis, Morawitz, Bull. Soc. Nat. Mosc. xxxvii. pt. 2. p. 446, from St. Petersburg.—*A. atrata*, Cresson, *l. c.* p. 189, from Cuba.

Exomalopsis. Cresson describes *E. pulchella*, *l. c.* p. 191, *E. similis*, ibid., and *E. pubescens*, *l. c.* p. 192, from Cuba.

Melissodes maura, Cresson, *l. c.* p. 188, and *M. pullata*, Cress. *l. c.* p. 189, from Cuba.

Tetralonia mirabilis, Smith, Ent. Trans. 3rd ser. ii. p. 398, pl. 21. fig. 2 (antenna), from Rio Janeiro.

Anthidium montanum, Morawitz, *l. c.* p. 448, from Switzerland.

Megachile. Cresson describes *M. atriceps*, *l. c.* p. 176, *M. singularis*, *l. c.* p. 177, *M. curta*, *l. c.* p. 178, and *M. maura*, *l. c.* p. 179, from Cuba.

Megachile nidulator and *sener*, Smith, Proc. Linn. Soc. viii. p. 92, from New Guinea; *M. apicata*, Smith, *l. c.* p. 93, from Morty.

Cœlioxys uhlerii, Cresson (= *C. rufipes*, Cress. olim, non Guér.), *l. c.* p. 186, and *C. producta*, Cress. *l. c.* p. 187, from Cuba.

Epeolus wilsoni, Cresson, *l. c.* p. 183, *E. vicinus*, Cress. *l. c.* p. 185, and *E. pulchellus*, Cress. ibid., from Cuba.

Ceratina cyaniventris, Cresson, *l. c.* p. 179, from Cuba.

Nomada cubensis, Cresson, *l. c.* p. 180, *N. flaviceps*, Cress. *l. c.* p. 181, and *N. tibialis*, Cress. *l. c.* p. 182, from Cuba.

Pasites pilipes, Cresson, *l. c.* p. 183, from Cuba.

Andrena nylanderi, Morawitz, *l. c.* p. 445, from Finland and near St. Petersburg.

Panurgus? parvus, Cresson, *l. c.* p. 175, from Cuba.

Colletes submarginata, Cresson, *l. c.* p. 167, from Cuba.

Augochlora. The following four new species from Cuba are described by Cresson:—*A. præclara*, *l. c.* p. 169; *A. elegans*, ibid.; *A. magnifica*, *l. c.* p. 170; and *A. parva*, *l. c.* p. 171.

Agapostemon semiviridis and *A. festivus*, Cresson, *l. c.* p. 172, Cuba.

Prosopis elegans, Smith, *l. c.* p. 91, from New Guinea.

Nomia opulenta, Smith, *l. c.* p. 91, from Morty.—*N. kirbii* (Westw. MS.), Smith, Ent. Trans. 3rd ser. vol. ii. p. 398, pl. 21. fig. 5 (♂ antenna), from Brazil.—*Nomia robinsoni*, Cresson, *l. c.* p. 174, from Cuba.

Vespidæ.

Morawitz publishes (Bull. Soc. Nat. Mosc. xxxvii. pp. 439 *et seq.*) some notes on northern species of the genus *Vespa*, including *Vespa austriaca* (Panz.) taken by him in the neighbourhood of St. Petersburg. He describes this species and its varieties ♂ & ♀, but had never met with the ☿ or the nest, and suggests that it may be a parasite.

Paragia. Smith (Ent. Trans. 3rd ser. vol. ii. p. 391) discusses the characters of this genus, and gives a list of the known species, with a description of the type (*P. decipiens*, Shuck.), from fresh and good specimens. The total number of species is 13, of which 3 are here described by the author as new.

Aubé & Sichel have communicated to the French Entomological Society some observations on the habits of Wasps, especially as to their leaving unharmed people who remain quite still in the vicinity of their nests. Aubé also mentioned his having observed a nest of the Hornet (*Vespa crabro*) suspended freely from the branch of a tree. Bull. Soc. Ent. Fr. 1865, pp. xxv–xxvi.

Stone has communicated to the Entomological Society his observations, upon the natural history and especially the building-operations of the British Wasps, made during 1864. He also refers particularly to the habits of the parasites found in the nests, among which is a species of Acarid. Proc. Ent. Soc. 1865, pp. 62–67. The same author communicates his early observations of 1865 on the same subject. Ibid. pp. 105–106.

Smith records an instance of two species of Wasps (*V. vulgaris* and *V. germanica*) assisting in the construction of the same nest. Proc. Ent. Soc. 1864, p. 57.

Stainton, Westwood, and Saunders refer to the early disappearance of Wasps in the summer of 1865. Proc. Ent. Soc. 1865, p. 109. Stone remarks on the scarcity of Wasps in 1865, although many nests were commenced early in the season. Entomologist, ii. pp. 318–319. This subject is also noticed by Hutchinson, ibid. p. 329. Harding describes the habits of *Vespa norvegica*. Entomologist, ii. pp. 319–320.

Guérin-Méneville records certain facts connected with the hybernation of Wasps. Bull. Soc. Ent. Fr. 1865, p. ix.

New species:—

Polistes incertus, Cresson, Proc. Ent. Soc. Philad. iv. p. 166, from Cuba.

Icaria festina and *bicolor*, Smith, Proc. Linn. Soc. viii. p. 90, from New Guinea.

Odynerus. Cresson describes the following six new species from Cuba:—*O. prætus*, *l. c.* p. 159; *O. consors*, *l. c.* p. 160; *O. apicalis*, *l. c.* p. 161; *O. cingulatus*, *l. c.* p. 162; *O. obliquus*, *l. c.* p. 163; and *O. dejectus*, *l. c.* p. 164.

Eumenes cubensis, Cresson, *l. c.* p. 157, and *E. ferruginea*, Cress. *l. c.* p. 158, from Cuba.—*Eu. insolens*, Smith, *l. c.* p. 88, from Gilolo.

Odynerus impulsus, Smith, *l. c.* p. 88, from Morty.

Pterochilus eximius, Smith, *l. c.* p. 89, pl. 4. fig. 4, from New Guinea.

Paragia calida, Smith, Ent. Trans. 3rd ser. vol. ii. p. 392, *P. venusta*, Smith, *l. c.* 393, and *P. vespiformis*, Smith, ibid., from Swan River.

Pompilidæ.

The characters of *Pompilus terminatus* (Say) are given by Cresson. Proc. Ent. Soc. Phil. vol. iv. p. 454.

Cresson describes a variety of *Pompilus coruscus* (Smith), Proc. Ent. Soc. Phil. vol. iv. p. 128, and the cocoon of *Pepsis marginata* (Pal. B.), *l. c.* p. 133.

Smith remarks on the habits of *Pompilus rufipes* and *Evagethes bicolor*. Ent. Annual, 1866, p. 131.

Pompilus. The following 8 new species from the Colorado Territory are described by Cresson, Proc. Ent. Soc. Phil. vol. iv :—*P. æthiops*, *l. c.* p. 451; *P. scelestus*, ibid.; *P. angustatus*, *l. c.* p. 452; *P. luctuosus*, ibid.; *P. tenebrosus*, *l. c.* p. 453; *P. arctus*, ibid.; *P. parvus*, ibid.; and *P. nigripes*, *l. c.* p. 454.

Cresson also describes the following 18 new species from Cuba :—*P. ignipennis*, *l. c.* p. 121; *P. gundlachii*, *l. c.* p. 122; *P. concinnus*, ibid.; *P. nubeculatus*, *l. c.* p. 123; *P. bellus*, *l. c.* p. 124; *P. uniformis*, *l. c.* p. 125; *P. macer*, ibid.; *P. pulchellus*, *l. c.* p. 126; *P. elegans*, ibid.; *P. compressiventris*, *l. c.* p. 127; *P. juxtus*, *l. c.* p. 128; *P. terminatus*, ibid.; *P. subargenteus*, *l. c.* p. 129; *P. violaceipes*, ibid.; *P. purpuripennis*, *l. c.* p. 130; *P. anceps*, ibid.; *P. fulgidus*, *l. c.* p. 131; and *P. orbitalis*, ibid.

Pompilus cognatus and *elatus*, sp. n., Smith, Proc. Linn. Soc. viii. p. 82, from Morty.

Planiceps collaris, sp. n., Cresson, *l. c.* p. 132, from Cuba.

Ceropales cubensis and *C. clypeatus*, sp. n., Cresson, *l. c.* pp. 132, 133, from Cuba.

Pepsis ignicornis, sp. n., Cresson, *l. c.* p. 134, from Cuba.

Agenia pandora, sp. n., Smith, *l. c.* p. 82, from New Guinea.

Ctenocerus ramosus, sp. n., Smith, Ent. Trans. 3rd ser. vol. ii. p. 396, pl. 21. fig. 4 (antenna ♂), from South Africa.

Crabronidæ.

Morawitz (Bull. Acad. St. Pétersb. tome vii. pp. 451–463) has published a catalogue of the *Crabronidæ* and *Pemphredonidæ* found in the neighbourhood of St. Petersburg. The total number of species (of which a full synonymy is given) is 49—namely, of *Crabro* 30, of *Lindenius* 2, of *Oxybelus* 4, of *Cemonus* 6, of *Diodontus* 3, of *Passalæcus* 3, and *Stigmus* 1. Of these species 4 are described as new.

Brischke (Schr. Kön. phys.-ökon. Ges. zu Königsb. v. pp. 208–210) gives a note upon the Fossorial Hymenoptera of the Province of Prussia, founded upon an examination of Morawitz's paper. Several new species are added :—

Genera : *Pompilus*, *Harpactes*, *Nysson*, *Bembex*, *Mellinus*, *Passalæcus*, *Cimonus*, *Pemphredon*, *Oxybelus*, *Trypoxylon*, *Crossocerus*, *Ceratocolus*, *Ectemnius*.

Cresson publishes (Proc. Ent. Soc. Phil. vol. v. pp. 85–132) a monographic revision of the North American species of *Philanthidæ*, under which title he includes *Philanthus*, *Cerceris*, and a new genus, *Eucerceris*. The total number of species cited is 69, including 5 species of *Cerceris* from Cuba of which no description is given. Of several species not known to him the author quotes the original descriptions. The known species described are:—

Philanthus frigidus (Smith), p. 87; *P. politus* (Say), p. 94; *P. ventilabris* (Fab.), p. 98; *P. punctatus* (Say), p. 100; *P. solivagus* (Say), p. 103; *P. barbatus* (Smith), ibid.; *P. crabroniformis* (Smith), p. 104; *Eucerceris zonatus* (Say), p. 105; *E. canaliculatus* (Say), p. 112; *Cerceris fumipennis* (Say), p. 113; *C. clypeata* (Dahlb.), p. 114; *C. bicornuta* (Guér.), p. 117; *C. sexta* (Say), p. 119; *C. nigrescens* (Smith), p. 123; *C. deserta* (Say), p. 125; *C. frontata* (Say), p. 129; *C. bidentata* (Say), p. 130; *C. verticalis* (Smith), ibid.; *C. elegans* (Smith), p. 131; *C. rufo-picta* (Smith), ibid.; *C. dufourii* (Guér.), ibid.; *C. lævigata* (Smith), p. 132; and *C. perboscii* (Guér.), ibid.

Crabro sexmaculatus (Say) is described by Cresson, *l. c.* iv. p. 485.

Cresson (*l. c.* p. 464) indicates the characters of *Larrada tarsata* (Say), and describes *L. fuliginosa* (Dahlb.) from Cuban specimens (*l. c.* p. 137).

Monedula insularis and *dissecta* (Dahlb.) are described in detail by Cresson, *l. c.* pp. 143–144.

Cresson (*l. c.* p. 459) describes a variety of *Ammophila gryphus* (Smith) from the Colorado Territory, and indicates the variations of *A. luctuosa* (Smith), *l. c.* p. 462.

Mellinus arvensis. Smith describes some peculiarities in the habits of this species. Ent. Annual, 1866, p. 132.

New genera and species :—

Eucerceris, g. n., Cresson, Proc. Ent. Soc. Phil. vol. v. p. 104. Allied to *Cerceris*; venation in ♀ nearly as in *Cerceris*, different in ♂; 3rd submarginal cell in both sexes nearly quadrate, less oblique than in *Cerceris*. Known species *Philanthus zonatus* and *canaliculatus* (Say). New species: *Eucerceris laticeps*, Cresson, *l. c.* p. 107, *E. superbus*, Cress. *l. c.* p. 108, *E. flavocinctus*, Cress. *l. c.* p. 109, *E. cingulatus*, Cress. *l. c.* p. 110, and *E. fulvipes*, Cress. *l. c.* p. 111, from North America.

Crabro (*Brachymerus*) *filigranus*, Costa, Ann. Mus. Zool. Nap. ii. p. 137, from Italy.

Crabro (*Rhopalum*) *lignarius* and *C. bucephalus*, Smith, Proc. Linn. Soc. viii. p. 86, from Morty.

Crabro. Cresson (Proc. Ent. Soc. Phil. vol. iv.) describes 14 new species from the Colorado Territory: namely, *C. ater*, *l. c.* p. 477; *C. packardii*, ibid.; *C. dilectus*, *l. c.* p. 478; *C. vicinus*, *l. c.* p. 479; *C. succinctus*, ibid.; *C. conspicuus*, *l. c.* p. 480; *C. odyneroides*, *l. c.* p. 481; *C. bellus*, ibid.; *C. nigrifrons*, *l. c.* p. 482; *C. atrifrons*, *l. c.* p. 483; *C. atriceps*, ibid.; *C. contiguus*, *l. c.* p. 484; *C. montanus*, ibid.; and *C. honestus*, *l. c.* p. 485; also *C. auriceps*, *l. c.* p. 150, *C. claviventris*, *l. c.* p. 151, and *C. cubensis*, *l. c.* p. 152, from Cuba.

Oxybelus interruptus, Cresson, *l. c.* p. 475, *O. similis*, Cress. *l. c.* p. 476, and *O. parvus*, ibid., from the Colorado Territory.

Oxybelus analis, Cresson, *l. c.* p. 149, from Cuba.

Trypoxylon succinctum, Cresson, *l. c.* p. 149, from Cuba.

Pemphredon morio, Cresson, *l. c.* p. 486, and *P. mandibularis*, Cress. *l. c.* p. 487, from the Colorado Territory.

Cemonus wesmaëli, Morawitz, Bull. Acad. St. Pétersb. tome vii. p. 459, and *C. shuckardi*, Moraw. *l. c.* p. 460, from St. Petersburg.

Diodontus dahlbomi, Moraw. *l. c.* p. 461, from St. Petersburg.

Stigmus solskyi, Moraw. *l. c.* p. 462, from St. Petersburg.

Nysson armatus, Cresson, *l. c.* p. 145, from Cuba.

Harpactus insularis, Cresson, *l. c.* p. 146, and *H. scitulus*, Cress. *l. c.* p. 147, from Cuba.

Gorytes venustus, Cresson, *l. c.* p. 472, *G. modestus*, Cress. *l. c.* p. 473, and *G. abdominalis*, Cress. *l. c.* p. 474, from the Colorado Territory.

Pison morosus, Smith, *l. c.* p. 85, from New Guinea.

Larrada. Cresson describes 4 new species from the Colorado Territory: namely, *L. semirufa*, *l. c.* p. 464; *L. montana*, *parvula*, and *æthiops*, p. 465.

Larrada vinulenta, Cresson, Proc. Ent. Soc. Phil. vol. iv. p. 138, from Cuba.—*Larrada mansueta*, Smith, *l. c.* p. 84, from New Guinea; *L. mendax*, Smith, ibid., from Gilolo.

Larra suada, Smith, *l. c.* p. 85, from Gilolo.

Bembex argentifrons, Cresson, *l. c.* p. 141, and *B. armata*, Cress. *l. c.* p. 142, from Cuba.—*B. sayi*, Cresson, *l. c.* p. 467, from the Colorado Territory.

Monedula. Four new species from the Colorado Territory are described by Cresson:—*M. emarginata*, *l. c.* p. 468; *M. obliqua*, *l. c.* p. 469; *M. speciosa*, *l. c.* p. 470; and *M. pulchella*, *l. c.* p. 471.

Tachytes cubensis, Cresson, *l. c.* p. 139, and *T. insularis*, Cress. *l. c.* p. 140, from Cuba.—*T. fulviventris*, Cresson, *l. c.* p. 466, from the Colorado Territory.

Astata nubecula, Cresson, *l. c.* p. 466, from the Colorado Territory.

Astata insularis, Cresson, *l. c.* p. 140, from Cuba.

Psen argentifrons, Cresson, *l. c.* p. 152, from Cuba.

Mimesa carbonaria, Smith, *l. c.* p. 86, from Morty.—*M. argentifrons*, Cresson, *l. c.* p. 487, *M. proxima*, Cress., *l. c.* p. 488, and *M. unicincta*, Cress. ibid., from the Colorado Territory.

Mellinus rufinodus, Cresson, *l. c.* p. 475, from the Colorado Territory.

Alyson aculeatus, Cresson, *l. c.* p. 148, from Cuba.

Philanthus. Cresson (Proc. Ent. Soc. Phil. vol. v.) describes the following 12 new North American species of this genus:—*P. gloriosus*, *l. c.* p. 86; *P. sanbornii*, *l. c.* p. 89; *P. laticinctus*, *l. c.* p. 91; *P. albopilosus*, ibid.; *P. lepidus*, *l. c.* p. 92; *P. pulchellus*, *l. c.* p. 93; *P. simillimus*, *l. c.* p. 95; *P. dubius* (=*P. politus* ♂?), *l. c.* p. 96; *P. bilunatus*, *l. c.* p. 97; *P. frontalis*, *l. c.* p. 99; *P. albifrons*, *l. c.* p. 101; and *P. flavifrons*, *l. c.* p. 102.

Cerceris. Cresson describes 15 new North American species: namely, *C. venator*, *l. c.* p. 116; *C. biungulata*, *l. c.* p. 118; *C. vicina*, *l. c.* p. 120; *C. rufinoda*, *l. c.* p. 121; *C. blakei*, ibid.; *C. finitima*, *l. c.* p. 122; *C. cubensis* (=*zonata*, Cress. 1864), *l. c.* p. 123; *C. dentifrons*, *l. c.* p. 124; *C. imitator*, *l. c.* p. 125; *C. compar*, *l. c.* p. 126; *C. fulvipes*, ibid.; *C. compacta*, *l. c.* p. 127; *C. californica*, *l. c.* p. 128; *C. kennicottii*, ibid.; and *C. insolita*, *l. c.* p. 129.

Cerceris. Cresson describes 5 new species from Cuba: namely, *C. flavocostalis*, Proc. Ent. Soc. Phil. iv. p. 153; *C. triangulata*, *l. c.* p. 154; *C. bitunata*, *l. c.* p. 155; *C. festiva*, *l. c.* p. 156; and *C. zonata*, ibid.

Cerceris tumulorum, Smith, *l. c.* p. 87, from Gilolo.

Sphex læviventris, Cresson, *l. c.* p. 463, from the Colorado Territory.

Sphex nigerrima, Costa, Ann. Mus. Zool. Nap. ii. p. 112, and *S. plumifera*, Costa, ibid., from Luçon.

Ammophila. Cresson (Proc. Ent. Soc. Phil. vol. iv.) describes 15 new species from the Colorado Territory: namely, *A. ferruginosa*, *l. c.* p. 455; *A. pruinosa*, ibid.; *A. collaris*, *l. c.* p. 456; *A. varipes*, *l. c.* p. 457; *A. extremitata*, ibid.; *A. polita*, *l. c.* p. 458; *A. vulgaris*, ibid.; *A. mediata*, *l. c.* p. 459; *A. strenua*, ibid.; *A. macra*, *l. c.* p. 460; *A. juncea*, ibid.; *A. valida*, *l. c.* p. 461; *A. robusta*, ibid.; *A. communis*, *l. c.* p. 462; and *A. argentifrons*, ibid.

Ammophila confusa, Costa, *l. c.* p. 111, from Senegal; *A. rubriventris*, Costa, ibid., from Corsica; *A. coronata*, Costa, ibid., from Luçon; *A. reticollis*, Costa, ibid., from Senegal.

Pelopœus conspicillatus, Costa, *l. c.* p. 112, from Luçon.—*P. nigriventris*, Costa, p. 60, from North America.—*P. annulatus* (Klug), Cresson, Proc. Ent. Soc. Phil. vol. iv. p. 135, and *P. argentifrons*, Cress. *l. c.* p. 136, from Cuba.

Podium fulvipes, Cresson, *l. c.* p. 136, from Cuba.

Sapygidæ.

Brischke records the detection of *Hellus 6-guttatus* (Fabr.) in the Province of Prussia. Schr. phys.-ökon. Ges. zu Königsb. v. p. 210.

Sapyga rufipes, sp. n., Costa, *l. c.* p. 105, from Sardinia.—*S. aculeata*, sp. n., Cresson, *l. c.* iv. p. 450, from the Colorado Territory.

Scoliidæ.

Cresson describes the variations of several individuals of *Scolia trifasciata* (Fab.). Proc. Ent. Soc. Phil. vol. iv. pp. 118–119.

New species:—

Myzine. Cresson (Proc. Ent. Soc. Phil. iv.) describes four new Cuban species: namely, *M. albopicta*, *l. c.* p. 113; *M. lateralis*, *l. c.* p. 115; *M. striata*, *l. c.* p. 116; and *M. apicalis*, *l. c.* p. 117.

Myzine hyalina, Cresson, *l. c.* p. 442, and *M. confluens*, Cress. *l. c.* p. 443, from the Colorado Territory.

Scolia. Cresson describes the following six new species from the Colorado Territory:—*S. ridingsii*, *l. c.* p. 445; *S. inconstans*, *l. c.* p. 446; *S. amœna*, *l. c.* p. 447; *S. regina*, ibid.; *S. consors*, *l. c.* p. 449; and *S. flavosignata*, ibid.

Scolia arrogans, Smith, Proc. Linn. Soc. viii. p. 81, from Sumatra.

Scolia (*Elis*) *fulvohirta*, Cresson, *l. c.* p. 119, from Cuba.

Tiphia luteipennis, Cresson, *l. c.* p. 445, from the Colorado Territory.

Tiphia argentipes, Cresson, *l. c.* p. 117, from Cuba.

Mutillidæ.

Radochkoffsky has published a monographic synopsis of the Russian and Siberian species of the genus *Mutilla* (Bull. Soc. Nat. Mosc. xxxviii. pt. 1. pp. 422–464). The total number of species described is 37, of which 15 are new. The species are tabulated in accordance with the characters presented by both

males and females, and most of them are figured. The known species referred to are the following :—

M. europæa (Linn.), *l. c.* p. 435, pl. 7. figs. 2 & 7 (details) and fig. 10; *M. quinquefasciata* (Oliv.), *l. c.* p. 439, pl. 7. fig. 13; *M. erythrocephala* (Fab.), *l. c.* p. 440, pl. 7. fig. 6; *M. ciliata* (Fab.), *l. c.* p. 440; *M. incompleta* (Wesm.), *l. c.* p. 442; *M. rufipes* (Lat.), *l. c.* p. 443; *M. subcomata* (Wesm.), *l. c.* p. 444; *M. sellata* (Panz.), *l. c.* p. 445; *M. montana* (Panz.), *l. c.* p. 446; *M. interrupta* (Klug), ibid., pl. 7. fig. 14; *M. coronata* (Fab.), *l. c.* 447; *M. maura* (Linn.), *l. c.* p. 449, pl. 8. fig. 1 (var.); *M. hungarica* (Fab.), *l. c.* p. 450, pl. 7. fig. 3 (1st abd. segm.); *M. tunensis* (Fab.), *l. c.* p. 452, pl. 8. fig. 3; *M. arenaria* (Fab.), *l. c.* p. 453; *M. maculosa* (Oliv.), *l. c.* p. 454, pl. 8. fig. 6; *M. austriaca* (Panz.), *l. c.* p. 456, pl. 7. fig. 1 (abnormal wing) and 5 (1st abd. segm.); *M. scutellaris* (Oliv.), ibid.; *M. pedemontana* (Fab.), *l. c.* p. 457, pl. 7. fig. 4 (1st abd. segm.); *M. italica* (Fab.), *l. c.* p. 458, pl. 7. fig. 9 (♂); *M. salentina* (Costa), *l. c.* p. 459; and *M. albeola* (Pall.), *l. c.* p. 462, pl. 9. fig. 6.

Morawitz has published (Bull. Acad. St. Pétersb. viii. pp. 82–141) some notes on the genus *Mutilla*, with a description of a peculiar form of the male and a list of the known European species of the genus. Morawitz cites the statements of various authors, from Linnæus to Burmeister, as to the sexual characters of the *Mutillæ*, and indicates that the universally prevalent notion has been that the males are always winged; so that when wingless males have been observed they have been taken for females. He now points out some instances of the occurrence of wingless males, including a specimen figured by Lucas as a female of his *M. capitata*, and describes a wingless male which he refers to *M. vulnericeps* (Costa). Morawitz describes the two sexes of *M. vulnericeps* (*l. c.* pp. 96–97), and also gives the characters of *M. capitata* from Lucas, and of an insect which he takes to be the female of that species and identical with *M. parvicollis* (Costa), *l. c.* p. 98. The author then discusses the question whether this absence of wings in the males of some *Mutillæ* justifies the division of the genus, and refers to the attempts which have already been made by Latreille, Wesmael, and Costa (*l. c.* pp. 100–106). He comes to the conclusion that there is no ground for any generic separation of the species.

After a discussion of the characters employed for the specific distinction and grouping of the *Mutillæ*, Morawitz proceeds to give his synonymic catalogue of the European species of the genus, of which he enumerates 56. Of these several are briefly characterized, and many of the references are accompanied by important notes on synonymy, &c. The following are the divisions and sections adopted by the author :—

§ Division I. First segment of abdomen nearly or quite as broad at hinder margin as the second, separated therefrom only by a shallow constriction.

Group 1. Sp.: *M. quinquemaculata* (Cyrill.); *M. erythrocephala* (Lat.);

M. vulnericeps (Costa); *M. capitata* (Luc.); *M. cornuta* (Oliv.), described *l. c.* p. 118.

Group 2. = *Myrmilla* (Wesm.), *Rudia* (Costa). Sp.: *M. corniculata* (Pall.); *M. angusticollis* (Spin.); *M. calva* (Vill.); *M. triareolata* (Spin.).

Group 3. Sp.: *M. europæa* (Linn.); *M. differens* (St. Farg.).

Group 4. = *Ronisia* (Costa). Sp.: *M. chiesi* (Spin.); *M. bipunctata* (Lat.); *M. divisa* (Smith); *M. barbara* (Spin.), with numerous varieties, characterized *l. c.* p. 126; *M. maroccana* (Oliv.); *M. ghilianii* (Spin.); *M. littoralis* (Petagna).

Group 5. = *Mutilla* (Wesm.). Sp. [not seen by author]: *M. ruficollis* (Fab.); *M. ciliata* (Panz.); *M. fasciaticollis* (Spin.); *M. cingulata* (Costa); *M. dorsalis* (Luc.); *M. dorsata* (Fab.); *M. quadrimaculata* (Luc.); *M. quadripunctata* (St. Farg.); *M. pusilla* (Klug); *M. nemoralis* (Baer). [Known to the author:] *M. halensis* (Fab.); *M. unicincta* (Luc.); *M. scutellaris* (Lat.); *M. partita* (Klug); *M. rufipes* (Fab.); *M. viduata* (Pall.); *M. obliterata* (Smith).

§ Division II. First segment of abdomen small, distinctly constricted from the second, with a conical tubercle on each side at the base.

Group 6. Sp. *M. petiolata* (Baer); *M. regalis* (Fab.), ♂ described, *l. c.* p. 135; *M. italica* (Fab.); *M. tunensis* (Fab.); *M. albeola* (Pall.); *M. armeniaca* (Kol.); *M. arenaria* (Fab.); *M. atrata* (Linn.); *M. lepida* (Klug); *M. maura* (Linn.); *M. sibirica* (Christ.); *M. nigripes* (Fab.); *M. egregia* (Klug); *M. collaris* (Fab.); *M. tristis* (Klug); *M. lugubris* (Fab.); *M. rondanii* (Spin.); *M. aucta* (St. Farg.).—*M. tunensis* (St. Farg.) and *M. ornata* (Klug) are noted as doubtful species, and *M. atrata* (Fab. nec Linn.) as probably the male of one of them, *l. c.* p. 106.

Group 7. Sp. *M. hottentotus* (Fab.).

In concluding his memoir (*l. c.* pp. 140–141), the author indicates that, although his classification is founded upon the European species, it will be applicable with but little alteration to the whole genus. His groups for the arrangement of all the species, including the exotic forms, are as follows :—

I. Eyes elongated, slightly convex, distinctly facetted. Divisions as above. Division I. includes Burmeister's Division III. of Brazilian species, and Division II. his second division.

II. Eyes in both sexes circular, very smooth and convex, =Burmeister's Division I.

Methoca ichneumonides. Smith has some notes on this species. Ent. Annual, 1860, p. 131.

Cresson indicates the characters of *Mutilla hexagona* (Say), Proc. Ent. Soc. Phil. iv. p. 430, and describes *M. californica* (Radochk.), *l. c.* p. 432.

New species :—

Thynnus lævissimus, Smith, Proc. Linn. Soc. viii. p. 77, from New Guinea; *T. atratus*, Smith, ibid., from Gilolo; *T.* (*Agriomyia*) *abductor*, Smith, *l. c.* p. 78, from Salwatty and New Guinea.—*T. ventralis*, Smith, Ent. Trans. 3rd ser. ii. p. 389, from Swan River.

Ælurus agilis, Smith, *l. c.* p. 390, from Swan River.

Ælurus fragilis, Smith, Proc. Linn. Soc. viii. p. 78, from Morty.

Enictus obscurus, Smith, *l. c.* p. 79, from New Guinea.

Scleroderma parasitica, Smith, *l. c.* p. 79, from Salwatty.—*Schleroderma* (sic) *mutilloides*, Costa, Ann. Mus. Zool. Nap. ii. p. 134, pl. 1. fig. 4, from South Italy.

Rhagigaster simillimus, Smith, Ent. Trans. 3rd ser. ii. p. 390, and *R. flavifrons*, Smith, ibid., from Swan River.

Psammotherma flabellata, Smith, *l. c.* p. 396, pl. 21: fig. 6, Senegal.

Mutilla. Cresson (Proc. Ent. Soc. Phil. iv.) describes 19 new species of this genus from the Colorado Territory: namely, *M. orcus*, *l. c.* p. 428; *M. macra*, *l. c.* p. 429; *M. monticola*, *l. c.* p. 430; *M. bioculata*, *l. c.* p. 431; *M. crensa*, ibid.; *M. medea*, *l. c.* p. 432; *M. fulvohirta*, *l. c.* p. 433; *M. propinqua*, ibid.; *M. bellona*, *l. c.* p. 434; *M. ægina*, *l. c.* p. 435; *M. asopus*, ibid.; *M. vesta*, *l. c.* p. 436; *M. montivaga*, ibid.; *M. contumax*, *l. c.* p. 437; *M. ornativentris*, *l. c.* p. 438; *M. clara*, *l. c.* p. 439; *M. concolor*, ibid.; *M. nubecula*, *l. c.* p. 440; and *M. glabrella*, *l. c.* p. 441.

Cresson also describes seven new Californian species of this genus: namely, *M. sackenii*, *l. c.* p. 385; *M. magna*, ibid.; *M. aureola*, *l. c.* p. 386; *M. ulkei*, *l. c.* p. 387; *M. connectens*, ibid.; *M. castanea*, *l. c.* p. 388; and *M. unicolor*, *l. c.* p. 389.

The following four new Cuban species are also described by Cresson:—*M. nigriceps*, *l. c.* p. 110; *M. rubriceps*, *l. c.* p. 111; *M. palliceps*, *l. c.* p. 112; and *M. wilsoni*, ibid.

Mutilla. Radochkoffsky (Bull. Soc. Nat. Mosc. xxxviii. pt. 1) describes the following new Russian species of this genus:—*M. trifasciata*, *l. c.* p. 43, pl. 7. fig. 11, from Spask; *M. simplica*, *l. c.* p. 439, pl. 7. fig. 12, from the Crimea; *M. petiolaris*, *l. c.* p. 448, pl. 7. fig. 15, from South Russia; *M. triangularis*, ibid., pl. 7. fig. 16, from Saratow, Kasan, &c.; *M. bicolor*, *l. c.* p. 451, pl. 8. fig. 2, from Songaria, &c.; *M. desertorum*, *l. c.* p. 452, pl. 8. fig. 4, from Songaria; *M. luctuosa*, *l. c.* p. 453, pl. 8. fig. 5, from Sir Daria; *M. taurica*, *l. c.* p. 454, pl. 8. fig. 7, from the Crimea; *M. discoidalis* (*tiscoidalis* in text), *l. c.* p. 455, pl. 8. fig. 8, from Spask; *M. caucasica*, *l. c.* p. 459, pl. 8. fig. 9, from the Caucasus; *M. manderstiernii*, *l. c.* p. 460, pl. 9. fig. 1, from beyond the Caucasus; *M. bartholomæi*, *l. c.* p. 460, pl. 9. fig. 2, from Tahéran; *M. concolora*, *l. c.* p. 461, pl. 9. fig. 3, from Spask; *M. rubrosignata*, *l. c.* p. 461, pl. 9. fig. 4, from Kiachta; and *M. crenata*, *l. c.* p. 462, pl. 9. fig. 5, from Songaria.

Mutilla sericeiventris, Costa, *l. c.* p. 130, pl. 1. fig. 3, and *M. cinereifrons*, Costa, *l. c.* p. 131, from South Italy.—*M. agilis*, Smith, Proc. Linn. Soc. viii. p. 79, from New Guinea; *M. fluctuata*, Smith, *l. c.* p. 80, from Morty.

Formicidæ.

Mayr (Reise der Novara, Zool. Bd. ii. Abth. 1) indicates the progress that has been made in the study of this family, and estimates the number of known species at almost 1200, which he distributes under 104 genera. Of described genera he professes himself unable to form a clear notion of the following:—*Paratrechina* (Motsch.), *Leptomyrma* (Motsch.), *Cerapachis* (Smith), and *Myrmosida* (Smith). The latter is referred by Smith to the Mutillidæ; but Mayr thinks it belongs to the present family. The author recognizes 5 subfamilies of Formicidæ, which he names *Formicidæ*, *Odontomachidæ*, *Poneridæ*, *Dorylidæ*, and *Myrmicidæ*, the *Attidæ* and *Cryptoceridæ* of Smith being combined with Myrmicidæ. The synopsis of the genera occupies pp. 6–26 of the work. The following is an analysis of it:—

	Subfamilies.
I. Articulations of mandibles distant; peduncle uniarticulate; abdomen not constricted between segments 1 and 2; no sting	1. Formicidæ.
II. Articulations of mandibles contiguous in ☿ and ♀; peduncle uniarticulate	2. Odontomachidæ.
III. Articulations of mandibles distant; peduncle uniarticulate; abdomen generally constricted between segments 1 and 2, aculeate	3. Poneridæ.
IV. ☿ blind; mandibles long, with subparallel margins; peduncle uniarticulate; last segment of abdomen bidentate; ♂ mandibles edentate; clypeus indistinct; peduncle uniarticulate; abdomen long, cylindrical, with equal segments.	4. Dorylidæ.
V. Peduncle biarticulate; abdomen aculeate	5. Myrmicidæ.

The *Formicidæ* include 24 genera, 10 of which have been proposed by the author. They are as follows:—

Camponotus (Mayr), *Polyrhachis* (Shuck.), *Hemioptica* (Rog.), *Echinopla* (Smith), *Colobopsis* (Mayr), *Œcophylla* (Smith), *Leptomyrmex* (Mayr), *Prenolepis* (Mayr), *Plagiolepis* (Mayr), *Acanthomyops* (Mayr), *Lasius* (Fab.), *Formica* (Lin.), *Cataglyphis* (Först.), *Polyergus* (Lat.), *Gigantiops* (Rog.), *Acantholepis* (Mayr), *Dolichoderus* (Lund), *Hypoclinea* (Mayr), *Liometopum* (Mayr), *Iridomyrmex* (Mayr), *Tapinoma* (Först.), *Myrmelachista* (Rog.), *Decamera* (Rog.), and *Mesoxena* (Smith).

To his subfamily *Odontomachidæ* Mayr refers the three genera *Odontomachus* (Lat.) and *Stenomyrmex* and *Anochetus* (Mayr), the latter separated upon very slight characters.

The *Poneridæ* include 28 genera; and of these 9 are of the author's proposing—namely, *Trapeziopelta*, *Strioblognathus*, *Odontoponera*, *Bothroponera*, *Diacamma*, *Lobopelta*, *Megaponera*, *Paltothyreus*, and *Typhlomyrmex*. The genera of other authors referred to this group are:—*Plectroctena*, *Pachycondyla*, *Drepanognathus*, *Paraponera*, and *Ectatomma* (Smith); *Myopias*, *Sysphincta*, *Proceratium*, *Discothyrea*, *Dinoponera*, *Leptogenys*, *Platythyrea*, *Gnamtogenys*, *Syscia*, *Mystrium*, *Myopopone*, and *Stigmatomma* (Roger); *Ponera* (Lat.); and *Amblyopone* (Erichs.).

The genera admitted among the *Dorylidæ* are:—*Labidus* (Jur.) and *Typhlopone* (Westw.), probably ♂ and ☿ of same form, as is also the case with *Dorylus* (Fab.) and *Anomma* (Shuck.); *Rhogmus* (Shuck.), *Ænictus* (Shuck.), and *Dichthadia* (Gerst.).

Of the 42 genera of *Myrmicidæ*, 11 bear the author's name,

and 5 more are here described as new. The sections adopted in this extensive subfamily are indicated below :—

I. Pit of antennæ terminated outwardly by a keel; clypeus in ☿ and ♀ interposed between the articulations of the antennæ; frontal laminæ in the middle of the anterior part of the head; funiculus with no distinct club (= *Attidæ*).

Genera: *Eciton* (Lat.), *Typhlatta* (Smith), *Atta* (Fab.), and *Sericomyrmex*, g. n.

II. Pit of antennæ without a keel; clypeus and frontal laminæ as in preceding section.

A. ☿ and ♀ antennæ 12-jointed; last three joints of funiculus shorter than the rest.

Genera: *Myrmecia* (Fab.), *Ischnomyrmex* (Mayr), *Aphænogaster* (Mayr), *Trichomyrmex*, g. n., *Macromischa* (Rog.), and *Myrmica* (Lat.).

B. ☿ and ♀ antennæ 12-jointed (sometimes 11-jointed in *Leptothorax*); last 3 joints of funiculus longer than or equal to the rest.

Genera: *Leptothorax*, *Tetramorium*, *Asemorhoptrum*, *Temnothorax*, *Strongylognathus*, and *Monomorium* (Mayr.), *Myrmecina* (Curt.), *Pheidole* (Westw.), and *Vollenhovia*, g. n.

C. ☿ and ♀ antennæ 7–11-jointed; mandibles trigonate.

Genera: *Pheidologeton* and *Tomognathus* (Mayr), *Cremastogaster* (Lund), *Phacota* and *Oocerœa* (Rog.), *Stenamma*, *Carebara*, and *Solenopsis* (Westw.), *Podomyrma* and *Heptacondylus* (Smith), and *Liomyrmex*, g. n.

III. Antennal pit without external keel; clypeus not interposed between the insertions of the antennæ; frontal laminæ as in preceding; mandibles trigonate.

Genera: *Pseudomyrma* (Guér.), *Sima* (Rog.), *Myrmicocrypta* (Smith), and *Apterostigma*, g. n.

IV. ☿ and ♀ frontal laminæ on the lateral margins of the head (= *Cryptoceridæ*).

Genera: *Cryptocerus* (Lat.), *Cyphomyrmex* (Mayr.), *Cataulacus*, *Meranoplus*, *Ceratobasis*, *Strumigenys*, and *Orectognathus* (Smith), and *Daceton* (Perty).

Mayr gives descriptions or remarks on the characters of the following previously described species of this family :—Camponotus [*Formica*] *maculatus* (Fab.), *l. c.* p. 27; *sexguttatus* (Fab.), *l. c.* p. 28; *pallidus* (Smith), ibid.; *tinctus* (Smith), *l. c.* p. 30; *morosus* (Smith), *l. c.* p. 32; *cruentatus* (Lat.), *l. c.* p. 33; *C. æneopilosus* (Mayr), *l. c.* p. 34, pl. 1. fig. 2; *C. niveosetosus* (Mayr), *l. c.* p. 35, pl. 1. fig. 3; and *C. crassus* (Mayr), *l. c.* p. 37, pl. 1. fig. 4. Polyrhachis *pressa* (Mayr), *l. c.* p. 39, pl. 1. fig. 5; *P. argentea* (Mayr), *l. c.* p. 40, pl. 2. fig. 7; *P. dives* (Smith), pl. 2. fig. 8; *P. clypeata* (Mayr), *l. c.* p. 42, pl. 2. fig. 9; *P. aurichalcea* (Mayr), *l. c.* p. 43, pl. 2. fig. 10; *P. striata* (Mayr), *l. c.* p. 44, pl. 2. fig. 11; *P. frauenfeldi* (Mayr), *l. c.* p. 45, pl. 1. fig. 6. Echinopla *lineata* (Mayr) *l. c.* p. 48, pl. 2. fig. 12; *E. senilis* (Mayr), *l. c.* p. 49, pl. 1. fig. 13. Prenolepis [*Formica*] *longicornis* (Lat.), *l. c.* p. 50; *P. fulva* (Mayr), *l. c.* p. 51, pl. 2. fig. 14; and *P. obscura* (Mayr), *l. c.* p. 52, pl. 2. fig. 15. Plagiolepis *flava* (Mayr), *l. c.* p. 53. Lasius [*Formica*] *familiaris* (Smith), *l. c.* p. 55. Acantholepis *capensis* (Mayr), *l. c.* p. 56, pl. 2. fig. 16. Dolichoderus (Lund), remarks on generic characters, *l. c.* p. 58; *D.* [*Formica*] *attelaboides* (Fab.), *l. c.* p. 59. Iridomyrmex [*Hypoclinea*] *glaber* (Mayr), *l. c.* p. 61. Tapinoma *nigrum* (Mayr), *l. c.* p. 62; *T. minutum* (Mayr), ibid. Odontoponera (Mayr), characters of worker, *l. c.* p. 64. Ponera *lutea* (Mayr), *l. c.* p. 66, pl. 3. fig. 18; *P. luteipes* (Mayr), *l. c.* p. 70. Drepanognathus *rugosus* (Mayr.), *l. c.* p. 71, pl. 3. fig. 19. Lobopelta *castanea* (Mayr), *l. c.* p. 72, pl. 3. fig. 20. Eciton, remarks on the genus, *l. c.* p. 76; table of the following species, *l. c.* p. 77: *E. crassicorne*, *pilosum*, *prædator*, *drepanophorum*, and *rapax* (Smith), *cæcum* (Lat.), *legionis*, *angustatum*, *lugubre*, and *mexicanum* (Rog.). Atta [*Formica*] *sexdens* (Linn.), *l. c.* p. 80 (incl. *sexdentata*, Lat., *coptophylla*, Guér., *lævigata*, Smith, and *abdominalis*, Smith). Myrmecia *tricolor* (Mayr), *l. c.* p. 85; *M. spadicea* (Mayr), *l. c.* p. 86, pl. 3. fig. 23. Aphænogaster *capensis* (Mayr), *l. c.* p. 87, pl. 3. fig. 24; *A. sardoa* (Mayr), *l. c.* p. 88. Monomorium [*Formica*] *pharaonis* (Lin.), *l. c.* p. 90; *M.* [*Myrmica*] *minutum* (Smith), *l. c.* p. 91; *M. basale* (Smith), *l. c.* p. 92; *M. fulvum* (Mayr), *l. c.* p. 93, pl. 3. fig. 25. Pheidole *chilensis* (Mayr), *l. c.* p. 94, pl. 4. fig. 27; *P. aspera* (Mayr), *l. c.* p. 97, pl. 3. fig. 26; *P. capensis* (Mayr), *l. c.* p. 100, pl. 4. fig. 29; *P. latinoda* (Rog.), *l. c.* p. 101. Pheidologeton, the characters of the genus discussed, *l. c.* p. 102. Cremastogaster *capensis* (Mayr), *l. c.* p. 103, pl. 4. fig. 30; *C. crinosa*, (Mayr), *l. c.* p. 104, pl. 4. fig. 31; *C. carinata*, (Mayr), *l. c.* p. 105, pl. 4. fig. 32; *C. curvispinosa* (Mayr), *l. c.* p. 106, pl. 4. fig. 33; *C. pallipes* (Mayr), *l. c.* p. 107, pl. 4. fig. 34. Solenopsis *similis* (Mayr), *l. c.* p. 109. Heptacondylus *niger* (Mayr), *l. c.* p. 110.

Smith (Ent. M. Mag. ii. pp. 28–30) notices the additions recently made to the lists of British Ants, the number having increased from 18 in 1851 to 32 in 1865. He suggests that further discoveries will be made, and indicates the direction in which researches should be pushed. On p. 29 is a tabular list of the known British species, with indications of the situations in which their nests are made, their time of swarming, and distribution. See also Ent. Annual, 1866, pp. 124–127, where Smith also refers to the habits of the following species:—*Formica exsecta*, *F. congerens*, *F. gagates* (now first recorded as British), *F. aliena*, *Tapinoma erratica*, *Ponera contracta*, *Myrmica lobicornis*, and *Myrmecina latreilli*. *Formica gagates* and *Myrmecina latreillii* are described (*l. c.* pp. 127 & 129).

Smith publishes some notes on the species of Ants occurring at Bournemouth, Hampshire. Entomologist, ii. pp. 303–305.

Atta. Mayr (*l. c.* p. 79) proposes to regard the two divisions established by Smith in this genus as subgenera, retaining the name of *Atta* for the first, and naming the second *Acromyrmex*. Of the latter he cites as a species *Formica hystrix* (Lat.).

Jerdon has described the habits of the workers of *Dorylus*, which appear to represent the genus *Typhlopone*, as suggested by Shuckard. He observed them especially at Mhow and Saharunpore. They are subterranean in their mode of life, which resembles that of the *Termites*. Dr. Jerdon has obtained the winged males, but has been unable to meet with the females. Proc. Ent. Soc. 1865, p. 93.

Smith on the worker of *Dorylus*. See Ent. M. Mag. ii. p. 3.

J. Shortt describes the structure of the nest and the general habits of

Myrmica kirbii, as observed by him in Southern India. Proc. Linn. Soc. viii. pp. 100–102.

Notes on the habits of the following known Australian species are given by Lowne (Entomol. ii.):—*Formica purpurea* (Smith), p. 275; *F. consobrina* (Erichs.) and *F. intrepida* (Kirby), p. 277; and *F. erythrocephala* (Fab.), p. 278. Particular forms of the following species are also described:—*F. purpurea* (Smith), ♂, and *F. nigro-ænea* (Smith), ☿, p. 277; *Polyrachis ammon* (Smith) and *P. latreilli*, p. 333; *Ponera metallica* (Smith), p. 334; *Myrmica longiceps* (Smith), ibid.; *Crematogaster læviceps* (Smith), p. 335; *Myrmecia gulosa* (Fab.), ibid.; and *M. pyriformis, tarsata*, and *nigrocincta* (Smith), p. 336; and *Cryptocephalus pubescens* (Smith), ibid.

New genera and species:—

(*Formicides.*)

Formica aterrima, Cresson, Proc. Ent. Soc. Phil. iv. p. 426, from the Colorado Territory.

Formica (*Myrmecopsis*) *respiciens*, Smith, Proc. Linn. Soc. viii. p. 68, pl. 4. fig. 3, from New Guinea. Probably type of a new genus.

Formica. The following new species of this genus from New South Wales are described by Lowne:—*F. smithii*, Entom. ii. p. 276; *F. æneovirens*, ibid.; *F. nitida*, p. 277; *F. terebrans*, p. 278; *F. itinerans*, ibid.; *F. rufonigra*, p. 279; *F. gracilis*, p. 280; *F. minuta*, p. 331; *F. purpurescens*, ibid.; and *F. inequalis* (sic), ibid. (Notes on the habits of *F. æneovirens, terebrans, itinerans, purpurescens*, and *inequalis* accompany the descriptions.)

Acantholepis tuberculatus, Lowne, *l. c.* p. 332, *A. mamillatus*, Lowne, p. 333, and *A. kirbii*, Lowne, ibid., from New South Wales.

Polyrachis hookeri and *P. foveolatus*, Lowne, *l. c.* p. 334, from New South Wales.—*P. neptunus*, Smith, *l. c.* p. 69, pl. 4. fig. 2, from New Guinea.

Camponotus nicobarensis, Mayr, *l. c.* p. 31, pl. 1. fig. 1, from Nicobar and Burmah.

Plagiolepis fallax, Mayr, *l. c.* p. 54, and *P. capensis*, Mayr, *l. c.* p. 55, from the Cape.

Iridomyrmex flavus, Mayr, *l. c.* p. 60, pl. 3. fig. 17, from Sydney.

(*Ponerides.*)

Ponera castanea, Mayr, *l. c.* p. 69, from New Zealand.

Ponera ferox, Smith, *l. c.* p. 70, from Salwatty.

Pachycondyla melancholica, Smith, *l. c.* p. 71, from Morty.

Anomma erratica, Smith, *l. c.* p. 71, from New Guinea.

Stenomyrmex africanus, Mayr, *l. c.* p. 11, from the Gold Coast.

(*Dorylides.*)

Dorylus planifrons, Mayr, *l. c.* p. 74, pl. 3. fig. 21, from the Cape; *D. aegyptiacus*, Mayr, *l. c.* p. 76, note, from Egypt.

(*Myrmicides.*)

Sericomyrmex, g. n., Mayr, Reise der Novara, Zool. Bd. ii. Abth. i. pp. 18 & 83. Allied to *Atta*; ♀ frontal laminæ extending to posterior

angles of head; pronotum bituberculate; scutellum emarginate; metanotum and peduncle with two obtuse teeth; first abdominal segment compressed, with two curved keels. Sp. *S. opacus*, sp. n., p. 84, pl. 3. fig. 22, Brazil.

Trichomyrmex, g. n., Mayr, *l. c.* p. 19. Allied to *Myrmica*; ♀ antennæ not clavate; frontal area indistinct and narrow; first segment of peduncle with a transverse knot behind, second globose and unarmed; tibial spurs simple. Sp. *T. rogeri*, sp. n., Mayr, *l. c.* p. 19, note, from Ceylon.

Vollenhovia, g. n., Mayr, *l. c.* p. 21. Allied to *Myrmecina*; ♀ clypeus bicarinate, excavated in the middle; funiculus with joints 2–6 very short; first segment of peduncle subcylindrical. Sp. *V. punctatostriata*, sp. n., Mayr, *l. c.* p. 21, note, from Java and Borneo.

Liomyrmex, g. n., Mayr, *l. c.* p. 23. Allied to *Stenamma*; ☿ antennæ 10-jointed; eyes, ocelli, and frontal sulcus wanting; first segment of peduncle with a transverse knot behind, second with an obtuse spine beneath. Sp. *Myrmica cæca* (Smith).

Apterostigma, g. n., Mayr, *l. c.* pp. 25 & 111. Allied to *Pseudomyrma*; max. palpi 3-jointed, labial 2-jointed; mandibles broad, multidentate in ♀, edentate in ♂; antennæ 11-jointed in ♀, clavate, last joint very large, acuminate, 13-jointed and filiform in ♂; frontal laminæ dilated in front in ♀; first segment of peduncle subcylindrical in front, thickened behind. Sp. *A. pilosum*, sp. n., Mayr, *l. c.* p. 113, pl. 4. fig. 35, from Rio Janeiro.

Pheidolacanthinus, g. n., Smith, Proc. Linn. Soc. viii. p. 75. Allied to *Pheidole*; antennæ 11-jointed; prothorax with a spine on each side. Sp. *P. armatus*, sp. n., Smith, *l. c.* p. 75, pl. 4. fig. 8, from Salwatty.

Cephaloxys, g. n., Smith, *l. c.* p. 76. Allied to *Ceratobasis* (Smith); antennæ 6-jointed; eyes under the sides of the head. Sp. *C. capitata*, sp. n., Smith, *l. c.* p. 77, pl. 4. fig. 5, from New Guinea.

Myrmica occidentalis, Cresson, *l. c.* p. 426, and *M. seminigra*, Cress. *l. c.* p. 427, from the Colorado Territory.

Myrmica rugosa, Mayr, *l. c.* p. 19, note, from the Himalaya.

Myrmica quadrispinosa, Smith, *l. c.* p. 72, pl. 4. fig. 6, from Salwatty; *M. maligna* and *aspersa*, Smith, *l. c.* p. 72, from Morty; *M. diligens*, Smith, *l. c.* p. 73, from New Guinea.

Tetramorium capense, Mayr, *l. c.* p. 89, from the Cape.

Pheidole parva, Mayr, *l. c.* p. 98, pl. 4. fig. 28, from Ceylon.

Pheidole hospes, Smith, *l. c.* p. 74, from New Guinea.

Crematogaster (= *Cremastogaster*) *politus* and *iridipennis*, Smith, *l. c.* p. 74, from New Guinea; *C. tarsatus*, Smith, *l. c.* p. 74, from Morty.—*C. pallidus* and *C. piceus*, Lowne, *l. c.* p. 335, from New South Wales.

Myrmecia urens, Lowne, *l. c.* p. 336, from New South Wales.

Solenopsis punctaticeps, Mayr, *l. c.* p. 109, from the Cape.

Solenopsis lævis, Smith, *l. c.* p. 75, from Morty.

Cataulacus hispidulus, Smith, *l. c.* p. 76, pl. 4. fig. 7, from Morty.

CHRYSIDIDÆ.

New species:—

Omalus læviventris, Cresson, Proc. Ent. Soc. Phil. iv. p. 303, from the Colorado Territory.

Holopyga compacta, Cresson, *l. c.* p. 304; from the Colorado Territory.

Hedychrum wiltii, Cresson, *l. c.* p. 305, *H. cupricolle*, Cress. ibid., and *H. viride*, Cress. *l. c.* p. 306, from the Colorado Territory.—*H. vernale*, Cresson, *l. c.* p. 104, and *H. cyaniventre*, Cress. ibid., from Cuba.

Elampus viridis, Cresson, *l. c.* p. 103, from Cuba.

Stilbum variolatum, Costa, Ann. Mus. Zool. Nap. ii. p. 67, from India.

Chrysis selenia, Costa, *l. c.* p. 67, from Mexico; *C. vomerina*, Costa, ibid., from India?; and *C. laborans*, Costa, *l. c.* p. 68, from Natal.

Chrysis intrudens, Smith, Proc. Linn. Soc. viii. p. 62, from New Guinea.

Chrysis. Cresson describes seven new species from Cuba: namely, *C. divergens*, *l. c.* p. 105; *C. oblonga*, *l. c.* p. 106; *C. superba*, ibid.; *C. purpuriventris*, *l. c.* p. 107; *C. dubia*, *l. c.* p. 108; *C. subviridis*, *l. c.* p. 109, and *C. consimilis*, *l. c.* p. 110; and several others from the Colorado Territory: namely, *C. integra*, *l. c.* p. 306; *C. densa*, *l. c.* p. 307; *C. perpulchra*, *l. c.* p. 308; *C. scitula*, ibid.; *C. virens*, *l. c.* p. 309; *C. lauta*, *l. c.* p. 310; *C. prasinus*, ibid.; *C. pulcherrima*, *l. c.* p. 311; *C. venusta*, ibid.; *C. bella*, *l. c.* p. 312; and *C. clara*, *l. c.* p. 313.

Ichneumonidæ.

Evaniides.

Aulacodes, g. n., Cresson, Proc. Ent. Soc. Phil. vol. iv. p. 8. Allied to *Capitonius*; head transverse; antennæ setaceous, of about 24 joints, basal long, 2nd short, 3rd as long as first; prothorax not forming a long neck; 3rd submarginal cell open. Sp. *Au. nigriventris*, sp. n., p. 9. fig. 3, from Cuba.

Evania semirubra, sp. n., Cresson, *l. c.* iv. p. 8, from Cuba.

Trigonalys gundlachi, sp. n., Cresson, *l. c.* p. 10, from Cuba.

Ichneumonides.

Taschenberg (Zeitschr. ges. Naturwiss. 1865, pp. 1–142) has submitted the species of *Cryptus* and the allied genera (*Cryptides*) to a careful revision, and established among them several new genera. The species described are chiefly German; but of the 21 genera admitted, only 12 are really treated by the author, and for the remainder, namely *Catalytus, Pterocormus, Cremnodes, Stibeutes, Agrothereutes, Aptesis, Theroscopus, Pezolochus*, and *Pezomachus*, the reader is referred to Förster's "Monographie der Gattung Pezomachus." The genera described in detail by Taschenberg are:—

1. *Exolytus* (Först.) 1 species; 2. *Phygadeuon* (Grav.) 96 species, 13 new; 3. *Stilpnus* (Grav.) 1 species (3 others described by Gravenhorst); 4. *Cryptus* (Grav.) 98 species, 13 new; 5. *Linoceras*, g. n., 3 species; 6. *Brachycentrus*, g. n., 1 species; 7. *Mesostenus* (Grav.) 10 species; 8. *Nematopodius* (Grav.) 1 species; 9. *Hemiteles* (Grav.) 56 species, 8 new; 10. *Orthopelma*, g. n., 2 species, 1 new; 11. *Agriotypus* (Walk.) 1 species; and 12. *Ischnocerus* (Grav.) 2 species.

The characters of all the genera are given in the analytical table (pp. 7–9), and the species are also tabulated, those of the larger genera separately, in accordance with the characters of the two sexes.

Holmgren (Ichneumonologia Suecica, tom. i.) adopts Wesmael's division of the true *Ichneumonides* into 4 groups, *Ichn. oxypygi, amblypygi, platyuri*, and *pneustici*, of the characters of which he gives a table (*l. c.* p. 1). His present volume is devoted to the first of these groups, which includes 4 genera represented in Sweden. These are:—

1. *Chasmodes* (Wesm.) with 3 species (pp. 2–7); 2. *Exephanes* (Wesm.) with 1 species (pp. 7–9); 3. *Ichneumon* (Linn.) with 124 species (pp. 9–206); and 4. *Hoplismenus* (Grav.) with 2 species (pp. 206–210). Of the genus *Ichneumon* several new species are described.

Brischke (Schr. kön. phys.-ökon. Ges. zu Königsb. v. pp. 177–208) gives a list of the *Pimplariæ* of the Province of Prussia, and a series of additions and corrections to the list of *Ichneumonides* in his former papers. Several new species and varieties of known species are described, and the particulars of the insects from which many of the specimens were bred are given.

Gouley, Sichel, and Guérin-Méneville have made some observations on the exclusion of *Metopius dentatus* from species of *Bombyx*. Guérin states that he has reared this species from *Bombyx cynthia*. Bull. Soc. Ent. Fr. 1865, p. xxvi.

Sichel describes a peculiar variety of *Pimpla examinator* (Fab.) bred from *Chelonia cervini*. Ann. Soc. Ent. Fr. 4e sér. tome iv. p. 687.

Cresson supplements his description of *Cryptus robustus*, and indicates some of its variations. Proc. Ent. Soc. Phil. iv. p. 265.

Taschenberg (Naturg. wirbell. Thiere, pp. 260–261) discusses the characters of *Hemiteles melanarius* (Grav.).

New genera:—

Linoceras, g. n., Taschenberg, Zeitschr. f. ges. Naturw. 1865, p. 105. Allied to *Cryptus*; antennæ in ♀ cylindrical, with the apex obtuse; first abdominal segment much elongated. Sp. *Cryptus macrobatus, seductorius*, and *melanoleucus* (Grav.).

Brachycentrus, g. n., Taschenberg, *l. c.* p. 106. Antennæ as in preceding, but first abdominal segment very short. Type *B. pimplarius* = *Cryptus brachycentrus* (Grav.).

Orthopelma, g. n., Taschenberg, *l. c.* p. 137. Allied to *Hemiteles*; abdominal peduncle linear, longitudinally fissured or keeled, with the spiracles before its middle. Sp. *Hemiteles luteolator* (Grav.); *O. anomalum*, sp. n., Tasch. *l. c.* p. 137.

Ceratosoma, g. n., Cresson, Proc. Ent. Soc. Phil. vol. iv. p. 281. Allied to *Exetastes* and *Banchus*; wings broader, neuration as in *Banchus*; legs shorter and stouter, claws with a small tooth near the tip; abdomen in ♀ subsessile, fusiform, acute at apex. Sp. *C. apicalis*, sp. n., Cress. *l. c.* p. 282, from the Colorado Territory; and *C. fasciata*, sp. n., Cress. *l. c.* p. 283, from the Middle and Eastern States.

Eiphosoma, g. n., Cresson, *l. c.* p. 52. Allied to *Cremastus*; abdomen long,

slender, compressed; posterior femora elongated, toothed near the apex. Sp. *E. atrovittata*, sp. n., Cress. *l. c.* p. 52, *E. vitticollis*, sp. n., Cress. *l. c.* p. 53, *E. annulata*, sp. n., Cress. *l. c.* p. 54, and *E. nigrovittata*, sp. n., Cress. *l. c.* p. 55, from Cuba.

Epirhyssa, g. n., Cresson, *l. c.* p. 39. Allied to *Rhyssa*, but with the antennæ shorter and stouter, the areolet of the wings wanting, and the abdomen shorter. Sp. *Epirhyssa speciosa*, sp. n., Cress. *l. c.* p. 39, and *E. alternata*, sp. n., Cress. *l. c.* p. 40, from Cuba.

New species:—

Ichneumon. Of this genus Cresson describes the following 12 new species from the Colorado Territory:—*I. macilentus*, *l. c.* p. 249; *I. ventralis*, *l. c.* p. 250; *I. variegatus*, *l. c.* p. 251; *I. infucatus*, *l. c.* p. 252; *I. bipunctatus*, *l. c.* p. 253; *I. delicatus*, ibid.; *I. rubellus*, *l. c.* p. 254; *I. montivagus*, *l. c.* p. 255; *I. allapsus*, *l. c.* p. 256; *I. festus*, *l. c.* p. 257; *I. subfulvus*, *l. c.* p. 258; and *I. magnus*, ibid.; and 6 new species from Cuba: namely, *Ichneumon breviventris*, *l. c.* p. 12; *I. meridionalis*, ibid; *I. cubensis*, *l. c.* p. 13; *I. serricornis*, ibid.; *I. burrus*, *l. c.* p. 14; and *I. flavovarius*, ibid.

Ichneumon. Holmgren (Ichneum. Succica, tom. i.) describes the following new Swedish species of this genus:—*I. anthracinus* (*l. c.* p. 27), *inquilinus* (p. 35), *funebris* (p. 39), *ephippium* (p. 47), *vicinus* (p. 67), *decipiens* (p. 69), *melanotis* (p. 72)=*luctatorius* ♀ (Wesm.), *validicornis* (p. 73), *tempestivus* (p. 74), *ruficollis* (p. 79), *septentrionalis* (p. 82), *subalpinus* (p. 84), *thomsoni* (p. 85), *incomptus* (p. 89), *alpestris* (p. 90), *divergens* (p. 93), *suturalis* (p. 97), *zonellus* (p. 100), *sculpturatus* (p. 107), *hircinus* (p. 110)=*gracilicornis* ♂ part. (Wesm.), *rufolineatus* (p. 112), *obscuripes* (p. 113), *manicatus* (p. 114), *versutus* (p. 117), *mäklini* (p. 127), *haglundi* (p. 129), *punctifrons* (p. 141), *solutus* (p. 145), *pictipes* (p. 151), *rutilus* (p. 152)=*coruscator* (Holmg.), *patruelis* (p. 164), *spectabilis* (p. 174), *rubricosus* (p. 190)=*tenebrosus* part. (Wesm.), *nubeculosus* (p. 196)=*castaneus*, var. 5 (Wesm.), *picticollis* (p. 204), and *protervus* (p. 205).

Cteniscus excelsus, Cresson, *l. c.* p. 262, *C. venustus*, Cress. *l. c.* p. 263, and *C. abdominalis*, Cress. *l. c.* p. 264, from the Colorado Territory.

Trogus flavitarsis, Cresson, *l. c.* p. 264, from the Colorado Territory.

Trogus. Cresson describes four new species from Cuba: namely, *Trogus thoracicus*, *l. c.* p. 18; *T. pusillus*, *l. c.* p. 19; *T. tricinctus*, ibid.; and *T. albovarius*, *l. c.* p. 20.

Epimecis. Cresson describes four new species from Cuba: namely, *Epimecis ferruginosa*, *l. c.* p. 32; *E. fascipennis*, *l. c.* p. 33; *E. fuscipennis*, ibid.; and *E. atriceps*, *l. c.* p. 34.

Eurylabus elongatus. Brischke, Schr. kön. phys.-ökon. Ges. zu Königsb., Jahrg. v. p. 205, from Prussia.

Herpestomus impressus, Brischke, *l. c.* p. 206, from Prussia.

Phygadeuon. Of this genus Taschenberg describes the following new German species (Zeitschr. f. ges. Naturw. 1865):—*P. semipolitus* (*l. c.* p. 28); *P. sodalis* (p. 29); *P. testaceus* (p. 35); *P. fulgens* (p. 36); *P. ceilonotus* (ibid.); *P. probus* (p. 42)=*improbus*, var. 2 (Grav.); *P. obscuripes* (p. 43)=*abdominator*, var. 3 (Grav.); *P. hastatus* (p. 45); *P. halensis* (ibid.); *P. brevicornis* (p. 48)=*oviventris* ♀ (Grav.); *P. corruptor* (p. 49)=*caliginosus* ♀ (Grav.); *P. aberrans* (p. 52)=*abdominator*, var. 2 (Grav.); *P. regius* (p. 53).

Cryptus. Taschenberg describes the following new German species of this genus:—*C. dentatus* (*l. c.* p. 73)=*spiralis* ♂ (Grav.); *C. varians* (p. 76); *C. deviger* (ibid.); *C. germari* (p. 83)=*apparitorius*, var.? (Grav.); *C. opacus* (p. 88); *C. melanopus* (p. 94); *C. varicoxis* (p. 97); *C. albus* (ibid.); *C. gracilis* (p. 98)=*gracilis*, var. 2 (Grav.)*; *C. dubius* (p. 99); *C. annulipes* (p. 100); *C. brachysoma* (ibid.).

Cryptus ducalis, Smith, Proc. Linn. Soc. viii. p. 63, from Morty.—*C. cubensis*, Cresson, *l. c.* p. 21, and *C.? ornatipennis*, Cress. ibid., fig. 4 (wing), from Cuba.—*C. samiæ*, Packard, Proc. Bost. Soc. Nat. Hist. ix. p. 345, and *C. smithii*, Pack. *l. c.* p. 346, parasitic on *Samia columbia* (Smith), from Maine.

Hemiteles. Taschenberg describes the following new German species of this genus:—*H. furcatus* (*l. c.* p. 121)=*æstivalis*, var. (Grav.); *H. simillimus* (p. 124)=*similis*, var. 3 (Grav.); *H. coriarius* (p. 125); *H. incertus* (p. 131); *H. castaneus* (p. 132)=*palpator*, var. 3 (Grav.); *H. cylindrithorax* (ibid.); *H. gravenhorstii* (ibid.)=*melanarius*, var. 2 (Grav.); *H. varicoxis* (p. 134); and *H. niger* (p. 136).

Cresson describes five new Cuban species: namely, *Hemiteles incertus*, *l. c.* p. 22; *H. amanus*, *l. c.* p. 23; *H. bicinctus*, *l. c.* p. 24; *H. thoracicus*, ibid.; and *H. subflavescens*, ibid.

Ischnocerus abdominalis, Cresson, *l. c.* p. 25, from Cuba.

Mesostenus. Cresson describes eight new species from Cuba: namely, *Mesostenus robustus*, *l. c.* p. 25; *M. strenuus*, *l. c.* p. 26; *M. tarsatus*, *l. c.* p. 27; *M. zonatus*, *l. c.* p. 28; *M. subtenuis*, *l. c.* p. 29; *M. semialbus*, *l. c.* p. 30; *M. flavescens*, *l. c.* p. 31; and *M. pusillus*, ibid.

Mesostenus arrogans, Smith, *l. c.* p. 63, from New Guinea.

Stilpnus obscurus, Cresson, *l. c.* p. 259, and *S.? compressus*, Cress. *l. c.* p. 260, from the Colorado Territory.

Rhyssa instigator, Smith, *l. c.* p. 65, from New Guinea.*

Ephialtes pectoralis, Brischke, Schr. kön. phys.-ökon. Ges. zu Königsberg, Jahrg. v. p. 178, *E. geniculatus*, Brischke, *l. c.* p. 179, and *E. facialis*, Brischke, ibid., from Prussia.

Ephialtes rufescens, Cresson, *l. c.* p. 38, from Cuba.

Ephialtes occidentalis, Cresson, *l. c.* p. 269, from the Colorado Territory.

Pimpla. Of this genus the following species are described by Smith:—*P. obnoxia* and *P. diligens*, *l. c.* p. 64, from Morty; *P. nigricornis*, *l. c.* p. 64, and *P. interceptor*, *l. c.* p. 65, from New Guinea.

Pimpla. Cresson describes seven new species from Cuba: namely, *P. rufoniger*, *l. c.* p. 35; *P. cubensis*, ibid.; *P. obscurata*, *l. c.* p. 36; *P. nubecula* †, ibid.; *P. consimilis*, *l. c.* p. 37; *P. tricincta*, ibid.; and *P. bicincta*, *l. c.* p. 38. Also *Pimpla tenuicornis*, Cresson, *l. c.* p. 267, *P. pedalis*, Cress. *l. c.* p. 268, and *P. fulvescens*, ibid., from the Colorado Territory.

* The adoption of this name cannot but lead to confusion. Taschenberg refers Gravenhorst's *C. gracilis*, with its var. 1, as a var. of *C. fugitivus*, and retains the name for this species, because it is "certainly distinct from both."

† *P. terminalis* in text, *l. c.*; *P. nubecula* in Corrigenda, p. 196.

Pimpla excelsa, Costa, Ann. Mus. Zool. Nap. ii. p. 69, from Australia; and *P. apicina*, Costa, ibid., from Brazil.

Clistopyga ? lateralis, Cresson, *l. c.* p. 34, from Cuba.

Joppa undatipennis, Costa, *l. c.* p. 70, origin not stated.

Glypta corniculata (Sieb. MS.), Brischke, *l. c.* p. 186, *G. cornuta*, Brischke, *l. c.* p. 187, and *G. rufipes*, Brischke, *l. c.* p. 188, from Prussia.

Glypta varipes, Cresson, *l. c.* p. 267, from the Colorado Territory.

Lissonota maculata, Brischke, *l. c.* p. 190, *L. affinis*, Brischke, *l. c.* p. 191, *L. rufipes*, Brischke, *l. c.* p. 192, *L. basalis*, Brischke, ibid., and *L. fissa*, Brischke, *l. c.* p. 194, from Prussia.

Phytodietus pleuralis, Cresson, *l. c.* p. 266, from the Colorado Territory.

Lamprŏnota rufithorax, Cresson, *l. c.* p. 40, from Cuba; *L. montana*, Cress. *l. c.* p. 267, from the Colorado Territory.

Xylonomus annulatus, Brischke, *l. c.* p. 198, from Prussia; *X. cinctcornis*, Cresson, *l. c.* p. 288, from the Colorado Territory.

Odontomerus æthiops, Cresson, *l. c.* p. 289, and *O. abdominalis*, Cress. ibid., from the Colorado Territory.

Echthrus brevicornis, Brischke, *l. c.* p. 199.

Metopius rufipes, Cresson, *l. c.* p. 270, and *M. pulchellus*, Cress. *l. c.* p. 271, from the Colorado Territory.

Bassus orbitalis, Cresson, *l. c.* p. 272, and *B. maculifrons*, Cress. ibid., from the Colorado Territory.

Mesoleptus valens, Cresson, *l. c.* p. 261, *M. montanus*, Cress. ibid., and *M. macer*, Cress. *l. c.* p. 262, from the Colorado Territory; *M. insularis*, Cress. *l. c.* p. 15, from Cuba.

Tryphon cinctus, Cresson, *l. c.* p. 16, *T. ? exiguus*, Cress. ibid., and *T. ? clavicentris*, Cress. *l. c.* p. 17, from Cuba.

Exochus validus, Cresson, *l. c.* p. 18, from Cuba.

Ophion stimulator, Smith, *l. c.* p. 65, from New Guinea; *O. thoracicus*, Cresson, *l. c.* p. 55, and *O. concolor*, Cress. *l. c.* p. 56, from Cuba.

Paniscus subfuscus, Cresson, *l. c.* p. 57, from Cuba.

Trachynotus cincticornis, Cresson, *l. c.* p. 49, *T. fuscatus*, Cress. *l. c.* p. 50, and *T. basalis*, Cress. ibid., from Cuba; *T. reticulatus*, Cress. *l. c.* p. 285, from the Colorado Territory.

Anomalon propinquum, Cresson, *l. c.* p. 284, from the Colorado Territory.

Campoplex laticinctus, Cresson, *l. c.* p. 283, from the Colorado Territory.

Campoplex. Of this genus Cresson describes the following five new Cuban species:—*C. tibiator*, *l. c.* p. 41; *C. insularis*, *l. c.* p. 42; *C. atriceps*, ibid.; *C. ? pedalis*, *l. c.* p. 43; and *C. ? bellus*, *l. c.* p. 44.

Thyreodon. The following four new species from Cuba are described by Cresson:—*T. grandis*, *l. c.* p. 45; *T. fulvescens*, *l. c.* p. 46; *T. affinis*, ibid.; and *T. elegans*, *l. c.* p. 47.

Cremastus luctuosus, Cresson, *l. c.* p. 51, from Cuba; *C. fulvescens*, Cress. *l. c.* p. 285, from the Colorado Territory.

Mesochorus agilis, Cresson, *l. c.* p. 266, from the Colorado Territory.

Porizon fulvescens, Cresson, *l. c.* p. 48, and *P. apicalis*, Cress. ibid., from Cuba; *P. fuscipennis*, Cress. *l. c.* p. 287, and *P. albipennis*, Cress. ibid., from the Colorado Territory.

Exetastes. Cresson describes eleven new species from the Colorado Territory; namely, *E. niger*, *l. c.* p. 275; *E. flavipennis*, ibid.; *E. cæruleus*, *l. c.* p. 276; *E. abdominalis*, ibid.; *E. affinis*, *l. c.* p. 277; *E. flavitarsis*, ibid.; *E. consimilis*, *l. c.* p. 278; *E. fascipennis*, ibid.; *E. scutellaris*, *l. c.* p. 279; *E. decoloratus*, *l. c.* p. 280; and *E. obscurus*, *l. c.* p. 281.

Banchus superbus, Cresson, *l. c.* p. 273, and *B. spinosus*, Cress. *l. c.* p. 274, from the Colorado Territory.

Braconides.

Reinhard has published a third part of his Contributions towards the knowledge of the genera of Braconidæ (Berl. ent. Zeitschr. 1865, pp. 243–267):—

To the genus *Rogas* he adds notes on *R. cruentus* (Nees), *dimidiatus* (Spin.), *zygænæ* (Nees)=*bicolor* (Spin.), var., and *procerus* (Wesm.), *l. c.* p. 243. Of *Pelecystoma* (Wesm.) he describes the two known species, *P. luteum* (Nees) and *P. tricolor* (Wesm.), *l. c.* p. 244. Of *Petalodes* (Wesm.) Reinhard gives a reformed diagnosis, taking account of the characters of the ♂, and describes the only known species, *P. unicolor* (Wesm.), *l. c.* p. 245. The genus *Doryctes* (Hal.)=*Ischiozonus* (Wesm.) is characterized by the author, *l. c.* p. 246; and the thirteen known species are tabulated, *l. c.* p. 247. The previously described species are *D. imperator* (Hal.), *longicaudis* (Giraud), *igneus* (Ratz.), *leucogaster* (Nees)=*erythrogaster* (Wesm.), *obliteratus* (Nees), *striatellus* (Nees)=*obliteratus* (Wesm.), *undulatus* (Ratz.), and *spathiformis* (Ratz.)=*obliteratus* (Hal.). *Bracon nobilis* (Nees) and *B. fuscatus* (Nees) also probably belong to *Doryctes*. *Orgilus* (Hal.)=*Ischius* (Wesm.) is characterized *l. c.* pp. 260–262, and its four species are tabulated on p. 263. These are *O. obscurator* (Nees), *rubrator* (Ratz.), *rugosus* (Nees), and *punctulator* (Nees). *Laccophrys* (Förster), *l. c.* p. 265, includes *Opius cephalotes* (Ratz.) and *rubriceps* (Ratz.); the former is figured on plate 3. fig. 6.

Microgaster glomeratus is described and figured by Taschenberg (Naturg. wirbell. Thiere, p. 93, pl. 3. figs. 3 & 4).

Miss Pasley records the hatching of an imago of *Pieris rapæ* "with two of the little yellow cocoons of *Microgaster glomeratus*, containing pupæ, rolled up in the wings." Ent. M. Mag. i. p. 281.

Moncreaff (Entomologist, ii. pp. 145–146) records the occurrence of the pupæ of parasitic Hymenoptera in the cocoons of some Moths along with the pupæ of the moths. On opening the cocoon of an *Acronycta* he found the included larva in the act of throwing off its skin, and with the skin six small Hymenopterous larvæ.

New genera:—

Rhopalosoma, g. n., Cresson, *l. c.* p. 58. True position uncertain, intermediate between *Ich. genuini* and *adsciti*; antennæ with twelve joints in ♀, thirteen in ♂; anterior wings with a faint second recurrent vein. Sp. *R. poeyi*, sp. n., Cress. *l. c.* p. 59, fig. 6, from Cuba.

Chaonia, g. n., Cresson, *l. c.* p. 59. Wings as in *Bracon*, but with first submarginal cell larger, irregularly pentagonal, second smaller and shorter;

head transverse; clypeus entire; vertex emarginate behind. Sp. *Chaonia xanthostigma*, sp. n., Cress. *l. c.* p. 60, and *C. pallida*, sp. n., Cress. *l. c.* p. 61, from Cuba. (Name preoccupied in Lepidoptera).

Tenthredoides, g. n., Cresson, *l. c.* p. 290. Allied to *Microgaster* (?); abdomen subsessile; wings with the nervures subobsolete beyond the middle, marginal cell reaching the apex of the wing, constricted at tip of second submarginal cell. Sp. *T. seminiger*, sp. n., Cress. *l. c.* p. 291, from the Colorado Territory.

*Corystes**, g. n., Reinhard, Berl. ent. Zeitschr. 1865, p. 258. Allied to *Orgilus* (Hal.); head cubical, occiput margined, mouth open; abdomen subsessile, its segments nearly equal, margined beneath, second incisure distinct; ovipositor exserted; fore wings with the radial cell wedge-shaped, narrow, two cubital cells; posterior discoidal cell shorter than the anterior, partly open, parallel vein not interstitial. Sp. *C. aciculatus*, sp. n., Reinh. *l. c.* p. 259, pl. 3. fig. 7 (Germany).

New species:—

Chelonus insularis, Cresson, *l. c.* p. 61, from Cuba.

Agathis. Cresson describes four new species from Cuba: namely, *A. cubensis*, *l. c.* p. 62; *A. ferrugator*, ibid.; *A. seminiger*, *l. c.* p. 63; and *A. albitarsis*, ibid.

Microgaster. Cresson describes the following six new Cuban species:—*M. mediatus*, Proc. Ent. Soc. Phil. iv. p. 66; *M. flaviventris*, ibid.; *M. marginiventris*, *l. c.* p. 67; *M. pinos*, ibid.; *M. hyalinus*, *l. c.* p. 68; and *M. iridescens*, ibid.

Microgaster congregata, sp. n., Fitch, 9th Rep. Ins. New York, p. 222. Parasitic upon the larva of *Sphinx quinquemaculatus* (Haworth).

Helcon occidentalis, Cresson, *l. c.* p. 292, and *H. fulvipes*, Cress. ibid., from the Colorado Territory.

Microdus fascipennis, Cresson; *l. c.* p. 64, *M. stigmaterus*, Cress. *l. c.* p. 65, and *M. varipes*, Cress. ibid., from Cuba; *M. fulvescens*, Cress. *l. c.* p. 297, *M. medius*, Cress. *l. c.* p. 298, *M. terminatus*, Cress. ibid., and *M.? longipalpus*, Cress. *l. c.* p. 299, from the Colorado Territory.

Agathis vulgaris, Cresson, *l. c.* p. 295, *A. media*, Cress. ibid., *A. atripes*, Cress. *l. c.* p. 296, and *A. nigripes*, Cress. *l. c.* p. 297, from the Colorado Territory; *A. interdicta* and *fenestrata*, Smith, Proc. Linn. Soc. viii. p. 67, from New Guinea.

Spinaria sulcata, Smith, *l. c.* p. 67, pl. 4. fig. 9, from Gilolo.

Chelonus ruficentris, Cresson, *l. c.* p. 293, *C. iridescens*, Cress. *l. c.* p. 294, and *C. lævifrons*, Cress. ibid., from the Colorado Territory.

Gnathobracon babirussa, Costa, Ann. Mus. Zool. Nap. ii. p. 70, hab. —?

Bracon. Cresson describes the following eight new species from the Colorado Territory:—*B. montivagus*, *l. c.* p. 299; *B. disputabilis*, *l. c.* p. 300; *B. dissitus*, ibid.; *B. palliventris*, *l. c.* p. 301; *B. croceiventris*, ibid.; *B. uniformis*, *l. c.* p. 302; *B. croceus*, ibid.; and *B. xanthostigma*, *l. c.* p. 303.

* Name previously employed in Crustacea.

The following 23 new Cuban species are described by Cresson:—*Bracon regnatrix*, *l. c.* p. 69; *B. lativentris*, *l. c.* p. 70; *B. crenulatus*, ibid.; *B. voraginis*, *l. c.* p. 71; *B. plicatus*, *l. c.* p. 72; *B. picipes*, *l. c.* p. 73; *B. aciculatus*, ibid.; *B. armatus*, *l. c.* p. 74; *B. limatus*, *l. c.* p. 75; *B. distinctus*, ibid.; *B. ventralis*, *l. c.* p. 76; *B. striatulus*, *l. c.* p. 77; *B. intimus*, *l. c.* p. 78; *B. dejectus*, *l. c.* p. 79; *B. albifrons*, ibid.; *B. rufithorax*, *l. c.* p. 80; *B. discolor*, ibid.; *B.? cincticornis*, *l. c.* p. 81; *B. exiguus*, ibid.; *B. pusillus*, ibid.; *B. centralis*, *l. c.* p. 82; *B. perparvus*, ibid.; and *B. fuscovarius*, *l. c.* p. 83.

Bracon gravidus, Smith, *l. c.* p. 66, and *B. ferax*, Smith, ibid., from New Guinea; *B. flaviceps*, Smith, ibid., from Salwatty; *B. longicauda*, *B. difficilis*, and *B. triangulum*, Costa, *l. c.* p. 70, origin not stated.

Rogas flavidus, Cresson, *l. c.* p. 83, from Cuba.

Megischus brunneus, Cresson, *l. c.* p. 84, from Cuba.

Stenophasmus. Cresson describes four new species from Cuba: namely, *S. gundlachii*, *l. c.* p. 85; *S. cubensis*, *l. c.* p. 86; *S. megischoides*, ibid.; and *S. pusillus*, *l. c.* p. 87.

Alysia nigriceps, Cresson, *l. c.* p. 87, *A. ruficoxalis*, Cress. *l. c.* p. 88, and *A. analis*, Cress. ibid., from Cuba.

Doryctes. Reinhard describes the following five new species of this genus:—*D. gallicus*, Berl. ent. Zeitschr. 1865, p. 248; *D. pomarius*, *l. c.* p. 249; *D. planiceps*, *l. c.* p. 251; *D. heydenii*, *l. c.* p. 253; and *D. fulviceps*, ibid.: all European.

Aphidius. Cresson describes four new Cuban species:—*A. fuscoventris*, *l. c.* p. 89; *A. longicornis*, *l. c.* p. 90; *A.? pallipes* and *A.? fulvus*, ibid.

Trioxis fuscatus, Cresson, *l. c.* p. 89, from Cuba.

Chalcididæ.

Sichel (Ann. Soc. Ent. Fr. 4e sér. tome v. pp. 345–348) commences a monographic revision of the genera *Phasganophora* (Westw.) and *Conura* (Spin.), and gives the following tabular scheme of the genera of the tribe *Chalcidoideæ*, introducing the exotic forms:—

I. Head armed with horn-like processes. . 1. *Dirrhinus* (Dalm.).
II. Head unarmed.
A. Abdominal petiole short, or nearly wanting.
a. Antennæ inserted in the middle of the forehead.
1. Abdomen in ♀ not caudate, segment 5 and anus normal, not produced into a tail-like appendage. 2. *Chalcis* (Fab.).
2. Abdomen in ♀ with segment 5 and the epipygium produced into a tail (*Conuræ chalcidiformes*, Sichel). 3. *Conura* (Spin. *s. s.*).
3. Abdomen in ♀ with segment 5 and the epipygium normal, the hypopygium alone produced into a tail (*Phasganophoræ chalcidiformes*, Sichel; *Phasganophora*, Westw. *s. lat.*)
a. Tail compressed, ensiform. 4. *Phasganophora* (Westw. *s. s.*).

β. Tail depressed, subtriangular.
5. *Trigonura* (Sich.).

b. Antennæ inserted near the mouth.
1. Apex of posterior tibiæ acuminate.
a. Abdomen with apex normal, not caudate.
6. *Halticella* (Spin.).
β. Abdomen with the apex abnormal, elongated into a tail-like appendage (*Phasg. halticelliformes*, Sichel).
7. *Allocera* (Sich.).
2. Posterior tibiæ not acuminate at apex.
a. Metatarsi slender ..... 8. *Hockeria* (Walk.).
β. Metatarsi thick..... 9. *Notaspis* (Walk.).

B. Petiole of abdomen elongate.
a. Antennæ inserted on the middle of the forehead or of the face.
1. Abdomen in ♀ with the apex normal, not caudate, rather obtuse.
10. *Smicra* * (Spin.)
(= *Chalcis*, Westw.).
2. Abdomen in ♀ with the apex abnormal, elongate, tailed.
a. Tail consisting of segment 5 and the epipygium (*Conuræ smicriformes*, Sichel) ..... *Conura* (Spin.), part.
β. Tail consisting only of the hypopygium (*Phasg. smicriformes*, Sichel) ..... *Phasganophora* (Westw.) part.
b. Antennæ inserted near mouth.
1. Antennæ fusiform ..... 11. *Epitranus* (Walk.).
2. Antennæ clavate at apex..... 12. *Chalcitella* (Westw.).

The remainder of this memoir will be noticed in the next Record.

Guérin-Méneville mentions an instance in which seven specimens of a Chalcidite were found to have escaped from the same number of apple-pips which had been kept with others in a box for two years. Ann. Soc. Ent. Fr. 4e sér. tome v. pp. 83–85.

Sichel records the parasitism of *Pteromalus boucheanus* (Ratz.) upon *Alucita cerealium*?, in the department of Tarn-et-Garonne, where the latter insect has been very injurious to the wheat in the granaries. Bull Soc. Ent. Fr. 1865, pp. liii–liv.

Diplolepis pupa rum is described and figured by Taschenberg (Naturg. wirbell. Thiere, p. 93, pl. 3. fig. 5).

New species:—

Smiera (= *Smicra*). Costa describes five new species of this genus (Ann. Mus. Zool. Nap. ii.):—*S. quinquesignata*, *S. multinotata*, *S. lobata*, and *S. capitulata*, *l. c.* p. 68, and *S. strigosa*, *l. c.* p. 69; origin not stated.

Smiera. Cresson (Proc. Ent. Soc. Phil. iv.) describes the following 12 new species of this genus from Cuba:—*S. coccinea*, *l. c.* p. 91; *S. intermedia*, *l. c.* p. 92; *S. ignea*, ibid.; *S. gundlachii*, *l. c.* p. 93; *S. eubule* (Poey, MS.), ibid.; *S. pulchra*, *l. c.* p. 94; *S. nigropicta*, *l. c.* p. 95; *S. pallens*†, *l. c.* p. 96; *S. ine-*

* Sichel adopts the true spelling of this name, which has generally been written *Smiera*, owing to a misprint in Spinola's original paper. Spinola has himself repeatedly corrected the name.

† *S. palens* in text: vide "Corrigenda," p. 196.

maculata, *l. c.* p. 97; *S. petiolata*, ibid.; *S. scutellaris*, *l. c.* p. 98; and *S. flavopicta*, *l. c.* p. 99.

Epitranus castaneus, Cresson, *l. c.* p. 100, from Cuba.

Chalcis robusta, Cresson, *l. c.* p. 101, and *C. incerta*, Cress. ibid., from Cuba.

Phasgonophora (sic) *insularis*, Cresson, *l. c.* p. 102, from Cuba.

Pteromalus tabacum, Fitch, 9th Rep. Ins. New York, p. 225. Parasitic upon the larva of *Microgaster congregata* (Fitch).

Petromalus liparæ (Giraud) is described by Walker as a species new to Britain. Ent. M. Mag. i. p. 255.

Proctotrupidæ.

Taschenberg (Naturg. wirbell. Thiere, pp. 157, 158) describes *Platygaster tipulæ* (Kirby) as a destroyer of *Cecidomyia tritici*.

Pristo notices that the eggs of *Pygæra bucephala* are attacked by a parasite which is said by F. Walker to be *Telonomus* (*Teleas*) *phalænarum* (Nees)= *T. belenus* (Walk.). Entomologist, ii. pp. 320, 321.

Telenomus orgyiæ, sp. n., Fitch, 8th Rep. Ins. New York, p. 197.

Cynipidæ.

Reinhard has discussed the conditions of reproduction in the unisexual *Cynipidæ* (Berl. ent. Zeitschr. 1865, pp. 1–13). He first refers to the various statements that have been made with regard to the occurrence of female specimens only in numerous species of *Cynips* and allied genera, and discusses the various hypotheses which have been proposed to explain the sexual relations of these forms, concluding with an exposition of the observations and hypothesis of Walsh (see Record, 1864, p. 468). He indicates, however, that from Walsh's own statements there is some possibility that there may be an error in his observations, especially as he admits a certain difference in the galls of *Cynips spongifica* and *C. aciculata*, which throws some doubt upon the accuracy of his data. Reinhard considers that there are at least two other possible explanations of the phenomena observed by Walsh, namely:—

1. *C. spongifica* may be an inquiline of *C. aciculata*; or,
2. *C. spongifica* and *C. aciculata* may be generically different gall-producers, giving rise to very similar galls.

Cynips aciculata belongs to the genus *Cynips*, as restricted by Hartig; *C. spongifica* is regarded by Reinhard as the type of a new genus, to which he gives the name of *Amphibolips*. In the superficial characters of the thorax this species seems to approach the inquiline genera *Synergus* and *Onychia*; in the venation of the wings it most resembles *Trigonaspis*. Hence it seems probable that *C. spongifica* is a true gall-fly; and this view is strongly borne out by the circumstances of its development. Reinhard accordingly regards the second conclusion as the correct one.

In his paper on the *Cynipidæ* of the United States, Proc. Ent.

Soc. Phil. iv. pp. 331–380, Osten-Sacken cites the characters of Hartig's genera of true Gall-flies (*Psenides*) and adds those of the genera established by Giraud. He remarks that, of the numerous North American species, comparatively few will enter into the genera established by European authors, so that it will eventually be necessary to form new genera for the American types "coordinate to Hartig's genera *Cynips*, *Andricus*, *Neuroterus*, *Spathegaster*, and *Trigonaspis*." Osten-Sacken accepts Walsh's view of the dimorphism of those species in which an agamous form occurs. He remarks on many points connected with the natural history of the American species of *Cynips* (*sens. lat.*), of which he characterizes 42 in an analytical table (pp. 344–346). He also gives a descriptive table of the galls produced, or supposed to be produced, by species of *Cynips* on various species of oaks (pp. 347–350), and accompanies these tables with some supplementary remarks illustrative of various points in the natural history of these insects and elucidative of their synonymy. Two new species of *Cynips* are described in this section of the paper.

Osten-Sacken also characterizes the genera *Aulax*, *Ceroptres*, and *Synergus*, and quotes Förster's description of his genus *Phanacis*. The latter appears to include no American species. All the American species of the three other genera, as far as the author is aware, are inquilines. Of the genus *Aulax*, Osten-Sacken cites 4 known species; *Ceroptres* includes 6 described species, and *Synergus* 7, 2 of which are described as new. The known species of the last-mentioned genus are characterized.

Cynips aptera was found in considerable numbers running on the snow near Autun on the 24th January, 1865. See Laboulbène in Bull. Soc. Ent. Fr. 1865, p. v.

Count d'Esterno records his having found great quantities of *Cynips aptera* alive upon new fallen snow in January 1865. Rev. et Mag. de Zool. 1865, p. 134. Guérin-Méneville, on the occasion of this note, gives a short account of the history of our knowledge of *Cynips aptera*, with some remarks on those specimens which he has had the opportunity of observing. He remarks that Westwood's name *Biorhiza*, which has the priority of Hartig's *Apophyllus*, cannot be applied to several species of the genus to which *C. aptera* belongs, and proposes for it that of *Heterobius*. *L. c.* pp. 135–141.

Bond has called attention to a rose-like gall found on willows near Cambridge (Proc. Ent. Soc. 1865, p. 85); and Peacock (Athenæum, 18th March 1865, and Proc. Ent. Soc. p. 88) cites several passages from old writers showing how such phenomena were observed and misunderstood by our forefathers. Saunders has also indicated the characters of some galls collected in Syria by Lowne (Proc. Ent. Soc. 1865, p. 89).

Frauenfield describes a peculiar gall on the leaf of the large-leafed lime tree (*Tilia grandifolia*). It contains a yellow larva; but the perfect insect is still unknown. Verh. zool.-bot. Ges. in Wien, xv pp. 535–536.

Inchbald records his having bred *Aulax subauli* from a gall formed on *Hieracium boreale*. Ent. M. Mag. ii. p. 46.

H. W. Kidd describes a woolly gall found by him on the oak. Ent. M. Mag. ii. p. 141. D'Urban also refers to some oak-galls, and states that the so-called "Artichoke gall" is produced from a flower-bud. Ibid. pp. 141, 142.

Cynips? armatus, sp. n., Cresson, Proc. Ent. Soc. Phil. iv. p. 4, fig. 2, Cuba.

Cynips tumifica, sp. n., Osten-Sacken, *l. c.* p. 356, and *C. cornigera*, sp. n., p. 358.

Synergus campanula and *S. dimorphus*, sp. n., Osten-Sacken, *l. c.* p. 376.

Eucoila? basalis, sp. n., Cresson, *l. c.* p. 5, and *E.? carinata*, Cress. *l. c.* p. 6, from Cuba.

Aspicera rufipes, sp. n., Cresson, *l. c.* p. 6, and *A. biforcolata*, Cress. *l. c.* p. 7, from Cuba.

Urocerida.

The characters and habits of *Cephus pygmæus* are described by Taschenberg, Naturg. wirbell. Thiere, pp. 82–86, pl. 4. figs. 4–6.

Urocerus caudatus, sp. n., Cresson, Proc. Ent. Soc. Phil. vol. iv. p. 247, from the Colorado Territory.

Tremex cubensis, sp. n., Cresson, Proc. Ent. Soc. Phil. vol. iv. p. 2, and *T. latitarsus*, Cress. *l. c.* p. 3, fig. 1 (wing, foot, and antenna), from Cuba.

Tenthredinidæ.

Schizocerus (*Hylotoma*) *plumiger* (Klug) is described by Cresson, Proc. Ent. Soc. Phil. vol. iv. p. 242.

Cladomacra macropus (Smith) is figured by Smith, Proc. Linn. Soc. viii. pl. 4. fig. 1.

The characters and mode of life of *Athalia spinarum* are described by Taschenberg, Naturg. wirbell. Thiere, pp. 79–82, pl. 2. figs. 20–22.

Life-histories of the following species are given by Snellen van Vollenhoven, Tijdschr. voor Entom. viii. Deel:—*Emphytus cinctus* (Linn.), *l. c.* pp. 73–77, pl. 3; *Selandria melanocephala* (Fab.), *l. c.* pp. 79–83, pl. 4; *Dineura alni* (Linn.), *l. c.* pp. 84–88, pl. 5; and *D. rufa* (Panz.), *l. c.* pp. 89–93, pl. 6.

Vollenhoven's Life-Histories of *Phymatocera aterrima* (Klug) and *Nematus salicis* (Linn.), are translated by J. W. May, Zoologist, 1865, pp. 9471–9474 & 9474–9477; those of *Nematus ventricosus* (Voll.) and *N. trimaculatus* (De G.), ibid. pp. 9549–9551 & 9551–9553; *Lophyrus rufus* (Klug), ibid. 9635–9638; *Hylotoma rosæ*, ibid. 9749–9754; *Selandria pusilla* (Klug), ibid. 9830–9833; *Cladius uncinatus* (Klug), 9833–9835.

Smith describes the larva of *Cræsus septentrionalis*, and states that his supposition that *Hemichroa alni* and *Eriocampa ovata* were the sexes of the same species (see Record, 1864, p. 473) is founded in error. Ent. Annual, 1866, pp. 135–137.

Selandria cerasi (Harris). Winchell describes the habits of this species and its larva, and gives some details of the anatomy of the latter. Proc. Bost. Soc. Nat. Hist. ix. pp. 321–325.

Smith (Proc. Ent. Soc. 1865, p. 96) records the production of a species

of *Nematus* from rose-galls of the willow. He regards these insects as probably inquilinous.

New species:—

Pterygophora analis, Costa, Ann. Mus. Zool. Nap. ii. p. 66, from Australia.

Dolerus rufotorquatus, Costa, *l. c.* p. 97, from Parma.

Lyda fasciatipennis, Costa, *l. c.* p. 97, from North Italy.—*L. cavifrons*, Cresson, Proc. Ent. Soc. Phil. iv. p. 246, from the Colorado Territory.

Lophyrus insularis, Cresson, *l. c.* p. 1, from Cuba.

Schizocerus abdominalis, Cresson, *l. c.* p. 243, from the Colorado Territory.

Selandria dubia, Cresson, *l. c.* p. 244, and *S. montana*, Cress. ibid., from the Colorado Territory.

Tenthredo pleuralis, Cresson, *l. c.* p. 245, from the Colorado Territory.—*T. aureola* and *T. dorsilinea*, Costa, *l. c.* p. 67, from the Amazons.

Trichiocampus garbiglietti, Costa, *l. c.* p. 103, from North Italy.

Blennocampa croceipes, Costa, *l. c.* p. 104, from Turin.

Aneugmenus coronatus, Costa, *l. c.* p. 104, from Turin.

Cerobactrus facialis, Costa, *l. c.* p. 104, from Turin.

LEPIDOPTERA.

A. *Works in progress.*

Felder, C. & R. Reise der Oesterreichischen Fregatte Novara um die Erde, &c. Zoologischer Theil, Zweiter Band, Zweite Abtheilung, Lepidoptera. Heft I. Vienna, 1865, 4to, pp. 136, with 21 plates.

The first Lepidopterological part of this fine work is devoted exclusively to the Papilionides. In it MM. Felder publish full descriptions and figures of a great number of species of this group, of which they have already given diagnoses in the Wiener ent. Monatsschrift and Verhandl. zool.-bot. Gesellschaft in Wien. Many new species are also described; but several of these have no connexion whatever with the 'Novara's' voyage. The illustrations are beautifully executed.

Heinemann, H. von. Die Schmetterlinge Deutschlands und der Schweiz, systematisch bearbeitet. Zweite Abtheilung. Kleinschmetterlinge, Band i. Heft 2. Die Zünsler. Brunswick, 1865, pp. vi, 214, & 27. 8vo.

The first part of Heinemann's work on the German and Swiss Microlepidoptera, published in 1863, contained the descriptions of the *Tortricina*; this second part includes the *Pyralidina*, to which the author gives a wide sense, taking in both *Pyralidæ* and *Crambidæ*. The work is too well known to lepidopterists to need any further remarks upon its general execution. Besides

the detailed descriptions of genera and species it is furnished at the end with separately paged synoptical tables and with alphabetical indexes. The author describes a few new species, and proposes two new genera; but as he adopts the greater proportion of the generic groups proposed by Zeller, Lederer, and Guenée, moderation in the latter respect is the less to be wondered at.

Hewitson, W. C. Exotic Butterflies, being illustrations of new species. 4to. London: Van Voorst, parts 53 to 56 (January to October, 1865).

The greater portion of the species figured and described in these parts belong to the *Papilionides* and *Nymphalides*.

——. Illustrations of Diurnal Lepidoptera. Part ii. Lycænidæ. 4to. London: Van Voorst, pp. 37–76, pls. 17–30. June 24, 1865.

This second part of Mr. Hewitson's 'Illustrations' contains the catalogue of the Thecliform *Lycænides*, and includes descriptions and figures of numerous new species and representations of a good many known ones. The known genera illustrated are *Myrina* (42 sp.), *Iolaus* (22 sp.), *Hypolycæna* (15 sp.), *Ialmenus* (8 sp.), *Ilerda* (6 sp.), *Aphnæus* (14 sp.), *Dipsas* (12 sp.), and *Thecla*. Five new genera are proposed.

Millière, P. Iconographie et Description de Chenilles et Lépidoptères inédits. Livraison x. completes tome i. pp. 373–424, pls. 45–50; liv. xi.–xiii. commence tome ii. pp. 1–100, pls. 51–62.

This work constitutes a separate impression from the Annales Soc. Linn. Lyon, tome xii., which does not appear to have yet reached this country. Previous livraisons are referred to as papers, with reference to the volume of the 'Annales' in which they appeared (see p. 573).

Scott, A. W. Australian Lepidoptera with their transformations. Part iii. London: Van Voorst, 1865. Folio, pp. 21–30, pls. 7–9.

This work is continued in the same creditable style as last year. The part published in 1865 includes the descriptions and life-histories of 7 species.

Stainton, H. T. The Natural History of the Tineina. Vol. ix. containing *Gelechia*, part 1. By H. T. Stainton, assisted by Professor Zeller, J. W. Douglas, and Professor Frey. 1865, 8vo, pp. 276, with 8 plates.

In this volume Stainton gives the natural history of twenty-four species of the great genus *Gelechia*, but defers his general remarks on the genus until the publication of his next volume, which will also be devoted to these moths.

Walker, Francis. List of the specimens of Lepidopterous Insects in the Collection of the British Museum. Parts xxxii., xxxiii. & xxxiv. (being parts 2–4 of the Supplement), pp. 323–1533. Published by order of the Trustees, 1865.

These three parts contain a list of the species acquired by the British Museum since the publication of the parts of the Catalogue relating to the larger *Heterocera* and *Pyralidæ*, with descriptions of a great number of new species from the Museum collection and that of Mr. Saunders.

B. *Separate Works.*

Werneburg, A. Beiträge zur Schmetterlingskunde. Two volumes, 8vo, pp. viii and 595 & 350. Erfurt 1864.

This valuable work contains, as expressed in its second title, a "Critical elaboration of the most important entomological works of the seventeenth and eighteenth centuries as regards the European Lepidoptera treated of therein." Commencing with the great work of Aldrovandi on Insects, the author analyses the various entomological publications (some of them mere compilations) of the pre-Linnean period, referring the European Lepidoptera described in them to their modern species. In treating of the Lepidoptera described in the works of Linnæus and his contemporaries Clerck, Scopoli, and Hufnagel, Werneburg brings together in parallel columns all the species referred to by these authors, arranging them in such a manner that the name given to each insect by each author stands on the same line, which also includes the modern denomination. In this way the synonymy of European Lepidoptera for the Linnean period is brought together in a remarkably convenient form; the first description of each species is indicated by its name being printed in thick letters; and the table is further elucidated by a long series of notes on particular species. The works of Fabricius and the 'Wiener Verzeichniss' are similarly treated. The species described in the works of other authors are arranged under their respective titles in the order in which they occur, and furnished with their modern equivalents. This is evidently a work of enormous labour and research, and will be indispensable to all future students of European Lepidoptera.

Nowicki, Max. Microlepidopterorum species novæ. 1864, cum figg.

This work, which the Recorder has not seen, is referred to in the author's "Beitrag zur Lepidopterenfauna Galiziens" (*vide infrà*), where the species described are cited.

C. *Papers published in Journals, &c.*

Anonymous. Liste des Lépidoptères qui d'après MM. Heydenreich, O. Staudinger, et Herrich-Schæffer, sont portés, à tort, sous plusieurs n^os^ de l'Index methodicus du Dr. Boisduval. Annales Soc. Entom. de Belgique, tome viii. pp. 281–288.

This paper displays in a tabular form the various species of Boisduval's 'Index Methodicus' which have been united by later authors.

Ballion, E. Verzeichniss der in der nächsten Umgegend von Gorki in den Jahren 1860–1863 gefundenen Schmetterlinge. Bull. Soc. Nat. de Moscou, tome xxxvii. part 1. pp. 349–382: 1864.

In this memoir the author describes the general position and climate of the town of Gorki, which is situated in 54° 15′ N. lat. and 48° 35′ E. long., at an elevation of about 680 feet above the sea-level, and seems, from the author's description, to present no very attractive features of landscape. In his catalogue he enumerates 315 species of Macrolepidoptera. The *Tortricidæ*, *Tineidæ*, and *Pterophoridæ* of the district amount to about 115 species. The species cited in the catalogue are chiefly common northern European forms; but the work presents some interest with respect to the geographical distribution of these. It is arranged in accordance with Staudinger's catalogue.

Bates, H. W. New species of Butterflies from Guatemala and Panama. Entom. Monthly Mag. vol. i. pp. 178–180, & 202–205: January and February 1865.

——. Contributions to an Insect Fauna of the Amazon Valley.—Lepidoptera—Nymphalinæ (continued). Journ. of Entom. vol. ii. pp. 311–346: March 1865.

——. Notes upon the variation of sexes in *Argynnis diana*. Proc. Ent. Soc. Philad. iv. pp. 204–207: March 1865.

Behr, Herman. On Californian Lepidoptera. No. IV. Proc. Calif. Acad. Nat. Sci. vol. iii. pp. 123–127.

Relates to various species of Nymphalides.

——. Notes on Californian Satyrides. Ibid. pp. 163–166.

Bellier de la Chavignerie. Description d'une Noctuelle nouvelle de l'île de Corse. Ann. Soc. Ent. Fr. 4^e^ sér. tome v. p. 104, pl. 2. fig. 1: August 23, 1865.

Bethune, C. J. S. Descriptions of three new species of Canadian Nocturnal Lepidoptera. Proc. Ent. Soc. Philad. vol. iv. pp. 213–215: (8) May 1865.

Birchall, Edwin. Notes on the Lepidoptera of Ireland. Ent. Monthly Mag. vol. i. pp. 270–272.

Blake, C. A. Description of a new species of Cuban Lepidoptera. Proc. Ent. Soc. Philad. vol. iv. pp. 313–314: (8) May 1865.

Butler, A. G. Description of six new species of Diurnal Lepidoptera in the British Museum Collection. Proc. Zoological Society, 1865, pp. 430–434, pl. 25 (read May 9, 1865).

——. Description of six new species of Exotic Butterflies in the Collection of the British Museum. Ibid. pp. 455–459, pl. 26 (read May 23, 1865).

——. Descriptions of the characters of six new species of Rhopalocerous Lepidoptera in the British Museum, with notes on the allied species. Ibid. pp. 481–486.

——. Description of a new species of *Morpho* in the Collection of the British Museum. Ent. Monthly Mag. vol. ii. p. 81.

——. Description of four new species of Butterflies in the Collection of the British Museum. Ann. & Mag. Nat. Hist. 3rd ser. vol. xvi. pp. 397–399: December 1, 1865.

——. Monograph of the species of *Charaxes*, a genus of Diurnal Lepidoptera. Proc. Zool. Soc. 1865, pp. 623–639, pls. 36–37.

——. Descriptions of Six Butterflies new to Science, belonging to the genera *Heterochroa* and *Romaleosoma*. Ibid. pp. 667–673 *cum figg.*

Bremer, Otto. Lepidopteren Ost-Sibiriens, insbesondere des Amur-Landes. Mém. Acad. Imp. Sci. St. Pétersb. tome viii. pp. 1–103, with 8 plates: June 1864 (read May 8, 1863).

This memoir contains a critical revision of all the species of Lepidoptera discovered in Eastern Siberia and the region of the Amur, and is founded chiefly on the specimens collected by Radde, Maack, and Wulffius. The total number of species here cited is 483, of which 130 are described as new and hitherto peculiar to the district. Ménétriés has described 22 new species in Schrenck's 'Amur-Lande,' raising the whole number of recently detected forms to 152, and leaving 336 as the number of previously described species. Of these, 20 belong to the fauna of China and Japan, and 33 are peculiar to Russian territory; the remainder, 283 species, are more or less generally distributed in Europe. The various groups are represented in the following proportions:—*Rhopalocera* 154 species, *Sphingidæ* 4 species, *Sesiidæ* 1 species, *Zygænidæ* 5 species, *Bombycina* 46

species, *Noctuidæ* 83 species, *Pyralidæ* 53 species, *Geometridæ* 103 species, *Tortricidæ* 15 species, *Tineidæ* 7 species, *Pterophoridæ* 2 species. The plates contain figures of the numerous species of Rhopalocera, Sphingidæ, Bombycina, and Noctuidæ previously described by Bremer in the Bulletins of the Academy of St. Petersburg; the descriptions and figures of new species relate chiefly to the remaining groups.

Clemens, Brackenridge. North American Micro-Lepidoptera. Proc. Ent. Soc. Philad. vol. v. pp. 133–147.

Constant, A. (fils). Description de quelques Lépidoptères nouveaux. Ann. Soc. Ent. Fr. 4e sér. tome v. pp. 189–198, pl. 7: October 25, 1865.

Cornalia, Emilio. Del Brucio del Lentisco (*Lasiocampa otus*, Drury). Atti della Soc. Ital. di Scienze Nat. vol. viii. pp. 186–192, pl. 2: 1865.

Couper, W. Description of a new species of *Alypia*. Canad. Nat. & Geol. new series, vol. ii. p. 64: March 8, 1865.

De la Chaumette, H. L. Notes on Indian Lepidoptera. Entom. Monthly Mag. vol. ii. pp. 36–38.

Dohrn, Anton. Die Darwin'sche Theorie und das Experiment. Stettiner entom. Zeitung, 1865, pp. 238–241.

In this paper the author indicates his own adherence to the Darwinian theory of the origin of species, and urges entomologists to undertake researches bearing upon it, which he justly says are of far more importance than the prevailing "cultus" of the "new species" and "new genus." He illustrates his remarks by an abstract of the experiments of Dorfmeister on the development of two species (?) of *Vanessa* (*vide infrà*).

Dürer, B. Il Baco da Seta della Quercia Giapponese (*Bombyx ya-ma-mai*) e la sua prima coltivazione sul lago di Como alla villa Carlotta. Atti Soc. Ital. Sci. Nat. vol. viii. pp. 168–173.

Edwards, W. H. Description of certain species of Diurnal Lepidoptera found within the limits of the United States and British America. No. 4. Proc. Ent. Soc. Philad. vol. iv. pp. 201–204, pl. 1: (16) March 1865.

——. Notes upon *Papilio asterias* and *Saturnia promethea* hermaphrodites. Proc. Ent. Soc. Philad. vol. iv. p. 390.

Fallou, J., Guenée, A., and Sichel, O. Notice sur les *Chelonia cervini* et *quenselii*. Ann. Soc. Ent. Fr. 4e sér. tome iv. pp. 679–687: May 24, 1865.

Contains an account of the metamorphoses of these species

by the two first-named authors, and a description of a variety of *Pimpla examinator* by Dr. Sichel.

Fallou, J. Rectification sur la *Bryophila guenei*. Ibid. p. 688.

Fauvel, A. Les Lépidoptères du Calvados. Mémoires Soc. Linnéenne de Normandie, tome xiii. pp. 74: 1864.

This paper constitutes the commencement of a complete synopsis of the Lepidoptera of the Department of Calvados, each species being briefly described, with indications of a few of its more important synonyms and varieties, and of the food-plants of its larva. To each group, family, and genus the author has given a table of the characters of the subordinate groups or species included in it. The present portion includes the *Rhopalocera*, *Sphingidæ*, *Sesiidæ*, and *Zygænidæ*. Considering the extent of the district, the number of species found in it is remarkable, especially in the case of the *Rhopalocera*, 73 species of Butterflies being here cited, whilst the whole of Britain can only muster 64.

Ferrario, E. Intorno all' allevamento dei bachi da seta sui rami del gelsi, e ad una nuova forma di tavola proposta a ciò. Rendic. R. Istit. Lombardo, vol. ii. pp. 48–50: February 1865.

Fologne, E. Lépidoptères nouveaux pour la Faune Belge. Ann. Soc. Entom. de Belgique, tome viii. pp. 273–276.

This paper contains a list of 16 species of Lepidoptera observed by the author for the first time in Belgium, chiefly at Ostend, with notes on rare species taken by him in 1864 and on the occurrence of the larvæ of two or three species.

Frey, H. Die schweizerischen Microlepidopteren. Erste Abtheilung. Mittheil. Schweiz. ent. Gesellsch. 1865, pp. 329–352.

Contains a list of the *Alucitina*, *Pterophorina*, and a portion of the *Tineina* of Switzerland, with notes on the times and modes of occurrence of the species, both in the larval and perfect states.

Gärtner, A. Die ersten Stände von *Eupleuris striatella*, und *Parasia paucipunctella*. Wiener entom. Monatsschrift, Band viii. pp. 29–32: January 1864.

——. Die ersten Stände von *Sesia braconiformis* und *Dichrorampha gruneriana*. Ibid. pp. 114–120: April 1864.

——. Die ersten Stände einiger Lepidopteren (*Anacampsis scintillella*, *Gelechia umbrosella*, and *Lycæna alsus*). Berliner entom. Zeitschrift, 1865, pp. 114–116.

Gärtner, A. Die ersten Stände mehrerer *Crambiden* und eine neue *Bucculatrix*. Stettiner entom. Zeitung, 1865, pp. 326–332.

Girard, Maurice. Note sur les femelles aptères du genre *Hibernia*. Ann. Soc. Ent. Fr. 4e sér. tome v. pp. 105–110: August 23, 1865.

This note includes the report of a discussion on its subject, in which MM. Laboulbène, Amyot, Bellier de la Chavignerie, and Aubé took part.

——. Note sur une double aberration présentée par une femelle de la *Lycæna adonis*. Ann. Soc. Ent. Fr. 4e sér. tome v. pp. 111–114, pl. 2. fig. 4: August 23, 1865.

Grote, A. R. Descriptions of North-American Lepidoptera. Proc. Ent. Soc. Philad. vol. iv. pp. 315–330, pl. ii.: (8) May 1865.

——. Notes on Cuban Sphingidæ. Proc. Ent. Soc. Philad. vol. v. pp. 33–84, pls. 1 & 2: (9) October 1865.

Guenée, A. Quelques espèces de Lépidoptères prouvées par leurs premiers états. Annales Soc. Ent. de France, 4e série, tome v. pp. 301–308, pl. 8: December 13, 1865.

——. Notes sur le genre *Setina* (Schr.). Ann. Soc. Ent. Fr. 4e série, tome iv. pp. 399–404: January 1865.

——. Souvenirs de Zermatt. Ann. Soc. Ent. Fr. 4e série, tome v. pp. 87–96: August 23, 1865.

Contains notes on various species of Lepidoptera observed at Zermatt by the author during the excursion of the French Entomological Society in 1864.

——. See Fallou.

Hasselt, A. W. M. van. Het verdedigings-toestel der Rups van den grooten of tweestart Hermelijn-Vlinder, *Cerura* (*Dicranura* s. *Harpyia*) *vinula*. (Kleine Entom. Meded.). Tijdschrift voor Entomologie, 1865, pp. 128–130.

A discussion of the means of defence possessed by *Cerura vinula*.

Healy, Charles. Observations on the economy, moulting, and pupation of the larva of *Lyonetia clerckella*. Ent. Monthly Mag. vol. ii. pp. 128–129.

Heinemann, H. von. Drei neue Phycideen. Wiener entom. Monatsschrift, Band viii. pp. 288–296: September 1864.

Herrich-Schäffer, —. Lepidopterorum index systematicus. Fortsetzung. Corresp.-Blatt des zool.-mineral. Vereines in Regensburg, Jahrg. 19, pp. 63–76, 84–92, 100–108: 1865.

——. Ein Ausflug ins Ober-Engadin. Ibid. pp. 109–113.

In this paper the author gives an account of his visit to the Engadine in July 1865, with notes on some of the species of Lepidoptera observed. Two of these, a *Depressaria* and a *Bucculatrix*, are described as new, pp. 115–117.

——. Die Schmetterlingsfauna der Insel Cuba. Fortsetzung. Ibid. pp. 52–60.

Hewitson, W. C. A monograph of the genus *Yphthima*, with descriptions of two new genera of Diurnal Lepidoptera. Trans. Ent. Soc. London, 3rd series, vol. ii. pp. 281–294: March 1865.

——. A List of Diurnal Lepidoptera collected by Mr. Wallace in the Eastern Archipelago. Proc. Linn. Soc. vol. viii. pp. 143–149: December 5, 1865.

This paper contains a catalogue of the *Satyrides* and *Erycinides* collected by Wallace in the eastern islands, with notes on the variation and synonymy of some of the species.

Heyden, C. von. Fragmente aus meinen entomologischen Tagebüchern. Stett. ent. Zeit. 1865, pp. 100–105, March 1865, and pp. 375–382, December.

This paper contains descriptions of the transformations of various *Pyralidæ*, *Tortricidæ*, and *Tineidæ*, and of several new species.

Hofmann, C. F. D. Zur Naturgeschichte einiger Geometrinen und Tortricinen. Wiener entom. Monatsschrift, Band viii. pp. 26–29: January 1864.

Hopffer, C. Bericht über Felder's Lepidoptera der Reise der Fregatte Novara. Stettiner entom. Zeitung, 1865, pp. 382–398: December 1865.

This article consists of a report upon, or abstract of, the descriptive work on the Lepidoptera of the voyage of the 'Novara' published by C. & R. Felder, which is noticed elsewhere.

Hutton, Thomas. On the Reversion and Restoration of the Silkworm (part ii.); with distinctive characters of 18 species of Silk-producing *Bombycidæ*. Trans. Ent. Soc. London, 3rd series, vol. ii. pp. 295–331, pl. 19: March 1865.

Jäggi, F. Lepidopterologische Excursion ins Wallis, im Sommer 1860. Mittheil. Schweiz. ent. Gesellsch. 1865, pp. 313–329.

This paper contains an account of what seems to have been at least a very jolly excursion to the Valais, with notes on the Lepidoptera observed.

Kirby, W. F. A synopsis of the *Sphingidæ* of Europe. Ent. Monthly Mag. vol. i. pp. 209–211, 232–235, and 253–255.

——. Catalogue des Rhopalocères d'Europe dont les chenilles ne sont pas connues ou ne le sont qu'imparfaitement. Annales Soc. Entom. de France, 4e série, tome v. pp. 321–330: December 13, 1865 (read July 12).

Knaggs, H. G. Description of an *Acidalia* new to Science and to Britain. Ent. Monthly Mag. vol. ii. pp. 130–132.

Laboulbène, A. Sur un habitat remarquable de la chenille de l'*Ephestia elutella*. Ann. Soc. Ent. Fr. 4e série, tome iv. p. 733: May 24, 1865.

Lederer, Julius. Zur Lepidopteren-Fauna von Imeretien und Grusien. Wiener entom. Monatsschrift, Band viii. pp. 165–172, Tafel 3: May 1864.

Lodeesen, J. W. Een paar dagen te Beek. Tijdschrift voor Entomologie, 1865, pp. 67–68, pl. 2.

Contains notices of some Lepidoptera observed by the author at Beek, near Nijmegen, and especially of varieties of *Satyrus egeria* and *Eupithecia nanata*.

Lucas, H. Quelques mots sur le cocon, les œufs et le mâle de la *Saturnia bauhiniæ*. Ann. Soc. Ent. Fr. 4e série, tome iv. pp. 727–732, pl. 10. fig. 6: May 24, 1865.

Mann, J. Nachtrag zur Schmetterling-Fauna von Brussa. Wien. entom. Monatssch. viii. pp. 173–190, Taf. 4 & 5: June 1864.

Millière, P. Iconographie et description de Chenilles et Lépidoptères inédits. 8me et 9me livraisons. Ann. Soc. Linn. Lyon, x. pp. 187–244, pls. 37–44: February 1864 (see above, p. 565).

Moore, F. List of Diurnal Lepidoptera collected by Capt. A. M. Lang in the North-west Himalayas. Proc. Zool. Soc. 1865, pp. 486–509, pls. 30 & 31 (read June 13).

Möschler, H. B. Beiträge zur Schmetterlingsfauna von Labrador. Wien. entom. Monatssch. viii. pp. 193–200: June 1864.

This paper contains a note of 19 species of Labradorian Lepidoptera, 4 of which are described as new.

Nickerl, F. A. Neue Microlepidopteren. Wiener entom. Monatsschrift, Band viii. pp. 1–8: January 1864.

Nowicki, M. Beitrag zur Lepidopterenfauna Galiziens. Verhandl. zool.-bot. Gesellsch. Wien, xv. pp. 175–192.

This paper contains a list of the Lepidoptera detected by the author in Galicia since the year 1860. The number of Galician species now known to him amounts to 1700. Notes are given on the mode of occurrence and habits of some of the species.

Plötz, C. Eine neue Cavallerie. Stettiner entom. Zeitung, 1865, pp. 115, 116: March 1865.

A note on the larva of *Lycæna argus*.

Prittwitz, O. von. Beitrag zur Fauna des Corcovado. Stettiner entom. Zeitung, 1865, pp. 123–143: June 1865.

Reading, J. J. A Catalogue of the Lepidoptera of Devon and Cornwall. Part iii. Annual Report and Trans. Plymouth Instit. &c. 1865, pp. 53–115.

This portion includes the Noctuidæ.

Reakirt, Tryon. Observations upon some American *Pierinæ*. Proc. Ent. Soc. Philad. vol. iv. pp. 216–222: (8) May 1865.

Robinson, C. T. See Grote, A. R.

Rogenhofer, A. F. Fünf Schmetterlings-Zwitter. Verhandl. zool.-bot. Gesellsch. in Wien, Bd. xv. pp. 513–516.

Descriptions of so-called hermaphrodite forms of *Erebia medea* and *Saturnia pavonia*.

Rössler, A. Ueber die neue neben *Platyptilus ochrodactylus* (H.-S.) einzureihende Art. Wiener entom. Monatsschrift, Band viii. pp. 53–54: February 1864.

——. Lepidopterologische Mittheilungen. Wiener entom. Monatsschrift, Band viii. pp. 131, 132: April 1864.

Scudder, S. H. Revision of the hitherto known species of the genus *Chionobas* in North America. Proc. Ent. Soc. Philad. vol. v. pp. 1–28: (9) October 1865.

Smith, S. J. Description of a species of *Samia*, supposed to be new, from Norway, Maine. Proc. Boston Soc. Nat. Hist. vol. ix. pp. 342–345: March 1865.

Snellen, P. C. T. Over *Agrotis ripæ*, Hübn. Tijdschrift voor Entomologie, 1865, pp. 70–72, pl. 2.

——. Lepidopterologische Aantekeningen. Ibid. pp. 94–97.

——. Jets over het onderzoeken der vleugel-aderen bij de Vlinders. Ibid. pp. 102–105.

In this paper the author recommends, as a means of investigating the venation of the wings of Lepidoptera, to soak them in pure new turpentine. This, he says, renders the wings quite transparent without injuring the scales. The precautions to be taken are described by the author.

Snellen, P. C. T. De Rups van *Gelechia terrella*, W. V. Ibid. p. 131.

Speyer, A. Lepidopterologische Mittheilungen. Stettiner entom. Zeitung, 1865, pp. 241–268: September 1865.

Stainton, H. T. My first visit to the Engadine. Entomologist's Annual for 1866, pp. 1–18.

This paper contains an account of the writer's travelling experiences, with many notes upon the Lepidoptera.

——. New British Lepidoptera since 1853. Ibid. pp. 19–46.

In this paper the author has brought together all the references to newly detected British species of this order, whether due to new discoveries in the field, or to the more accurate examination of specimens contained in collections. It is, in fact, a summary of all the previous notices on the same subject in preceding volumes of the 'Annual.'

——. An entomological excursion in the Alps. Ent. Monthly Mag. vol. ii. pp. 153–154.

Contains an account of a visit to the Val da Fain in July 1865, with notices of the principal Lepidoptera observed.

——. Note on the larva of *Laverna sub-bistrigella*. Ent. Monthly Mag. vol. ii. pp. 105–106.

——. Notice of an undescribed species of the genus *Depressaria*. Entom. Monthly Mag. vol. i. pp. 221–222: March 1865.

Ström, V. Om de danske Arter af Slægten *Argyia*: et Bidrag til Insekternes Udviklings historie. Naturhist. Tidsskr. 3rd ser. vol. iii. pp. 44–47.

Syme, J. Boswell. Observations on the larva of *Deilephila*. Ent. Monthly Mag. vol. ii. pp. 5–8.

Villa, Ant. e Giov. Batt. Catalogo di Lepidopteri della Lombardia. Atti Soc. Italiana di Sci. Nat. vol. viii. pp. 41–64: April 1865.

This paper contains only a catalogue of the species of Lepidoptera found in Lombardy, with the altitudes at which each species occurs indicated by letters. No localities are given except in

one or two special cases, where notes are appended to the names.

Vollenhoven, S. C. Snellen van. Over eene rups van *Clostera curtula*. Tijdschrift voor Entomologie, 1865, pp. 69–70, pl. 2.

Wallace, A. R. On the Phenomena of Variation and Geographical Distribution as illustrated by the Papilionidæ of the Malayan region. Linn. Trans. vol. xxv. pp. 1–71, pls. 1–8: 1865 (read March 17, 1864).

In this important paper Wallace discusses the variation and geographical distribution of the Malasian Papilionides from the Darwinian point of view, and enumerates the Malasian species of that subfamily. A good many new species are described.

Walsh, B. D. See Insecta, p. 385.

Watson, J. On the microscopical examination of the plumules &c. of certain Diurnal Lepidoptera, as a means of specific diagnosis. Ent. Monthly Mag. ii. pp. 1–2.

Werneburg, A. Ein Beitrag zur Fauna der Insel Sylt. Stettiner entom. Zeitung, 1865, pp. 148–156: June 1865.

——. Ueber das Lepidopteren-Genus *Colias*, wie es in Staudinger's Catalog aufgestellt ist. Stettiner entom. Zeitung, 1865, pp. 272–288: September 1865.

——. Ueber die Gruppe *Alveolus carthami* der saumscheckigen Hesperien. Mittheil. Schweiz. ent. Gesellsch. 1864, pp. 277–279.

Weymer, G. Beitrag zur Naturgeschichte der *Pachnobia leucographa*. Stett. ent. Zeit. 1865, pp. 106–110: March 1865.

——. Bemerkungen über einige Lepidopteren. Ibid. pp. 110–114.

Contains notes on the habits and transformations of Lepidoptera of various families.

Wocke, M. F. Zwei neue Nepticulen. Stettiner entom. Zeitung, 1865, pp. 269–270: September 1865.

Wullschlegel, J. Ueber den japanesischen Eichenseidenspinner Jama-Maï, seine Einführung, Zucht und Pflege. Mittheil. Schweiz. ent. Gesellsch. March 1865, pp. 281–292.

Zeller, P. C. Nachricht über einige Falter der Meseritzer Gegend. Stett. ent. Zeit. 1865, pp. 29–48: March 1865.

This paper contains notices of the transformations, habits, and synonymy of several species of Lepidoptera, and descriptions of two new species. The Insects referred to will be noticed in their proper places.

D. *Anatomical and Physiological Papers.*

Breyer, —. Trachée centrale dans les antennes des Lépidoptères. Ann. Soc. Ent. Belg. tome viii. pp. 279–280.

The author and M. Lambotte have detected a trachea traversing the centre of the antennæ of *Anaitis plagiaria*. This trachea gives off a lateral canal in each joint, leading to an *ostium*, in the same way that the principal tracheæ communicate by a canal with the stigmata in the body of a caterpillar.

Girard, Maurice. Note sur la chaleur considérable de larves de la *Galleria cerella*. Annales Soc. Entom. Fr. 4ᵉ série, tome iv. pp. 676, 677: May 24, 1865.

The author gives a series of results obtained by six days' observation, from the 7th to the 12th October 1864, on combs containing larvæ of *Galleria*. The temperature of the combs showed an excess of from 12° to 27°·4 C. (=from 53°·6 to 81°·3 F.) over that of the surrounding air.

Laboulbène, A. Sur l'organe musical de la *Chelonia pudica*. Ibid. pp. 689–704, pl. 10: May 24, 1865.

This paper contains an analysis of the previous information extant on the stridulation of *C. pudica*, and gives a full description of the anatomical structure of the singular vesicular thoracic organ, by the pressure of the hind legs upon which the author believes the sound to be produced. The insect and its vesicle are represented in pl. 10. figs. 4 & 4 *a*. Laboulbène gives a list of 22 allied species examined by him, in 20 of which the thorax presents no peculiarity, whilst 2 of them (*Chelonia matronula* and *C. flavia*) show a denuded membranous space on the metathorax. The author also describes the similar vesicular organs occurring in the genus *Setina*, and figures *S. aurita* with its vesicle (pl. 10. figs. 5 & 5 *a*). He recommends the formation of a separate genus for *Chelonia pudica*.

General Notes on the Order.

Grote publishes (Proc. Ent. Soc. Phil. vol. iv. pp. 318–320) some notes on the geographical distribution of Lepidoptera in various parts of the United States, especially the Colorado Territory and the vicinity of Chicago. In the former *Zygænidæ* are said to be tolerably numerous; the *Bombycidæ* and *Sphingidæ* are but poorly represented.

Herrich-Schäffer (Regensb. Corr.-Blatt, 1865, pp. 132–

137, 169–171, and 180–182) criticises the following works on North-American Lepidoptera, and discusses the synonymy of many of the species referred to:—Boisduval et Leconte, Hist. Gén. et Iconogr. des Lépid. et des Chenilles de l'Amérique septentrionale; Morris, Synopsis of described Lepidoptera of North America; and Boisduval, Lépidoptères de la Californie.

John Watson indicates the use that may be made of the plumules of certain Butterflies in the determination of the species, and gives outline figures of these organs from species of various families. Ent. M. Mag. ii. pp. 1–2.

Laboulbène communicated to the French Entomological Society an account of Wagner's experiments upon the action of electricity on the pigments of the wings of Lepidoptera. Weak currents are said to diminish the intensity of the colours, and MM. Bellier de la Chavignerie and Depuiset recorded some facts which led them to think that the electricity of the atmosphere had a similar effect. MM. Bellier de la Chavignerie and Berce also stated that the greater or less exposure of chrysalides to the light has an influence on the coloration of the wings of the perfect insects. Bull. Soc. Ent. Fr. 1865, p. xlvii.

Moore has communicated some remarks on the parasitic fungi of insects in connexion with specimens found on *Spiramia retorta* and an undetermined Geometer, both from India. Proc. Ent. Soc. 1865, p. 89.

Greene mentions (Entomologist, ii. pp. 325–327), in reply to a question published in a previous number of the same journal, that in his opinion the females of Lepidoptera generally make their appearance earlier than the males, and gives a list of emergences in support of this view. Birchall (ibid. pp. 336–338) confirms this result, and gives notes of the emergence of the numerous individuals of five broods of as many different species. In each case the greater number of the earlier specimens were females; the number of males gradually increased, while that of the females diminished; and in general the last individuals to emerge were males. These observations show a remarkable equality in the number of individuals of the two sexes produced from the same brood.

Walsh (Proc. Bost. Nat. Hist. Soc. ix. p. 312) cites papers published by him in American agricultural journals, in which the following Lepidopterous insects are mentioned:—*Leucania unipunctata* (Haw.), the "Army-worm," and its parasites, and an undetermined species of *Solenobia* (?), of which the larva was found under the bark of apple-trees.

Llewellyn publishes some notes on peculiarities in the mode of occurrence of varieties of certain Lepidopterous insects. Ent. M. Mag. i. pp. 264–265.

Barrett and Horton publish notes on the hybernation of various Lepidoptera in Ent. M. Mag. i. p. 238.

Bold (Nat. Hist. Trans. Northumb. and Durh. i. p. 127) states that Lepidoptera generally were rare in the Northumberland district in 1864. He notices the occurrence of great quantities of the larvæ of *Mamestra*, *Agrotis*, *Tryphæna*, and *Plusia* in the turnip-fields (*l. c.* p. 124), and also the abundance of caterpillars of various kinds in the kitchen-gardens.

Horton publishes notes on the Lepidoptera observed by him near Worcester, Ent. M. Mag. i. p. 189, and Clark a list of the species taken by him in 1864, *l. c.* pp. 189–193.

Chappell enumerates some Lepidopterous insects taken by him in Staffordshire. Ent. M. Mag. ii. p. 47.

Baker publishes a list of Lepidoptera taken at Bournemouth in July. Ent. M. Mag. ii. pp. 21–23.

Douglas C. Timins communicates (Proc. Ent. 1865, pp. 102-103) the results of a month's collecting, chiefly of Butterflies, at Cannes, in April 1865. His observations on habits and synonymy will be noted, when necessary, further on.

Fauvel has published (Bull. Soc. Linn. Norm. tome ix. p. 126) some addenda to his list of Diurnal and Crepuscular Lepidoptera of the Department of Calvados.

Bellier de la Chavignerie communicates the results of his collecting Lepidoptera in the environs of Valladolid. Of the species obtained by him two are said to be new, a *Cleophana* and a *Siona*. Bull. Soc. Ent. Fr. 1865, p. xxxvi.

Lederer (Wien. ent. Mon. Bd. viii. pp. 165–172) gives a list of the species of Lepidoptera collected by Haberhauer at Kutais and Abbastuman in Imeretia, and by Kindermann near Elisabethopol in Grusia. Several new species are described; and notes on variation and habits are appended to the citations of several known species. The total number of species included in the catalogue is 157—namely, *Rhopalocera* 35, *Sesiidæ* 1, *Zygænidæ* 2, *Bombycidæ* 3, *Lithosiidæ* 1, *Arctiidæ* 2, *Noctuidæ* 25, *Pyralidæ* 23, *Geometridæ* 34, *Tortricidæ* 12, *Tineidæ* 13, and *Pterophoridæ* 6.

Werneburg has published (Stett. ent. Zeit. 1865, pp. 148–156) a list of the Lepidoptera observed by him on the island of Sylt (Schleswig) in July and August 1861. The total number of species obtained was 127, to several of which are appended notes on their habits. The various families are represented in the following proportions:—*Rhopalocera* 14 species, *Sphingidæ* 2, *Zygænidæ* 2, *Bombycidæ* 9, *Noctuidæ* 14, *Geometridæ* 18, *Pyralidæ* 3, *Tortricidæ* 27, *Tineidæ* 30, and *Pterophoridæ* 3.

Becker gives a list of a few species of Lepidoptera new to the fauna of Sarepta. Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 492.

Mann has added (Wien. ent. Mon. Bd. viii. pp. 173–190) a list of species to his catalogue of the Lepidopterous fauna of the neighbourhood of Brussa. The different families are represented as follows:—*Rhopalocera* 28 species, *Sphingidæ* 1, *Sesiidæ* 9, *Arctiidæ* 2, *Bombycidæ* 8, *Noctuidæ* 24, *Geometridæ* 13, *Pyralidæ* 30, *Tortricidæ* 22, *Tineidæ* 73, and *Pterophoridæ* 4. A considerable number of new species are described.

A. Young communicates to the Entomologist (ii. pp. 230–231) a list of a few species of Lepidoptera captured by him in Irak (Persia) in 1859. As indicated by Newman, this list consists exclusively of British species, with the exception of six which have at different times been recorded as British.

De la Chaumette has published notes on species of Indian Lepidoptera, chiefly Butterflies, observed by him in Bengal and Oude. Ent. M. Mag. ii.

pp. 36–38. This paper includes notices of the food-plants of several species.

H. Birchall's notes on collecting Lepidoptera in New Granada relate chiefly to the Rhopalocera. Zoologist, 1865, pp. 9638–9641.

According to Stainton (Entom. Annual for 1866, pp. 19–40) the additions made to the list of British Lepidoptera during the last eleven years have been 157 in number, distributed as shown by the following statement:—*Sphingina* 5; *Bombycina* 5; *Noctuina* 21; *Geometrina* 14; *Pyralidina* 13; *Tortricina* 11; *Tineina* 85; and *Pterophorina* 3.

Hodgkinson describes the general results of his collecting Lepidoptera in the spring of 1865. Ent. M. Mag. ii. p. 159.

Knaggs has continued his instructions in collecting and managing Lepidoptera, in Ent. M. Mag. i. pp. 193–195, 217–220, 240–242, 265–268, and ii. pp. 38–42, and 109–114. In these articles he treats of the mode of collecting and rearing larvæ, and in the last cited gives a list of allied genera of plants for the guidance of collectors in finding substitutes for the known food of larvæ, when this is inaccessible.

Barrett publishes some further notes on collecting Lepidoptera from thatch. Ent. M. Mag. ii. pp. 17–19.

The Entomologist, vol. ii., contains numerous notes on the best methods of destroying Lepidoptera and other insects, and on the preservation of larvæ.

Peale describes the means by which he preserves specimens of Lepidoptera from the attacks of insects, &c. Before putting them into the permanent cases, he subjects them to the action of heat in an oven heated by boiling water; the cases themselves are made of two plates of glass, united by a wooden frame and closed on all sides by tinfoil. Upon the inner surface of one of these plates small cylinders of cork are cemented to support the insects, and beneath each of these a small disk of paper with a number. The insects may thus be examined on both surfaces without opening the box, and when put into covers the boxes may stand on shelves like books. Smiths. Instit. Report for 1863, pp. 404–406, *cum figg.* (1864).

Rhopalocera.

In his paper on the Malasian Papilionides (Linn. Trans. xxv. pp. 1–71), Wallace discusses the question of the position of this group in the series of Rhopalocera, and adopts the old notion that they should occupy the highest place, in opposition to the views of Bates and Herrich-Schäffer, who remove them to a much lower rank. He founds this view on the possession by the perfect insects of two characters which are peculiar to them, namely the four-branched median nervule and the spur on the anterior tibiæ (the latter shared, however, with some of the Hesperiides). Adding to these the presence of the Y-shaped tentacle in the larva, an apparatus often of very complicated structure, found only in these insects, and considering all these characters in the light of the evolutionary hypothesis, the Papilionides must be regarded as constituting the most highly developed portion of the order Lepidoptera (p. 3).

Under the general term "variation" Wallace thinks that several different phenomena have been confounded. These he defines as follows:—1st, simple variability; 2nd, polymorphism; 3rd, local forms; 4th, coexisting varieties; 5th, races or subspecies; 6th, true species. The result of simple variability is the production of individual varieties, which occur almost con-
p. 15
-ually in some species, whilst others, nearly allied to these, are quite constant in their characters. Polymorphism (including dimorphism) consists in "the coexistence in the same locality of two or more distinct forms, not connected by intermediate gradations, and all of which are occasionally produced from common parents." The intercrossing of two of these forms does not produce an intermediate race, but reproduces the same forms. Thus *Papilio memnon* (Linn.), ♂, has two forms of ♀, namely, *P. anceus* and *P. achatis* (Cram.); *P. pammon* (Linn.), ♂, has a ♀ nearly resembling it, but also two other forms, described as *P. polytis* (Linn.) and *P. romulus* (Cram.); whilst *P. theseus* (Cram.) has no less than four forms of ♀—one resembling the male, the others described as *P. polyphontes* (De Haan), *P. antiphus* (De Haan), and *P. melanides* (De Haan). Wallace refers to some other examples of this polymorphism in the females of Papilionides; the different forms of the Malasian species are also figured. Local forms or varieties occur in species of wide range where groups of individuals have become isolated in particular spots. *P. agamemnon* presents a good example of this. Under the denomination of "coexisting variety" Wallace means to indicate the existence of a "slight but permanent and hereditary modification of form in company with the parent or typical form." Races or subspecies are "local forms completely fixed and specialized," which may be, and are, regarded by many authors, and even by Wallace himself, as entitled to specific distinction.

By applying these principles to the study of the Papilionides of the Eastern Archipelago, Wallace brings the number of species inhabiting those islands to 123, the distribution of which is shown in an elaborate table (pp. 24–27). The Indo-Malayan region, extending from Malacca to the Philippines, possesses 61 species; the Austro-Malayan region, from Celebes to New Guinea and its dependencies, possesses 72 species; so that only 10 species are common to the two regions. This discrepancy between the Papilionides of the eastern and western parts of the archipelago is evidence in the same direction as the great number of forms occurring in the whole region. The whole of Africa possesses only 33 known species of these insects, and tropical Asia only 65. The whole of America south of Panama has only 120 species, or about the same number as here recorded by Wallace for the Malayan archipelago; but the area of South America is at least 5,000,000 square miles, whilst the whole area

of the Malayan region is only 2,700,000 square miles, of which the land constitutes about 1,000,000. The author indicates that this may be accounted for in part by the favourable conditions presented for the segregation and perpetuation of local peculiarities in certain groups by the breaking up of a district into small isolated portions.

One of the most singular facts adduced by Mr. Wallace are that:— that in the island of Celebes nearly all the Papilionides have the wings falcate, as shown by a series of outlines exhibiting the costal margin and apex of several species from Celebes, compared with the same parts of the most nearly allied species from other islands. The same phenomenon is presented by the Pierides; and the author endeavours to account for it by the supposition that these insects were at some time exposed in Celebes to the attacks of some particular enemy, which could only be avoided by a rapidly tortuous flight. Under these circumstances he thinks the individuals with the more falcate wings would have the best chance of escaping, and thus, in accordance with the principles of natural selection, would give origin to permanent falcate forms.

With regard to mimetic resemblances the author agrees with his former associate, Mr. Bates, in considering that the purpose of this is in some way to protect the mimetic form. He adduces fifteen cases of the kind as occurring among the Malayan *Papiliones*; in eight of these the species mimicked are *Danaides*.

The Malayan Papilionides belong to the three genera *Ornithoptera*, *Papilio*, and *Leptocircus*—the first divided into three, and the second into sixteen groups by the author (p. 23). The three groups of *Ornithoptera* are the *Priamus-*, *Pompeus-*, and *Brookeanus*-groups. The groups of *Papilio* are as follows:—

A. Larva short, thick, with numerous fleshy tubercles; purplish. *Nox-*, *Coon-*, and *Polydorus*-groups.

B. Larva with third segment swollen, transversely or obliquely banded; pupa much bent. Imago with abdominal margin in ♂ plaited, but not reflexed; body weak; antennæ long; wings much dilated, often tailed. *Ulysses-*, *Peranthus-*, *Memnon-*, *Helenus-*, *Erectheus-*, *Pammon-*, and *Demolion*-groups.

C. Larva subcylindrical, variously coloured. Imago with abdominal margin in ♂ plaited, but not reflexed; body weak; antennæ short, with a thick, curved club; wings entire. *Erithonius-*, *Paradoxa-*, and *Dissimilis*-groups.

D. Larva elongate, attenuate behind, and often bifid; with lateral and oblique pale stripes, green. Imago with the abdominal margin in ♂ reflexed, woolly or hairy within; anal valves small, hairy; antennæ short, stout; body stout. *Macarius-*, *Antiphates-*, and *Eurypylus*-groups.

Kirby has published (Ann. Soc. Ent. Fr. 4e sér. tom. v. pp. 321–330) a catalogue of the European species of Butterflies of which the larvæ are either entirely or imperfectly described in some respect. From the table given a the conclusion of the paper, it appears that, out of 326 European species of Rhopalocera, the larvæ of only 140 are known, leaving no fewer than 180 still to be discovered. These belong to the genera *Parnassius* (2), *Pieris* (3), *Anthocharis* (2), *Zegris* (1), *Leucophasia* (1), *Colias* (11), *Melitæa* (5), *Argynnis* (12), *Junonia* (1), *Melanagria* (9), *Lasiommata* (3), *Hipparchia* p. 13. *Triphysa* (2), *Cœnonympha* (8), *Chionobas* (7), *Erebia* (30), *Thecla* (2), *Polis* (1), *Thestor* (1), *Chrysophanus* (4), *Polyommatus* (39), *Pyrgus* (15), *Nisoniades* (1), *Pamphila* (2), and *Cyclopides* (1). Of these the larva of *Parnassius debius* is said to be known, but still undescribed, as far as the author's knowledge extends; and those of *Colias phicomone*, *Hipparchia fidia*, *Cœnonympha typhon*, *Erebia euryale*, *Aurotis robosis*, and *Cyclopides sylvius* have been described, but without any indication of their food-plants. Mr. Kirby concludes his paper with a list of the genera including species with unknown or imperfectly known larvæ, with indications of the general character of the food-plants of the known species, from which it appears that most of the desiderata belong to genera which feed on low-growing plants.

W. F. Kirby has communicated to the Entomological Society some "Notes on the synonymy of certain British Butterflies," chiefly derived from Staudinger's Catalogue (Proc. 1864, pp. 58, 59). He supports the adoption by British entomologists of the genus *Pyrameis* (Hübn.) and of the name *Melanagria* (Meig.) in place of *Arge*, indicates that *Erebia epiphron* (Knoch) has the priority over *E. cassiope* (Fab.) and *E. medea* (W. V.) over *E. blandina* (Fab.), *Polyommatus medon* (Hufn.) is prior to *P. agestis* (W. V.), *P. icarus* (Rottemb.) is prior to *P. alexis* (W. V.); *P. semiargus* (Rottemb.) takes the place of *P. acis* (W. V.); and *Pyrgus malvæ* (Linn.)= *P. alveolus* (Hübn.). The generic name *Steropes* (Boisd.) should give way to *Cyclopides* (Hübn.).

Herrich-Schäffer has continued (Regensb. Corr.-Blatt, 1865) his Systematic Index of the Diurnal Lepidoptera, with lists of the species belonging to his families *Danaina*, *Brassolina*, *Biina*, *Hetærina*, *Satyrina*, *Ragadina*, *Elymniina*, *Eurytelina*, and *Nymphalina*. The species in each genus are arranged under geographical heads. At the close the author announces the suspension of his work until the appearance of the next part of Felder's Lepidoptera of the voyage of the 'Novara.'

D'Urban (Ent. M. Mag. ii. p. 108) calls attention to some examples of mimetic analogies in Butterflies. *Danais archippus* (Fab.) and *Nymphalis disippus* (God.), *D. echeria* and *Papilio cenea*, and *D. chrysippus* and *Diadema bolina* ♀ are the species referred to.

Walsh (Proc. Ent. Soc. Lond. 1865, pp. 104–105) also instances *Danais plexippus* and *Limenitis disippus* as examples of mimetic species. The larvæ of the latter hybernate in willow-leaves rolled up and affixed to twigs.

Herrich-Schäffer has completed his revision of the Rhopalocera of Cuba, Regensb. Corr.-Blätt, 1865, pp. 52–56. This portion includes the remainder of the Hesperides, and brings the total number of species to 140, belonging to 54 genera.

Prittwitz has commenced (Stett. ent. Zeit. 1865, pp. 123–143 and 307–325) an account of the Lepidoptera observed at the foot of the Corcovado, near Rio Janeiro. He gives an account of the general features and climate of the district, which is supplemented by a note from personal observation by C. A. Dohrn (pp. 127–128). The species referred to are all Rhopalocera. The total number recorded is 125, of which 18 are described as new.

Birchall has commenced publishing some notes on the Lepidoptera of Ireland (Ent. M. Mag. i. pp. 270–272). Of Butterflies twenty-four of the British species have not yet been noticed in Ireland; the author adds four to the published list of Irish Butterflies, namely, *Argynnis lathonia*, *Melitæa athalia*, *Vanessa polychloros*, and *Lycæna agestis*. *Thecla betulæ* is abundant in the west of Ireland; the species of *Pieris* are rare.

Fauvel (Mém. Soc. Linn. Norm. tom. xiii.) enumerates 73 species of this family as inhabiting the department of Calvados—namely *Papilionides* 2, *Pierides* 10, *Lycænides* 19 (including *Lyc. bætica*, *ægon*, *cyllarus*), *Erycinides* 1, *Nymphalides* 23 (incl. *Arg. dia*, *euphrosyne* and *selene*, *Mel. artemis*, *phœbe*, *parthenie*, *Lim. populi*, and *Apat. ilia*), *Satyrides* 10 (incl. *S. semele*, *Las. mæra*, *megæra*, and *ægeria*, and *Can. arcanius*), and *Hesperiides* 8 (incl. *H. actæon* and *Syr. sao*).

Ballion, in his Catalogue of the Lepidoptera of Gorki (Bull. Soc. Nat. Mosc. xxxvii. pt. 1. pp. 357–363), enumerates 72 species of Butterflies as occurring in that district, amongst which are two species of *Lycæna* and one of *Melitæa* which he has been unable to determine.

Moore has indicated the contents of a small collection of Butterflies formed by Lang at great elevations (up to 14,800 and 18,000 feet) in the north-western Himalayas. Proc. Ent. Soc. 1865, p. 89. (*Vide infrà.*)

Papilionides.

The following known species of this group are described and figured by Bremer, Mém. Acad. de St. Pétersb. tom. viii.:—*Papilio raddei* (Brem.), p. 3, pl. 1. fig. 1; *P. xuthulus* (Brem.), p. 4, pl. 1. fig. 2; *Parnassius bremeri* (Feld.), pl. 1. figs. 3 & 4; *Parnassius felderi* (Brem.), p. 6, pl. 1. fig. 5.

The following known species of this group are fully described and figured by C. and R. Felder, Reise der Novara, Zool. Bd. ii. Abth. ii. Heft 1:—*Leptocircus decius* (Feld.), p. 1, pl. 21. fig. *a*; *Papilio* (*Ornithoptera*) *arruanus* (Feld.), p. 3, pl. 1. figs. *a* & *b*; *P.* (*O.*) *criton* (Feld.), p. 12, pl. 3. figs. *a–c*; *P.* (*O.*) *magellanus* (Feld.), p. 14, pl. 4. figs. *a*, *b*; *P. childrenæ* (Gray), p. 21; *P. erithalion* (Boisd.) = *P. alyattes* ♀ (Feld.), p. 25, pl. 6. fig. *d*; *P. alyattes* (Feld.), p. 26, pl. 6. fig. *e*, *f*; *P. osyris* (Feld.), p. 30, pl. 9. figs. *b–d*; *P. anaximenes* (Feld.), p. 36, pl. 7. fig. *b*; *P. latinus* (Feld.), p. 39, pl. 10. fig. *b*; *P. lepidus* (Feld.), p. 40, pl. 10. fig. *a*; *P. hostilius* (Moritz, Feld.), p. 43, pl. 9. fig. *a*; *P. euryleon* (Hew.), p. 44, pl. 6. fig. *c*; *P. servillei* (God.), p. 49; *P. euphrates* (Feld.), p. 54, pl. 11. fig. *d*; *P. rama* (Feld.), p. 71, pl. 12. fig. *a*; *P. melanthus* (Feld.), p. 72, pl. 12. fig. *c*; *P. scottianus* (Feld.), p. 73; *P. lycophron* (Hübn.) ♀, p. 76; *P. theramenes* (Feld.), p. 78; *P. corœbus* (Feld.), p. 84, pl. 13. figs. *a*, *b*; *P. eurotas* (Feld.), p. 85; *P. lycortas* (Feld.), p. 90; *P. ledebouria* (Esch.) ♀, p. 99; *P. alphenor* (Cram.) ♂, p. 101; *P. hipponous* (Feld.), p. 104, pl. 15. fig. *b*; *P. hystaspes* (Feld.), p. 105, pl. 15. fig. *c*; *P. araspes* (Feld.), p. 108, pl. 15. fig. *a*; *P. tydeus* (Feld.), p. 111, pl. 16. fig. *c*, and 17, figs. *a–c*; *P. telegonus* (Feld.), p. 116, pl. 19. figs. *a–c*; *P. montrouzieri* (Boisd.), p. 118; *P. blumei* (Boisd.), p. 122, pl. 18. fig. *a*; *P. dædalus* (Boisd., Feld.), p. 123, pl. 18. fig. *b*; *P. semperi* (Feld.), p. 131, pl. 20. figs. *a*, *b*; *P. ainæ* (Semp., Feld.), p. 132, pl. 20. fig. *c*; and *Parnassius apollo* (Linn.) aberr., p. 135, pl. 21. figs. *c*, *d*.

Papilio. The following known species of this genus are figured by Wallace (*l. c.*):—*P. noctis* (Hew.), pl. 5. fig. 1; *P. blumei* (Boisd.), pl. 6. fig. 4; *P. memnon* (Linn.), pl. 1. figs. 1 (♂) & 2–4 (♀ ♀); *P. pammon* (Linn.), pl. 2. figs. 1 (♂) & 3, 5, 6 (♀ ♀); *P. theseus* (Cram.), pl. 2. figs. 2, 4, 7 (♀ ♀); *P. armenus* (Guér.), pl. 3. figs. 2 (♂) & 1, 3, 4 (♀ ♀); *P. tydeus* (Feld.), pl. 4. figs. 2 & 3; *P. androcles* (Boisd.), pl. 7. fig. 5.

Papilio salvini (Bates) is figured by Hewitson, Exot. Butt. April 1865, *Papilio*, pl. 8. fig. 23.

Prittwitz (*l. c.* pp. 129–130) mentions eight species of *Papilio* as inhabitants of the foot of the Corcovado, and gives some account of the habits of *P. thoas*, *polydamas*, *dolicaon*, *tros*, *agavus*, and *torquatus*. Of the latter species all the specimens were destitute of the series of red points on the hind wings.

Moore gives notes on the occurrence and habits of the following known species of this group, from Lang's observations (Proc. Zool. Soc. 1865, pp. 486–488):—*Papilio dissimilis* (Linn.), *pammon* (Linn.), *polytes* (Linn.), *polyctor* (Boisd.), *erithonius* (Cram.), *machaon* (Linn.), *sarpedon* (Linn.), *cloanthus* (Westw.), and *protenor* (Cram.); *Parnassius jacquemonti* (Boisd.), *hardwickii* (Gray), and a species undetermined.

Edwards describes an hermaphrodite of *Papilio asterias* with right wings ♂, and left wings ♀. Proc. Ent. Soc. Phil. vol. iv. p. 390.

New species:—

Ornithoptera leda, Wallace, Linn. Trans. xxv. p. 39, from Celebes; *O. plato*, Wall. *l. c.* p. 110, from Timor.

Papilio. The following new Malayan species of this genus are described by Wallace (*l. c.*):—*P. leodamas*, p. 43, pl. 5. fig. 2 (=*P. polydorus*, B. M. Cat.), from New Guinea, Mysol, and Australia; *P. penelope*, p. 44, from New Guinea, &c.; *P. pericles*, p. 45, pl. 6. fig. 1, from Timor; *P. philippus*, p. 45, pl. 6. fig. 3 (=*peranthus*, var. A, Boisd.), from the Moluccas; *P. macedon*, p. 46, pl. 6. fig. 2 (=*peranthus*, var. B, Boisd.), from Celebes; *P. deiphontes*, p. 48 (=*deiphobus*, var. A, Boisd.), from Batchian, Gilolo, &c.; *P. pertinax*, p. 49, pl. 5. fig. 4, from Macassar; *P. albinus*, p. 49, pl. 5. fig. 5, from New Guinea; *P. hecuba*, p. 50, pl. 5. fig. 3, from Celebes; *P. epirus*, p. 54, from Aru; *P. pandion*, p. 56, from Dorey; *P. adrastus*, p. 57, pl. 4. fig. 1, from Banda; *P. gigon*, p. 59, pl. 7. fig. 6, from Celebes; *P. ænigma*, p. 60, pl. 7. fig. 3, from Malacca, Sumatra, and Borneo; *P. thule*, p. 63, pl. 7. fig. 1, from New Guinea; *P. miletus*, p. 65, pl. 7. fig. 2, from Celebes; *P. telephus*, p. 67, pl. 7. fig. 4, from Celebes. Wallace also describes *P. doubledayi*, *l. c.* p. 42, note, from Moulmein and Assam, and *P. chiron*, *l. c.* p. 66, note, from Assam and Sylhet.

The following new species of this genus are described by Felder (*l. c.*):—*P. pegasus*, p. 4, pl. 2. figs. *a*, *b* (=*Ornith. archidæus* [Gray], Feld.), from

New Guinea and Dorey; *P. lydius*, p. 9, pl. 3. figs. *a*, *b*, from Halmaheira; *P. hephæstus*, p. 16, from Celebes; *P. pluto*, p. 18, origin unknown; *P. cerberus*, p. 19, from Northern India; *P. eteocles*, p. 22, pl. 7. fig. *e*, origin unknown; *P. idalion*, p. 23, pl. 7. fig. *f*, origin unknown; *P. polyzelus*, p. 24, pl. 6. fig. *a*, from Mexico; *P. xenares*, p. 28, pl. 8. fig. *a* (=*P. erithalion*, Koll.), from Venezuela; *P. anacharsis*, p. 29, pl. 7. fig. *d*, origin unknown; *P. pisander*, p. 31, pl. 8. fig. *f*, origin unknown; *P. anaximander*, p. 32, pl. 8. fig. *b*, origin unknown; *P. phrynichus*, p. 33, pl. 8. fig. *e* (=*P. eurymas*, God. apud Koll.), from New Granada; *P. echion*, p. 34, pl. 8. fig. *d*, origin unknown; *P. polyphron*, ibid. pl. 8. fig. *c*, from Surinam; *P. alcamedes*, p. 36, pl. 7. fig. *c*, from New Granada?; *P. aristomenes*, p. 38, pl. 7. fig. *a*, from Mexico; *P. aristagoras*, p. 41, pl. 9, figs. *e*, *f*, from New Granada; *P. hephæstion*, p. 42, pl. 6. fig. *b*, from Mexico; *P. therodamas*, p. 45, pl. 10. fig. *e*, from New Granada; *P. athous*, p. 46, from South Brazil; *P. œdipus*, p. 47, from South Brazil; *P. deileon*, p. 48, from New Granada; *P. archesilaus*, p. 51, pl. 11. figs. *a*, *b*, from New Granada; *P. penthesilaus*, p. 52, pl. 11. fig. *c*, from Mexico; *P. timocrates*, p. 55, from Halmaheira; *P. pherecrates*, p. 56, from Dorey; *P. hermocrates*, p. 57, pl. 12. fig. *e*, from Luçon; *P. anaxilaus*, p. 59, from New Granada; *P. telamonides*, p. 60, from North America; *P. teredon*, p. 61, from Ceylon; *P. milon*, p. 62, from Celebes; *P. telephus*, p. 64, from Ceylon; *P. gordion*, p. 66, from Luçon; *P. pamphylus*, p. 67, from Celebes; *P. lycaon* (Boisd. MS.), p. 68, from Australia; *P. plisthenes*, p. 70, from Amboyna; *P. thrason*, p. 74, from Venezuela and New Granada; *P. theophron*, p. 76, from New Granada; *P. pandion* (Boisd. MS.), p. 79, from Mexico; *P. bachus*, p. 80, pl. 14. figs. *a*, *b*, from New Granada; *P. ascolius*, p. 82, from New Granada; *P. ctesias*, p. 86, pl. 14. figs. *c*, *d*, from New Granada; *P. clearchus*, p. 88, from New Granada; *P. philocleon*, p. 89, origin unknown; *P. helleri*, p. 91, pl. 13. figs. *c*, *d*, from Mexico; *P. albanus*, p. 93, from California; *P. pseudo-nireus*, p. 94, from North-eastern Africa; *P. meriones*, p. 95 (=*P. merope*, var., Boisd.), from Madagascar; *P. vollenhovii*, p. 97, pl. 10. fig. *f*, from the Malayan region?; *P. gigon* (Gray, MS.), p. 98, pl. 12. figs. *a*, *b*, from Celebes; *P. nicanor*, p. 102, pl. 9. figs. *c*, *d* (=*P. alphenor* ♂, Boisd.), from Batchian; *P. sataspes*, p. 106, pl. 15. fig. *c*, from Celebes; *P. prexaspes*, p. 107, pl. 15. fig. *d*, from Malacca; *P. adrastus*, p. 110, pl. 16. figs. *a*, *b* (=*P. erechtheus*, var., Blanch.), from Banda and New Guinea; *P. autolycus*, p. 114, from Dorey; *P. lorquinianus*, p. 119, from Halmaheira; *P. adamantius*, p. 121, pl. 18. fig. *e* (=*P. peranthus*, var. C, Boisd.), from Celebes; *P. karna*, p. 125, from Java; *P. deiphontes*, p. 126 (=*P. deiphobus*, var. A, Boisd.), from Ternate; *P. deipylus*, p. 128, from New Guinea; and *P. alcmenor*, p. 129, pl. 20. fig. *d*, from Northern India.

Papilio ucalegon, Hewits. Exot. Butt. Jan. 1865, *Papilio*, pl. 7. fig. 19, from Old Calabar; *P. veiovis*, Hewits. *l. c.* fig. 20, from Menado; *P. porthaon*, Hewits. *l. c.* figs. 21 & 22, from the Zambesi; *P. zaleucis*, Hewits. *l. c.* April 1865, *Papilio*, pl. 8. figs. 24 & 25, from Burmah.—*P. govindra*, Moore, Proc. Zool. Soc. 1865, p. 486=*P. agestor* (Hügel nec Gray), from the North-west Himalayas.—*P. virgatus*, Butler, ibid., p. 430, pl. 25. fig. 1, from Syria.—*P. grotei*, Blake, Proc. Ent. Soc. Phil. vol. iv. p. 313 (=*P. columbus*, Gundl. nec Hewits.).

Parnassius bremeri, Felder, *l. c.* p. 133, pl. 21. figs. *e–g*, from the Amur.

Leptocircus curtius, Wallace, *l. c.* p. 68, from Celebes.—*L. eunius*, Felder, *l. c.* p. 2, pl. 21. fig. *b*, from Celebes.

Pierides.

Werneburg (Stett. ent. Zeit. 1865, pp. 272–288) has subjected the reputed European species of *Colias* to an examination, which leads him to reduce the number of species to six, of which the remainder are to be regarded as aberrant forms or varieties. His results, explained at considerable length in the paper, are shown in a table. The species recognized by him are *C. hyale* (L.), *C. edusa* (Fabr.), *C. myrmidone* (Esp.), *C. erate* (Esp.), *C. chrysotheme* (Esp.), and *C. palæno* (L.).

Prittwitz (Stett. ent. Zeit. 1865, pp. 130–135) mentions as inhabitants of the Corcovado 11 species of this group, 3 of which are described as new. Particular notice as to habits or variation is taken of *Pieris pylotis*, *pyrrha*, and *ilaire*, and *Terias elathea*.

Moore (Proc. Zool. Soc. 1865, pp. 489–493) publishes notes on the habits of the following species of this group from Lang's observations:—*Aporia agathon* (Gray) and *soracta* (Boisd.), *Pieris daplidice*, (Linn.), *mesentina* (Cram.), *nipalensis* (Gray), *gliciria* (Cram.), *sanaca* (Moore), *œnippe* (Cram.), and *marianne* (Cram.), *Colias edusa*, var. *myrmidone*, *hyale* (Linn.), and *neriene* (Fisch.), *Terias hecabe* (Linn.), *sari* (Horsf.), and *lacta* (Boisd.), *Gonepteryx nipalensis* (Dbld.), *Callidryas pyranthe* (Linn.) and *hilaria* (Cram.).

Colias heldreichi (Staud.) is described and figured by Millière, Ann. Soc. Linn. Lyon, tome x. p. 207, pl. 40. figs. 1–4.

The following known species is described and figured by Bremer:—*Pieris hippia* (Brem.), *l. c.* p. 7, pl. 3. fig. 1.

Gonepteryx cleopatra. The distinctness of this species is maintained by Timins, Proc. Ent. Soc. 1865, p. 103.

A variety of *Colias edusa* is noticed by Bond. Proc. Ent. Soc. 1865, p. 85.

Lederer (Wien. ent. Mon. Bd. viii. p. 165, taf. 3. figs. 1 & 2) describes and figures a variety (*caucasica*) of *Thais cerisyi* from Kutais. Lederer also mentions the occurrence of orange-yellow females of *Colias aurosina* in the same locality (*l. c.* p. 166).

Reakirt describes numerous varieties of *Colias philodice* (God.). Proc. Ent. Soc. Phil. vol. iv. pp. 218–222.

Bond describes two varieties of *Gonepteryx rhamni*, each exhibiting traces of the coloration of the opposite sex. Proc. Ent. Soc. 1865, p. 111.

Thorncroft (Entomologist, ii. pp. 289–290) records his having seen numerous individuals of *Pieris napi* and *brassicæ* coming to land at Shoreham, and observed them settling on the surface of the sea with outspread wings and rising again with facility.

Weymer (Stett. ent. Zeit. 1865, p. 111) remarks that *Colias palæno* is seen at Aix-la-Chapelle in June.

Leucophasia sinapis is included in the list of Lepidoptera new to the Dutch fauna. Tijdschr. voor Entom. 1865, p. 34.

The larva of *Callidryas phillipina* is described by De la Chaumette, Ent. M. Mag. ii. p. 36.

The Entomologist (vol. ii.) contains notes on the habits of *Gonepteryx*

rhamni, by Pristo, p. 148; and on the abundance of *Colias edusa* in Cornwall, by S. Clogg, pp. 338, 339.

The habits of the three common White Butterflies are described by Taschenberg, Naturg. wirbell. Thiere, pp. 89–94, and the characters of *Pieris brassicæ*, *l. c.* p. 95, pl. 3. fig. 1 (pupa); *P. rapæ*, *l. c.* p. 96, pl. 3. fig. 2 (pupa); and *P. napi*, *l. c.* p. 97.

New species:—

Leptalis kollari (Boisd. MS.), Reakirt, Proc. Ent. Soc. Phil. vol. iv. p. 216, from Bahia.

Pieris kalora, Moore, Proc. Zool. Soc. 1865, p. 489, pl. 31. fig. 15, *P. ajaka*, Moore, *l. c.* p. 490, pl. 31. fig. 16, and *P. hira*, Moore, ibid., pl. 31. fig. 17, from the North-west Himalayas.

Pieris glauce, Butler, Proc. Zool. Soc. 1865, p. 431, pl. 25. fig. 2, from Borneo.—*P. pactolicus*, Butler, *l. c.* p. 455, pl. 26. fig. 1, from Bogota; *P. cruentata*, Butl. ibid., pl. 26. fig. 2, from Mysol; *P. vecticlusa*, Butl. *l. c.* p. 456, pl. 26. fig. 3, habitat unknown; and *P. avivolans*, Butl. *l. c.* p. 457, pl. 26. fig. 4, from Mexico.

Anthocharis daphalis, Moore, *l. c.* p. 491, pl. 31. fig. 14, Himalayas.

Anthocharis leo, Butler, Ann. & Mag. Nat. Hist. 3rd ser. xvi. p. 397, and *Anthocharis phlegyas*, Butler, Proc. Zool. Soc. 1865, p. 431, pl. 25. fig. 3, from the White Nile.

Gonepteryx gobrias (Hew. MS.), Butler, *l. c.* p. 432, pl. 25. fig. 4, from Borneo; *G. urania*, Butler, *l. c.* p. 458, pl. 26. fig. 5, from Northern India.—*G. zaneka*, Moore, *l. c.* p. 493, pl. 31. fig. 18, from the North-west Himalayas.

Callidryas bracteolata, Butler, *l. c.* p. 458, pl. 26. fig. 6, from Brazil.

Colias shipkee, Moore, *l. c.* p. 492, pl. 31. fig. 13, from the North-west Himalayas.—*C. scudderi*, Reakirt, *l. c.* p. 217, from the Colorado Territory.

Lucidia exigua, Prittwitz, Stett. ent. Zeit. 1865, p. 133, and *L. pygmæa*, Prittwitz, ibid., from the Corcovado.

Terias perimede, Prittwitz, *l. c.* p. 134, from the Corcovado.

Danaides.

Lang's notes on the following species observed by him in the Himalayas are published by Moore (Proc. Zool. Soc. 1865, pp. 493–494):—*Euploæa core* (Cram.) and *midamus* (Linn.), *Danais chrysippus* (Linn.), *plexippus* (Linn.), *limniacæ* (Cram.), *melissa* (Cram.), and *tytia* (Gray).

Danais evippus is recorded by Prittwitz (*l. c.* p. 135) as abundant at Rio.

Danais œnone, sp. n., Butler, Proc. Zool. Soc. 1865, p. 433, pl. 25. fig. 6, from the Philippine Islands; *D. inuncta*, sp. n., Butler, *l. c.* p. 481, from Waigiou; *D. mariana*, sp. n., Butler, Ann. & Mag. Nat. Hist. 3rd ser. xvi. p. 397, from New Caledonia.

Heliconides.

Prittwitz (*l. c.* pp. 136–137) enumerates ten species of this group as inhabiting the Corcovado and Rio—namely *Heliconia* 3, *Lycorea* 1, *Ithomyia* 5 (1 new), and *Mechanitis* 1.

Ithomyia hymenæa, sp. n., Prittwitz, *l. c.* p. 136, from the Corcovado.

Heliconia vulcanus, sp. n., Butler, Proc. Zool. Soc. 1865, p. 433, pl. 25. fig. 5, from Demerara and Panama.

Acræides.

Acræa thalia is recorded by Prittwitz (*l. c.* p. 137), from the Corcovado.

Acræa anemosa, sp. n., Hewits. Exot. Butt. July 1865, *Acræa*, pl. 3. figs. 14 & 15, and *A. acrita*, Hewits. *l. c.* fig. 18, from the Zambesi; *A. admatha*, Hewits. *l. c.* figs. 16 & 17, from Old Calabar; and *A. acara*, Hewits. *l. c.* figs. 19 & 20, from Natal and the White Nile.

Nymphalides.

G. Dorfmeister (Mittheil. naturw. Ver. für Steiermark, Heft ii. 1864, pp.) has experimented upon the development of two forms of the genus *Vanessa*, described as distinct species under the names of *V. prorsa* and *V. levana*. The latter appears in spring, after remaining in the pupa state about six months; the former is a summer insect, the pupa state of which lasts only a few days. The occurrence of intermediate forms has led some entomologists to believe that these *Vanessæ* form only a single species; and the author, by subjecting larvæ and pupæ to changes of temperature, has succeeded in producing a series of such forms, proving the identity of the two supposed species. In these and some other Lepidoptera (*Vanessa io* and *urticæ*, *Euprepia caja*) a low temperature seems to produce a darker or less lively coloration, and a high one to cause the colours to become more brilliant.

The following known species are described and figured by Bremer (*l. c.*):—*Melitæa baicalensis* (Brem.), p. 13, pl. 1. fig. 6; *M. britomartis* (Asm.), var. *plotina* (Brem.), p. 14, pl. 3. fig. 2; *M. arcesia* (Brem.), p. 15, pl. 1. fig. 7; *Araschina burejana* (Brem.), p. 15, pl. 1. fig. 8; *Neptis raddei* (Brem.), p. 18, pl. 1. fig. 9.

Argynnis diana. Notes on the sexual differences of this and other species of *Argynnis*, with explanatory remarks upon them in accordance with the Darwinian hypothesis, are published by Bates in Proc. Ent. Soc. Phil. vol. iv. pp. 204–207.

Nowicki (Verh. zool.-bot. Ges. in Wien, xv. p. 176) describes a variety of *Argynnis selene*.

Heterochroa celerio (Bates) = *Papilio iphicla* (Cram. *nec* Linn.) is figured by Bates, Journ. of Ent. ii. pl. 13*. fig. 4.

Butler describes and figures *Romalæosoma medon* (Lin.). Proc. Zool. Soc. 1865, p. 672. fig. 6.

Charaxes. Butler has published (Proc. Zool. Soc. 1865, pp. 623–639) a synoptic list of the known species of this genus, founded chiefly upon those contained in the collections of the British Museum. The total number of species cited by him is 68; *C. rayi* (Van der Hoev.) is said to be identical with the South American *Megistanus baotus* (Boisd.). Of the previously described species the synonymy is indicated; the number of species described as new is nine. *C.* (*Nymphalis*) *baya* (Moore) is figured, pl. 37. fig. 5.

Paphia glauce (Bates, Felder) is figured by Bates, *l. c.* pl. 13*. fig. 2.

Trimen states (Proc. Ent. Soc. 1865, p. 61) that *Charaxes argynnides* (Westw.) = *Nymphalis jahlusa* (Trimen).

Aterica meleagris and *stictica* are specifically identical, according to Butler. Ent. M. Mag. ii. p. 139.

A. Wilson adduces reasons for regarding *Vanessa ichnusa* (Bon.) as distinct from *V. urticæ*. Ent. M. Mag. i. p. 265. To this Kirby replies, *l. c.* p. 281.

Bates (Journ. of Entom. ii. pp. 311–346) has concluded his account of the *Nymphalinæ* of the valley of the Amazons. As stated in the 'Record' for 1864 (p. 402), he includes the *Eurytilides* and *Morphides* in the group; but the total number of species recorded is 181, instead of 160. The number referred to in the present memoir is consequently 108.

Behr (Proc. Calif. Acad. vol. iii. pp. 123–127) refers to various species of this group inhabiting California. Among these are *Grapta c-album* and *Grapta comma*, the former identical with European specimens, *l. c.* p. 123; *Vanessa californica* (Boisd.), *l. c.* pp. 123 & 124, the habits and especially the migrations of which are described; *V. milbertii* (God.) and *V. antiopa* (Linn.), *l. c.* p. 125; *Pyrameis atalanta*, *carye*, and *cardui*, *l. c.* p. 125, and *P. hunteri* (Fab.), *l. c.* p. 126; *Junonia cœnia* (Boisd. & Lec.), *l. c.* p. 126; and *Limenitis lorquini* (Boisd.) and *eulalia* (Dbld.), *l. c.* p. 127.

Prittwitz (*l. c.* pp. 135–143) enumerates 35 species (1 new) of this group in his Fauna of the Corcovado, and gives notes of more or less value on the following:—*Ageronia feronia* and *amphinome*, *Colœnis julia* and *dido*, *Agraulis juno* and *vanillæ*, *Melitæa liriope*, *Eurema lethe* and *paullus*, *Junonia cœnia*, *Anarthia jatrophæ* and *amalthæa*, *Myscelia orsis* and *anna*, *Eubagis postverta*, *Callicore clymene*, *Gynæcia dirce*, *Timetes themistocles*, *Heterochroa plesaura*, *Prepona amphimachus*, *Aganisthos orion*, *Hypna clytemnestra*.

Notes on the habits and mode of occurrence of the following species observed by Lang in the North-west Himalayas are published by Moore (Proc. Zool. Soc. 1865, pp. 494–498):—*Vanessa charonia* (Drury), *xanthomelas* (Den. & Schiff.), and *kaschmirensis* (Koll.), *Pyrameis callirhoë* (Hübn.) and *cardui* (Linn.), *Junonia lemonias* (Linn.), *œnone* (Linn.), and *orithyia* (Linn.), *Precis iphita* (Cram.) and *hara* (Moore), *Atella phalanta* (Drury), *Laogona hyppocla* (Cram.), *Argynnis niphe* (Linn.), *issæa* (Gray), *childreni* (Gray), and *kamala* (Moore), *Cyrestis thyodamas* (Boisd.), *Neptis aceris* (Esp.), *nandina* (Moore), and *zaida* (Dbld.), *Athyma leucothoë* (Linn.) and *opalina* (Koll.), *Limenitis ligyes* (Hewits.)=*L. trivena* (Moore), *Hestina persimilis* (Westw.), *Castalia dichroa* (Koll.), *Adolias garuda* (Moore) and *doubledayi* (Gray), and *Nymphalis athamas* (Drury).

Pyrameis atalanta. Girard records the occurrence of a variety of this species with two white spots on the red band of the anterior wings. Bull. Soc. Ent. Fr. 1865, p. l.

Vanessa antiopa. Specimens taken at Cannes, in April 1865, had the borders of the wings white, though quite fresh. The insect appears to be double-brooded there. Timins, Proc. Ent. Soc. 1865, p. 102.

Vanessa urticæ is said, by H. Doubleday, to produce two broods in the year. Entomologist, ii. p. 294.

A variety of *Vanessa urticæ* is noticed by Bond. Proc. Ent. Soc. 1865, p. 85.

A variety of *Apatura iris* destitute of white markings is noticed by T. W. Wood. Proc. Ent. Soc. 1865, p. 85.

Fallou describes a variety of *Melitæa parthenie* (Borkh.) from Zermatt,

which he thinks may be the *M. varia* (Mey.-Dür). Ann. Soc. Ent. Fr. 4e sér. tome v. p. 103.

Guenée has some remarks on the habits of *Melitæa parthenoides* (Kef.). Ann. Soc. Ent. Fr. 4e sér. tome v. p. 88.

Lederer (Wien. ent. Mon. Bd. viii. p. 166, taf. 3. figs. 3 & 4) describes and figures a variety of *Melitæa didyma* from Kutais, and states that he has a variety of *M. trivia* from Grusia.

Melanargia caucasica (Nordm.)=*clotho*, according to Lederer (*l. c.* p. 167).

Ageronia. Bates (Journ. of Ent. ii. p. 311) describes the habits of the larvæ of this genus, and states that the pupæ are simply suspended without any girdle.

Didonis. Bates (*l. c.* p. 315) remarks upon the character of this genus, the true place of which he thinks to be in the immediate vicinity of *Ageronia*. The same observation is applied to *Olina* (*l. c.* p. 316), *Cystineura*, and *Pyrrhogyra* (*l. c.* p. 317).

The Entomologist (vol. ii.) contains notes on the habits of the following species:—*Cynthia cardui*, by J. Pristo, pp. 149, 305; *Argynnis aglia*, by Tuely, p. 294; *A. aglaia*, *adippe*, and *paphia*, by Bignell, ibid.

Newman publishes life-histories of the following species:—*Melitæa athalia*, Entom. ii. pp. 243–244; *M. artemis*, Zool. 1865, pp. 9814–9816; and *Vanessa cardui*, *l. c.* pp. 9825–9826.

F. Smith records the occurrence of great numbers of *Cynthia cardui* in company with *Vanessa atalanta* on ivy-blossom in Devonshire, in October 1865. A specimen of *V. antiopa* was also seen. Ent. M. Mag. ii. pp. 160–161.

New species:—

Ageronia alicia, Bates, Journ. of Ent. ii. p. 312, pl. 13*. fig. 1, *A. belladonna*, Bates, *l. c.* p. 313, pl. 13*. fig. 3, *A. velutina*, Bates, *l. c.* p. 315, from the Amazons.

Argynnis jainadeva, Moore, Proc. Zool. Soc. 1865, p. 495, pl. 30. fig. 1, Himalayas.—*Argynnis ella*, Bremer, *l. c.* p. 94, pl. 8. fig. 1, East Siberia.

Melitæa intermedia, Bremer, *l. c.* p. 12=*M. maturna*, var. *intermedia* (Ménétr.), from the Amur.—*Melitæa sindura*, Moore, *l. c.* p. 496, pl. 30. fig. 2, from the North-west Himalayas.—*Melitæa picta*, Edwards, Proc. Ent. Soc. Phil. vol. iv. p. 201, from Nebraska. (This species is said to be figured in pl. 1. fig. 1; but this figure represents an *Hesperia*, named *H. nemoris* at foot of plate 1.)

Eubagis. Of this genus Bates (*l. c.*) describes the following new species from the valley of the Amazons:—*E. leucothea*, p. 320; *E. chryseis*, p. 322, pl. 14. fig. 2; *E. vicaria*, p. 323; *E. sara*, p. 324, pl. 14. fig. 1; *E. glauce*, p. 324; *E. paulina*, p. 325, pl. 14. fig. 3; *E. perpetua*, p. 326, pl. 14. fig. 4 (5 in text); and *E. zenobia*, p. 326, pl. 14. fig. 5.

Pyrrhogyra cuparina, Bates, *l. c.* p. 318, and *P. amphiro*, Bates, *l. c.* p. 319, from the Amazons.

Cyrestis achates, Butler, Proc. Zool. Soc. 1865, p. 481, from Mysol; and *C. sericeus*, Butl. *l. c.* p. 482, from Borneo.

Victorina aphrodite, Butler, Proc. Zool. Soc. 1865, p. 483, from Mexico.

Timetes heraldicus, Bates, *l. c.* p. 328, and *T. egina*, Bates, *l. c.* p. 329, pl. 10. fig. 1, from the Amazons.

Limenitis proserpina, Edwards, Proc. Ent. Soc. Phil. vol. v. p. 148, from the Catskill Mountains.

Heterochroa paraëna, Bates, *l. c.* p. 331, from Pará; *H. basiloïdes* (Boisd. MS.), Bates, *l. c.* p. 332, note, from Mexico.—*Heterochroa californica*, Butler, *l. c.* p. 485, from California; *H. lydia*, Butler, Ann. & Mag. Nat. Hist. 3rd ser. xvi. p. 398, from Honduras.—*H. salmoneus*, Butler, Proc. Zool. Soc. 1865, p. 667. fig. 1, Venezuela; *H. boreas*, Butl. p. 668, fig. 2, Bolivia; *H. sichæus*, Butl. p. 669, fig. 3, Bogota.

Romaleosoma phaëthusa, Butler, *l. c.* p. 670, fig. 4, and *R. agnes*, Butl. *l. c.* p. 672, Ashantee; *R. gausape*, Butl. p. 671. fig. 5, West Africa.

Diadema mena (Moore, MS.), Butler, *l. c.* p. 398, from North India.

Diadema dolomena, Hewitson, Exot. Butt. Jan. 1865, *Diad.* pl. 2. fig. 4, from Old Calabar; *D. imerina*, Hewits. *l. c.* figs. 5 & 6, from Madagascar; and *D. dinarcha*, Hewits. *l. c.* fig. 7, from Old Calabar.

Romalæosoma ruspina, Hewits. *l. c.* April 1865, *Rom.* pl. 2. figs. 6 & 7, from Old Calabar; *R. xypete*, Hewits. *l. c.* figs. 8–10, origin not stated; *R. adonina*, Hewits. *l. c.* Oct. 1865, *Rom.* pl. 3. figs. 11 & 12, and *R. cutleri*, Hewits. *l. c.* figs. 14–16, from Old Calabar.

Euryphene phranza, Hewits. Exot. Butt. Jan. 1865, *Euryph.* pl. 2. figs. 7 & 8, *E. phantasia*, Hewits. *l. c.* figs. 9–11, *E. milnei*, Hewits. *l. c.* pl. 3. figs. 12 & 13, *E. plantilla*, Hewits. *l. c.* figs. 14 & 15, *E. aramis*, Hewits. ibid. Oct. 1865, pl. 4. figs. 16 & 17, and *E. doralice*, Hewits. *l. c.* figs. 18–20, from Old Calabar.

Aterica atossa, Hewits. *l. c.* pl. 3. figs. 1 & 2, from Old Calabar.

Charaxes. Butler (Proc. Zool. Soc. 1865) describes *C. saturnus*, p. 624, pl. 36. fig. 1, from South Africa; *C. phœbus*, p. 625, pl. 36. fig. 2, from Abyssinia; *C. cynthia*, p. 626, pl. 36. fig. 3, from Ashantee; *C. viola*, p. 627, pl. 36. fig. 4, from West Africa; *C. smaragdalis*, p. 630, pl. 36. fig. 5, from Congo; *C. latona*, p. 631, pl. 37. fig. 1, and *C. galaxia*, p. 633, pl. 37. fig. 2, from Timor; *C. hebe*, p. 634, pl. 37. fig. 3, from Sumatra; *C. affinis*, p. 636, pl. 37. fig. 4, from Celebes.

Prepona eugenes, Bates, *l. c.* p. 335, from the Amazons; and *P. gnorima*, Bates, *l. c.* p. 336, note, from New Granada.

Apatura selina, Bates, *l. c.* p. 334, from the Amazons.

Paphia porphyrio, Bates, *l. c.* p. 340, *P. erythema*, Bates, *l. c.* p. 342, from the Amazons.—*Paphia stheno*, Prittwitz, Stett. ent. Zeit. 1865, p. 142 (=*philumena*, Dbld.?), from the Corcovado.

Zeuxidia amethystus, Butler, Proc. Zool. Soc. 1865, p. 485, from Sumatra.

Olina mariana, Bates, *l. c.* p. 316, from the Amazons.

Cystineura locantina, Bates, *l. c.* p. 317, from the Amazons.

Pronophila hilara, Bates, Ent. Mag. i. p. 178, *P. napæa*, Bates, *l. c.* p. 179 and *P. dejecta*, Bates, ibid., from Guatemala.

Taygetis satyrina, Bates, *l. c.* p. 179, from Guatemala.

Antirrhæa casta, Bates, *l. c.* p. 179, from Guatemala.

Hetæra macleannania, Bates, *l. c.* p. 180, from Panama.

Euptychia sericeella and *E. glaucina*, Bates, *l. c.* p. 202, Guatemala.

Mesosemia gaudiolum, Bates, *l. c.* p. 202, and *M. vestalis*, Bates, p. 203, from Guatemala.

Pheles alicia, Bates, *l. c.* p. 203, from Guatemala.

Mesene rubella, Bates, *l. c.* p. 204, from Panama; *M. croceella*, Bates, ibid., from Guatemala.

Lemonias domina, Bates, *l. c.* p. 204, from Panama.

Nymphidium olinda, Bates, *l. c.* p. 204, from Panama.

Morphides.

Prittwitz (*l. c.* p. 143, and pp. 309–310) enumerates eight species of this group as inhabiting the Corcovado district, and gives notes on the following species:—*Morpho laertes* and *achilles*, *Caligo idomeneus* and *inachis*, *Dasyophthalma creusa*, *Opsiphanes syme* and *cassiæ*, and *Dynastor darius*.

Morpho neoptolemus, sp. n., Bates, Journ. of Ent. ii. p. 345, and *M. uraneis*, Bates, *l. c.* p. 346, from the Amazons.

Morpho thetis, sp. n., Butler, Ent. M. Mag. ii. p. 81, from Para.

Brassolides.

Prittwitz (*l. c.* p. 310) mentions *Brassolis sophoræ* as an inhabitant of the district of Rio, and gives some particulars as to its habits.

Satyrides.

Scudder has published a revision of the North American species of the genus *Chionobas* (Proc. Ent. Soc. Phil. vol. v. pp. 1–28). He enumerates and describes seven species, of which he gives the synonymy as follows:—

C. jutta (Möschl.), *l. c.* p. 3 = *C. balder* (Boisd.) = *Eumenis balderi* (Hübn.); *C. chryxus* (Doubl.); *C. calais*, *l. c.* p. 7 = *C. taygete* (Edw.) = *Œneis tayget* ♀ (Hübn.); *C. bore* (Schiödte), *l. c.* p. 10 = *C. bootes* (Boisd.) = *C. taygete* (Hübn.); *C. æno* (Boisd. Ic.), *l. c.* p. 13 = *C. also* (Boisd.) = *C. crambis* (Doubl.); *C. semidea*, *l. c.* p. 20 = *Hipparchia semidea* (Say) = *C. also* (Boisd. Ic.) = *Satyrus eritiosa* (Harr.); and *C. nevadensis* (Boisd., Behr).

Speyer (Stett. ent. Zeit. 1865, pp. 241–248) states that *Erebia reichlini* (Herr.-Sch.) is specifically identical with *E. nerine* (Freyer), and describes the different forms of the species. He describes one variety under the name of *Erebia morula* (*l. c.* pp. 245–248). The same author also refers *Erebia tripes* to *E. gorges* as a variety, and describes its characters (*l. c.* pp. 248–249).

Hewitson remarks on sexual peculiarities and varieties of the following species of this subfamily (Proc. Linn. Soc. viii. pp. 143–148):—*Debis europa* (Fab.), *Cyllo amabilis* (Boisd.), *C. constantia* (Cram.), *C. leda* (Linn.), *Erites madura* (Horsf.), *Mycalesis dorica* (Boisd.), *M. mehadeva* (Boisd.), *M. asophis* (Hew.), *M. phidon* (Hew.), *M. dexamenus* (Hew.), *M. dora* (Hew.) = *deianira* (Hew.), p. 146, *M. dinon* (Hew.), *M. diniche* (Hew.), *M. manipa* (Boisd.), *M. lesique* (Cram.), *M. mineus* (Linn.), *M. megamede* (Hew.), and *Yphthima sepyra* (Hew.). *Cyllo leda* includes as vars. numerous species described by Westwood, Horsfield and Moore, and Felder; *Mycalesis daidis* (Hew.) = *M. manipa* (Boisd.); *M. lalassis* (Hew.) probably = *M. mineus*, var.

Arge clotho (Hübn.), var. *cleanthe* (Boisd.), is described and figured with its transformations by Millière, Iconogr. et Descr. de Chen. et Lépid. tome ii.

pp. 90–92, pl. 62. figs. 1–3; also *Arge lachesis* (Hübn.) with its larva, *l. c.* pp. 92–93, pl. 62. figs. 4 & 5.

Lasiommata maackii (Brem.) is described and figured by Bremer, *l. c.* p. 22, pl. 3. fig. 3, as is *Erebia ero* (Brem.), p. 20, pl. 2. fig. 2.

Yphthima. In his monographic revision of this genus (Ent. Trans. 3rd ser. vol. ii.) Hewitson enumerates 24 species, 8 of which are described as new. The following known species are referred by him to the genus, characterized in greater or less detail and partly figured :—

Hipparchia asterope (Klug) = *Y. norma* (Westw.), p. 283; *Pap. arctous* (Fab.), ibid.; *Hipparchia philomela* (Hübn.), p. 284; *Satyrus nareda* (Koll.), ibid., pl. 17. figs. 6 & 7; *S. chenu* (Guér.), p. 285; *Hipparchia stellera* (Eschsch.) = *Yphthima sempera* (Feld.), p. 285; *Papilio baldus* (Fab.) = *P. lara* (Don.), p. 286; *P. lysandra* (Cram.), p. 287; *Yphthima amphithea* (Ménétr.), p. 289; *Y. pandocus* (Moore), p. 290, pl. 18. fig. 12; *Satyrus motschulskiji* (Brem.), p. 290; *Yphthima sakra* (Moore), ibid., pl. 18. fig. 18; *Y. hyagriva* (Moore), p. 291, pl. 18. fig. 11; *Y. narasingha* (Moore), ibid., fig. 19; *Satyrus aphnius* (God.), p. 292, pl. 18. figs. 8 & 9; and *S. tamatavæ* (Boisd.), p. 293.

Satyrus egeria (Linn.). A peculiar variety of this species is figured by Lodeesen, Tijdschr. voor Entom. 1865, pl. 2. fig. 1.

A variety (*caucasica*) of *Satyrus pelopea*, from Grusia, is described and figured by Lederer, Wien. ent. Mon. Bd. viii. p. 168, taf. 3. fig. 5.

Satyrus megæra. A dwarf specimen of this species, 8½ lines in expanse, is recorded by Albert Müller, Ent. M. Mag. ii. p. 117.

Behr (Proc. Calif. Acad. Nat. Sci. vol. iii. pp. 163–166) enumerates the species of this subfamily found in California, and remarks upon the comparative distribution of the group in Europe and California. The known species referred to are *Chionobas nevadensis* (Boisd. MS.), *Satyrus sthenele* (Boisd.), *sylvestris* (Edw.), *ariadne* (Boisd.), and *Cœnonympha galactina* (Boisd.). A new species of *Satyrus* is characterized. Thus only three genera are represented in California, and the species are very few, whilst Europe possesses seven genera with numerous species.

Notes on the habits and mode of occurrence of the following species of this group as observed by Lang in the North-west Himalayas are published by Moore (Proc. Zool. Soc. 1865, pp. 498–502) :—*Debis europa* (Fab.), *rohria* (Fab.), and *verma* (Koll.), *Enope pulaha* (Moore), *Lasiommata schakra* (Koll.) and *satricus* (Dbld.), *Satyrus swaha* (Koll.), *saraswati* (Koll.), and *avatara* (Moore), *Hipparchia parysatis* (Koll.), *Erebia annada* (Moore) and *scanda* (Koll.), *Yphthima sakra* (Moore), and *Libythea myrrha* (God.).

Prittwitz (*l. c.* pp. 310–311) records seven species of this group (one new) as occurring at the Corcovado. The known species are *Hæteran ereis*, *Euptychia ocyrrhoë*, *elueria*, and *lyses*, and *Neonympha camerta* and *sosybius*.

Erebia medea. An hermaphrodite form of this species, having the left side male and the right female, but the abdomen almost as in the normal ♂, is described by Rogenhofer, Verh. zool.-bot. Ges. in Wien, xv. p. 513.

Pristo has notes on the habits of *Arge galathea* in Entomologist, ii. p. 148.

Newman publishes life-histories of *Satyrus janira*, Entom. ii. pp. 244–246; *Arge galathea*, *l. c.* pp. 263–264; and *Chortobius davus*, Zool. pp. 9745–46.

Weymer (Stett. ent. Zeit. 1865, pp. 110–111) remarks on the transformations of *Arge galathea*, and especially on the occurrence of a green variety of the larva.

Cœnonympha davus. Of this species Zeller describes the transformations and the habits of the perfect insect as found in the vicinity of Meseritz, and remarks upon some variations in the coloration of the wings. Stett. ent. Zeit. 1865, pp. 29–30; translated by Kirby, Ent. M. Mag. ii. pp. 64–65.—The larva of *C. davus* is also described by Buckler, Ent. M. Mag. ii. pp. 65–66, and by Stainton, *l. c.* p. 17.—The food of the larva is stated by Stainton to be *Rhynchospora alba*. Ent. M. Mag. ii. p. 44.

On the characters of *Cœnonympha typhon* and *C. davus*, see Wilson, Ent. M. Mag. i. p. 216.

New genera and species :—

Cœnyra, g. n., Hewitson, Ent. Trans. 3rd ser. vol. ii. p. 281. Allied to *Yphthima* and *Cœnonympha*; palpi long, straight, compressed, clothed with hair, 3rd joint long and nearly naked; costal vein of fore wing swollen at base, subcostal with four equidistant branches; hind wing round. Sp. *Yphthima hebe* (Trimen) = *Cœnyra hebe* (Hew. *l. c.* p. 281, pl. 17. figs. 1 & 2, *C. corycia*).

Xois, g. n., Hewitson, *l. c.* p. 282. Allied to preceding; palpi short, densely clothed with long hair, last joint short, naked; fore wings with costal vein swollen at base, subcostal with four branches, the first before end of cell, the rest equidistant. Sp. *Xois sesara*, sp. n., Hew. *l. c.* p. 282, pl. 17. figs. 3 & 4, from Fiji.

Satyrus ridingsii, Edwards, Proc. Ent. Soc. Phil. vol. iv. p. 201, from the Colorado Territory.

Neonympha poltys, Prittwitz, Stett. ent. Zeit. 1865, p. 311, Corcovado.

Lasiommata menava, Moore, Proc. Zool. Soc. 1865, p. 499, pl. 30. fig. 3, and *L. baldiva*, Moore, ibid., pl. 30. fig. 4, Himalayas.

Erebia nirmala, Moore, *l. c.* p. 501, and *E. kalinda*, Moore, ibid., pl. 30. fig. 5, from the North-western Himalayas.—*Erebia hewitsonii*, Lederer, Wien. ent. Mon. Bd. viii. p. 167, taf. 3. figs. 6 & 7, from Imeretia.—*Erebia wanga*, Bremer, *l. c.* p. 20, pl. 2. fig. 1, from the Amur = *E. tristis* (Brem. olim).

Epinephile cheena, Moore, *l. c.* p. 501, pl. 30. fig. 6, and *E. davendra*, Moore, *l. c.* p. 502, pl. 30. fig. 7, from the Himalayas and Thibet.

Idiomorphus italus, Hewits. Exot. Butt. Oct. 1865, *Idiom.* figs. 1–3, and *I. iccius*, Hewits. *l. c.* figs. 4 & 5, from Old Calabar.

Yphthima. Hewitson (Ent. Trans. 3rd ser. vol. ii.) describes the following as new species :—*Y. arctoides*, p. 284 = *Pap. arctous* (Don.), *Y. inica*, *l. c.* p. 284, pl. 17. fig. 5, from the East Indies; *Y. itonia*, p. 287, pl. 18. fig. 13, from the White Nile; *Y. fasciata*, ibid., from Sarawak and Sumatra; *Y. ceylonica*, p. 288, pl. 18. figs. 14 & 15, from Ceylon; *Y. loryma*, p. 289, pl. 18. figs 16 & 17, from Macassar and Celebes; *Y. methora*, p. 291, pl. 18. figs. 20 & 21, from North India; and *Y. sepyra*, p. 292, from Gilolo and Batchian.

Erycinides.

The following species are noticed particularly by Hewitson (Proc. Linn. Soc. viii. pp. 148–149) :—*Zemeros flegyas* (Cram.); *Sospita statira* (Hew.),

pp. 90–92, pl. 62. figs. 1–3; also *Arge lachesis* (Hübn.) with its larva, *l. c.* pp. 92–93, pl. 62. figs. 4 & 5.

Lasiommata maackii (Brem.) is described and figured by Bremer, *l. c.* p. 22, pl. 3. fig. 3, as is *Erebia ero* (Brem.), p. 20, pl. 2. fig. 2.

Yphthima. In his monographic revision of this genus (Ent. Trans. 3rd ser. vol. ii.) Hewitson enumerates 24 species, 8 of which are described as new. The following known species are referred by him to the genus, characterized in greater or less detail and partly figured:—

Hipparchia asterope (Klug) = *Y. norma* (Westw.), p. 283; *Pap. arctous* (Fab.), ibid.; *Hipparchia philomela* (Hübn.), p. 284; *Satyrus nareda* (Koll.), ibid., pl. 17. figs. 6 & 7; *S. chenu* (Guér.), p. 285; *Hipparchia stellera* (Eschsch.) = *Yphthima sempera* (Feld.), p. 285; *Papilio baldus* (Fab.) = *P. lara* (Don.), p. 286; *P. lysandra* (Cram.), p. 287; *Yphthima amphithea* (Ménétr.), p. 289; *Y. pandocus* (Moore), p. 290, pl. 18. fig. 12; *Satyrus motschulskiji* (Brem.), p. 290; *Yphthima sakra* (Moore), ibid., pl. 18. fig. 18; *Y. hyagriva* (Moore), p. 291, pl. 18. fig. 11; *Y. narasingha* (Moore), ibid., fig. 19; *Satyrus aphnius* (God.), p. 292, pl. 18. figs. 8 & 9; and *S. tamatavæ* (Boisd.), p. 293.

Satyrus egeria (Linn.). A peculiar variety of this species is figured by Lodeesen, Tijdschr. voor Entom. 1865, pl. 2. fig. 1.

A variety (*caucasica*) of *Satyrus pelopea*, from Grusia, is described and figured by Lederer, Wien. ent. Mon. Bd. viii. p. 168, taf. 3. fig. 5.

Satyrus megæra. A dwarf specimen of this species, 8½ lines in expanse, is recorded by Albert Müller, Ent. M. Mag. ii. p. 117.

Behr (Proc. Calif. Acad. Nat. Sci. vol. iii. pp. 163–166) enumerates the species of this subfamily found in California, and remarks upon the comparative distribution of the group in Europe and California. The known species referred to are *Chionobas nevadensis* (Boisd. MS.), *Satyrus sthenele* (Boisd.), *sylvestris* (Edw.), *ariadne* (Boisd.), and *Cœnonympha galactina* (Boisd.). A new species of *Satyrus* is characterized. Thus only three genera are represented in California, and the species are very few, whilst Europe possesses seven genera with numerous species.

Notes on the habits and mode of occurrence of the following species of this group as observed by Lang in the North-west Himalayas are published by Moore (Proc. Zool. Soc. 1865, pp. 498–502):—*Debis europa* (Fab.), *rohria* (Fab.), and *verma* (Koll.), *Enope pulaha* (Moore), *Lasiommata schakra* (Koll.) and *satricus* (Dbld.), *Satyrus swaha* (Koll.), *saraswati* (Koll.), and *avatara* (Moore), *Hipparchia parysatis* (Koll.), *Erebia annada* (Moore) and *scanda* (Koll.), *Yphthima sakra* (Moore), and *Libythea myrrha* (God.).

Prittwitz (*l. c.* pp. 310–311) records seven species of this group (one new) as occurring at the Corcovado. The known species are *Hæteran ereis*, *Euptychia ocyrrhoë*, *elueria*, and *byses*, and *Neonympha camerta* and *sosybius*.

Erebia medea. An hermaphrodite form of this species, having the left side male and the right female, but the abdomen almost as in the normal ♂, is described by Rogenhofer, Verh. zool.-bot. Ges. in Wien, xv. p. 513.

Pristo has notes on the habits of *Arge galathea* in Entomologist, ii. p. 148.

Newman publishes life-histories of *Satyrus janira*, Entom. ii. pp. 244–246; *Arge galathea*, *l. c.* pp. 263–264; and *Chortobius davus*, Zool. pp. 9745–46.

Weymer (Stett. ent. Zeit. 1865, pp. 110–111) remarks on the transformations of *Arge galathea*, and especially on the occurrence of a green variety of the larva.

Cœnonympha davus. Of this species Zeller describes the transformations and the habits of the perfect insect as found in the vicinity of Meseritz, and remarks upon some variations in the coloration of the wings. Stett. ent. Zeit. 1865, pp. 29–30; translated by Kirby, Ent. M. Mag. ii. pp. 64–65.—The larva of *C. davus* is also described by Buckler, Ent. M. Mag. ii. pp. 65–66, and by Stainton, *l. c.* p. 17.—The food of the larva is stated by Stainton to be *Rhynchospora alba*. Ent. M. Mag. ii. p. 44.

On the characters of *Cœnonympha typhon* and *C. davus*, see Wilson, Ent. M. Mag. i. p. 216.

New genera and species:—

Cœnyra, g. n., Hewitson, Ent. Trans. 3rd ser. vol. ii. p. 281. Allied to *Yphthima* and *Cœnonympha*; palpi long, straight, compressed, clothed with hair, 3rd joint long and nearly naked; costal vein of fore wing swollen at base, subcostal with four equidistant branches; hind wing round. Sp. *Yphthima hebe* (Trimen) = *Cœnyra hebe* (Hew. *l. c.* p. 281, pl. 17. figs. 1 & 2, *C. corycia*).

Xois, g. n., Hewitson, *l. c.* p. 282. Allied to preceding; palpi short, densely clothed with long hair, last joint short, naked; fore wings with costal vein swollen at base, subcostal with four branches, the first before end of cell, the rest equidistant. Sp. *Xois sesara*, sp. n., Hew. *l. c.* p. 282, pl. 17. figs. 3 & 4, from Fiji.

Satyrus ridingsii, Edwards, Proc. Ent. Soc. Phil. vol. iv. p. 201, from the Colorado Territory.

Neonympha poltys, Prittwitz, Stett. ent. Zeit. 1865, p. 311, Corcovado.

Lasiommata menava, Moore, Proc. Zool. Soc. 1865, p. 499, pl. 30. fig. 3, and *L. baldiva*, Moore, ibid., pl. 30. fig. 4, Himalayas.

Erebia nirmala, Moore, *l. c.* p. 501, and *E. kalinda*, Moore, ibid., pl. 30. fig. 5, from the North-western Himalayas.—*Erebia hewitsonii*, Lederer, Wien. ent. Mon. Bd. viii. p. 167, taf. 3. figs. 6 & 7, from Imeretia.—*Erebia wanga*, Bremer, *l. c.* p. 20, pl. 2. fig. 1, from the Amur = *E. tristis* (Brem. olim).

Epinephile cheena, Moore, *l. c.* p. 501, pl. 30. fig. 6, and *E. davendra*, Moore, *l. c.* p. 502, pl. 30. fig. 7, from the Himalayas and Thibet.

Idiomorphus italus, Hewits. Exot. Butt. Oct. 1865, *Idiom.* figs. 1–3, and *I. iccius*, Hewits. *l. c.* figs. 4 & 5, from Old Calabar.

Yphthima. Hewitson (Ent. Trans. 3rd ser. vol. ii.) describes the following as new species:—*Y. arctoides*, p. 284 = *Pap. arctous* (Don.), *Y. inica*, *l. c.* p. 284, pl. 17. fig. 5, from the East Indies; *Y. itonia*, p. 287, pl. 18. fig. 13, from the White Nile; *Y. fasciata*, ibid., from Sarawak and Sumatra; *Y. ceylonica*, p. 288, pl. 18. figs. 14 & 15, from Ceylon; *Y. loryma*, p. 289, pl. 18. figs 16 & 17, from Macassar and Celebes; *Y. methora*, p. 291, pl. 18. figs. 20 & 21, from North India; and *Y. sepyra*, p. 292, from Gilolo and Batchian.

Erycinides.

The following species are noticed particularly by Hewitson (Proc. Linn. Soc. viii. pp. 148–149):—*Zemeros flegyas* (Cram.); *Sospita statira* (Hew.),

S. echerius (Stoll), of which *Abisara kausambi* (Feld.) is a var.; *Sospita savitri* (Feld.) = *S. susa* (Hew.); *Taxila orphna* (Boisd.), *T. telesia* (Hew.), and *T. decorata* (Hew.).

Prittwitz (*l. c.* pp. 311–316) records the occurrence of 20 species of this group in the Corcovado district, of which six are described as new. Notes of more or less importance are appended to the following species:—*Erycina rhetus, Calydna lusca, Panara jarbas, Nymphidium lamis,* and *Bœotis melanis*.

Notes on the habits of *Dodona durga* (Koll.) and *egeon* (Boisd.) as observed by Lang are given by Moore (Proc. Zool. Soc. 1865, p. 503).

New species:—

Nymphidium arche, Hewits. Exot. Butt. July 1865, *Nymph.* pl. 2. fig. 10, *N. apame*, Hewits. *l. c.* figs. 13–15, *N. omois*, Hewits. *l. c.* pl. 3. fig. 20, *N. ninias*, Hewits. *l. c.* fig. 22, and *N. molela*, Hewits. *l. c.* figs. 23 & 24, from the Amazons; *N. eroe*, Hewits. *l. c.* pl. 2. figs. 11 & 12, and *N. onoba*, Hewits. *l. c.* pl. 3. fig. 21, from Cayenne; *N. mycone*, Hewits. *l. c.* figs. 16–18, from Nicaragua; and *N. mycea*, Hewits. *l. c.* fig. 19, from New Granada.

Calydna castanea, Prittwitz, Stett. ent. Zeit. 1865, p. 312, Corcovado.

Theope phæo, Prittwitz, *l. c.* p. 312, from the Corcovado.

Panara episatnius, Prittwitz, *l. c.* p. 313 (=*satnius*, Dalm.?), from the Corcovado.

Emesis diogenia, Prittwitz, *l. c.* p. 314, from the Corcovado.

Charis epijessa, Prittwitz, *l. c.* p. 315, from the Corcovado.

Mesosemia martha, Prittwitz, *l. c.* p. 315, from the Corcovado.

Lycænides.

Myrina. According to Hewitson (Illust. D. Lepid. p. 40), *Sithon thymbræus* (Hübn. 1832) = *Amblypodia jalindra* (Horsf. 1829) = *Myrina jalindra*; and *Myrina syrinx* (Feld. 1860) = *M. onyx* (Horsf. & Moore, 1857).

Iolaus (Hewits. *l. c.* p. 40) = *Amblypodia*, p., and *Iolaus*, p. (Doubl. & Westw.). Type *I. eurisus*. The following known species are figured by Hewitson:—*I. sidus* (Trimen), p. 41, pl. 20. fig. 25; *I. cleobis* (God.), p. 43, pl. 20. figs. 8–10; *I. mantra* (Feld.), p. 46, pl. 20. fig. 24; *I. deva* (Horsf. & Moore), pl. 18. figs. 3–5.

Hypolycæna. Hewitson (*l. c.*) figures the following known species as belonging to this genus:—*H. erylus* (God.), pl. 21. figs. 1, 2, & 4; *H. tmolus* (Feld.), pl. 21. figs. 3 & 6; *H. phorbas* (Fab.), pl. 21. figs. 5, 7, & 8; *H. thecloides* (Feld.), pl. 22. figs. 9 & 10; *H. sipylus* (Feld.), pl. 22. figs. 11–14; *H. philippus* (Fab.), pl. 22. figs. 15 & 16.

Ialmenus chrysomallus is figured by Hewitson, *l. c.* pl. 24. figs. 4 & 5.

Aphnæus. The following known species referred to this genus are figured by Hewitson:—*A. etolus* (Cram.), pl. 25. figs. 3 & 4; *A. syama* (Horsf.), pl. 25. fig. 7; *A. lohita* (Horsf.), pl. 25. figs. 10 & 11; and *A. natalensis* (Doubld. & Hewits.), pl. 25. figs. 1 & 2.

Dipsas. This genus as limited by Hewitson includes *Thecla quercus* and *T. betulæ*, as well as the species referred to it by Doubleday. Hewitson figures *D. sila*, *l. c.* pl. 26. fig. 3; and *D. ataxus*, *l. c.* pl. 26. fig. 6.

Thecla. The following known species are figured by Hewitson:—*T. du-*

calis (Doubld. & Hewits.), *l. c.* pl. 28. fig. 16; *T. gabriela* (Cram.), *l. c.* pl. 27. fig. 7; and *T. lisus* (Stoll), *l. c.* pl. 30. fig. 22.

Lycæna helena (Staud.) is described and figured by Millière, Ann. Soc. Linn. Lyon, tome x. p. 200, pl. 39. figs. 1–3.

Lycæna ægon, var., described and figured by Millière, Iconogr. &c. ii. p. 86, pl. 61. fig. 7.

The following known species of this group are described and figured by Bremer (*l. c.*):—*Thecla attilia* (Brem.), p. 24, pl. 2. fig. 3; *T. smaragdina* (Brem.), p. 25, pl. 3. fig. 5; *T. arata* (Brem.), ibid., pl. 3. fig. 6; *T. taxila* (Brem.), p. 26, pl. 3. fig. 7, & pl. 8. fig. 2; *Lycæna diodorus*, (Brem.), p. 29, pl. 1. fig. 10; *L. biton* (Brem.), p. 30, pl. 3. fig. 9.

Girard describes a singular instance of great variation both of the upper and lower surfaces in a female of *Lycæna adonis*. Ann. Soc. Ent. Fr. 4e sér. tome v. pp. 111–114, pl. 2. fig. 4.

Fallou records the occurrence of a variety of the male *Lycæna adonis* agreeing almost exactly with that of the female described by Girard. Bull. Soc. Ent. Fr. 1865, p. l.

Prittwitz (*l. c.* pp. 316–325) enumerates twenty-three species of this group from the Corcovado; of these six are described as new. Of the known species several are described, and others receive some notice either as to habits or synonymy. The species are *Thecla marsyas, meton, phaleros, polybe, eurisides, æthecis, hemon, herodotus, dindymus, crolus, beon, hugo, bazochii, bulastus, palegon*, and *Lycæna cassius* and *hanno*.

Plötz (Stett. ent. Zeit. 1865, p. 115) describes his finding numerous caterpillars of *Lycæna argus* feeding on the common heath (*Calluna vulgaris*), and each of them carrying on its back ants from the neighbouring ant-hills. The larvæ did not appear to be incommoded by the ants; and the latter seemed anxious to defend the larvæ from capture.

Lycæna alsus. The larva of this species lives in the flower-heads of *Anthyllis vulneraria*; its metamorphosis is described by Gärtner, Berl. ent. Zeitschr. 1865, pp. 115–116.

Thecla quercus. Courtice records an instance of cannibalism in the larva of this species. Ent. M. Mag. ii. p. 45. Davis has observed it sitting on ash trees. Entom. ii. p. 312.

A dwarf specimen of *Polyommatus icarus* (=*alexis*), measuring only 8½ lines in expanse, is recorded by Kirby, Proc. Ent. Soc. 1865, p. 112, & Ent. M. Mag. ii. p. 92.

Fallou describes and figures a variety of *Polyommatus virgaureæ* (Linn.) discovered by him at Zermatt, to which he gives the name of *zermattensis*. Ann. Soc. Ent. Fr. 4e sér. tome v. pp. 101 & 102, pl. 2. fig. 3.

Polyommatus salinacis occurs at Cannes, *teste* Timins, Proc. Ent. Soc. 1865, p. 103.

Notes on the habits and mode of occurrence of the following species of this group are given by Moore from the observations of Lang (Proc. Zool. Soc. 1865, pp. 503–508):—*Chrysophanus timeus* (Cram.) and *pavana* (Koll.), *Dipsas odata* (Hew.) and *syla* (Koll.), *Ilerda oda* (Hew.) described and figured, *l. c.* p. 508, pl. 31. fig. 12, and *I. tgmus* (Koll.).

New genera and species :—

Camena, g. n., Hewitson, Illustr. D. Lepid. p. 47. Allied to *Deudoryx* and *Iolaus*; eyes smooth; posterior wings without a distinct lobe; subcostal vein of fore wings with three branches; palpi smooth, very erect, long, second joint compressed. Sp. *C. ctesia*, sp. n., Hewits. *l. c.* p. 48, pl. 20. figs. 1 & 2, from North India.

Utica, g. n., Hewitson, *l. c.* p. 56. Allied to *Ialmenus*; eyes small, densely hairy; palpi with second joint very long, hairy externally, last joint short; antennæ with a distinct oblong club; subcostal vein with three branches, base of third far from apex of wing. Sp. *U. onycha*, sp. n., Hewits. *l. c.* p. 56, pl. 24. figs. 11 & 12, from Australia.

Capys, g. n., Hewitson, *l. c.* p. 59 = *Zeritis* (Westw.). Allied to *Deudorix*; posterior wing without tail and lobe. Sp. *Pap. alphæus* (Cram.).

Trichonis, g. n., Hewitson, *l. c.* p. 68. Allied to *Thecla*; eyes smooth; palpi short, smooth, terminal joint short; subcostal vein with two branches; posterior wings round. Fore legs in ♂ with tibiæ and tarsi of equal length, tarsi exarticulate, robust, broad beyond the middle. Sp. *T. theanus* (Cram.), pl. 29. figs. 1–3.

Theorema, g. n., Hewitson, *l. c.* p. 69. Allied to *Thecla*; eyes very slightly hairy; palpi long, second joint squamose, terminal joint long; subcostal vein with two branches; posterior wing with one short tail. Sp. *T. eumenia*, sp. n., Hewits. *l. c.* p. 69, pl. 27. figs. 1 & 2, from New Granada.

Polyommatus. Moore (Proc. Zool. Soc. 1865) describes the following Himalayan and North Indian species:—*P. kasmira*, p. 503, pl. 31. fig. 1; *P. nycula*, ibid., pl. 31. fig. 3; *P. nazira*, p. 504, pl. 31. fig. 4; *P. ariana*, p. 504, pl. 31. fig. 2; *P. chandala*, ibid., pl. 31. fig. 5; *P. vicrama*, p. 505, pl. 31. fig. 6; and *P. karsandra*, ibid., pl. 31. fig. 7.

Amblypodia dispar, Bremer, *l. c.* p. 24, pl. 3. fig. 9, from East Siberia = *Thecla fusca* (Brem. olim).

Lycæna ægonides, Bremer, *l. c.* p. 28, pl. 3. fig. 8, from East Siberia = *L. cleobis* (Brem. olim).

Lycæna rustica, Edwards, Proc. Ent. Soc. Phil. vol. iv. p. 203, from Pike's Peak (Colorado).—*Lycæna vanessoides*, Prittwitz, *l. c.* p. 323, and *L. astiocha*, Prittwitz, *l. c.* p. 324, from the Corcovado.—*Lycæna zena*, Moore, *l. c.* p. 505, pl. 31. fig. 9, from North-west India; and *L. dipora*, Moore, *l. c.* p. 506, pl. 31. fig. 8, from the North-western Himalayas.

Chrysophanus kasyapa, Moore, *l. c.* p. 506, pl. 31. fig. 10, from Kunawur.

Myrina. The following new species are described by Hewitson, Illust. Diurn. Lepid. part ii.:—*M. lorisona*, p. 37, pl. 16. figs. 48 & 49, from Sierra Leone; *M. travana*, p. 38, pl. 17. figs. 59 & 60, from Sumatra and Borneo; *M. orsolina*, ibid., pl. 17. figs. 56–58, from Celebes and Macassar; *M. hypoleuca* (Boisd. MS.), ibid., pl. 17. figs. 54 & 55, from Java; *M. donina*, p. 39, pl. 17. figs. 61 & 62, from Burmah; and *M. ceres* (Boisd. MS.), ibid., pl. 17. fig. 63, from Amazoulou.

Iolaus. Hewitson (*l. c.*) describes the following new species of this genus:—*I. iasis*, p. 42, pl. 19. figs. 11 & 12, origin unknown; *I. anysis*, ibid., pl. 19. figs. 17 & 18, from Macassar; *I. cotys*, p. 43, pl. 19. figs. 19 & 20, from Nepal; *I. ister*, ibid., pl. 19. figs. 15 & 16, from India; *I. icetas*, p. 44, pl. 18. figs. 6 & 7, from India; *I. isæus*, ibid., pl. 19. figs. 13 & 14, from Sumatra and Sarawak; *I. iapyx*, p. 45, pl. 18. figs. 1 & 2, from Celebes; *I. diæus*, ibid., pl. 20. figs. 26–28, from North India; *I. cyrillus*, p. 46, pl. 20. figs. 21–23, from Macassar; and *I. maculatus*, p. 47, pl. 21. figs. 29 & 30, from Silhet.

Hypolycæna. Hewitson (*l. c.*) describes and figures as new species:—*H. othona*, p. 50, pl. 22. figs. 17 & 18, from North India; *H. lebona*, p. 51, pl. 23. figs. 28 & 29 (sub nom. *H. antifaunus*), from Old Calabar; *H. hatita*, p. 51, pl. 23. figs. 21–24, from West Africa; *H. eleala*, p. 52, pl. 23. figs. 25–27, from Old Calabar; and *H. amasa* (= *P. etolus*, Fab.), p. 51, pl. 22. figs. 19 & 20 (*H. etolus*).

Ialmenus ictinus, Hewitson, *l. c.* p. 54, pl. 24. figs. 6–8, from Australia; *I. inous*, Hewits. ibid., pl. 24. figs. 1 & 2, from Swan River; and *I. icilius*, Hewits. ibid., pl. 24. fig. 3, origin unknown.

Ilerda oda, Hewitson, *l. c.* p. 58, pl. 24. figs. 9 & 10, from India; and *I. moorei*, Hewits. ibid., from Bhotan.

Aphnæus. Hewitson (*l. c.*) describes the following four new species of this genus:—*A. ictis*, p. 61, pl. 25. figs. 8 & 9, from North India; *A. nilus*, p. 62, from the White Nile; *A. iza*, ibid., pl. 25. fig. 5, origin unknown; and *A. ella*, p. 63, pl. 25. fig. 6, from Natal.

Dipsas. Hewitson (*l. c.*) describes six new species as belonging to this genus: namely, *D. absolon* (Boisd. MS.), p. 65, pl. 30. figs. 11 & 12, *D. zaura*, p. 65, pl. 26. figs. 1 & 2, and *D. odata*, p. 66, pl. 30. figs. 13 & 14, from India; *D. lutea*, p. 67, pl. 26. figs. 9 & 10, and *D. sæpestriata*, ibid., pl. 26. figs. 7 & 8, from Japan; and *D. ziha*, p. 66, pl. 26. figs. 4 & 5, of unknown origin.

Thecla. Of this genus, as limited by him, Hewitson (*l. c.*) describes the following new species:—*T. coronata*, p. 70, pl. 27. figs. 3–5, from Bogota and Guatemala; *T. tuneta*, p. 71, pl. 28. figs. 14 & 15, from South America; *T. batesii*, ibid., pl. 27. fig. 6, from Rio Janeiro; *T. tagyra*, p. 73, pl. 28. figs. 20 & 21, *T. satyroides*, p. 74, pl. 29. figs. 10, 12, & 13, *T. temathea*, ibid., pl. 29. fig. 11, *T. gispa*, p. 75, pl. 30. fig. 25, and *T. mavors*, p. 76 (pl. 31. fig. 28), from the Amazons; *T. latreillii*, p. 74, pl. 29. figs. 8 & 9, from Java; *T. phegeus* (Boisd. MS.), p. 75, pl. 30. figs. 26 & 27, from Bahia and the Amazons; *T. triquetra*, p. 76, pl. 28. figs. 17–19, from Brazil; and *T. havila*, ibid., pl. 30. figs. 23 & 24, from New Granada.

Thecla. Of this genus Prittwitz describes from the Corcovado, *T. acuste*, Stett. ent. Zeit. 1865, p. 318; *T. hirsuta*, *l. c.* p. 321; *T. innua*, *l. c.* p. 322; and *T. megamede*, ibid.—*Thecla deria*, Moore, *l. c.* p. 507, pl. 31. fig. 11, from Kunawur.

Hesperiides.

Möschler (Wien. ent. Mon. Bd. viii. pp. 193–195) describes the comparative characters of *Syrichthus* (scr. *Syrithus*) *centaureæ* and *S. cacaliæ*, which he regards as distinct species, in opposition to Werneburg.

Pamphila danna (Moore) is described and figured by Moore, Proc. Zool. Soc. 1865, p. 508, pl. 30. fig. 8; and he also gives notes on the habits of *Hesperia leucocera* (Koll.).

The following known species of this group are described and figured by

Bremer:—*Pyrgus montanus* (Brem.), *l. c.* p. 31, pl. 2. fig. 4; *Cyclopides ornatus* (Brem.), *l. c.* p. 33, pl. 2. fig. 5; *Pamphila ochracea* (Brem.), ibid., pl. 1. fig. 11; *P. sylvatica* (Brem.), *l. c.* p. 34, pl. 3. fig. 10.

Werneburg remarks on the synonymy and variation of several species of *Hesperia*. Mitth. Schw. ent. Ges. 1864, pp. 277–279.

The habits of *Thymele alveolus* are noticed by J. Pristo, Entom. ii. p. 149.

New species:—

Hesperia napa, Edwards, Proc. Ent. Soc. Phil. vol. iv. p. 202, pl. 1. figs. 3 & 4, and *H. ricara*, Edw. *l. c.* p. 203, pl. 1. fig. 2, from the Colorado Territory; *H. maculata*, Edw. *l. c.* p. 202, pl. 1. fig. 6, from New Orleans; and *H. viator*, Edw. *l. c.* p. 202, pl. 1. fig. 5, from Illinois and New Orleans.

Pamphila mæsa, Moore, Proc. Zool. Soc. 1865, p. 509, pl. 30. fig. 9, from Simla and Kunawur.

Pyrgus gigas, Bremer, *l. c.* p. 96, pl. 8. fig. 3, from East Siberia.

Achlyodes gesta, H.-Schäffer, Regensb. Corr.-Blatt, 1865, p. 52, from Cuba.

Thymelicus nanus, H.-Schäffer, *l. c.* p. 52, from Cuba.

Cobalus tripunctus, H.-Schäffer, *l. c.* p. 53, from Cuba.

Goniloba. Of this genus Herrich-Schäffer describes the following new Cuban species:—*G. coscinia*, *sandarac*, *malitiora*, and *corrupta*, *l. c.* p. 54; *G. sylvicola*, *cubana*, and *singularis*, *l. c.* p. 55.

Goniurus marmorosa, H.-Schäffer, *l. c.* p. 56, from Cuba.

Sphingidæ.

Herrich-Schäffer (Regensb. Corr.-Blatt, 1865, pp. 56–60) enumerates 46 species of this family sent to him by Gundlach from Cuba. Several of them are undetermined; and of these the author gives descriptions, but without names.

Grote publishes (Proc. Ent. Soc. Phil. vol. v. pp. 33–84) a revision of the *Sphingidæ* of Cuba, from materials in the collection of the Entomological Society of Philadelphia. He remarks that the Cuban species of this family include a preponderance of forms which resemble the *Noctuidæ*, whilst in the northern parts of the American continent Bombycoid types are more prevalent. The genera *Protoparce* and *Dilophonota* of Burmeister are rejected by Grote, the former being regarded as identical with *Macrosila* (Boisd., Walk.) and the latter with *Erinnyis* (Hübn.). The total number of Cuban species cited is 46, of which 9 are described as new. Several new generic groups are proposed.

Grote (*l. c.* p. 39) remarks that *Sphinx brontes* (Boisd.) is identical with *Ceratomia repentinus* (Clem.), and discusses the synonymy of the species. The same author states that *Deilephila chamænerii* (Harr.) is distinct from the European *D. galli*, and indicates their differences (*l. c.* p. 39). *Macroglossa sisyphus* (Burm.) is said by Grote to belong to *Aellopos* (*l. c.* p. 42). The following known species from Cuba are cited by Grote, with discussions on their synonymy and descriptions or indications of differential characters:—*Aellopos titan* (Cram.), p. 41; *A. tantalus* (Linn.), p. 42; *Eupyrrhoglossum sagra* (Poey), p. 43; *Enyo lugubris* (Linn.), p. 44; *E. camertus* (Cram.), ibid.; *E. danum* (Cram.), p. 45; *Perigonia lusca* (Fab.), p. 47; *P. lefebvrei* (Luc.), p. 48; *Calliomma lycastus* (Cram.), ibid.; *Pergesa thorates* (Hübn.), p. 49; *Chærocampa nechus* (Cram.), p. 50; *C. gundlachii* (H.-Sch.), p. 51; *C. porcus* (Hübn.), p. 53; *C. tersa* (Drury), p. 56; *Deilephila lineata* (Fab.), p. 58; *Philampelus vitis* (Linn.), pp. 58 & 83; *P. fasciatus* (Salz.), pp. 59 & 84, *P. lycaon* (Cram.), p. 60; *P. labruscæ* (Linn.), p. 62; *Pachylia ficus* (Linn.), ibid.; *P. inornata* (Clem.), p. 63; *P. resumens* (Walk.), ibid.; *Ambulyx strigilis* (Linn.), p. 64; *A. ganascus* (Stoll), ibid.; *Pseudosphinx tetrio* (Linn.), ibid.; *Amphonyx antæus* (Drury), p. 66; *A. duponchel* (Poey), p. 67; *Sphinx rustica* (Fab.), p. 68; *S. carolina* (Linn.), p. 69; *S. cingulata* (Linn.), ibid.; *S. brontes* (Drury), ibid., pl. 1. fig. 5; *Erinnyis caicus* (Cram.), p. 72; *E. ello* (Linn.), p. 73; *E. alope* (Drury), p. 75; *E. œnotrus* (Cram.), p. 76, pl. 2. fig. 3; *E. guttularis* (Walk.), p. 79; and *Œnosanda noctuiformis* (Walk.), p. 79.

Macrosila. Grote indicates (*l. c.* pp. 67–68) that this genus, which corresponds to a certain extent with *Protoparce* (Burm.), has been confused by Walker and Clemens. He proposes to restrict it to *Sphinx rustica* (Fab.), *carolina* (Linn.), *cingulata* (Linn.), and *ochus* (Klug) and the other species agreeing with these in character.

Darapsa. The same author remarks (*l. c.* p. 81) that *Darapsa* (Walk.) is identical with *Otus* (Hübn.), and gives the preference to the latter name as having the priority. But *Otus* was long preoccupied by Cuvier for a genus of Birds. The American species of the genus, according to Grote, who gives their synonymy in full, are *O. chorilus* (Cram.), *O. myron* (Cram.), *O. versicolor* (Harr.), and *O. pholus* (Cram.). *Darapsa rhodocera* (Walk) is regarded by Grote as the type of a distinct genus.

Kirby has published a synopsis of the European species of this family (Ent. M. Mag. i.). He gives a table (*l. c.* p. 209) of the genera, 11 in number. Following Walker, he divides *Macroglossa* into two genera, retaining that name for the clear-winged species, and applying the name of *Sesia* to the group including *M. stellatarum*. The number of species recorded is as follows:—*Macroglossa* 2, *Sesia* 2, *Proserpinus* 2, *Chærocampa* 5, *Pergesa* 1, *Deilephila* 9, *Daphnis* 1, *Sphinx* 2, *Anceryx* 1, *Acherontia* 1, and *Laothoë* 5=31 in all. Of these, 18 occur in Britain.

Of this family 16 species are cited by Fauvel (Mém. Soc. Linn. Norm. tome xiii.) as inhabitants of the department of Calvados, including, in addition to our British species, *Macroglossa fuciformis* and *bombyliformis*, *Deilephila lineata*, and *Sphinx pinastri*.

Ballion enumerates 13 species of this family in his Catalogue of the Lepidoptera of Gorki (Bull. Soc. Nat. Mosc. xxxvii. pt. 1. pp. 363–365). They are all generally distributed in Europe.

The following known species of this family are described and figured by Bremer, Mém. Acad. St. Pétersb. tome viii.:—*Smerinthus maackii* (Brem.), *l. c.* p. 34, pl. 3. fig. 11; *S. dissimilis* (Brem.), *l. c.* p. 35, pl. 3. fig. 12; *Macroglossa affinis* (Brem.), ibid., pl. 3. fig. 13.

Chærocampa celerio. Notes on the occurrence of this species in various places are published by Winter in Ent. M. Mag. ii. p. 117; by Horn, *l. c.* p. 132; by Kingston, *l. c.* p. 133; and by Postans, *l. c.* p. 162.

Macroglossa stellatarum. E. Horton states he reared a second brood of this

species in the autumn of 1865. None of the females contained ova. Ent. M. Mag. ii. p. 165.

Girard records the capture, by M. Fallou, of a freshly developed specimen of *Macroglossa stellatarum* in Paris on 21st January 1865. Bull. Soc. Ent. Fr. 1865, p. v.

Deilephila nerii. Beckér records the occurrence of this species in the larval state at Sarepta during the dry and hot summer of 1863. Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 479.

Syme describes the habits of the larvæ of *Deilephila galii*. Ent. M. Mag. ii. pp. 5–8.

The Entomologist (vol. ii.) contains notes on *Macroglossa stellatarum* by Clifford, p. 298, C. R. Leighton and E. Newman, p. 328; *Acherontia atropos* by P. Andrews, p. 296, Doubleday, p. 305 (barren ♀), and Gregson, p. 313; and *Chærocampa celerio* (descr. of larva) by Doubleday, p. 327.

Acherontia atropos. The life-history of this species is described by Newman, Entom. ii. pp. 280–285.—E. A. Johnson attributes the peculiar sound produced by the *Acherontia atropos* to the passage of air through an aperture situated under the fore wings. Ibid. p. 325.

Sphinx quinquemaculatus (Haworth). The habits of this insect, the larva of which is injurious to tobacco, potatoes, and tomatoes in gardens in the Northern States, are described by Fitch, 9th Rep. Ins. New York, pp. 211–229. The moth is figured *l. c.* pl. 4. fig. 1, the caterpillar p. 219, and the pupa p. 220. The caterpillar is attacked by a species of *Microgaster*, and this again by a *Pteromalus*, both of which are described by the author. The occurrence of a Dipterous parasite upon the caterpillar has also been observed.

Weymer (Stett. ent. Zeit. 1865, p. 111) states that the larva of *Sphinx ligustri* feeds on the holly. The same author says that the larva of *S. pinastri* will feed on the larch.

Girard describes a peculiar variety of the larva of *Acherontia atropos*. Bull. Soc. Ent. Fr. 1865, p. xlix.

New genera and species:—

Lepisesia, g. n., Grote, Proc. Ent. Soc. Phil. vol. v. p. 38. Allied to *Macroglossa*; head smaller; antennæ shorter and more prismatic; fore wings longer and narrower and with the outer margin more oblique. Sp. *L.* (*Macroglossa*) *flavofasciata* (Walk.), *l. c.* p. 39, from Canada.

Eupyrrhoglossum, g. n., Grote, *l. c.* p. 42. Allied to *Macroglossa*; eyes larger and more globose; antennæ slender, not prismatic, less acutely hooked than in *Macroglossa*; fore wings very strong and broad, second median nervule equidistant from first and third at apical margin. Sp. *E.* (*Macroglossa*) *sagra* (Poey).

Hemeroplanes pseudothyreus, Grote, *l. c.* p. 46, pl. 1. fig. 1, from Cuba = *Calliomma oiclus* (H.-Sch. nec Cram.).

Chærocampa (sic) *irrorata*, Grote, *l. c.* p. 52, pl. 1. fig. 2, from Cuba; *C. robinsonii*, Grote, *l. c.* p. 54, pl. 1. fig. 3 = *C. falco* (H.-Sch. nec Walk.), from Cuba.

Deilephila calverleyi, Grote, *l. c.* p. 56, pl. 1. fig. 4, from Cuba.

Sphinx afflicta, Grote, *l. c.* p. 71, from Cuba.

Erinnyis rimosa, Grote, *l. c.* p. 73, pl. 2. fig. 1 = *Anceryx scyron* (Walk. nec Cram.), *E. merianæ*, Grote, *l. c.* p. 75, pl. 2. fig. 2, *E. melancholica*, Grote, *l. c.* p. 77, pl. 2. fig. 4, and *E. pallida*, Grote, *l. c.* p. 78, pl. 1. fig. 6, from Cuba.

Chærocampa. A Cuban species, nearly allied to *C. gundlachii*, is described without a name by H.-Schäffer, Regensb. Corr.-Blatt, 1865, p. 58.

Anceryx. A supposed new species from Cuba, allied to *A. mnechus* (H.-Sch.), is described by Herrich-Schäffer, *l. c.* p. 60.

Castniidæ.

Agarista agricola (Don.) is described with its transformations in Scott's Austral. Lepid. p. 25, pl. 8.

Agarista casuarinæ, sp. n., Scott, Austral. Lepid. p. 24, pl. 8 (with transformations), from New South Wales.

Zygænidæ.

Guenée (Ann. Soc. Ent. Fr. 4e sér. tome v. pp. 88–90) describes the habits and transformations of *Zygæna pluto* (Boisd.), and remarks upon its synonymy and that of *Z. minos* and other allied species. The same author discusses the characters of *Z. genevensis* (Mill.), *l. c.* pp. 91–92, and describes a copulation of *Z. filipendulæ* ♂ with *Z. achilleæ* ♀, *l. c.* pp. 92–93.

Glaucopis latipennis (Boisd.) is said by Grote to belong to one or other of his new genera *Callalucia* or *Eupsychoma*. Proc. Ent. Soc. Phil. vol. iv. p. 317. Grote also discusses the characters and position of his genus *Ciris*, *l. c.* pp. 320–321.

Procris. Guenée (Ann. Soc. Ent. Fr. 4e sér. tome v. pp. 301–305) discusses the question of the distinctness of some of the described species of *Procris*, and describes and figures the larvæ of *P. statices* (*l. c.* p. 302, pl. 8. fig. 1), *P. geryon* (*l. c.* p. 304, pl. 8. fig. 3), and *P. micans* (*l. c.* p. 305, pl. 8. fig. 2). He is of opinion that these three species are distinct.

Bremer describes and figures *Euchromia octomaculata* (Brem.), Mém. Acad. St. Pétersb. tome viii. p. 36, pl. 4. fig. 1.

Atychia læta (Staud.) is described and figured by Millière, Iconogr. et Descr. de Chen. et Lépid. tome ii. pp. 13–15, pl. 52. figs. 3 & 4.

Mann (Wien. ent. Mon. Bd. viii. p. 176, taf. 4. fig. 2) describes and figures an hermaphrodite *Ino ampelophaga* taken by him near Brussa. The right side possesses ♂, and the left ♀ characters; the abdomen is ♀.

Fauvel (Mém. Soc. Linn. Norm. tome xiii.) enumerates eight species of this family among the Lepidoptera of Calvados.

Ballion gives three species of this family as occurring in the vicinity of Gorki. Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 365.

Zygæna lavenduli occurred at Cannes in April at a distance from any lavender, according to Timins, Proc. Ent. Soc. 1865, p. 103.

New genera and species:—

Callalucia, g. n., Grote, Proc. Ent. Soc. Phil. vol. iv. p. 315. Allied to *Ctenucha*; antennæ less closely pectinated; palpi slender, horizontal, third joint depressed, not pointed; third subcostal nervule of fore wings furcate; hind wings with nine veins. Sp. *C.* (*Omoiala*) *vermiculata* (Grote).

Eupsychoma, g. n., Grote, *l. c.* p. 317. Allied to *Ctenucha*; wings broad; second and third subcostal nervules in fore wings bent up towards costa, third not furcate. Sp. *E. geometrica*, sp. n., Grote, *l. c.* p. 318, pl. 2. fig. 1, from the Colorado Territory.

Scepsis packardii, Grote, *l. c.* p. 318, from California.

Zygæna kadenii, Lederer, Wien. ent. Mon. Band viii. p. 168, taf. 3. fig. 8, from Abbastuman.

Procris tristis, Bremer, Mém. Acad. St. Pétersb. viii. p. 97, pl. 8. fig. 4, from East Siberia.

Alypia langtonii, Couper, Canad. Nat. & Geol. n. s. vol. ii. p. 64, cum fig., from Quebec.

Chalcosia caudata, Bremer, *l. c.* p. 97, pl. 8. fig. 8, from East Siberia.

Sesiidæ.

Fauvel (Mém. Soc. Linn. Norm. tome xiiie) describes eight species of this family as inhabitants of the district of Calvados.

Weymer (Stett. ent. Zeit. 1865, p. 112) mentions the occurrence of *Sesia scoliiformis* near Elberfeld, and states that the moth escapes from the cocoon by the separation of a distinct lid.

Ballion cites one undetermined species of *Sesia* in his Catalogue of the Lepidoptera of Gorki. Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 365.

Sesia chalcocnemis (Staud.) is described, with a variety, by Millière, Iconogr. et Descr. de Chen. et Lépid. tome ii. pp. 11–13, pl. 52. figs. 1 & 2.

Sesia culiciformis is included in the list of Lepidoptera new to the fauna of Holland. Tijdschr. voor Entom. 1865, p. 34.

The metamorphoses of *Sesia braconiformis* (H.-Sch.) are described by A. Gärtner. Wien. ent. Mon. Band viii. pp. 114–118.

Paranthrene hoplisiformis, sp. n., Mann, Wien. ent. Mon. Band viii. p. 176, taf. 4. fig. 1, from Brussa.

Hepialidæ.

Hepialus variabilis (Brem.) is figured and described by Bremer, in Mém. Acad. St. Pétersb. viii. p. 41, pl. 3. fig. 17.

Hepialus lupulinus is described and figured with its transformations by Millière, Iconogr. et Descr. de Chen. et Lépid. tome ii. pp. 81–83, pl. 60. figs. 5–7.

Bond describes varieties of *Hepialus humuli* from Shetland. Proc. Ent. Soc. 1865, p. 61.

Newman describes a curious geographical race of *Hepialis humuli* from the Shetland Islands. Entomologist, ii. p. 162. This variety is also referred to by W. D. Crotch, who proposes to denominate it *H. humuli*, var. *thulensis* (*l. c.* p. 176).

A single species of this family, the common *H. humuli*, is cited by Ballion among the Lepidoptera of Gorki. Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 367.

Walker (List Lepid. xxxii.) describes new species of the following known genera of this family:—*Cossus* (7), *Zeuzera* (7), *Hepialus* (4), *Elhamma* (1), *Fraus* (1), *Gorgopis* (1), *Charagia* (1), *Porina* (2), *Oxycanus* (2), and *Pielus* (2); and the following as types of new genera:—*Salagena transversa* (p. 590), from Sierra Leone, and *Casana trochiloides* (p. 591), from Aru.

Bombycidæ.

Snellen refers to the condition of the first vein in the hind wings of the *Platypterycides*. It is entirely wanting only in *Plat. lacertinaria* (Linn.), and very rudimentary in *P. cultraria* (Fab.), *binaria* (Hfn.), *curvatula* (Borkh.), and *falcataria* (Linn.). In *P. sicula* (H.-Sch.) no trace of this vein is to be seen by moistening the wing with turpentine; but it is rendered distinct by this process in *Cilix ruffa* (Linn. = *spinula*, auct.). Tijdschr. voor Entom. 1865, p. 96.

Grote indicates the synonymy of *Limacodes viridis* (Reakirt), which belongs to Packard's genus *Callochlora*, and is identical with *C. vernata* (Pack.), over which it has the advantage of one month's priority. Proc. Ent. Soc. Phil. vol. iv. p. 322.

Grote states that his *Parathyris angelica* is identical with *Apatelodes hyalino-puncta* (Packard), and adopts for it the generic name given by Packard. *Loc. cit.* p. 207.

Chelepteryx collesi (G. R. Gray) is described with its transformations in Scott's Australian Lepidoptera, pp. 21–23, pl. 7.

Anisota. Grote and Robinson state, from an examination of spirit specimens, that *A. rubicunda* does not possess characters justifying its separation from the other species. Proc. Ent. Soc. Phil. vol. iv. p. 223.

The relations of *Liparis eremita* to *L. monacha* are discussed by Berce and Bellier de la Chavignerie in Bull. Soc. Ent. Fr. 1865, p. xlvi.

Lucas describes the caterpillar and cocoon of a gigantic species, probably of *Lasiocampa*, received from Guinea. The caterpillar is more than 7 inches long, and covered with spines which readily penetrate the skin. H. Deyrolle mentions his having seen the caterpillar at the Gaboon, and gives a very imperfect account of the moth. Bull. Soc. Ent. Fr. 1865.

Ballion enumerates twenty-nine species of this group in his Catalogue of the Lepidoptera of Gorki. Bull. Soc. Nat. Mosc. xxxvii. pt. 1. pp. 366–372. One species, an undetermined *Platypteryx*, is described, but not named.

Ström (Naturh. Tidsskr. 3rd ser. iii. pp. 44–47) enumerates three species of *Orgyia*, namely *O. antiqua*, *gonostigma*, and *ericæ*, as inhabiting Denmark, and describes their transformations.

Leucoma vau-nigrum. Baldwin publishes a note on the occurrence of this species in England. Ent. M. Mag. i. p. 213.

Psyche plumifera is included in the list of species new to the Lepidopterous fauna of Holland. Tijdschr. voor Entom. 1865, p. 34.

Bremer has described and figured the following known Eastern Siberian species in Mém. Acad. St. Pétersb. viii.:—*Odonestis albomaculata* (Brem.), *l. c.* p. 42, pl. 3. fig. 20 ♀, and pl. 4. fig. 6 ♂; *Tropæa artemis* (Brem.), *l. c.* p. 44, pl. 2. figs. 6 & 7; *Harpyia ocypete* (Brem.), ibid., pl. 5. fig. 1; *Ptilodontis grisea* (Brem.), *l. c.* p. 45, pl. 5. fig. 2.

Bombyx franconica (Fab.). The transformations and imago of this species are described and figured by Millière, Ann. Soc. Linn. Lyon, tome x. pp. 235–238, pl. 44. figs. 1–6. Millière regards the French specimens sup-

posed to belong to *B. franconica* as forming a distinct species, which he describes under the name of *B. dorycnii* (vide infrà).

Bombyx ilicis (Ramb.) is described with its transformations by Millière, Iconogr. et Descr. de Chen. et. Lépid. tome ii. pp. 49–51, pl. 56. figs. 5–8.

Typhonia dardoinella (Mill.). The ♀ and larva are described and figured by Millière, *l. c.* ii. pp. 27–29, pl. 54. figs. 3–5.

The young larva of *Endromis versicolor* is described by Weymer, Stett. ent. Zeit. 1865, p. 112. The life-history of this species is given by Gascoyne. Entomologist, ii. pp. 184–189.

Gouley states that from his observations *Orgyia antiqua* has only a single brood in the year in Lower Normandy. Bull. Soc. Ent. Fr. 1865, p. xxxi.

Platypteryx lacertula and *falcula*. A. Edwards publishes notes on the history of these species. Ent. M. Mag. i. p. 188.

The Entomologist (vol. ii.) contains notes on the habits of the following species:—*Argyia pudibunda* and *Bombyx rubi* by J. Pristo, p. 144; *Lasiocampa quercifolia* by Moncreaff, ibid.; *Dicranura vinula* by Pristo, p. 149, and Clifford, pp. 159–160; *Liparis salicis* by Moncreaff, p. 191; *Bombyx trifolii* by J. S. Dell, p. 315; *Notodonta dromedarius* by W. Watkins, p. 316; and *Pœcilocampa populi* by E. H. Todd, p. 246.

Life-histories of the following species are given by Newman:—*Bombyx callunæ* and *quercus*, Entom. ii. pp. 137–141; *B. neustria*, *l. c.* pp. 265–267; *B. trifolii*, *l. c.* pp. 291–292; *Eriogaster lanestris*, *l. c.* pp. 264–265; *Pygæra bucephala*, Zool. 1865, pp. 9746–47; and *Odonestis potatoria*, *l. c.* pp. 9826–9828.

Perris records the devastations of *Bombyx pityocampa* among the pine trees of the Landes, and the destruction of great numbers of these insects by the intense cold of January 1864. He also states that the nests of this moth are inhabited by *Paramecosoma abietis* and *Dermestes aurichalceus*. Bull. Soc. Ent. Fr. 1865, pp. xvii–xix.

Cnethocampa pityocampa is mentioned by Erber as most injurious to *Pinus halepensis* on the Dalmatian island of Lesina. Verh. zool.-bot. Ges. in Wien, Bd. xv. p. 943 *bis*.

Girard communicates some notes on keeping the larvæ of *Bombyx rubi* through the winter. He succeeded in bringing them through the winter by giving them moistened food; but they died in April in consequence of the attacks of Cryptogamic plants. M. Berce maintains that these larvæ do not feed during the winter, which also appears to be the opinion of Boisduval. Bull. Soc. Ent. Fr. 1865, pp. xxii–xxiii.

Girard also records that some larvæ of *Psyche calvella* kept in the same vessel with larvæ of *Chelonia caja* devoured the silky cocoons of the latter. Bull. Soc. Ent. Fr. 1865, p. xxiii.

Tieffenbach describes and figures a gynandromorphous specimen of *Bombyx dispar*, in which the different sexual characters are very distinctly exhibited on the two sides. Berl. ent. Zeits. 1865, p. 413, pl. 3. fig. 8.

Saturnia pavonia (=*carpini*, W. V.). Rogenhofer describes four so-called hermaphrodite forms of this species. Verh. zool.-bot. Ges. Wien, xv. pp. 514–516.

Edwards describes an hermaphrodite specimen of *Saturnia prometheus*. Proc. Ent. Soc. Phil. vol. iv. p. 390.

Porthesia chrysorrhœa. Snellen describes a variation in the venation of the hind wing in a ♀ of this species. Tijdschr. voor Entom. 1865, p. 96 *cum figg.*

Saturnia carpini. Edmunds records a cocoon of this species with three valvular apertures. Ent. M. Mag. i. p. 215.

Clostera curtula. Snellen van Vollenhoven describes and figures a peculiar larva of this species. Tijdschr. voor Entom. 1865, p. 69, pl. 2. figs. 3 & 4.

Annitap records an instance of three males of an *Oiketicus* (supposed to be *O. kirbyi*) having simultaneously thrust their abdomens into the case of a female. Proc. Ent. Soc. 1865, p. 103.

Moncreaff (Entomologist, ii. p. 177) describes the presence in the female of *Bombyx neustria* of glandular organs, secreting an exceedingly tenacious fluid serving to cement the eggs to the surface on which they are deposited.

Liparis auriflua. Moncreaff describes the irritant effects of the broken hairs of the larvæ of this species. Ibid. p. 191.

Guérin's 'Revue de Sériciculture comparée' for 1865 contains a great mass of notices of different value upon all subjects connected with sericiculture, such as the progress made in the cultivation of new species of silkworms, including valuable notes on *Antheræa cynthia* and *yama-maï*, the condition of sericiculture in France and other parts of Europe, and especially the ravages of the epidemic which has for so many years ravaged the French and Italian silk-growing establishments.

Attacus polyphemus. This moth has been successfully experimented on as a source of silk by Trouvelot. See Silliman's American Journal, March 1865; note reprinted in Ann. & Mag. Nat. Hist. 3rd ser. vol. xv. p. 499.

Westwood remarks on the habits of the larva of *Antheræa cynthia*. Proc. Ent. Soc. 1865, p. 109.

Guérin-Méneville exhibited to the French Entomological Society dyed specimens of silk from the silkworms of the *Ailanthus* and *Ricinus* and from a hybrid between the two species. Bull. Soc. Ent. Fr. 1865, p. iv.

Guérin-Méneville describes the variations and the constant characters presented by individuals of *Bombyx yama-maï*. Rev. et Mag. de Zool. 1864, pp. 182–185.

Chavannes reports on the cultivation of the *Yama-maï* silkworm in the open air near Nyon. He fed the larvæ on the quince and the *Pyrusaria*. Bull. Soc. Vaudoise des Sci. Nat. tome viii. pp. 11 & 14. Further notes on this and other species by the same author occur *l. c.* pp. 167, 170, 308.

B. Dürer (Atti Soc. Ital. Sci. Nat. viii. pp. 168–173) records the results of a first experiment in rearing *Bombyx ya-ma-mai* on the shores of the Lake of Como. He mentions that advantageous use was made of the tender leaves of the evergreen *Quercus virens* in bringing up the young larvæ, and gives a brief history of the introduction of the species and details of the dates of hatching, moulting, and emergence of the insects and of the weights of the cocoons and eggs as compared with those of other species.

Wullschlegel describes *Bombyx yama-maï* in its various stages, and indicates the mode of managing it. Mitth. Schw. ent. Ges. 1865, pp. 281–292.

Guérin-Méneville states that his *Saturnia bauhiniæ* forms the type of a new "subgenus," to which he gives the name of *Faidherbia* in honour of General Faidherbe, who first brought the possible use of its silk into notice. Comptes Rendus, tome lx. pp. 162–164, January 23, 1865 (see also Rev. Séric. i. pp. 20–29 & 41–50). In a subsequent note Guérin announces that the silk of this species had been wound off by M. Forgemol. *L. c.* pp. 341–342, February 13, 1865.

Lucas describes the cocoon, the egg, and the male perfect insect of *Saturnia bauhiniæ*. Ann. Soc. Ent. Fr. 4e sér. tome iv. pp. 727–732, and figures the cocoon *l. c.* pl. 10. fig. 6.

Cornalia (Atti Soc. Ital. Sci. Nat. vol. viii.) treats of the cultivation of *Lasiocampa otus* (Drury) and figures the moth, the egg, and the cocoon with with some details. *L. c.* pl. 2.

Hutton has published (Ent. Trans. 3rd ser. vol. ii. pp. 295–331) a second part of his memoir on the silkworms, in which he indicates that several species have been confounded under the common name of *Bombyx mori*. He discusses the phenomena of silk-production in various localities, and describes the general course of development of different forms of silkworms. 1. The true *Bombyx mori*, a native of the northern mountainous provinces of China, is the species domesticated in China, Cashmere, Persia, Syria, and Europe; its ordinary white caterpillar is figured by Hutton, pl. 19. fig. 8, and its dark larva, which is regarded by Hutton as the normal form, pl. 19. fig. 7. This silkworm is an annual; its larvæ and imago are described by Hutton, *l. c.* pp. 303–308. 2. *Bombyx textor*, sp. n., Hutton, *l. c.* pp. 309–312, the *Boropoolo* of Bengal and the "*Pat-major*" of Royle, is also an annual worm, and is said to have been introduced into India from China, where it is still cultivated. The larva is similar to that of *B. mori*. 3. *Bombyx cræsi*, sp. n., Hutton, *l. c.* p. 312, the *Nistry* and *Madrassee* worm of Bengal, and probably the "*Pat-minor*" of Helfer and Royle, is a "monthly" worm, furnishing seven or eight crops of silk in the year; it is smaller than either of the preceding, and the larva is of a pearly hue. 4. *Bombyx fortunatus*, sp. n., Hutton, *l. c.* p. 312, the *Dasee* worm of Bengal, is the smallest of the species; and the larva, when mature, is of a bluish leaden-grey colour (pl. 19. fig. 3). 5. *Bombyx arracanensis*, sp. n., Hutton, *l. c.* p. 313. 6. *Bombyx sinensis*, sp. n., Hutton, *l. c.* pp. 313–316, the small Chinese monthly worm, the *Sina* and *Cheena* of Bengal, is also a small species, differing both in the larva and perfect states from the other forms described. Of the wild species of *Bombyx* indigenous to India, Captain Hutton describes:—*B. huttoni* (Westw.), *l. c.* pp. 318–322, of which he figures the larva, pl. 19. fig. 4; *B. bengalensis*, sp. n., Hutton, *l. c.* pp. 322–323, larva pl. 19. fig. 5; *B. sherwilli*, sp. n. (Moore), Hutton, *l. c.* p. 324; *B. religiosæ* (Helfer), *l. c.* pp. 325–326. Other allied species described by the author in this paper are:—*Ocinara moorei*, sp. n., Hutton, *l. c.* pp. 326–328; *O. lactea*, sp. n., Hutton, *l. c.* pp. 32833 o, larva pl. 19. fig. 6; *O. comma*, sp. n., Hutton, *l. c.* p. 330. He also figures the larva of *Trilocha varians* (Moore), pl. 19. figs. 1 & 2, and remarks upon *Bombyx submotata* (Walk.) and *B. horsfieldi* (Moore), *l. c.* p. 324, and upon *Ocinara dilectula* (Walk.) and *O. lida* (Moore), *l. c.* p. 330.

Notes on the following matters connected with the cultivation of the common Silkworm were communicated to the Academy of Sciences in Paris:—On the disease of the Silkworm by Mouline, Comptes Rendus, lxi. pp. 413–416, 480, and 638–639 (see also Rev. Séric. 1865, pp. 226–230); Pasteur, *l. c.* pp. 506–512 (and Rev. Séric. pp. 276–286); Guérin-Méneville, *l. c.* lx. p. 1306 (and Rev. Séric. pp. 170–172); and A. Polaillon, *l. c.* p. 1307. Under the title of "Etudes chimiques et physiologiques sur les vers à soie" (Comptes Rendus, lxi. pp. 866–876), Eugène Péligot publishes a series of researches upon the chemical constitution of the eggs and larvæ of *Bombyx mori*, and the relation of their increase in weight and of their composition to the quantity and constitution of their food.

Girard calls attention to the probability that want of intercrossing may be the cause of the degeneration of the European silkworms. Bull. Soc. Ent. Fr. 1865, p. v.

Ferrario (Rendic. Ist. Lomb. vol. ii. pp. 48–50) recommends the use of mulberry-branches in rearing silkworms, and describes a table to be used for this purpose if his method be adopted on a large scale.

New genera and species:—

(*Bombycides.*)

Sphingicampa, g. n., Walsh. Proc. Bost. Soc. Nat. Hist. vol. ix. p. 290 (see Zool. Record, i. pp. 332 & 503). Sp. *S. distigma*, sp. n., Walsh, *l. c.* p. 290.

Walker (List Lepid. xxxii.) describes numerous new species of this group, referred to the following known genera:—*Bunæa* (1), *Copaxa* (1), *Antheræa* (3), *Hyperchiria* (12), *Dirphia* (3), *Gastropacha* (3), *Hydrias* (2), *Odonestis* (2), *Trabala* (2), *Opsirhina* (10), *Pachypasa* (2), *Lasiocampa* (6), *Megasoma* (6), *Lebeda* (4), *Eriogaster* (1), *Pœcilocampa* (2), *Callia* (1), *Clisiocampa* (1), *Tacillia* (1), *Ocha* (1), *Dryocampa* (1), *Adelocephala* (1), *Bombyx* (1), and *Trisula* (1); and the following as constituting new genera:—*Sarvena incompta* (p. 543), from Bogota; *Turuenna dirphioides* (p. 545), of unknown origin; *Panacela rufescens* (p. 546), from Moreton Bay; *Semuta pristina* (p. 547), from Australia; *Sabalia picarina* (p. 548), from the Zambesi; *Cotana rubrescens* and *C. vidua* (p. 549), from New Guinea; *Colla glaucescens* (p. 580), from Bogota; *Mustilia falcipennis* (p. 581), from Northern India; and *Andraca bipunctata* (p. 582), from India.

Bombyx dorycnii, Millière, Ann. Soc. Linn. Lyon, tome x. p. 229, pl. 43 (transformations and imago), from the south of France (= *B. franconica* of former authors).

Bombyx vandalicia, Millière, Icon. Lépid. ii. p. 93, pl. 62. figs 6 & 7 (with larva), from Spain.

Samia columbia, Smith, Proc. Bost. Soc. Nat. Hist. ix. p. 343, from Norway, Maine.

(*Saturnides.*)

Citheronia sepulcralis, sp. n., Grote and Robinson, Proc. Ent. Soc. Phil. vol. iv. p. 222, from Massachusetts.

(*Limacodides.*)

Walker (List Lepid. xxxii.) describes numerous new species of this group, belonging to the following known genera:—*Susica* (1), *Romosa* (1), *Anapæa*

(1), *Miresa* (5), *Perna* (1), *Nyssia* (7), *Parasa* (5), *Limacodes* (4), *Naprepa* (3); and the following as examples of new genera:—*Hyphorma minax* (p. 493), from Northern China; *Eloasa calida* (p. 494), from Moreton Bay; *Aphendala transversata* (p. 495), from India; *Comana collaris* (p. 496), from Northern Australia; *Belgoræa subnotata* (p. 497), from India; *Hysibada varipes* (p. 498), from Natal; *Zebonda basigutta* (ibid.), from Rio Janeiro; *Cothocida nigrifera* (p. 499), from North America; *Celama liparisalis* (p. 500), from Sarawak; *Toana semiochrealis* (p. 501), from Sarawak; *Carnotena xanthiata* (p. 502), from Ega; *Orvasca subnotata* (ibid.), from India; *Magava multilinea* (p. 503), from Limas; *Probalintha inclusa* (p. 504), from Natal; *Bembina apicalis* (p. 505), from Ceylon; *Evonima aperta* (p. 506), from Java; *Erizada lichenaria* (p. 507), from Java; *Rabila frontalis* (p. 508), from Ceylon; *Belippa horrida* (p. 509), from Northern China; *Adrallia bipunctata* (p. 510), from Natal.

Limacodes? hyalinus, Walsh, Proc. Bost. Soc. Nat. Hist. vol. ix. p. 299.

(*Psychides.*)

Oreopsyche, g. n., Speyer, Stett. ent. Zeit. 1865, p. 250 (= *Psyche*, Abth. v. H.-Sch.). Nervules from the median cell 7 or 8 in fore wings, 4 or 5 in hind wings; median cell of hind wings bipartite; pectinations of the antennæ very long. Type *Psyche tenella* (Spey.). Speyer gives a classification of the other species of this group.

Conæca, g. n., Scott, Austr. Lepid. p. 26. ♂ and ♀ winged; wings long and narrow, lanceolate; abdomen longer than anterior wings, last segment with long hairs; head very small; antennæ long, subserrate in ♂, in ♀ filiform; palpi very small, last joint minute, 1 and 2 subequal, longer, pilose. Sp. *C. guildingi*, sp. n., Scott, *l. c.* p. 27, pl. 9, from New South Wales.

Œcobia, g. n., Scott, *l. c.* p. 27. ♂ and ♀ winged; anterior wings triangular, costa arcuate; abdomen much longer than fore wings, last segment with long hairs partly concealing the ovipositor; antennæ long, filiform; palpi porrect, first and last joints equal, last slender, acuminate; legs robust. Sp. *Œcobia frauenfeldi*, sp. n., Scott, *l. c.* p. 28, pl. 9, from New South Wales.

Œcinea (MacLeay, MS.), Scott, *l. c.* p. 28. Wings more or less developed in ♀, trigonate; abdomen exceeding wings in ♀, not exceeding wings in ♂, last segment with long hairs, ovipositor long; antennæ long, subserrate below in ♂, subfusiform and squamose in ♀; palpi minute. Sp. *Œ. felderi*, and *Œ. scotti* (MacL. MS.), Scott, *l. c.* p. 29, pl. 9, from New South Wales.

Walker (List Lepid. xxxii.) describes *Perina bipars* (p. 406), from India; *Mondu* (g. n.) *delicatissima* (p. 407), from the Cape.

Psyche dardoinella, sp. n., Millière, Ann. Soc. Linn. Lyon, tome x. p. 192, pl. 37. figs. 8–11 (♂ imago, details, and case), from Marseilles.

Fumea sapho, sp. n., Millière, Icon. Lépid. ii. p. 25, pl. 54. figs. 1 & 2, from Germany.

Fumea flavociliella, sp. n., Mann, Wien ent. Mon. Band viii. p. 177, taf. 4. fig. 3, from Brussa.

(*Dasychirides.*)

Walker (List Lepid. xxxii. pp. 324–326) describes six new species of *Orgyia*, and (pp. 360–363) eight new species of *Dasychira*.

Dasychira albodentata, sp. n., Bremer, *l. c.* p. 102, pl. 8. fig. 13, from Kiachta.

Argyia nova, sp. n., Fitch, 8th Rep. Ins. New York, pp. 193–199, living on fruit-trees in New York.

(*Liparides.*)

Walker (List Lepid. xxxii.) describes numerous new species of this group belonging to the following known genera:—*Aroa* (4), *Artaxa* (7), *Charnidas* (1), *Anthora* (3), *Lacida* (3), *Amsacta* (1), *Eloria* (1), *Cypra* (1), *Genusa* (3), *Penora* (1), *Redoa* (1), *Leucoma* (3), *Euproctis* (18), *Cispia* (1), *Poloma* (1), *Lopera* (1), *Lymantria* (8), *Darala* (7), *Dreata* (7), *Tanada* (2), *Archylus* (1), and *Naxa* (1).

The following are described as types of new genera:—*Cozistra subnudata* (p. 342), from Ceram and Mysol; *Axuenna*, type *Eloria discalis* (Walk.); *Euchontia sublactigera* (p. 383), from Bogota; *Aza micacea* (p. 384), from Bogota; *Contheyla vestita* (p. 385), from South India; *Cynosarga ornata* (p. 386), from Moreton Bay; *Echlida subjecta* (p. 387), from South India; *Sitvia denudata* (p. 388), from Malacca; *Etobena circumdata* (ibid.), from New Guinea; *E. lineosa* (p. 389), from Singapore; *Laganda picaria* (ibid.), from Mysol; *Cozola leucospila* (p. 390), *submarginata* (p. 391), and *biplagiata* (ibid.), from Celebes; *Adlullia lunifera* (p. 392), *præcurrens* (ibid.), *signata* and *innotata* (p. 393), from Celebes, &c.; *Ticilia argentilinea* (p. 394), from Singapore; *Themaca comparata* (p. 395), from North India; *Munychryia senicula* (p. 396), from Moreton Bay; *Ciaca urapterides* (p. 397), from Sumatra; *Marane subargentea* (ibid.), from North Australia; *Gazalina venosata* (p. 398), from India; *Bazisa detecta* (p. 399), from India; *Pida apicalis* (p. 400), from North India; *Icambosida nigrifrons* (p. 401), from India; *Odagra devestita* (p. 402), from North India; *Mardara calligramma* (p. 402), from North India; *Bathyra*, type *Diphtera sagata* (Walk.); *Phreata glaucoalba* (p. 404), from Bolivia.

Aroa alba, sp. n., Bremer, Mém. Acad. St. Péters. viii. p. 41, pl. 3. fig. 18, and *A. subflava*, Brem. ibid., pl. 3. fig. 19, from East Siberia.

Artaxia confusa, sp. n., Bremer, *l. c.* p. 42, pl. 4. fig. 5, from East Siberia.

(*Notodontides.*)

Walker (List Lepid. xxxii.) describes numerous new species of this subfamily, belonging to the following genera:—*Cerura* (4), *Destolmia* (1), *Notodonta* (2), *Ochrostigma* (1), *Drymonia* (3), *Lophopteryx* (1), *Ramesa* (1), *Stauropus* (1), *Heterocampa* (11), *Exæreta* (1), *Edema* (7); *Gluphisia* (1), *Cnethocampa* (1), *Phalera* (1), *Ichthyura* (2), *Nioda* (1), *Nerice* (1), *Rilia* (3), *Rigema* (3), *Parathyris* (2), *Anticyra* (2).

And the following as constituting new genera:—*Cimbina cucullodes* (p. 445), from Java; *Charadra contigua* (p. 446), from Georgia?; *Dudusa nobilis* (p. 447), from North China; *Psaphida resumens* (p. 448), from Georgia; *Certila flexuosa* (p. 449), from North America; *Misogada sobria* (p. 450), from North America; *Hatima semirufescens* (p. 450), from North America; *Acherdoa ferraria* (p. 451), from Florida; *Collyta lanceolata* (p. 452), from Moreton Bay; *Turnaca acuta* Moreton Bay; *Vunga delineata* (p. 453), from Moreton Bay; *Turnaca acuta* (p. 454), from Canara; *Gargetta costigera* (p. 455), from North India; *Besida xylinata* (p. 456), from Java; *Sphetta apicalis* (p. 457), from Ceylon; *Gallaba*

duplicata (p. 458), from Moreton Bay; *Besaia rubiginea* (p. 459), from India; *Boreconia subviridis* (p. 460), from South Africa; *Cascera muscosa* (p. 461), from Swan River; *Menapia xanthophila* (p. 462), from North India; *Ceira metaphæa* (ibid.), from Ceylon; *Celeia plusiata* (p. 463), from Canara; *Braura ligniclusa* (p. 464), from Natal; *Bellura gortynoides* (p. 465), from North America; *Sybrida inordinata* (p. 466), from North India; *Arundia opponens* (p. 467), from South India; *Torona ferrifera* (p. 468), from India; *Lirimiris lignitecta* (p. 469), origin unknown; *Zama ursipes* (p. 469), from West Africa; *Arcilasisa sobria* (p. 470), from South India; *Etobesa ligneata* (p. 471), from Ega; *Mamala instructalis* (p. 472), from St. Domingo.

(*Platypterycides.*)

Walker (List Lepid. xxxii.) describes the following species:—*Nataxa rubida* (p. 512), from Australia; *Tagora antheræata* (ibid.), from Ceylon; *Apona rosea* (p. 513), from India; *Metadula* (g. n.) *indecisa* (p. 514), from the Zambesi; *Thymistada* (g. n.) *tripunctata* (p. 515), from India; *Siculodes annuligera* (p. 516), from the Amazons; *Vadata* (g. n.) *macropterana*, *eurymenana*, and *subchalybæa* (p. 517), from Brazil; *Ortospeda* (g. n.) *trilineata* (p. 519), from Bogota; *Risama* (g. n.) *picta* (p. 519), from Brazil; *Aziba* (g. n.) *transversa* (p. 520), from Brazil; *Iza* (g. n.) *botydana* (p. 522), from Para; *I.? terminalis* (ibid.), from St. Domingo; *Morova* (g. n.) *subfasciata* (p. 523), from New Zealand.

Arctiidæ.

Chelonia latreillei (God.). The transformations, imago, and varieties of this species are described and figured by Millière, Ann. Soc. Linn. Lyon, tome x. pp. 217–222, pl. 41.

Chelonia flavida (Brem.) is figured and described by Bremer, Mém. Acad. St. Pétersb. viii. p. 39, pl. 4. fig. 4.

The following known species and varieties of known species are described and figured by Millière, Iconogr. et Descr. de Chen. et Lépid.:—*Nemeophila?* *metelkana* (Led.), with 2 vars., *l. c.* i. pp. 395–398, pl. 49. figs. 1–4; *Spilosoma zatima* (Cram.) and var., *l. c.* pp. 398–401, pl. 49. figs. 5–7, taken in Heligoland; *Chelonia hebe* (Linn.), 3 singular varieties, *l. c.* ii. pp. 17–20, pl. 53. figs. 1–3; *C. caja*, 2 varieties, *l. c.* pp. 23–25, pl. 53. figs. 6 & 7; and *Arctia quenselii* (Payk.), 4 varieties, 2 figured, *l. c.* pp. 20–23, pl. 53. figs. 4 & 5.

The metamorphoses of *Chelonia cervini* are described and figured by Fallou, Ann. Soc. Ent. Fr. 4e sér. tome iv. pp. 679–681, pl. 10. figs. 1–3; fig. 3 represents the ♂. Guenée also describes this species in all its states (*l. c.* pp. 681–683), and likewise *Chelonia quenselii* (*l. c.* pp. 683–685), and discusses the nature and position of the genus *Nemeophila*, to which, if it be sustained, they must be referred. If the so-called *Nemeophilæ* be separated from *Chelonia*, they must further be divided into two genera: namely, *Nemeophila*, with the palpi isolated and very distinct, the trunk and antennæ long, the two sexes very different, &c., including *N. russula*; and *Chionophila*, with the palpi incumbent, the trunk rudimentary, the antennæ short and scarcely pectinated, the two sexes similar, &c., including *N. plantaginis*, *quenselii*, *glaphyra*, *virguncula*, and *cervini*.

Newman describes the larva of *Chelonia villica*, Entomol. ii. p. 221.

Arctia caja. This insect is described by Fitch as injurious to garden-produce in New York (9th Rep. Ins. New York, pp. 234–237). He regards *Arctia americana* (Harris) as identical with the European species.

figs. Eichenbach describes a peculiar variety of *Euprepia villica*. Nova Acta Sad. Cæs.-Leop. tom. xxxii. 2 pp. *cum fig. col.*

Ten species of this group are cited by Ballion as occurring in the neighterhood of Gorki. Bull. Soc. Nat. Mosc. xxxvii. pt. 1. pp. 366–367.

l. c. *Timpanophora*, g. n., Laboulbène, Ann. Soc. Ent. Fr. 4e sér. tome iv. p. 704. pl. 5. ed to *Chelonia*, but possessing a vesicular organ of sound on each side of the metathorax, and presenting other distinctive characters both in the larval and perfect states. Type *Chelonia pudica* (Esper).

Arctia speciosa, sp. n., Möschler, Wien. ent. Mon. Band viii. p. 195, taf. 5. figs. 13 & 14, from Labrador.

Halesidota antiphola, sp. n., Walsh, Proc. Bost. Soc. Nat. Hist. vol. ix. p. 288, from Illinois (see Zool. Record, 1864, pp. 332 & 510).

Callidula felderi, sp. n., Bremer, Mém. Acad. St. Pétersb. viii. p. 38, pl. 4. fig. 3, from East Siberia.

Lithosiidæ.

Setina. Guenée (Ann. Soc. Ent. Fr. 4e sér. tome iv. pp. 399–401) states that the tympaniform vesicles observed by him on the pectoral region of the males of *Setina* are, as he supposed, organs of sound. The sound emitted is a sort of crepitation, but its object and the means by which it is produced are alike unexplained. Guenée likewise discusses (*l. c.* pp. 401–404) the question of the specific distinctness of the forms described under the names of *S. ramosa*, *kuhlweini*, and *aurita*, which have been regarded as belonging to the same species. His opinion is that the three are distinct.

M'Lachlan publishes an abstract of Guenée's paper on the sounds produced by *Setina*. Ent. M. Mag. ii. pp. 70–71.

Snellen has discovered the presence of ocelli in *Lithosia rubricollis*, *quadra*, and *griseola*, and maintains that the chief distinction between the Lithosiidæ and Arctiidæ is thus broken down. Tijdschr. voor Entom. 1865, pp. 94–95.

Bremer describes and figures *Calligena rosacea* (Brem.), Mém. Acad. St. Pétersb. viii. p. 37, pl. 3. fig. 14; *Nudaria ochracea* (Brem.), *l. c.* p. 38, pl. 3. fig. 15; and *Setina flava* (Brem.), *l. c.* pl. 8. fig. 7.

Guenée describes and figures the female and larva of *Lithosia vitellina* (Boisd.), Ann. Soc. Ent. Fr. 4e sér. tome v. p. 306, pl. 8. fig. 4. The male of this species is the *L. pallifrons* (Zell.) He also remarks upon the distinctive characters of *L. vitellina* and *L. pygmæola* (*l. c.* p. 307).

Ballion enumerates eight species of this group as inhabitants of Gorki and its neighbourhood. Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 366.

Fallou describes and figures a peculiar and constant variety of *Setina anderegii* (H.-Sch.) discovered by him at Zermatt, to which he gives the name of *riffellensis*. Ann. Soc. Ent. Fr. 4e sér. tome v. pp. 97–100, pl. 2. fig. 2.

The habits of *Setina kuhlweinii* are described by Zeller, who also refers to the variations of the species observed by him in abundance at Meseritz. He likewise indicates the differences between this and allied species, regarding it as identical with Freyer's *S. complecta*, but distinct from *S. roscida*. Stett. ent. Zeit. 1865, pp. 30–37.

Lithosia cameola. The Entomologist (vol. ii. pp. 255–256) contains notes on the natural history of this species by E. Birchall.

New species :—

Lithosia ochraceola, Bremer, Mém. Acad. St. Pétersb. viii. p. 37, pl. 5. fig. and *L. affineola*, Brem. *l. c.* p. 97, pl. 8. fig. 5, from East Siberia.

Calligena pallida, Bremer, *l. c.* p. 97, pl. 8. fig. 7, from East Siberia.

Crocota treatii, Grote, Proc. Ent. Soc. Phil. vol. iv. p. 322, from M. chusetts.

Cyrtosia ocellata, Grote, *l. c.* p. 322, pl. 2. fig. 2, from New Jersey.

Nudaria ? massiliensis, Millière, Ann. Soc. Linn. Lyon, tom. x. p. 222, pl. 42. figs. 1–3, from Marseilles.

Noctuidæ.

Ballion, in his Catalogue of the Lepidoptera of Gorki (Bull. Soc. Nat. Mosc. xxxvii. pt. 1. pp. 372–379), enumerates 90 species of this family, and adds that he has 17 undetermined forms, raising the total to 107 species. Of the 90 species also 2 *Cucullieæ* and 1 *Plusia* are specifically undetermined. Among the species are *Plusia cheiranthi* and *Toxocampa lusoria*.

Leucania loreyi and *L. turca*, and *Erastria venustula* occur in the list of Lepidoptera new to the Dutch fauna. Tijdschr. voor Entom. 1865, pp. 34–35.

Möschler (Wien. ent. Mon. Bd. viii. p. 196) has corrected and supplemented his description of his *Agrotis comparata* and *A. septentrionalis* from Labrador. The same author remarks (*l. c.* p. 198) that *Agrotis hyperborea* and *Pachnobia carnea* (*vide* Staud. Catal.) belong to the same genus, and differ from the other *Pachnobiæ* in the form of the anal valves in the ♂.

Fologne remarks (Ann. Soc. Ent. Belg. tom. viii. p. 275) that the examples of *Agrotis cursoria* taken by him at Ostend differ in colour from those observed at Campine. Some specimens agree precisely with *A. sagitta* Hübn., H.-Sch.); and as intermediate forms occur, he regards the whole as forming one species. *Agrotis tritici* and *aquilina* also appear to be identical. Specimens of *Luperina testacea* from Ostend are very dark or nearly black in colour. The occurrence of *Hydrilla uliginosa* in Belgium is noticed by Fologne (*l. c.* p. 273).

Fallou states that his *Bryophila guenei* proves to be only a variety of *Erastria fuscula*. Ann. Soc. Ent. Fr. 4e sér. tom. iv. p. 688.

Gortyna. Grote discusses the synonymy of the North American species of this genus. Proc. Ent. Soc. Phil. vol. iv. pp. 324–325.

Lederer (Wien. ent. Mon. Bd. viii. p. 169) describes a large variety of the ♂ *Heliothis purpurascens* (Tauscher) from Imeretia.

Bellier de Chavignerie exhibited (April 12, 1865) living caterpillars of *Polia asphodeli* (Ramb.) which had fed through the preceding winter, having been hatched in October 1864, from eggs brought from Corsica. He states that he regards this species as distinct from *P. pumicosa* (Hübn.). Bull. Soc. Ent. Fr. 1865, p. xix.

Grote (Proc. Ent. Soc. Phil. vol. iv. p. 320) describes a variety of *Catocala amatrix* (Hübn.) = *C. selecta* (Walk.), and discusses the characters of *C. desperata* and *C. vidua*.

The following known species are described and figured by Millière,

Iconogr. et Descr. de Chen. et Lépid. :—*Pachnobia carnea* (Thunb.), *l. c.* i. pp. 380–381, pl. 45. fig. 8; and *P. hyperborea* (Dalm.), *l. c.* ii. p. 79, pl. 60. figs. 3 & 4.

The same author describes and figures the transformations of the following species :—*Eriopus latreillii* (Dup.), *l. c.* i. pp. 388–391, pl. 47. figs. 4–7; *Hecatera cappa* (Hübn.), *l. c.* pp. 393–395, pl. 48. figs. 3–6; *Cerastis buxi* (Boisd.), *l. c.* ii. pp. 15–17, pl. 52. figs. 5–8; *Glottula pancratii* (Cyr.), *l. c.* pp. 30–32, pl. 54. figs. 6–9; *Noctua conflua* (Tr.), *l. c.* pp. 58–60, pl. 58. figs. 1–3; *Crymodes sommeri* (Lef.), *l. c.* pp. 61–63, pl. 58. figs. 4–6; and *Xanthodes graellsii* (Festh.), *l. c.* pp. 73–77, pl. 59. figs. 6 & 7.

Anarta bohemani (Staud.) is described and figured by Millière, Ann. Soc. Linn. Lyon, tom. x. p. 203, pl. 39, fig. 6.

Agrotis tritici (Linn.). A variety (E) of this species is described and figured by Millière, *l. c.* p. 239, pl. 44. figs. 7 & 8.

Polia cærulescens (Boisd.). The transformations and imago of this species are described by Millière, *l. c.* pp. 209–212, pl. 40. figs. 5–7.

The following known species from East Siberia are described and figured by Bremer in Mém. Acad. St. Pétersb. viii. :—*Asteroscopus atrovittatus* (Brem.), p. 46, pl. 5. fig. 4; *Thyatira trimaculata* (Brem.), p. 47, pl. 5. fig. 5; *Cymatophora albicostata* (Brem.), ibid., pl. 5. fig. 6; *Acromycta major* (Brem.), p. 48, pl. 5. fig. 7; *Acromycta lutea* (Brem.), pl. 4. fig. 7; *Leucania radiata* (Brem.), p. 48, pl. 5. fig. 8; *Caradrina tristis* (Brem.), p. 49, pl. 5. fig. 9; *Caradrina montana* (Brem.), ibid., pl. 4. fig. 8; *Agrotis ononensis* (Brem.), p. 50, pl. 4. fig. 9; *Noctua speciosa* (Brem.), ibid., pl. 4. fig. 10; *N. fuscostigma* (Brem.), p. 51, pl. 5. fig. 10; *N. descripta* (Brem.), ibid., pl. 4. fig. 11; *Xanthia flavostigma* (Brem.), p. 52, pl. 5. fig. 11; *Miselia viridimixta* (Brem.), ibid., pl. 5. fig. 12; *Cloantha intermedia* (Brem.), p. 53, pl. 5. fig. 13; *Cucullia perforata* (Brem.), p. 54, pl. 5. fig. 14; *Leocyma albonitens* (Brem.), p. 55, pl. 5. fig. 15; *Glaphyra atomosa* (Brem.), ibid., pl. 5. fig. 16; *Toxocampa maxima* (Brem.), p. 57, pl. 5. fig. 17; *Catocala dislara* (Brem.), p. 59, pl. 4. fig. 13; *C. dula* (Brem.), ibid., pl. 4. fig. 14; *C. similis* (Brem.), p. 60, pl. 4. fig. 15; *Agnomonia juvenilis* (Brem.), p. 61, pl. 5. fig. 18; *Remigia ussuriensis* (Brem.), ibid., pl. 5. fig. 19.

Cucullia lychnitidis. Larvæ of *Cucullia* taken on *Scrophularia*, near Lemberg, furnished *C. lychnitidis*; and no examples of the true *C. scrophulariæ* made their appearance. Hence Nowicki concludes that Speyer's supposition that *C. lychnitidis* is only a variety of *C. scrophulariæ* may be correct. Verh. zool.-bot. Ges. in Wien, xv. p. 179.

The Entomologist (vol. ii.) contains notes on *Caradrina cubicularis* by Buckler, p. 205, and *Anarta myrtilli* by Clifford, p. 208.

Agrophila sulphuralis. The habits of this species are noticed by Bond, Ent. M. Mag. i. p. 214.

Newman gives life-histories of the following species :—*Tæniocampa miniosa*, Entom. ii. pp. 249–250; *Agrotis segetum*, Zool. 1865, pp. 9545–49; and *Hadena rectilinea*, *l. c.* pp. 9747–48. He also describes the larvæ of *Acromycta strigosa*, Entom. ii. pp. 156–157, and *Nonagria pudorina* and *lutosa*, *l. c.* pp. 224–225.

Guenée describes the metamorphoses of *Plusia devergens* (Hübn.). Ann. Soc. Ent. Fr. 4e sér. tome v. pp. 93–94, pl. 8. fig. 5.

G. Weymer publishes (Stett. ent. Zeit. 1865, pp. 106–110) an account of the transformations of *Pachnobia leucographa*, correcting some errors in Treitschke's description of the larva.

Agrotis ripæ. Snellen describes the larva of this species. Tijdschr. voor Entom. 1865, pp. 70–72, pl. 2. fig. 5.

The larvæ of the following species are described by Buckler in Ent. M. Mag. vol. ii.:—*Agrotis ravida*, pp. 115–116; *A. aquilina*, p. 133; *A. nigricans*, p. 162; *Leucania putrescens*, p. 94; *Hadena rectilinea*, p. 20; and *Toxocampa craccæ*, p. 67.—The last mentioned is noticed by Hellins (*l. c.* p. 68), who also describes the larva of *Phytometra ænea*, *l. c.* p. 163.

Hellins describes a variety of the larva of *Tæniocampa gracilis*. Ent. M. Mag. i. p. 283.

Caterpillars of *N.* (*Orrhodia*) *rubiginea* have been obtained from nests of *Lasius fuliginosus* by Von Hagens. Berl. ent. Zeits. 1865, p. 112.

Weymer (Stett. ent. Zeit. 1865, p. 113) also states that larvæ of *Orrhodia rubiginea* have been found in nests of *Formica fuliginosa*. He also states that *Xylocampa lithoriza* is not double-brooded, and mentions *Lonicera periclymenum* and *Senecio nemorensis* as food-plants of *Plusia iota* (ibid.).

Grote states that the larva of *Heliothis armigera* (Hübn.) = *umbrosus* (Grote) is destructive to the cotton-plant. Proc. Ent. Soc. Phil. vol. iv. p. 328, note.

The larva of *Agrotis segetum*, as being injurious to the coffee-plantations in Ceylon, is noticed by Nietner, and referred to by Guérin, Rev. et Mag. de Zool. 1864, pp. 58–60.

The occurrence of *Galleriomorpha lichenoides* on the coffee-trees is also noticed, *l. c.* p. 60.

The habits of the larvæ of *Toxocampa craccæ* are recorded by Bond. Proc. Ent. Soc. 1865, p. 101.

Caradrina cubicularis. The larvæ of this species have been found in great abundance feeding on peas in the field. W. Buckler, Ent. M. Mag. i. p. 213.

On the hybernation of the larva of *Hadena rectilinea*, see Edmunds, Ent. M. Mag. ii. p. 19.

The habits of *Dasypolia templi* are noticed by Dunning, on the authority of Rev. J. Collins, Proc. Ent. Soc. 1865, p. 61.

On the occurrence of *Noctuidæ* in sugar, see Barrett in Ent. M. Mag. i. p. 214; and on their association with species of other families, *l. c.* p. 264.

Taschenberg (Naturg. wirbell. Thiere) describes the characters and habits of the following species of this family injurious to agricultural produce, and especially indicates the means of determining the larvæ:—*Agrotis segetum*, *l. c.* pp. 100–103, pl. 1. figs. 8–10; *A. exclamationis*, *l. c.* pp. 103, 104, pl. 1. figs. 11 & 12; *A. tritici*, *l. c.* pp. 104–105, pl. 1. figs. 13 & 14; *A. fumosa*, *l. c.* pp. 105–106; *A. corticea*, *l. c.* pp. 106–107; *Hadena polyodon*, *l. c.* pp. 107–108, pl. 5. figs. 9–11; *H. lateritia*, *l. c.* pp. 108–109, pl. 5. fig. 12 (tail of pupa); *H. basilinea*, *l. c.* pp. 109–111, pl. 4. figs. 7–9; *H. infesta*, *l. c.* pp. 111–113; *Neuronia popularis*, *l. c.* pp. 113–115, pl. 5. figs. 7 & 8; *Charæas graminis*, *l. c.* pp. 115–116, pl. 5. figs. 4–6; *Mamestra brassicæ*, *l. c.* pp. 116–119, pl. 3. figs. 6–8; *M. persicariæ*, *l. c.* pp. 119–121, pl. 6. fig. 15 (larva); *M. pisi*, *l. c.* pp. 121–122, pl. 6. figs. 16 & 17; *M. oleracea* and *suasa*, *l. c.* p. 253; and *Plusia gamma*, *l. c.* pp. 122–124, pl. 1. figs. 5–7

Agrotis nigricans (Linn.), var. *maiji*. The larva of this moth is described by Fitch (9th Rep. Ins. New York, pp. 237–250), under the name of the *Corn Cut-worm*, from its cutting off young Indian corn and other plants near the ground. The habits of the larva are described in great detail, and the imago is figured, pl. 4. figs. 2 & 3. The chief enemy of this species is *Calosoma calidum*.

New genera and species:—

Ripogenus, g. n., Grote, Proc. Ent. Soc. Phil. vol. iv. p. 325. Allied to *Eutelia*; head somewhat immersed; antennæ short, bipectinate for two-thirds of length; palpi projecting, third joint obtuse; abdomen conical, obtuse, with two anal tufts; wings narrow, apical margin of fore wings with two teeth. Sp. *R. pulcherrimus*, sp. n., Grote, *l. c.* p. 326, from New Jersey.

Heliocheilus, g. n., Grote, *l. c.* p. 328. Allied to *Heliothis*; head smaller, and clypeus more globose and prominent; wings broad and short, venation in ♀ as in *Heliothis*, different in ♂. Sp. *H. paradoxus*, sp. n., Grote, *l. c.* p. 329, pl. 2. figs. 3–5, from the Colorado Territory.

Euleucyptera, g. n., Grote, *l. c.* p. 329. Allied to *Heliothis* and *Anthœcia*; costal margin of anterior wings depressed, apex produced; anterior tibiæ without terminal spines. Sp. *E. cumatilis*, sp. n., Grote, *l. c.* p. 330, pl. 2. fig. 6, from the Colorado Territory.

Leptina formosa, Grote, Proc. Ent. Soc. Phil. vol. iv. p. 323, from Massachusetts.

Acontia metallica, Grote, *l. c.* p. 327, pl. 2. fig. 7, from New Jersey.

Calpe canadensis, Bethune, Proc. Ent. Soc. Phil. vol. iv. p. 213, from Canada West.

Homoptera nigricans, Bethune, Proc. Ent. Soc. Phil. vol. iv. p. 214, and *H. saundersii*, Beth. *l. c.* p. 215, from Canada West.

Dianthœcia phoca, Möschler, Wien. ent. Mon. Bd. viii. p. 197, tab. 5. fig. 15, from Labrador.

Bolina maximowiczi, Bremer, Mém. Acad. St. Pétersb. viii. p. 58, pl. 4. fig. 12, from the Amur = *B. flavomaculata* (Brem. olim).

Toxocampa recta, Bremer, *l. c.* p. 98, pl. 8. fig. 9, from East Siberia.

Acronycta literata, Bremer, *l. c.* p. 102, pl. 8. fig. 14, from Kiachta.

Plusia ornata, Bremer, *l. c.* p. 103, pl. 8. fig. 15, from Kiachta.

Caradrina variabilis, Bellier de la Chav. Ann. Soc. Ent. Fr. 4ᵉ sér. tome v. p. 104, pl. 2. fig. 1, from Corsica.

Caradrina infusca (Staud.), Constant, Ann. Soc. Ent. Fr. 4ᵉ sér. tome v. p. 194, pl. 7. fig. 10, from the Landes.

Walker (List. Lepid. xxxii. & xxxiii.) describes a great number of new species of this family, occupying indeed upwards of 500 pages of the supplements to his Catalogue of the Lepidoptera in the British Museum. The following known genera are represented among them:—*Cymatophora* (2 sp.), *Aquis* (1), *Diphtera* (7), *Acronycta* (1), *Leucania* (8), *Nonagria* (1), *Pitara* (1), *Polytela* (1), *Euthisanotia* (1), *Chasmina* (1), *Giscala* (1), *Hydrœcia* (1), *Xylophasia* (2), *Spodoptera* (1), *Laphygma* (10), *Prodenia* (2), *Heliophobus* (2), *Mamestra* (21), *Apamea* (5), *Miana* (8), *Celæna* (1), *Perigea* (8), *Caradrina* (2), *Agrotis* (24), *Spælotis* (1), *Epilecta* (1), *Graphiphora*

(3), *Orthosia* (5), *Dabarita* (1), *Dianthœcia* (1), *Polia* (1), *Euplexia* (1), *Polyphœnis* (1), *Eurois* (2), *Hadena* (26), *Erana* (2), *Xylina* (15), *Nystalea* (4), *Calophasia* (2), *Alaria* (1), *Lepipolys* (1), *Heliothis* (2), *Anthœcia* (2), *Panemeria* (2), *Areola* (1), *Agrophila* (5), *Xanthodes* (5), *Euphasia* (1), *Acontia* (8), *Ariolica* (1), *Erastria* (9), *Hydrelia* (1), *Micra* (3), *Anthophila* (6) *Microphysa* (1), *Palindia* (2), *Callopistria* (1), *Penicillaria* (4), *Eutelia* (11), *Varnia* (8), *Abrostola* (1), *Plusia* (11), *Plusiodonta* (7), *Oraesia* (1), *Calpe* (2), *Deva* (2), *Hemiceras* (2), *Hyblæa* (4), *Cosmophila* (1), *Anomis* (1), *Gonitis* (3), *Amphipyra* (1), *Toxocampa* (4), *Polydesma* (2), *Alamis* (2), *Homoptera* (24), *Cœnipeta* (2), *Hypogramma* (2), *Briarda* (3), *Gadirtha* (3), *Diomea* (2), *Catephia* (1), *Anophia* (1), *Erygia* (1), *Stictoptera* (2), *Lophoptera* (3), *Andea* (1), *Steiria* (3), *Maceda* (1), *Hypocala* (1), *Catocala* (2), *Ophideres* (1), *Brujas* (1), *Sypna* (1), *Tavia* (5), *Nyctipao* (1), *Ommatophora* (1), *Spiramia* (1), *Entomogramma* (2), *Ophisma* (10), *Achæa* (4), *Calesia* (1), *Hypætra* (3), *Athyrma* (4), *Ophiusa* (7), *Fodina* (2), *Grammodes* (2), *Euclidia* (4), *Poaphila* (13), *Phurys* (7), *Nocis* (2), *Baniana* (2), *Remigia* (20), *Zethes* (1), *Thyridospila* (7), *Focilla* (1), *Lacera* (1), *Amphigonia* (2), *Episparis* (1), *Thermesia* (42), *Azeta* (1), *Selenis* (7), *Ephyrodes* (3), *Capnodes* (9), *Dialithis* (1), *Ctypansa* (3), *Hypernaria* (18).

The following are described as types of new genera:—(Cymatophoridæ) *Bapara obliterosa* (p. 603), from New Guinea; *Bariana submuscosa* (p. 604), from Java; *Lazanda fasciata* (p. 605), from India; *Saligena personata* (p. 606), from North America: (Bryophilidæ) *Panassa cingalesa* (p. 607), from Ceylon; *Elesma subglauca* (p. 608), from Australia; *Exacosmia rubiginosa* (p. 609), from Australia; *Sina tenera* (p. 610), from Australia; *Casama indeterminata* (p. 611), from South India: (Acronyctidæ) *Detunda atronivea* (p. 619), from New Zealand; *Gaurena florens* and *florescens* (p. 620), from Darjeeling; *Bithra spilosomoides* (p. 621), from South Africa: (Leucanidæ) *Cirphis costalis* (p. 623), from Tasmania; *Catabena lineolata* (p. 631); *Hermonassa consignata* (p. 632), from Darjeeling; *Eldana saccharina* (p. 633), from Sierra Leone; *Chœrecla chrysargyria* (p. 634), from Bouru and Ceram; *Crambopsis excludens* (p. 634), from Ceylon: (Glottulidæ) *Arbassera candida* (p. 638), from Cambodia, and *A. scripta* (p. 639), from Aru; *Chaladra cucullioides* (p. 640), from Ceram; *Galadra rhomboidata* (p. 641), from New Guinea; *Sinna calospila* (p. 642), from Java; *Politeia junctilinea* (p. 643), from New Zealand: (Gortynidæ) *Arzama densa* (p. 645), from North America; *Fagitana lucidata* (p. 645): (Episemidæ) *Oxira ochracea* (p. 657), from Ceylon: (Apamidæ) *Ozarba punctigera* (p. 685), from China and Moreton Bay: (Noctuidæ) *Tetrapyrgia graphiphorides* (p. 712), from Tasmania; *Elegarda orthosioides* (ibid.), from Moreton Bay, and *E. summa* (p. 713), from Tasmania: (Orthosidæ) *Rhizana metarhoda* (p. 720), from Java: (Hadenidæ) *Sarbanissa insocia* (p. 746), from North India; *Ariathisa atrosignata* (p. 747), from Natal; *Lochia apicalis* (p. 748), from Australia.: (Xylinidæ) *Corymbia smerinthoides* (p. 765), from Demerara; *C. obliqua* (p. 766), from Madras; and *C. simplex* (ibid.), from Cayenne; *Osica glauca* (p. 767), from Moreton Bay: (Acontidæ) *Caoma pulchripicta* (p. 790), from North India: (Anthophilidæ) *Lerna nivosa* (p. 805), from Australia: (Palindidæ) *Armactica columbina* (p. 808), from Moreton Bay: (Dyopsidæ) *Maxera subocellata* (p. 809), from West Africa; *Michera submurina* (p. 810), from Swan River: (Eriopidæ) *Perciana marmorea* (p. 813), from India: (Eurhipidæ) *Mestleta abrupta* (p. 830), from India; *Pacidara venustissima* (p. 831), from Natal: (Placodidæ) *Bithiga rubrisparsa* (p. 832), from Venezuela: (Calpidæ) *Rhiscipha scissa* (p. 851), from Congo: (Hemiceridæ) *Epicoria canosparsa, deornata,* and *gemina* (p. 853), from Bogota; *Gadiana rufescens* (p. 854), from Bogota; *Salamboria deornata* (p. 855), from Bogota; *Cyphanta xanthochlora* (p. 856), from India; *Phanaca damnipennis* (p. 857), from Ceylon: (Hyblæidæ) *Deremma simulatrix* (p. 864), from Sierra Leone; *Batina marginalis* (p. 865), from St. Domingo; *Coruncala latipennis* (p. 866), from the Amazons; *Mauna acuminata* (p. 867), from South Africa: (Amphipyridæ) *Bityla thoracica* (p. 869), from New Zealand; *Tiridata colligata* (p. 870), from Ceylon: (Homopteridæ) *Othora velata* (p. 902), *albotecta, cinerascens* (p. 903), *canescens* (p. 904), *onusta, subglauca* (p. 905), *signata* (p. 906), *subfasciata, plagiata* (p. 907), *albivitta* (p. 908), *includens, lata* (p. 909), *concisa* (p. 910), *basifascia,* and *imprimens* (p. 911), all from Ceylon; *Ptisciana seminivea* (p. 912), from Borneo; *Gerbatha laticincta* (p. 913), from Ceylon; *Carthara albicosta* (p. 915), from the Amazons; *Moepa albidens* (p. 916), from South India: (Catephidæ) *Donuca spectabilis* and *memorabilis* (p. 926), from Australia: *Ortheaga combusta* (p. 928), from Java: (Bolinidæ) *Sebagena furcifera* (p. 929), from Bogota: (Catocalidæ) *Eliocroca chrysochlora* (p. 935), from Ceram; *Zalissa catocalina* (p. 936), from Swan River: (Erebidæ) *Gigia obliqua* (p. 942); *Gorua partita* (p. 943), from Sierra Leone; *Bulna glaucineta* (p. 944), from Jamaica; *Mazacyla fusifera* (p. 945), from Rio Janeiro; *Naharra contracta* (p. 946), from Aru: (Ommatophoridæ) *Ortospana connectens* (p. 950), from Ceylon; *Facidia nigrofusca* (p. 952), from Natal: (Ophiusidæ) *Daddala quadrisignata* (p. 974); *Astha spectabilis* (p. 975); *Birtha insulata* (p. 976), from Ceylon; *Massala dimidiata* (p. 977), from Jamaica; *Colbusa euclidica* (p. 978), from North America; *Thiganusa euproctisoides* (p. 979), from Natal; *Mecyra invaria* (p. 980), from Java; *Marcillada rubricosa* (p. 981), from Cambodia; *Moepa** *concisa* (p. 982), from Ceram; *Bathantha bisignata* (p. 983), from Timor; *Elpia achæoides* (p. 984), from Celebes: (Poaphilidæ) *Elocussa gortynoides* (p. 1001), from Ega; *Baxogha serpentina* (p. 1002), from Natal; *Rhosologia porrecta* (p. 1003), from Mexico; *Nahara*† *clavifera* (p. 1004), from India; *Peliala tenebrosa* (p. 1005), from Venezuela; *Corna inconspicua* (p. 1006), from Ega; *Iluza decisa* (p. 1007), from North India; and *I.*? *concisa* (ibid.), from St. Domingo: (Remigidæ) *Baratha acuta* (p. 1022); *Aginna circumscripta* (p. 1023), from Penang; *Arugisa aliena* (ibid.), from Ega: (Amphigonidæ) *Marathyssa basalis* (p. 1034); *Liviana pallescens* (p. 1035), from Para; *Leida pallida* (p. 1036), from Venezuela: (Thermesidæ) *Apphadana liturata* (p. 1094), from the Amazons; *Bematha extensa* (p. 1095), from North India; *Maxula idonea* (p. 1096), from India; *Saroba pustulifera* (p. 1097), from North India; *Archana certa* (p. 1098), from Santarem; *Eusimara subfervida* (p. 1099), from Bogota; *Emea palpalis* (p. 1100), from Bogota; *Elixoia subocellata* (p. 1100), from Rio Janeiro; *Pœta denotalis* (p. 1101), from Sarawak; *Legna semilineata* (p. 1102), from Georgia; *Mulelocha frontalis* (p. 1103), from Para; *Osdara ordinata* (p. 1104), from

* Previously employed at p. 916!

† *Naharra* previously employed, p. 946!

Ega; *Blanona selenisoides* (p. 1105), from Ega, and *B.? dives* (p. 1106), from Para; *Zazamisa specularis* (p. 1107), from Bogota; *Mareura aurilinea* (p. 1108), from Ega; *Daxata bijungens* (p. 1109), from Ceylon; *Massava scissa* (p. 1110), from Venezuela; *Ombrea ænochromoides* (sic) (p. 1111), from Sumatra; *Betousa dilecta* (p. 1112), from Morty; *Orsa erythrospila* (p. 1112), from Ega; *Singara diversalis* (p. 1113), from Silhet; *Chabora undulifera* (p. 1114), from St. Domingo; *Manbuta devia* (p. 1115), from Ega; *Bithiasa determinata* (p. 1116), from Ceylon; *Nazuda digestalis* (p. 1118), from St. Domingo; *Scambina aliena* (p. 1119), from Sierra Leone; and *S.? larvata* (ibid.), from Natal.

Geometridæ.

Speyer has examined the originals of several species of Geometridæ described by Freyer, and published the results of his investigations in Stett. ent. Zeit. 1865, pp. 253–260:—

Geometra falconaria (Fr.) is a colour variety of *Gnophos glaucinaria* (Hübn.), *l. c.* p. 253; *Geom. raunaria* (Fr.) is a species of *Scodiona* nearly allied to *conspersaria*, and is described in detail by Speyer, *l. c.* pp. 254–256; *Geom. nausauaria* (Fr.) belongs to *Larentia* and to the subgenus *Lygris* (Lederer) and is most nearly allied to *L. populata*; it is fully described by Speyer, *l. c.* pp. 256–259; *Geom. placidaria* (Fr.)=*Larentia scripturaria* (W. V.), *l. c.* p. 259; *G. potentillaria* (Fr.)=♂ *Larentia tophaceata* (W. V.), ibid.; *G. tamarisciata* (Fr.)=var. *Eupithecia innotata* (Hübn.), ibid.; *G. proluaria* (Fr.)=*Eupithecia impurata* (Hübn.), ibid.

Speyer describes in detail the distinctive characters of *Gnophos mucidaria* (Hübn.) and *variegata* (Dup.), *l. c.* pp. 260–265; and also gives a full description of *Acidalia tessellaria* (Bdv.), which is quite distinct from *immorata*, *l. c.* pp. 265–268.

Larentia unangulata (Haw.) and *rivata* (Hübn.). Nowicki regards these as distinct species and indicates their distinctive characters. Verh. zool.-bot. Ges. Wien, xv. p. 182. The same author describes a variety, *rimata*, of *L. fluctuata*, ibid.

The following known species are described and figured by Millière, Iconogr. et Descr. de Chen. et Lépid.:—*Gnophos gruneraria* (Staud.), *l. c.* i. p. 387, pl. 47. figs. 1–3; *Angerona prunaria* (Linn.), 2 vars. pp. 391–392, pl. 48. figs. 1 & 2; *Acidalia robiginata* (Staud.), *l. c.* ii. p. 52, pl. 50. figs. 3–7; *A. pecharia* (Staud.), p. 53, pl. 51. figs. 3 & 4; *A. fologneuria* (Staud.), p. 54, pl. 57. figs. 10–12; and *Nychiodes lividaria* (Hübn.), vars. A. and *andalu-* pl. 60. figs. 1 & 2. Also with transformations:—*Hemesiaria*, pp. 77–79, *rophila abruptaria* (Thunb.), *l. c.* ii. pp. 4–8, pl. 51. figs. 3–5; *H. nyctemeraria* (Hübn.), pp. 8–11, pl. 51. figs. 6–8; *Acidalia nexata* (Hübn.), pp. 56–58, pl. 57. figs. 5–9; and *Dasydia operaria* (Hübn.), var.? *scalettaria* (Mill.), i. pp. 404–408, pl. 50. figs. 3–7.

The following known species of this family are described and figured by Millière, Ann. Soc. Linn. Lyon, tome x:—*Sparta paradoxaria* (Staud.), *l. c.* pp. 187–189, pl. 37. figs. 1–3; *Larentia zumsteinaria* (Lah.), *l. c.* p. 227, pl. 42. figs. 10 & 11; and with their transformations:—*Heliothea discoidaria* (Boisd.), *l. c.* pp. 189–192, pl. 37. figs. 4–7; *Eubolia peribolaria* (Hübn.), *l. c.* pp. 195–198, pl. 38. figs. 3–7; and *Tephrina peltaria* (Dup.), *l. c.* pp. 201–203, pl. 39. figs. 4 & 5.

The following known species are noticed by Weymer (Stett. ent. Zeit. 1865):—*Geometra papilionaria*, description of larva (*l. c.* p. 113); *Eugonia fuscantaria*, its occurrence in Germany (ibid.); *Rumia cratægata*, said to be double-brooded (ibid.); *Anaitis plagiata*, the occurrence of *Filaria* in the larva (ibid.); *Cidaria affinitata*, occurrence in North Germany (*l. c.* p. 114); *Eupithecia centaureata*, said to be double-brooded (ibid.); and *E. pumilata*, distribution in Germany (ibid.).

The list of new Dutch Lepidoptera includes *Zonosoma annulata*, *Lobophora polycommata*, *Cidaria affinitata*, and *Eupithecia piperata*. Tijdsch. voor Entom. 1865, p. 35.

Caustoloma flavicaria. Nowicki describes the habits and transformations of this species. Verh. zool.-bot. Ges. Wien, xv. p. 180.

Hypoplectis pluviaria (Fab.)=*adspersaria* (Tr.) has a second generation in July, according to Nowicki, *l. c.* p. 181.

Newman (Entomologist, ii.) describes the metamorphoses of *Cidaria russata* and *immanata*, pp. 153–156, *Boarmia perfumaria*, pp. 246–249, and *Biston hirtarius*, pp. 285–286; and the larvæ of *Hybernia rupicapraria*, p. 141, *Lobophora polycommata*, p. 201, *Hybernia leucophæaria*, p. 202, *Epione apiciaria*, pp. 221–222, *Pseudoterpna cytisaria*, p. 223, and *Fidonia carbonaria*, p. 314.

The Entomologist (vol. ii.) contains notes on the habits of the following species:—*Aspilates citraria* by Moncreaff, p. 144; *Amphydasis betularia* by Eleston, p. 150; *Acidalia sulphuralis* by Bond, p. 205; and *Iodis vernaria* (oviposition) by Newman, p. 314.

The Entomologist's Monthly Magazine contains notes on the metamorphoses or descriptions of the larvæ of the following species:—*Eupithecia plumbeolata* by Crewe, ii. p. 90; *E. ciliata* by Knaggs, *l. c.* pp. 93–94; *Sterrha sacraria* by Hellins, *l. c.* pp. 134–135, and 166; *Phorodesma bajularia* by Horton, *l. c.* pp. 91–92, and Hellins, *l. c.* p. 114; *Acidalia rubricata* by Hellins, *l. c.* pp. 66–67; *Ypsipetes elutata* by Jordan, *l. c.* pp. 90–91; *Nemoria viridata* and *Corycia temerata* by Hellins, i. p. 263.

The larva of *Eupithecia plumbeolata* is also described by Hellins, Zool. 1865, p. 9738.

Bond notices the occurrence of *Eupithecia campanulata* (H.-Sch.) in Britain, and the habits of its larva. Proc. Ent. Soc. 1865, p. 100.

Varieties of the larvæ of the following species are noticed by Hellins, Ent. M. Mag.:—*Ennomos fuscantoria*, i. p. 187; *Ligdia adustata*, ii. p. 16; and *Hybernia leucophæaria*, ibid. Horton also describes a variety of the larva of *Cidaria immanata*, *l. c.* p. 93.

The larva of *Gnophos obscurata* feeds on *Potentilla reptans*. Hellins, *l. c.* p. 115.

Acidalia promutata is probably double-brooded. Hudd, *l. c.* p. 117.

Pseudoterpna cytisaria. The hybernation of the larva of this species is referred to by Hellins, *l. c.* i. p. 183.

Sixty-four species of this family are stated by Ballion to inhabit the neighbourhood of Gorki; but of these 15 are still undetermined. Bull. Soc. Nat. Mosc. xxxvii. pt. i. pp. 379–382.

Dunning describes a gynandromorphous specimen of *Fidonia piniaria* (Linn.), taken by him near Huddersfield. Proc. Ent. Soc. 1865, pp. 109–110.

Bond records the occurrence of an andromorphous female and a gynæcomorphous male of *Fidonia atomaria*. Proc. Ent. Soc. 1865, p. 111.

Eupithecia nanata (Hübn.). A remarkable variety of this species is figured by Lodeesen, Tijdschr. voor Entom. 1865, pl. 2. fig. 2.

Ypsipetes elutata. Fallou describes a peculiar variety of this species. Bull. Soc. Ent. Fr. 1865, p. li.

Girard (Ann. Soc. Ent. Fr. 4e sér. tome v. pp. 105–108) and Fauvel (Bull. Ent. Fr. 1865, pp. lii–liii.) have made observations upon the occurrence of females of *Hibernia brumata* and other species of the genus upon the gas-lamps in the Bois de Boulogne.

Hopley records the occurrence near Epping of immense multitudes of larvæ said to be those of *Cheimatobia brumata*. Ent. M. Mag. i. p. 243.

On the hybernation of *Cidaria miata*, Edmunds, Ent. M. Mag. ii. p. 19.

Eupithecia. Breyer (Ann. Soc. Ent. Belg. tome viii. pl. 5) figures the larvæ of the following species of this genus:—*E. isogrammata* (fig. 1), *tenuiata* (fig. 2), *rectangulata* (fig. 3), *coronata* (fig. 4), *linariata* (fig. 6), *campanulata* (fig. 5), *pulchellata* (fig. 7), and *venosata* (fig. 8). *E. pulchellata* feeds on *Digitalis ambigua*.

Hofmann describes the habits and transformations of *Lobophora viretata* and *Eupithecia argillacearia*. Wien. ent. Mon. Bd. viii. pp. 26–27.

Rössler describes a pure-green variety of the larva of *Eupithecia innotata* (Knoch). Wien. ent. Mon. Band viii. p. 131.

Guenée describes the transformations and discusses the characters of *Dasydia spurcaria* (Laharpe). Ann. Soc. Ent. Fr. 4e sér. tome v. pp. 95–96.

Fologne records the occurrence of *Eupithecia innotata* at Ostend (Ann. Soc. Ent. Belg. viii. p. 273).

Boarmia leucostigmaria, *B. ceylanicaria*, and *Eupithecia coffearia* are injurious to the coffee-plantations in Ceylon, according to Nietner. See Guérin, Rev. et Mag. de Zool. 1864, p. 60.

New species:—

Hipparchiscus, g. n., Walsh, Proc. Bost. Soc. Nat. Hist. vol. ix. p. 300. Palpi long, basal joints hairy, curved upwards, terminal joint not hairy, short and porrect; antennæ long, three-fourths bipectinated in ♂; tibial spurs minute on fore legs, hind tibiæ in ♂ with a large fan-like brush of hairs; fore wings subtrigonate, angles slightly rounded. Sp. *H. venustus*, sp. n., Walsh, *l. c.* p. 301; larva feeds on oak.

Cleta reaumuraria, Millière, Icon. Lépid. tome ii. pp. 2–4, pl. 51. figs. 1 & 2, from the south of France, Spain, and Algeria.

Eupithecia cocciferata, Millière, *l. c.* p. 45, pl. 56. figs. 1–4 (with transf.), from the south of France.

Nemoria aureliaria, Millière, *l. c.* p. 37, pl. 55. figs. 1 & 2, from the south of Italy.

Baptria haberhaueri, Lederer, Wien. ent. Mon. Bd. viii. p. 170, taf. 3. figs. 9 & 10, from Abbastuman.

Tephromia oppositaria, Mann, Wien. ent. Mon. Bd. viii. p. 178, taf. 4. fig. 4, from Brussa.

Acidalia mancuniata, Knaggs, Ent. M. Mag. ii. p. 130, from Manchester.

Acidalia aquitanaria, Constant, Ann. Soc. Ent. Fr. 4e sér. tome v. p. 195, pl. 7. fig. 11, from the Landes.

Scardamia aurantiacaria, Bremer, Mém. Acad. St. Pétersb. viii. p. 72, pl. 6. fig. 15, from East Siberia.

Selenia albonotaria, Bremer, *l. c.* p. 73, pl. 6. fig. 16, from East Siberia.

Amphidasys tendinosaria, Bremer, *l. c.* p. 73, pl. 6. fig. 17, East Siberia.

Hemerophila emaria, Bremer, *l. c.* p. 74, pl. 6. fig. 18, from East Siberia.

Boarmia mandshuriaria, Bremer, *l. c.* p. 74, pl. 6. fig. 19, and *B. nooraria*, Brem. *l. c.* p. 75, pl. 6. fig. 20, from East Siberia.

Geometra albovenaria, Bremer, *l. c.* p. 75, pl. 6. fig. 21, from East Siberia.

Euchloris albocostaria, Bremer, *l. c.* p. 76, pl. 6. fig. 22, and *E. subtiliaria*, Brem. ibid., pl. 6. fig. 23, from East Siberia.

Jodes ussuriaria, Bremer, *l. c.* p. 77, pl. 6. fig. 24, from East Siberia.

Chlorochroma sponsaria, Bremer, *l. c.* p. 77, pl. 6. fig. 25, from East Siberia.

Phorodesma gratiosaria, Bremer, *l. c.* p. 77, pl. 7. fig. 1, from East Siberia.

Acidalia rufociliaria, Bremer, *l. c.* p. 78, pl. 7. fig. 2, from East Siberia.

Argyris deliaria, Bremer, *l. c.* p. 79, pl. 7. fig. 3, from East Siberia.

Cabera schæfferi, Bremer, *l. c.* p. 80, pl. 7. fig. 4, from East Siberia.

Elicrinia nuptaria, Bremer, *l. c.* p. 80, pl. 7. fig. 5, from East Siberia.

Macaria nigronotaria, Bremer, *l. c.* p. 80, pl. 7. fig. 6, *M. proditaria*, Brem. *l. c.* p. 81, pl. 7. fig. 7; *M. indictinaria*, Brem. ibid., pl. 7. fig. 8, and *M. castigataria*, Brem. *l. c.* p. 82, pl. 7. fig. 9, from East Siberia.

Numeria pruinosaria, Bremer, *l. c.* p. 82, pl. 7. fig. 10, from East Siberia.

Rhyparia flavomarginaria, Bremer, *l. c.* p. 83, pl. 7. fig. 11, East Siberia.

Doryodes electaria, Bremer, *l. c.* p. 84, pl. 7. fig. 12, from East Siberia.

Emmelesia albostrigaria, Bremer, *l. c.* p. 85, pl. 7. fig. 13, from East Siberia.

Melanippe mandshuricata, Bremer, *l. c.* p. 86, pl. 7. fig. 14, and *M. baicalata*, Brem. ibid., pl. 7. fig. 15, from East Siberia.

Scotosia atrostrigata, Bremer, *l. c.* p. 87, pl. 7. fig. 16, from East Siberia.

Cidaria ledereri, Bremer, *l. c.* p. 88, pl. 7. fig. 17; *C. convergenata*, Brem. ibid., pl. 7. fig. 18; and *C. fixseni*, Brem. *l. c.* p. 100, pl. 8. fig. 12, from East Siberia.

Odezia kindermanni, Bremer, *l. c.* p. 89, pl. 7. fig. 19, from East Siberia.

Ennomos serrata, Bremer, *l. c.* p. 100, pl. 8. fig. 11, from East Siberia.

Pyralidæ.

Heinemann (Schmetterlinge Deutschlands und der Schweiz, Abth. ii. Band i. Heft 2) describes the German and Swiss species of this family, which he defines as including the whole of the *Pyralides* and *Crambides* of authors, with the exception of the genera *Herminia* and *Hypena*, regarded as belonging to the *Noctuidæ*, and *Choreutes*, which is referred by him to the *Tineidæ*. He includes *Acentropus* in this group, placing it among his *Botidæ*. He divides the group into the following subfamilies, as tabulated on p. 8:—

1. *Pyralididæ*. Branches 8 and 9 of the fore wings pedunculated, or

springing one after the other from branch 7; vein 1 not forked; median cell of hind wings closed.

2. *Botidæ*. Branches 7 and 8 of fore wings separated, transverse branch straight or slightly bent; vein 1 not forked; median cell of hind wings closed.

3. *Chilonidæ*. Branches 7 and 8 of fore wings separated, transverse branch strongly bent; vein 1 not forked; median cell of hind wings closed.

4. *Crambidæ*. Branches 8 and 9 of fore wings pedunculated from 7, branches 7 and 8 rarely separated; vein 1 not forked; median cell of hind wings open.

5. *Phycideæ*. Fore wings without branch 7; vein 1 not forked; median cell of hind wings closed.

6. *Galleriæ*. Branches 8 and 9 of fore wings springing one after the other from 7 (rarely without branch 9); vein 1 forked near its base.

The Pyralididæ include the genera *Cledeobia* (5 sp.), *Aglossa* (2), *Asopia* (4), and *Endotricha* (1); the Botidæ include *Prosmixis* (1 sp.), *Scoparia* (21) = *Eudorea* (Ste.), *Hellula* (1), *Aporodes* (1), *Heliothela* (1), *Noctuomorpha* (1), *Catharia* (1), *Hercyna* (6), *Threnodes* (1), *Ennychia* (1), *Phlyctænodes* (1), *Odontia* (1), *Tegostoma* (1), *Algedonia* (1), *Eurrhypara* (1), *Botys* (61), *Eurycreon* (7), *Nomophila* (1), *Psamotis* (1), *Pionea* (1), *Orobena* (7), *Perinephele* (1), *Diasemia* (2), *Metasia* (1), *Stenia* (1), *Agrotera* (1), *Hydrocampa* (3), *Paraponyx* (2), *Cataclysta* (1), and *Acentropus* (1); the Chilonidæ consist of the genera *Scirpophaga* (2 sp.), *Schœnobius* (3), and *Chilo* (2); the Crambidæ include *Calamotropha* (1 sp.), *Thinasotia* (2), *Crambus* (53), and *Agriphila* (1); the Phycideæ, *Dioryctria* (2 sp., 1 new), *Nephopteryx* (10) = *Nephopteryx* (Zell.) + *Psarosa* (Zell.) + *Selagia* (Hübn.), *Etiella* (1), *Salebria* (10), *Pempelia* (3), *Gymnancyla* (1), *Spermatophthora* (1), *Asarta* (2), *Catastia* (2), *Hypochalcia* (7), *Eucarphia* (3), *Epischnia* (2), *Cryptoblabes* (1), *Brephia*, g. n. (1), *Myelois* (18) = *Acrobasis* (Zell.) + *Trachonitis* (Zell.) + *Myelois* (Zell.) + *Eurhodope* (Hübn.) + *Ilythia* (Guen.), *Glyptoteles* (1), *Eccopisa* (1), *Nyctegretis* (1), *Ancylosis* (1), *Alispa* (1), *Zophodia* (1), *Stenoptycha*, g. n. (9), *Homœosoma* (4), *Semnia* (1), *Anerastia* (2), including *Hypsotropa* (Zell.), *Ephestia* (2) = *Ephestia* (Guen.) + *Plodia* (Guen.); the Galleriæ include *Achroa* (1), *Melissoblaptes* (3), *Aphomia* (1), and *Galleria* (1). The total number of species described is 301.

The following known species are described and figured by Millière, Iconogr. et Descript. de Chen. et Lépid:—*Crambus scirpellus* (Lah.), *l. c.* i. pp. 373–379, pl. 45. fig. 1; *Orenaia helveticalis* (H.-Sch.), var. *conspurcalis* (Lah.), pp. 374–376, pl. 45. fig. 2; *Scoparia amissella* (Lah.), pp. 401–402, pl. 50. fig. 1; *S. imparella* (Lah.), p. 403, pl. 50. fig. 2; and *Euplocamus anthracinalis* (Scop.), var., *l. c.* ii. p. 95, pl. 62. fig. 8.

Margarodes unionalis (Hübn.) is described with its transformations by Millière, Icon. &c. tome ii. pp. 39–42, pl. 55. figs. 3–6.

Tinia margarita (Hübn.) is referred to the Pyralidæ by Millière, from his investigation of the structure of the young larvæ. Icon. &c. tome i. pp. 409–411, with figures of egg and larva.

Metoponia agnatha (Staud.) is figured and described by Millière, Ann. Soc. Linn. Lyon, tome x. p. 194, pl. 38. figs. 1 & 2.

Botys quadrimaculalis (Brem.) is figured by Bremer, Mém. Acad. St. Pétersb. viii. pl. 6. fig. 10.

Heyden (Stett. ent. Zeit. 1865, p. 376) describes the distinctive characters *Myelois* (*Ilythia*) *cruentella* (Dup.).

Bond describes a variety of *Ennychia anguinalis*, Proc. Ent. Soc. 1865, p. 111.

Among five species of this family new to the Belgian fauna recorded by Fologne (Ann. Soc. Ent. Belg. tome viii. p. 273) is *Anerastia farrella* (Curt.), which occurred in abundance at Ostend in July 1864. Fologne indicates the characters by which it is distinguished from *A. lotella*. The other species mentioned are *Crambus cerusselus* (Voll.), *Homœosoma binævella* (Hübn.), *Eudorea parella* (H.-Sch.), and *E. valesialis* (Dup.).

Ballion enumerates *Zanclognatha nemoralis* (Fab.) and *tarsipennalis* (Tr.), *Herminia tentaculatis* (Linn.), *Rivula sericialis* (Scop.), and an undetermined *Hypena* in his Catalogue of the Lepidoptera of Gorki. Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 379.

Taschenberg (Naturg. wirbell. Thiere) describes the characters and habits of the following injurious species of this family:—*Hypena rostralis*, *l. c.* pp. 125–126, pl. 7. figs. 1 & 2; *Botys silacealis*, *l. c.* pp. 126–128, pl. 3. figs. 14 & 15; *B. forficalis*, *l. c.* pp. 128–129, pl. 2. figs. 17–19; *B. margaritalis*, *l. c.* pp. 129–130, pl. 3. figs. 10 & 11; and *B. frumentalis*, *l. c.* pp. 130–132, pl. 3. 12 & 13.

Nephopteryx pinæ (Staud.) infests the fruit of *Pinus halepensis* on the Dalmatian island of Lesina. Erber, Verh. zool.-bot. Ges. in Wien, Band xv. p. 944 *bis*.

Zeller (Stett. ent. Zeit. 1865, pp. 37–40) describes the habits of *Hydrocampa rivulalis* as observed by him at Meseritz. The same author (*l. c.* pp. 40–42) remarks upon *Crambus alienellus* and (*l. c.* p. 43) on *Zophodia* (*Myelois*) *ilignella*, which he also took near Meseritz.

A. Gärtner describes the transformations of *Crambus chrysonuchellus* (Scop.), Stett. ent. Zeit. 1865, p. 326; *C. luteellus* (W. V.), *l. c.* p. 327; *Homœosoma cinerosella* (H.-Sch.), *l. c.* p. 329, and *H. nimbella* (Zell.), *l. c.* p. 330.

Heyden (Stett. ent. Zeit. 1865, p. 376) describes the transformations of *Eudorea cratægella* (Hübn.).

Botys asinalis. Metamorphosis described by Hellins, Ent. M. Mag. ii. pp. 135–136, and 166.

Laboulbène states that *Ephestia elutella* has been bred from larvæ feeding on the dried bark of pomegranate roots. Ann. Soc. Ent. Fr. iv. p. 733.

The larva of *Pyralis sulphuralis* lives on *Artemisia inodora*. Becker, Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 490.

Stainton remarks on the form of the cocoon of *Pyralis glaucinalis*, Proc. Ent. Soc. 1865, p. 101.

New genera and species:—

Brephia, g. n., Heinemann, Schm. Deutschl. Abth. ii. Bd. i. p. 173. Allied to *Myelois*; antennæ in ♂ thickened, slightly bent above the basal joint; palpi short, compressed, with a short, obliquely erected terminal joint; ocelli present; fore wings with 11 veins, branches 4 and 5 not pedunculate; hind wings with 8 veins, branch 2 close before, branches 3 and 4 upon a long common peduncle from, the posterior angle of the median cell. Sp. *B. compositella* (Treits.).

Melia, g. n., Heinemann, *l. c.* p. 190 (sub nom. *Stenoptychæ*; ad *Meliam* mutat, *l. c.* p. 209). Allied to *Zophodia*; palpi erected, filiform, terminal joint shorter than middle joint; fore wings with 11 veins, branches 4 and 5 pedunculate; hind wings with 7 veins, branch 2 usually springing distinctly before the hinder angle of the median cell. Known sp. *terebrella* (Zck.), *pinguis* (Haw.), *bigella* (Zell.), *biviella* (Zell.), *cinerosella* (Zell.), *icelseriella* (Zell.), *furcatella* (H.-Sch.), and *oblitella* (Zell.); n. sp. *M. fuliginosella* (v. Heyd. MS.), Heinem. *l. c.* p. 192, from Frankfort on the Maine.

Hypena tripunctalis, Bremer, Mém. Acad. St. Pétersb. viii. p. 62, pl. 5. fig. 20, and *H. kengkalis*, Brem. *l. c.* p. 63, pl. 5. fig. 21, from East Siberia.

Herminia modestalis, Heyden, Stett. ent. Zeit. 1865, p. 375, Engadine.

Herminia stramentacealis, Bremer, *l. c.* p. 64, pl. 5. fig. 22, *H. trilinealis*, Brem. ibid., pl. 5. fig. 23, and *H. albomaculalis*, Brem. *l. c.* p. 65, pl. 5. fig. 24, from East Siberia.

Rhodaria flavofascialis, Bremer, *l. c.* p. 65, pl. 6. fig. 1, and *R. olivacealis*, Brem. *l. c.* p. 66, pl. 6. fig. 2, from East Siberia.

Oligostigma vittalis, Bremer, *l. c.* p. 66, pl. 6. fig. 3, from East Siberia.

Hydrocampa colonalis, Bremer, *l. c.* p. 67, pl. 6. fig. 4, from East Siberia.

Margarodes nigropunctalis, Bremer, *l. c.* p. 67, pl. 6. fig. 5, East Siberia.

Botyodes ussurialis, Bremer, *l. c.* p. 68, pl. 6. fig. 6, from East Siberia.

Botys tristrialis, Bremer, *l. c.* p. 68, pl. 6. fig. 7, *B. basipunctalis*, Brem. ibid., pl. 6. fig. 8; and *B. varialis*, Brem. *l. c.* p. 69, pl. 6. fig. 9, East Siberia.

Botys torvalis, Möschler, Wien. ent. Mon. Bd. viii. p. 198, taf. 5. fig. 16, from Labrador.

Omiodes heterogenalis, Bremer, *l. c.* p. 70, pl. 6. fig. 11, from East Siberia.

Stemmatophora obsoletalis, Mann, Wien. ent. Mon. Bd. viii. p. 179, taf. 4. fig. 5, from Brussa.

Pempelia jucundella, Mann, *l. c.* p. 181, taf. 4. fig. 10, from Brussa.

Myelois subalbatella, Mann, *l. c.* p. 181, taf. 4. fig. 7, and *M. tabidella*, Mann, *l. c.* p. 182, taf. 4. fig. 9, from Brussa.

Myelois bicolorella, Heinemann, Wien. ent. Mon. Bd. viii. p. 288, from Brussa.—*Myelois obsoletella* (*Ilythia*), Heinemann, Schm. Deutschl. *l. c.* p. 183, from Vienna.—*Myelois robiniella*, Millière, Icon. Lépid. tome ii. p. 87, pl. 61. figs. 8–11, from the south of France.—*Myelois lafauryella*, Constant, Ann. Soc. Ent. Fr. 4e sér. tome v. p. 189, pl. 7. fig. 1, and *M. nigrocyanella*, Const. *l. c.* p. 190, pl. 7. fig. 2, from the Landes.

Ephestia reductella, Mann, *l. c.* p. 182, taf. 4. fig. 6, from Brussa.

Dioryctria simplicella, Heinemann, *l. c.* p. 148, from Frankfort on the Maine.

Nephopteryx murinella, Heinemann, *l. c.* p. 151, from Gumpoldskirchen; *N. senescens*, Heinem. *l. c.* p. 152, from Berne.—*Nephopteryx meliella*, Mann, *l. c.* p. 180, taf. 4. fig. 8, from Brussa.

Homœosoma, sp. n.? (= *H. binævella*?), Heinemann, Wien. ent. Mon. viii. p. 290, from Spalato and Brussa.

Ancylosis neglectella, Heinemann, *l. c.* p. 292, from Sarepta.

Epischnia ampliatella, Heinemann, *l. c.* p. 294, from the Basses-Alpes.

Phycita nebulo, Walsh, Proc. Bost. Soc. Nat. Hist. ix. p. 312.

Zophodia dentinella, Bremer, *l. c.* p. 103, pl. 8. fig. 16, from Kiachta.

Pyrausta tendinosalis, Bremer, *l. c.* p. 99, pl. 8. fig. 10, Eastern Siberia.

Ebulea zelleri, Bremer, *l. c.* p. 70, pl. 6. fig. 12, *E. simplicealis*, Brem. *l. c.* p. 71, pl. 6. fig. 13, and *E. gracialis*, Brem. ibid., fig. 14, Eastern Siberia.

Walker (List Lepid. xxxiv.) describes numerous new species of this family belonging to the following genera:—*Platydia* (4), *Sarmatia* (1), *Hypena* (34), *Hormisa* (1), *Hyamia* (1), *Cyclopteryx* (1), *Rivula* (3), *Herminia* (5), *Bleptina* (8), *Megatomis* (2), *Mastygophora* (1), *Bertula* (4), *Bocana* (7), *Orthaga* (1), *Catada* (1), *Chusaris* (2), *Corgatha* (1), *Egnosia* (4), *Ecregma* (1), *Pinacia* (1), *Pyralis* (52), *Aglossa* (3), *Labanda* (1), *Pyrausta* (1), *Rhodaria* (7), *Herbula* (6), *Emmychia* (1), *Syngamia* (1), *Desmia* (8), *Ædiodes* (7), *Samea* (7), *Asopia* (5), *Agathodes* (1), *Terastia* (1), *Megaphysa* (4), *Daraba* (1), *Endotricha* (1), *Leucinodes* (3), *Hymenia* (1), *Isopteryx* (8), *Diasemia* (4), *Oligostigma* (6), *Cataclysta* (9), *Hydrocampa* (6), *Lepyrodes* (2), *Phalangiodes* (1), *Zebronia* (15), *Leucochroma* (2), *Glyphodes* (9), *Phakellura* (1), *Margaronia* (10), *Pygospila* (1), *Caprina* (1), *Cirrhochrista* (1), *Bradina* (1), *Astura* (2), *Botys* (120), *Pionea* (2), *Scopula* (37), *Pachynoa* (2), *Nosophora* (1), *Entephria* (1), *Analtes* (4), *Polythlipta* (1), *Scoparia* (11).

Walker (List Lepid. xxxiv.) describes the following new species as types of new genera:—(Platydidæ) *Aniana straminealis* (p. 1124), from Ega; *Canatha confutalis* (p. 1125), from Ega; and *C. subangulalis* (p. 1126), from Honduras; *Magulaba mœstalis* (p. 1127), from Sierra Leone; *Ægara interceptalis* (p. 1128), from Ega; *Gaala dispunctalis* (p. 1129), from Brazil; *Curicta oppositalis* (p. 1130), from Aru; and *C.? xanthochloralis* (ibid.), from New Guinea; *Phagytra leucogastralis* (p. 1508), from Java: (Hypenidæ) *Aganzagara disparatalis* (p. 1146), from Limas; *Britha biguttata* (p. 1147), from Moreton Bay; *Derbeta nigrifimbria* (p. 1148), from Ega; *Alinza discessalis* (p. 1149), from Ega; *Rhapsa scotosialis* (p. 1150), from New Zealand; *Tachasara languidalis* (p. 1151), from St. Domingo; *Agamana cavatalis* (p. 1152), from Australia; *Aluaca eubolialis* and *anaitisalis* (p. 1153), from St. Domingo; *Betharga lycoides* (p. 1154), from New Guinea; *Rhabana platychloralis* (p. 1517), from Java; *Methora tortricalis* (p. 1518), from Java: (Herminidæ) *Sorygaza didymata* (p. 1181), from Venezuela: *Aradrapha partitalis* (p. 1182), from Natal; *Lambana cucullatalis* (p. 1183), from Ega; *Arxama subcervinalis* (p. 1184), from Ceram; *Chabora tauralis* (p. 1185), from St. Domingo; *Tendarba linecsa* (p. 1186), from Rio Janeiro; *Maguda immundalis* (ibid.), from Sarawak; *Mosopia megaspila* (p. 1188), from Penang; *Hiaspis closteroides* (p. 1189), from Borneo; *Vurna instructalis* (ibid.), from St. Domingo; *Saraca disruptalis* (p. 1190), from Shanghai; *Orocala distentalis* (p. 1191), from Brazil; *Alicadra vexatalis* (p. 1192), from Brazil; *Phanaspa dilatatalis* (p. 1193), from the Cape; *Istarba varialis* (p. 1194), from Moreton Bay; *Rhescipha obtusa* (p. 1195), from Brazil; *Perta arenalis* (p. 1196), from St. Domingo; *Suma incongrualis* (p. 1197), from South Africa; *Gaberasa ambigualis* (p. 1198), from North America; *Tibracana xanthialis* (p. 1199), from Brazil; *Moscha posticalis* (p. 1200), from India; *Larassa condecoralis* (p. 1201), from Moreton Bay; *Addæa subtessellata* (ibid.), from Swan River; *Zalaca anticalis* (p. 1202), from Natal; *Sanacea truncatalis* (p. 1203), from Venezuela; *Marimatha dinumeratalis* and *nigripalpis* (p. 1204), from Honduras; *M.? trajectalis* (p. 1519), from St. Domingo; *M. duplicalis* (p. 1205), from Sierra Leone; *M. subflavalis* (ibid.), from Southern

India; *M. confinisalis* (p. 1206), and *Anitha mundiferalis* (ibid.), from Sarawak; *Meranda latalis* (p. 1207), from Swan River; *Gauzania mundalis* (p. 1208), from Swan River; *Betousa* * *divisalis* (p. 1209), from Ega; *Tigrana detritalis* and *fervidalis* (p. 1210), from Australia; *Phanaspa thermesialis* (p. 1211), from Natal; *Ocrasa albidalis* (p. 1212), from Moreton Bay; *Apphadana*† *evulsalis* (p. 1213), from Ceylon; *Oscricana albistella* (p. 1214), from Sumatra; *Ballatha atrotumens* (p. 1215), from Ceylon; and *B. læta* (ibid.), from India; *Tranaxa obliqualis* (p. 1216), from Ega; *Canipsa suspensalis* (p. 1217), from Sarawak; *Calinipaxa validalis* (p. 1218), from Sarawak; *Selca latifascialis* and *sabulosalis* (p. 1219), from Sarawak; *Gogana specularis* (p. 1220), from Sarawak; *Gabala polyspilalis* (p. 1221), from India; *Thelda descriptalis* (p. 1222), from St. Domingo; *Crosa tortricoides* (p. 1223), from Ceylon; *Maguza albiguttalis* (p. 1224), from Brazil; *Margana seclusalis* (p. 1520), from Java; *Nagadeba indecoralis* (ibid.), from Java: (PYRALIDÆ) *Gauna subferralis* (p. 1253), from Moreton Bay; *Cwena externalis* (ibid.), from Australia; *Lixa productalis* (p. 1254), from Sarawak; *Pacoria albifimbrialis* (p. 1255) and *P.? congrualis* (p. 1256), from Swan River; *Zania unicalis* (p. 1257), from Shanghai; *Aradrapha*‡ *mixtalis* (p. 1257), from Honduras; *Docela vetustalis* (p. 1258), from Congo; *Tricomia auroralis* (p. 1259), from Moreton Bay; *Arsacia saturatalis* (p. 1260), from Penang; *Vinzela inaptalis* (p. 1261), from Sarawak; *Arsisaca bolinalis* (p. 1262), from Jamaica; *Zarania cossalis* (ibid.), from Rio Janeiro; *Parachma ochracealis* (p. 1263); *Zitha punicealis* (p. 1264), from South Africa; *Fabatana ovipalpalis* (p. 1265), from North America; *Gabrisa scoparialis* (p. 1266), from Sydney; *Molvena guttalis* (p. 1267), from Moreton Bay; *Hisbanda acronyctoides* (p. 1268), from Sydney; *Taurica muscosalis* (p. 1269), from Northern China; *Zazaca auratalis* (ibid.), *Abacena discalis* (p. 1270), from Ega; *Chlumetia guttiventris* (p. 1271), from Ceylon; *Niaccaba sumptualis* (p. 1272), from Ceylon; *Bejuda costigeralis* (p. 1273), from Sarawak; *Gazaca dirutalis* (p. 1274), from Limas; *Pharambara micacealis* (p. 1275), from Mysol; *Enispa eosarialis* (ibid.), from Sarawak; *Zurobata rorata* (p. 1276), from Sarawak; *Zitna albicinctalis* (p. 1277), from Sarawak; *Cossedia erateinalis* (ibid.), from Sarawak: (ASOPIDÆ) *Synchromia coccinealis* (p. 1292), from St. Domingo; *Nagia desmialis* (p. 1320), from Sarawak; *Rhisina punctivostalis* (p. 1324), from Moreton Bay: (HYDROCAMPIDÆ) *Ertrica purpurealis* (p. 1343), from Bogota: (MARGARODIDÆ) *Sozoa costalis* (p. 1373), from Bogota and Venezuela; *Eidama hypsalis* (p. 1374), from Aru; *Erilusa crocciceps* (p. 1375), *cyanea*, *dioptalis* (p. 1376), *cælivitta*, and *dioptoides* (p. 1377), from the Amazons; *Nagara phryganealis* (p. 1378), from the West Indies, &c.; *N.? steirialis* (p. 1379), from Para; *Carbaca decoralis* (p. 1380), from St. Domingo: (BOTYDÆ) *Rehimena dichromalis* (p. 1492), from Southern India; *Osiriaca inturbidalis* (p. 1493), from Moreton Bay; *Candisa auriflavalis* (p. 1494), from Venezuela; *Deba surrectalis* (p. 1495), from Ceylon; *Almonia onustalis* (p. 1495), from Sula: (SCOPARIDÆ) *Auradisa gelidalis* (p. 1505), from Honduras; *Nigetia formosalis* (p. 1506); *Tribunta scabrulis* and *biguttalis* (p. 1507), from Australia.

* Previously used by the author for a new genus of Noctuidæ at p. 1112!

† *Apphadana* under Noctuidæ, p. 1094!

‡ Previously used by the author for another new genus of Pyralidæ at p. 1182 of this part!

TORTRICIDÆ.

CLEMENS (Proc. Ent. Soc. Phil. vol. v.) gives tables of the North American species of the following genera:—

Stigmonota (Guen.), p. 133 (2 sp.); *Sericoris* (Treit.), ibid. (12 sp.); *Lozotænia* (Steph.), p. 136 (6 sp.); and *Steganoptycha* (Steph.), p. 137 (4 sp.).

Conchylis meridiana (Staud.) is described and figured by Millière. Ann. Soc. Linn. Lyon, tome x. p. 226, pl. 42. fig. 9.

Tortrix pronumbana (Hübn.) is described with its transformations by Millière. Ic. et Descr. de Chen. et Lépid. i. pp. 382–385, pl. 46. figs. 1–3.

A list of *Tortricidæ* new to the fauna of Holland includes *Tortrix semialbana* and *pilleriana*, *Sciaphila nubilana*, *Conchylis rupicola*, *Penthina bipunctana* and *fuligana*, *Grapholitha nigricana*, *brunnichiana*, *succedana*, *ustomaculana*, *obtusana*, *ericetana*, *furfurana*, *tineana*, and *badiana*, *Dichrorampha caliginosana*, *Phthoroblastis fimbriana*. Tijdschr. voor Entom. 1865, pp. 36–38.

Fologne records the occurrence of *Grapholitha cæcana* in Belgium.

Grapholitha. Hofmann (Wien. ent. Mon. Bd. viii.) describes the preparatory states of *G. kochiana* (H.-Sch.), *l. c.* p. 28; *G. succedana* (Voll.), ibid.; *G. pallifrontana* (Zell.), ibid.; and *G. vacciniana* (Zell.), *l. c.* p. 29.

The transformations of *Dichrorampha grumeriana* (H.-Sch.) are described by A. Gärtner. Wien. ent. Mon. Bd. viii. pp. 119–120.

Von Heyden (Stett. ent. Zeit. 1865) describes the larva of *Conchylis helveticana* (*l. c.* p. 100), and refers to those of *C. sanguinana*, *francillana*, and *dilucidana*. The same author describes the transformations of *Grapholitha vacciniana*, *Rhopobota nævana* (p. 101), and *Choreutis müllerana* (p. 104).

Heyden (Stett. ent. Zeit. 1865, p. 378) describes the preparatory states of *Penthina postremana* (Zell.).

Tortrix ministrana. The larva of this species is described by J. Peers, Entom. ii. pp. 250–251.

Farren publishes notes on the habits of *Xanthosetia zæana*, *X. hamana*, and *Chrosis tesserana*, in Ent. M. Mag. i. p. 279.

Piffard ascribes at least a portion of the leaf-rolling action of the larvæ of Tortricidæ to the contractility of the fresh silk, and describes an experiment by which this contractility may be made manifest. Ent. M. Mag. ii. p. 15.

The following known species of this family injurious to agriculture are described with their habits by Taschenberg (Naturg. wirbell. Thiere):—*Conchylis epilinana*, *l. c.* pp. 132–134, pl. 6. figs. 18 & 19; *Grapholitha nebritana*, *l. c.* pp. 134–135, pl. 6. figs. 5 & 6; and *G. dorsana*, *l. c.* p. 136.

Delaharpe discusses the possibility of keeping down the numbers of the destructive caterpillars of the vine (*Coccyx roserana*) by the capture of the perfect moth with a ring net when on the wing. He says this method may be practised with facility and with beneficial effect. Bull. Soc. Vaudoise des Sci. Nat. tome viii. pp. 7–8 and 171.

Girard publishes a note on the ravages of *Tortrix viridana* in the oak-woods near Paris and the simultaneous absence of the species in other localities. Bull. Soc. Ent. Fr. 1865, p. xxxi.

Retinia pinicolana (Doubl.) is recorded by Erber as destructive to *Pinus*

halepensis on the Island of Lesina. Verh. zool.-bot. Ges. in Wien, Bd. xv. p. 944 *bis*.

The larva of *Tortrix coffearia* is noticed by Nietner as injurious to the coffee-plantations in Ceylon. See Guérin, Rev. et Mag. de Zool. 1864, p. 61.

New genera :—

Leptoris, g. n., Clemens, Proc. Ent. Soc. Phil. vol. v. p. 139. Wings with costal margins arched, apex acute, hind wings broadest; hind wings with median vein 4-branched; branches of subcostal in fore wings equidistant, apical one furcate; labial palpi smooth, long, slender, tapering. Sp. *L. breviornatana*, Clem. *l. c.* p. 140, from Virginia.

Euryptychia, g. n., Clemens, *l. c.* p. 140. Fore wings with a broad fold, long, hind wings broader; costa straight, apical margin rounded; head smooth, ocelli at base of antennæ; labial palpi not exceeding the face, curved, smooth, expanded towards tip, apical joint inconspicuous. Sp. *E. saligneana*, Clem. *l. c.* p. 141, from Illinois.

Callimosema, g. n., Clemens, *l. c.* p. 141. Allied to *Grapholitha*; apical branch of subcostal in fore wings simple, medio-central nervule in hind wings furcate; labial palpi somewhat elongate, nearly cylindrical, clothed beneath with longish scales, apical joint inconspicuous. Sp. *C. scintillana*, Clem. *l. c.* p. 142, from Pennsylvania?

New species :—

Ptycholoma plumbeolana, Bremer, Mém. Acad. St. Pétersb. viii. p. 89, pl. 7. fig. 20, from Eastern Siberia.

Grapholitha littorana, Constant, Ann. Soc. Ent. Fr. v. p. 190, pl. 7. fig. 3, and *G. micaceana*, Const. *l. c.* p. 191, pl. 7. fig. 4, from the Landes.

Conchylis conjunctana, Mann, Wien. ent. Mon. Bd. viii. p. 183, taf. 4. fig. 12, and *C. tetricana*, Mann, ibid., taf. 4. fig. 11, from Brussa.—*C. pallorana*, Lederer, Wien. ent. Mon. Bd. viii. p. 171, taf. 3. fig. 11, from Imeretia.

Tortrix (*Conchylis*) *moguntiana*, Rössler, Wien. ent. Mon. Bd. viii. p. 131, from Mayence.

Teras hippophaëana, Heyden, Stett. ent. Zeit. 1865, p. 377, from Rogatz and Neuburg.

Stigmonota tristrigana, Clemens, Proc. Ent. Soc. Phil. vol. v. p. 133, from Virginia.

Sericoris. Clemens describes five new North American species: namely, *S. gratiosana*, *l. c.* p. 134; *S. concinnana*, ibid.; *S. mutabilana*, *l. c.* p. 135; *S. instrutana*, ibid.; and *S. fœdana*, ibid.

Lozotænia. Clemens describes four new North American species: namely, *L. vesperana*, *L. purpurana*, and *L. fractivittana*, *l. c.* p. 136; and *L. fuscolineana*, *l. c.* p. 137.

Lazotænia (sic) *aurichalcana*, Bremer, *l. c.* p. 89, pl. 7. fig. 22, and *L. quinquemaculana*, Brem. *l. c.* p. 90, pl. 7. fig. 23, from Eastern Siberia.

Xanthosetia albicomana, Clemens, *l. c.* p. 137, from Virginia.

Steganoptycha crispana, Clemens, *l. c.* p. 137, and *S. flavocellana*, Clem. *l. c.* p. 138, from Virginia.

Tortrix lutosana, Clemens, *l. c.* p. 138, *T. incertana*, Clem. ibid., and *T.? fumiferana*, Clem. *l. c.* p. 139, from Virginia.

Halonota tantana, Clemens, *l. c.* p. 139, from Virginia.

Smicrotes virescana, Clemens, *l. c.* p. 140, from Pennsylvania?

Mixodia? intermistana, Clemens, *l. c.* p. 140, from Pennsylvania?

Siderea? nubilana, Clemens, *l. c.* p. 140, from Pennsylvania?

TINEIDÆ.

FREY has commenced the enumeration of the Swiss species of this group (Mitth. Schw. ent. Ges. 1865, pp. 337–352). The published portion of the genera *Trifincula*, *Nepticula*, *Bucculatrix*, *Opostega*, *Cemiostoma*, *Phyllocnistis*, *Lyonetia*, and *Lithocolletis*.

CLEMENS characterizes the genus *Batrachedra* (Staint.), Proc. Ent. Soc. Phil. vol. v. p. 142, and tabulates 7 American species of *Gracilaria* (*l. c.* p. 145) and 5 species of *Nepticula* (*l. c.* p. 146). He also describes the larva of *Nepticula saginella*.

Gelechia. The natural history of the following known species is described by Stainton, Nat. Hist. Tineina, vol. ix. :—

Gelechia ferrugella (W. V.), pp. 2–13, pl. 1. fig. 1; *G. rufescens* (Haw.), pp. 14–33, pl. 1. fig. 2; *G. hippophaëlla* (Schr.), pp. 34–43, pl. 1. fig. 3; *G. scintillella* (F. v. R.), pp. 44–55, pl. 2. fig. 1; *G. temerella* (Zell.), pp. 56–63, pl. 2. fig. 2; *G. lentiginosella* (Zell.), pp. 64–73, pl. 2. fig. 3; *G. flavicomella* (Zell.), pp. 74–83, pl. 3. fig. 1; *G. ericetella* (Hübn.), pp. 84–95, pl. 3. fig. 2; *G. mulinella* (Zell.), pp. 96–105, pl. 3. fig. 3; *G. peliella* (Treits.), pp. 106–115, pl. 4. fig. 1; *G. acuminatella* (Sircan), pp. 116–127, pl. 4. fig. 2; *G. mouffetella* (W. V.), pp. 128–139, pl. 4. fig. 3; *G. domestica* (Haw.), pp. 140–149, pl. 5. fig. 1; *G. affinis* (Dougl.), pp. 150–161, pl. 5. fig. 2; *G. vulgella* (Hübn.), pp. 162–171, pl. 5. fig. 3; *G. scriptella* (Hübn.), pp. 172–183, pl. 6. fig. 1; *G. triparella* (Zell.), pp. 184–195, pl. 6. fig. 2; *G. leucatella* (Linn.), pp. 196–207, pl. 6. fig. 3; *G. artemisiella* (Treits.), pp. 208–219, pl. 7. fig. 1; *G. æthiops* (Westw.), pp. 220–227, pl. 7. fig. 2; *G. maculatella* (Hübn.), pp. 228–235, pl. 7. fig. 3; *G. nigricostella* (Dup.), pp. 236–245, pl. 8. fig. 1; *G. næviferella* (Dup.), pp. 246–261, pl. 8. fig. 2; and *G. hermannella* (Fab.), pp. 262–273, pl. 8. fig. 3.

Gelechia ulicinella (Staud.) is described and figured, with its transformations, by Millière, Ann. Soc. Linn. Lyon, x. p. 198, pl. 38. figs. 8–11.

Gelechia terrella (W. V.). Snellen van Vollenhofen describes the larva of this species. Tijdschr. voor Entom. 1865, p. 131.

Gelechia cerealella (Oliv.). Nickerl has described the habits of this species before the Academy of Sciences in Prague. An abstract of his observations is given in Regensb. Corr.-Blatt, 1865, pp. 177–178.

Gelechia umbrosella (=*affinis*, Haw.). Gärtner describes the transformations of this species, the larva of which lives in the flower-heads of *Anthyllis vulneraria*. Berl. ent. Zeitschr. 1865, p. 115.

Depressaria olerella and *albipunctella*. The distinctive characters of these species are indicated by Barrett. Ent. M. Mag. ii. p. 164.

Several varieties of *Euplocamus anthracinalis* (Scop.) are indicated by Lederer, Wien. ent. Mon. Bd. viii. p. 171.

Mühlig remarks (Stett. ent. Zeit. 1865, pp. 183–184) that he has found it better in breeding *Coleophoræ* to allow the larvæ through the winter to be exposed to all the changes of the weather.

Anacampsis scintitella. The transformations of this species, the larva of which lives on *Helianthemum vulgare*, are described by Gärtner, Berl. ent. Zeitschr. 1865, p. 114.

Gärtner has described the habits and transformations of *Eupleuris striatella* and *Parasia paucipunctella.* Wien. ent. Mon. Bd. viii. pp. 29–32.

Coleophora artemisiella. Notes on its habits by Edleston, Entom. ii. p. 150.

Lyonetia clerckella. The metamorphoses of this species are described by Healy, Ent. M. Mag. ii. pp. 128–129.

Laverna sub-bistrigella. Stainton publishes an account of the larva of this species received from Wiesbaden. Ent. M. Mag. ii. pp. 105, 106. See also Barrett, *l. c.* p. 137.

Laverna decorella. The galls produced by the larva of this species are described by Barrett, Ent. M. Mag. i. p. 197.

Cemiostoma lotella. Stainton remarks on the egg and larva of this species. Proc. Ent. Soc. 1865, p. 101.

The larva of *Acrolepia granitella* lives on *Inula germanica.* Becker, Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 484.

Farren publishes notes on the habits of numerous Tineidæ, Ent. M. Mag. i. pp. 279–281. He refers to species of *Tinea, Adela, Swammerdammia, Depressaria, Hypercallia, Coleophora, Batrachedra,* and *Phyllocnistis.*

Barrett has bred *Tinea rusticella, fuscipunctella,* and *ganomella* (=*lapella*) from birds' nests containing wool and hair. Ent. M. Mag. i. p. 282.

The larvæ of the following known species are described by Von Heyden (Stett. ent. Zeit. 1865):—*Exapate congelatella* (*l. c.* p. 104), larva different in ♂ and ♀; *Cedestis gysseleniella* (*l. c.* p. 105); and *Tischeria gaunacella* (ibid.). Von Heyden states (*l. c.* p. 106) that the insect described by him in Stett. ent. Zeit. 1860, p. 40, as *Nepticula argyropeza*=*N. sericopeza*, and his *Tinea nigripunctella* (*l. c.* 1861, p. 33)=*T. parietariella.* He also remarks on the transformations of *Bucculatrix fatigatella.*

Heyden (Stett. ent. Zeit. 1865) describes *Gelechia hippophaëlla* (Schr.) and its larva, *l. c.* p. 379; the larva and habits of *Ypsolophus schmidiellus* (Heyd.), *l. c.* p. 380; the development of *Stagmatophora pomposella* (Zell.), *l. c.* p. 381; and the habits and transformations of *Nepticula apicella* (Sta.), *l. c.* p. 381.

Nepticula. Hind publishes notes on the habits and food-plants of several species of this genus bred by him in York. Ent. M. Mag. i. pp. 216–217.

Lemnatophila phryganella. Notes on habits by Piffard. Ent. M. Mag. i. p. 188.

Gallus describes (Stett. ent. Zeit. 1865, pp. 352–354) the habits and metamorphoses of *Ochsenheimeria taurella* (W. V.), the larva of which is said to be destructive to the rye.

Dunning records having found two males of *Micropteryx calthella* copulating simultaneously with a female. Proc. Ent. Soc. 1865, p. 104.

Healy and Stainton remark on the intermittent occurrence of *Bedellia somnulentella.* Ent. M. Mag. ii. p. 137.

The characters and mode of life of *Tinea granella* are described by Taschenberg, Naturg. wirbell. Thiere, pp. 136–138, pl. 4. figs. 10–12; and those of *Depressaria nervosa*, *l. c.* pp. 138–141, pl. 5. figs. 14–16.

Gracilaria coffeifoliella, noticed by Nietner as injurious to the coffee-plantations, is referred to by Guérin, Rev. et Mag. de Zool. 1864, p. 61.

Fologne (Ann. Soc. Ent. Belg. tome viii. pp. 274–275) records the occurrence in Belgium of *Depressaria yeatiana, discipunctella,* and *cnicella, Gelechia hippophaëlla, desertella,* and *superbella, Blastobasis phycidella,* and *Æchmia oculatella.*

Barrett publishes a list of *Tineidæ* captured by him at Haslemere, with notes on the habits of some of the species. Ent. M. Mag. ii. pp. 42–44.

Depressaria. Blackburn records the species of this genus met with by him in the Isle of Wight. Ent. M. Mag. ii. pp. 68–69.

New species:—

Ceuthomadarus, g. n., Mann, Wien. ent. Mon. Bd. viii. p. 188. Allied to *Gelechia*; 7th and 8th veins in hind wings pedunculate; proboscis short and weak; third joint of palpi acute, scaled. Sp. *C. tenebrionellus*, sp. n., Mann, *l. c.* p. 188, taf. 5. figs. 1 & 2, from Brussa.

Tinea oleastrella, Milliére, Icon. Lépid. ii. p. 42, pl. 55. figs. 7–9 (with transformations), from the south of France.—*Tinea gliriella*, Heyden, Stett. ent. Zeit. 1865, p. 102, and *T. roeslerella*, Heyden, ibid., from Frankfort.

Incurvaria mediostriatella, Clemens, Proc. Ent. Soc. Phil. v. p. 147, from Pennsylvania.—*I. provertella*, Heyden, *l. c.* p. 103, from Vienna.

Adela schrencki, Bremer, Mém. Acad. St. Pétersb. viii. p. 92, pl. 7. fig. 24, and *A. chalybeella*, Brem. ibid., pl. 7. fig. 25, from Eastern Siberia.

Swammerdammia zimmermanni, Nowicki, Microl. Spec. novæ, 1864, fig. 3, from Galicia.

Depressaria. Nickerl describes four new species of this genus: namely, *D. cotopaxiella, laserpitii*, Wien. ent. Mon. viii. p. 1, taf. 5. fig. 5, and *D. cotoneastri*, *l. c.* p. 2, taf. 5. fig. 6, from the Upper Engadine; *D. hypomarathri*, *l. c.* p. 3, taf. 5. fig. 8, and *D. artemisiæ*, *l. c.* p. 4, taf. 5. fig. 7, from Prague.

Depressaria squamosa, Mann, *l. c.* p. 185, taf. 4. fig. 13, and *D. floridella*, Mann, *l. c.* p. 186, taf. 4. fig. 14, from Brussa.—*D. absynthiella*, H.-Schäffer, Regensb. Corr.-Blatt, 1865, p. 115, from the Engadine.—*D. silerella*, Stainton, Ent. M. Mag. i. p. 221, from Vienna.

Gelechia halymella, Millière, Ann. Soc. Linn. Lyon, tome x. p. 224, pl. 42. figs. 4–8 (larva, pupa, and imago), from Marseilles.—*G. psoralella*, Millière, Icon. Lépid. tome ii. p. 83, pl. 61. figs. 1–6 (with transform.), from the south of France.—*G. ruptella*, Constant, Ann. Soc. Ent. Fr. 4ᵉ sér. tome v. p. 192, pl. 7. fig. 6, *G. lutescens*, Constant, *l. c.* p. 196, pl. 7. fig. 12, and *G. capnella*, Const. ibid., pl. 7. fig. 13, from the Landes; and *G. melaleucella*, Const. *l. c.* p. 197, pl. 7. fig. 14, from the Valais.—*Gelechia labradorica*, Möschler, Wien. ent. Mon. Bd. viii. p. 200, taf. 5. fig. 17.—*Gelechia tenuiella*, Mann, *l. c.* p. 186, taf. 4. fig. 16, and *G. fervidella*, Mann, *l. c.* p. 187, taf. 5. fig. 4, from Brussa.

—*G. herbichii*, Nowicki, Microl. Spec. novæ, 1864, fig. 6, and *G. dzieduszychii* Now. *l. c.* fig. 4, from Galicia.

Glyphipteryx pietruskii, Nowicki, *l. c.* fig. 8, from Galicia.

Parasia intestinella, Mann, *l. c.* p. 187, taf. 4. fig. 15, from Brussa.

Cleodora bohemiella, Nickerl, Wien. ent. Mon. viii. p. 5, taf. 5. fig. 9, from Prague.*

Ypsolophus pulverellus, Constant, *l. c.* p. 191, pl. 7. fig. 5, from the Landes.

Œcophora heringii, Lederer, Wien. ent. Mon. Bd. viii. p. 172, taf. 3. fig. 12, from Kutais.—*Œ. pokornyi*, Nickerl, *l. c.* p. 6, taf. 5. fig. 10, from Prague. —*Œ. tragicella*, Heyden, Stett. ent. Zeit. 1865, p. 380, from the Engadine.

Butalis lampyrella, Constant, *l. c.* p. 192, pl. 7. fig. 7, from the Pyrenees; and *B. rouxella*, Const. *l. c.* p. 193, pl. 7. fig. 8, from the Alps.

Acrolepia smilaxella, Millière, *l. c.* pp. 385–387, pl. 46. figs. 6–11, from the Pyrénées orientales.

Gracilaria desmodifoliella, Clemens, *l. c.* p. 145=*G. violacella* (Clem. 1860).

Ornix insperatella, Nickerl, *l. c.* p. 5, taf. 5. fig. 12, from Weltrus.

Coleophora arenariella (Wocke), Zeller, Stett. ent. Zeit. 1865, p. 43, and *C. polonicella*, Zeller, *l. c.* p. 46, from Meseritz.—*C. tanaceti*, Mühlig, Stett. ent. Zeit. 1865, p. 182. *C. plusiella*, Constant, *l. c.* p. 198, pl. 7. fig. 15, from Zermatt.—*C. hieronella*, Mann, *l. c.* p. 189, taf. 5. fig. 3 (*C. basimaculella*), from Brussa.—*C. zelleri*, Nowicki, *l. c.* fig. 10, from Galicia.

Lyonetia schineri, Nowicki, *l. c.* fig. 11, from Galicia.

Batrachedra salicipomonella, Clemens, *l. c.* p. 143, from Illinois.

Bucculatrix trifasciella, Clemens, *l. c.* p. 147, from Pennsylvania?

Bucculatrix absinthii, Gärtner, Stett. ent. Zeit. 1865, p. 330, from near Brünn.—*B. lavaterella*, Millière, Icon. Lépid. tome ii. p. 69, pl. 59. figs. 1–5 (with transf.), from the south of France.—*B. absynthiella*, H.-Schäffer, *l. c.* p. 117, from the Engadine.

Nepticula sanguisorbæ, Wocke, Stett. ent. Zeit. 1865, p. 269, and *N. aterrima*, Wocke, *l. c.* p. 270, from Breslau.

Stagmatophora nickerlii, Nickerl, *l. c.* p. 7, taf. 5. fig. 11, from Prague.

Hypatima undecimpunctella, Mann, *l. c.* p. 185, taf. 4. fig. 17, from Brussa.

Eucarphia resectella (Zeller, MS.), Werneburg, Stett. ent. Zeit. 1865, p. 153, from the Island of Sylt.

Trachonitis myricariella, Millière, Iconog. &c., tome i. pp. 376–380, pl. 45. figs. 3–7 (with transformations), from Chamouni and Lyons.

Pterophoridæ.

H. Frey (Mitth. Schw. ent. Ges. 1865, pp. 330–336) enumerates 37 Swiss species of this family, 32 belonging to the *Pterophorides* and 5 to the *Alucitides*.

Oxyptilus latus (Zell.), with its transformations, is described and figured by Millière, Ann. Soc. Linn. Lyon, tome x. pp. 205–207, pl. 39. figs. 7–10.

Rössler has described the distinctive characters of *Platyptilus ochrodactylus* (H.-Sch.) and *P. dichrodactylus* (Mühl.). Wien. ent. Mon. Bd. viii. p. 53.

Pterophorus rinderæ (=*volgensis*) is said by Becker to have a naked pupa, attached only by the tail. Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 482. The same author mentions some particulars of the transformations of *Agdistis tamaricis*, var. ?, sp. n. ?, *l. c.* p. 484.

Rössler describes the larva of *Pterophorus serotinus* (Zell.), which feeds on the flowers of *Scabiosa succisa*. Wien. ent. Mon. Bd. viii. p. 201.

W. R. Jeffrey communicates notes on *Pterophorus dichrodactylus*, and on the food of various *Pterophori*, to Ent. M. Mag. ii. p. 165.

Pterophorus brachydactylus. The larvæ of this moth are described by Jordan, Ent. M. Mag. i. p. 215.

Pterophorus dichrodactylus (Mühlig) is figured by Stainton, Entom. Annual for 1866, fig. 2.

On *Pterophorus ochrodactylus* (Zell.), *dichrodactylus* (Mühlig), and *bertrani* (Rössler), see Stainton, Ent. M. Mag. ii. pp. 137–138.

On the food of *Pterophorus acanthodactylus* and other species, see notes by D'Orville and Stainton, ibid. p. 138.

Oxyptilus maculatus, sp. n., Constant, Ann. Soc. Ent. Fr. 4e sér. tome v. p. 193, pl. 7. fig. 9, from the Basses-Alpes.

DIPTERA.

(*Including* Aphaniptera.)

* *Descriptive.*

Bellardi, L. Saggio di Ditterologia Messicana. Parte II. Mem. R. Accad. Torin. xxi. pp. 103–225, Tav. 1–3: 1865.

Boie, F. Dipterologische Notizen. Verh. zool.-bot. Gesellsch. in Wien, xv. pp. 241–242.

Canestrini, G., and Generali, G. Sopra alcuni parassiti della *Cecidomyia tritici*. Canestrini, Archiv. Zoolog., &c. iii. pp. 317–321: April 1865.

Egger, J. Dipterologische Beiträge. Fortsetzung der Beschreibung neuer Zweiflügler. Verhandl. zool.-bot. Gesellsch. Wien, Bd. xv. pp. 291–298, and 573–574.

Frauenfeld, G. von. Zoologische Miscellen. IV. Eine neue *Trypete*. Ibid. pp. 259–263.

Kirk, J. On the "Tsetse" Fly of Tropical Africa (*Glossina morsitans*, Westwood). Proc. Linn. Soc. viii. pp. 149–156: December 5, 1865.

Loew, H. Sechs neue europäische *Ortalidæ*. Wiener entom. Monatsschr. Band viii. pp. 8–17: January 1864.

——. Acht neue *Cordylura*-Arten. Ibid. pp. 17–26.

Loew, H. Die europäischen *Tipula*-Arten, deren Weibchen verkümmerte Flügel haben. Ibid. pp. 120–128: April 1864.

——. *Tipula sinuata* und ihre nächsten Verwandten. Ibid. pp. 128–131.

——. Die œsterreichischen *Hemerodromia*-Arten. Ibid. pp. 237–255: August 1864.

——. Ueber die *Pachymeria*-Arten aus dem Verwandtschaftskreise der *P. femorata* (Fab.). Ibid. pp. 353–366: November 1864.

——. Ueber die europäischen Arten der Gattung *Geomyza*. Berliner entom. Zeitschrift, 1865, pp. 14–25.

——. Ueber die europäischen *Opomyza*-Arten. Ibid. pp. 26–33.

——. Ueber die europäischen Arten der Gattung *Rhicnoëssa*. Ibid. pp. 34–39.

——. Diptera Americæ septentrionalis indigena. Centuria sexta. Ibid. pp. 127–186.

——. Ueber einige bei Kutais in Imeretien gefangene Dipteren. Ibid. pp. 234–242.

——. Ueber die europäischen *Noterophila*-Arten. Ibid. pp. 268–269.

——. Notiz über eine neuere, die lebendig gebärenden Dipteren-larven betreffende Publication. Ibid. p. 270.

Meinert, F. *Miastor metraloas*: yderligere Oplysning om den af Prof. Nic. Wagner nyligt beskrevne Insektlarve, som fonnerer sig ved Spiredannelse. [*Miastor metraloas*: external description of the Insect-larva recently described by Prof. Nic. Wagner, which propagates by gemmation.] Naturhist. Tidsskrift, 3rd ser. vol. iii. pp. 37–43: 1864.

Osten-Sacken, R. Description of some new genera and species of North American *Limnobiina*. Part I. Proc. Ent. Soc. Philad. vol. iv. pp. 224–242: (8) May 1865.

This paper includes a portion of Baron Osten-Sacken's work on the *Limnobiina* of North America, prepared for publication by the Smithsonian Institution. The greater part of the work had been sent in to the authorities of the Institution, and was consumed during the fire which destroyed its premises; the author had, however, retained a portion for the purpose of making additions to it, and this furnished the materials for his present memoir.

Philippi, R. A. Aufzählung der Chilenischen Dipteren. Verh. zool.-bot. Gesellsch. Wien, xv. pp. 595–782, Taf. 23–29.

This paper contains a list of the Diptera of Chili, with descriptions of a great number of new species, many of which are described as the types of new genera.

Rondani, C. Diptera Italica non vel minus cognita descripta vel annotata observationibus nonnullis additis. Fasc. I. *Œstridæ, Syrphidæ, Conopidæ*. Atti della Soc. Ital. Sci. Nat. viii. pp. 127–146: May 1865.

——. Alcune osservazioni sulla Nota dei Professori Generali e Canestrini sui parassiti della Cecidomia del Frumento. Ibid. pp. 150–153.

——. Dipterorum species et genera aliqua exotica revisa et annotata, novis nonnullis descriptis. Archiv. Zool. Anat., &c., di Canestrini, iii. pp. 1–99, pl. 5: May 1864.

Schiner, J. R. Erwiederung auf wiederholte Angriffe des Herrn H. Loew in Meseritz gegen meine Person und gegen meine Fauna austriaca. Wiener entom. Monatsschr. viii. pp. 296–301.

——. Ueber *Miastor metraloas* Meinert. Verhandl. zool.-bot. Gesellsch in Wien, Bd. xv. pp. 87, 88.

In this paper the author briefly indicates the peculiar mode of reproduction of *Miastor*, and discusses the characters and position of that genus.

——. Dipterologische Miscellen. Ibid. pp. 989–1000.

In this paper Schiner first records the additions made during the year 1865 to the list of Austrian Diptera (pp. 989–993), and afterwards notices the objections raised by the Recorder to some parts of his nomenclature of the veins of the Dipterous wings. The paper concludes with descriptions of some new species.

Walker, F. Descriptions of new species of the Dipterous Insects of New Guinea. Proc. Linn. Soc. vol. viii. pp. 102–130: January 13 (pp. 102–108) and December 5, 1865.

——. Descriptions of some new species of Dipterous Insects from the Island of Salwatty, near New Guinea. Ibid. pp. 130–136: December 5, 1865.

Walsh, B. D. See Insecta, p. 385.

(*Aphaniptera.*)

Guyon, —. Histoire naturelle et médicale de la Chigue (*Rhynchoprion penetrans*, Oken), insecte parasite des régions tropicales des deux Amériques. Revue et Mag. Zool. 1865, pp. 295–307: October.

This constitutes the first part of a memoir on the Chigoe, and contains an historical account of the knowledge of the insect, and a discussion of its geographical distribution. This portion of

the work seems to be chiefly founded upon Karsten's elaborate paper on the same subject, with a few additional references.

Karsten, H. Beitrag zur Kenntniss des *Rhynchoprion penetrans, Pulex*, L., 1767 ; *Rhynchoprion*, Oken (nicht Hermann), 1815; *Sarcophaga*, Guilding, MS. Westw.; *Dermatophilus*, Guérin, 1836; *Sarcopsylla*, Westw. 1837. Bull. Soc. Nat. Moscou, xxxvii. pt. 2. pp. 72–156, taf. 1 &2, 1864; translated in Ann. & Mag. Nat. Hist. xv. pp. 293–312, pls. 8 & 9.

† *Anatomical and Physiological Papers.*

Leuckart, R. Ueber die Fortpflanzung der viviparen Cecidomyienlarven. Nachricht. kön. Gesellsch. der Wiss. Göttingen, 1865, p. 215.

——. Die ungeschlechtliche Fortpflanzung der Cecidomyienlarven. Archiv für Naturg. xxxi. pp. 286–303, pl. 12.

Mecznikoff, E. Ueber die Entwickelung der Cecidomyienlarve aus dem Pseudovum. Ibid. pp. 304–310.

Meinert, F. Om Larvespirernes Oprindelse i Miastor-Larven [On the origin of the larval gemmation in *Miastor*]. Naturhist. Tidsskrift, 3rd ser. vol. iii. pp. 83–86: 1864.

General Remarks.

Loew, in his remarks on the European *Tipulæ* of which the females have rudimentary wings (Wien. ent. Mon. viii. pp. 120–128), refers to other forms of Diptera in which the same character occurs in one or both sexes, namely, *Epidapus* (Hal.) and *Chionea* (Dalm.), both sexes apterous; *Psyllomyia* (Loew), *Apterina* (Macq.), and *Elachiptera* (Macq.), and species of *Tachista, Chersodromia*, and *Geomyza*, have rudimentary wings in both sexes; in other forms the wings are only abbreviated (*Sciomyza*, sp.) in both sexes, or those of the male or female are smaller than in the other sex (species of *Empis, Rhamphomyia, Idioptera*, and *Tipula*).

Van der Wulp gives a list of species of Diptera recently detected in Holland (Tijdschr. voor Entom. 1865, p. 41) :—

Hypophyllus crinipes (Stäg.), *Gymnopternus chalybæus* (Wied), *Anthomyia invisa* (Zett.), *winthemi* (Meig.), and *albicincta* (Fall.), *Madiza annulitarsis* (Zett.), *Mosillus arcuatus* (Lat.), *Scatella sorbillans* (Hal.) and *sibilans* (Hal.), *Agromyza latipes* (Meig.) and *curvipalpis* (Zett.), *Phytomyza elegans* and *ochripes* (Meig.), and *Phora sordipennis* (Duf.) and *urbana* and *crassicornis* (Meig.).

Schiner remarks upon Philippi's descriptions of new Chilian Diptera, Verh. zool.-bot. Ges. in Wien, 1865, pp. 63–66 (Sitzungsb.).

Boie records the discovery of the larvæ, evidently of some Dipterous insect, living in the soft parts surrounding the nostrils of toads. Ibid. p. 241.

Bold (Nat. Hist. Trans. North. and Durh. i. p. 124) describes a footless larva, probably Dipterous, which injured the turnips in Northumberland in 1864, by eating into the crown between the leaves and then passing directly downwards, boring a hole as large as a stout knitting-needle. From four to twelve individuals would attack one turnip, soon leading to its decay.

Geldart publishes some notes on Diptera occurring in the Lake district. Ent. M. Mag. i. p. 239.

Cecidomyidæ.

Cecydomyia tritici. Canestrini and Generali have described the general mode of life of this species (Archivio Canestr. vol. iii. pp. 317–321) and the parasitism of a species of *Platygaster* upon the larva, and of a *Methoca* (?) upon the pupa. These parasites occur in great abundance, and, as the authors point out, must put a great check upon the increase of the *Cecidomyia*.

Rondani (Atti Soc. Ital. Sci. Nat. viii. pp. 150–153) remarks that the insect referred to by Generali and Canestrini is *Cecidomyia frumentaria* (Rond.) and not *C. tritici* (Kirby), and that the parasite referred by them to *Methoca* appears to belong to the *Cynipidæ*. He also suggests that the *Platygaster* is really parasitic upon the latter, and not immediately upon the *Cecidomyia*.

Taschenberg (Naturg. wirbell. Thiere) describes the characters and mode of life of *Cecidomyia destructor*, *l. c.* pp. 145–153, pl. 4. figs. 13–17, and *C. tritici*, *l. c.* pp. 153–158, pl. 4. figs. 18–20. Also of *C. brassicæ* (Winnertz), *l. c.* pp. 161–162.

Cecidomyia destructor. Fitch (8th Rep. Ins. New York, pp. 203–204) cites a statement leading to the conclusion that the Hessian Fly was more widely diffused in North America in 1779 than he formerly supposed.

Rose-galls of the willow produced by species of *Cecidomyia* are noticed by F. Smith and Inchbald, Entomologist, ii. pp. 234–235.

Loew states (Berl. ent. Zeitschr. 1865, p. 270) that the species on which Wagner's observations on the reproduction of the larvæ were made is nearly allied to the genus *Heteropeza*, but still more closely to the genus *Monodicrana* from Amber.

Pagenstecher has some remarks on the asexual reproduction of *Cecidomyia* in Amtl. Ber. Versamml. 39. deutscher Naturf. in Giessen, pp. 164–165.

Miastor, g. n., Meinert, Naturh. Tidsskr. 3rd ser. vol. iii. p. 42. Palpi biarticulati, brevissimi; tarsi 4-articulati; antennæ moniliformes, 11-articulatæ; alæ tricostatæ, costa media non apicem attingente, extrema integra. Sp. *M. metraloas*, sp. n., Meinert, *l. c.* p. 42.

Schiner refers *Miastor metraloas* (Meinert) to the neighbourhood of *Heteropeza*, and states that the tarsi are really five-jointed, the fifth joint being very small. Verh. zool.-bot. Ges. in Wien, xv. pp. 87–88.

Psychophæna, g. n., Philippi, Verh. zool.-bot. Gesellsch. in Wien, xv. p. 628. Allied to *Campylomyza*; marginal cell very small; transverse vein before the furcation of the following longitudinal vein. Sp. *P. pictipennis*, Phil. *l. c.* pl. 24. fig. 12, from Chili.

Spaniotoma, g. n., Philippi, *l. c.* p. 629. Antennæ short, 6-jointed, with sparse verticillate hairs. Sp. *S. bivittata*, Phil. *l. c.* pl. 24. fig. 13, and *S. unicolor*, Phil. ibid., from Chili.

Pentaneura, g. n., Philippi, *l. c.* p. 629. Antennæ moniliform, 12–14-

jointed, verticillately pilose; palpi as long as antennæ; wings narrow, very hairy, with five longitudinal veins, second furcate. Sp. *P. grisea*, Phil. *l. c.* p. 630, pl. 24. fig. 14, from Chili.

Tetraphora, g. n., Philippi, *l. c.* p. 630. Allied to preceding; wings pilose, with four longitudinal veins, fourth furcate. Sp. *T. fusca*, Phil. *l. c.* pl. 24. fig. 15, from Chili.

Cecidomyia? fuscescens, sp. n., Philippi, *l. c.* p. 628, from Chili.

Lasioptera pallipes, sp. n., Philippi, *l. c.* p. 630, and *L. furcata*, sp. n., Phil. p. 631, from Chili.

Mycetophilidæ.

Cnephæophila, g. n., Philippi, *l. c.* p. 618. Allied to *Bolitophila*; antennæ 16-jointed; tibiæ spurred at apex, otherwise unarmed; wings with a short basal cell, 2 marginals, first very short, second very long, arcuate, forming apex of wing. Sp. *C. fenestralis*, Phil. *l. c.* p. 618, pl. 23. fig. 6, from Chili.

Centrocnemis, g. n., Philippi, *l. c.* p. 619. Allied to *Mycetophila*; antennæ smooth, compressed; marginal cells 2; tibiæ with 2 rows of spines. Sp. *C. stigmatica*, Phil. *l. c.* p. 619, pl. 23. fig. 7, from Chili.

Agaricobia, g. n., Philippi, *l. c.* p. 626. Allied to *Sciara*; eyes in ♂ approximate, subreniform; antennæ as long as head and thorax, cylindrical, first joints cyathiform, setose; 2 mediastinal, 1 submarginal, and 3 posterior cells; tibiæ spurred, posterior with about six short setæ. Sp. *A. fulvicollis*, Phil. *l. c.* p. 626, pl. 24. fig. 11, from Chili.

New species:—

Macrocera valdiviana, Philippi, *l. c.* p. 617, and *M. testacea*, Phil. ibid., from Chili.

Ceroplatus obscurus, Philippi, *l. c.* p. 618, pl. 23. fig. 8. from Chili.

Gnoriste chilensis, Philippi, *l. c.* p. 620, pl. 23. fig. 9 (proboscis).

Platyura subannulata, Philippi, *l. c.* p. 620, from Chili.

Mycetophila. Of this genus Philippi describes *M. cognata* and *fascipennis*, p. 621; *M. heteroneura*, *apicata*, and *atricornis*, p. 622; and *M. nigriventris*, p. 623.

Mycetophila obscurata, Walker, Proc. Linn. Soc. viii. p. 130, from Salwatty.

Leia? pæciloptera, Philippi, *l. c.* p. 623, from Chili.

Leia punctata, Bellardi, Mem. R. Accad. Tor. ser. 2. tome xxi. p. 202, pl. 3. fig. 3, from Mexico.

Sciophila. Philippi describes *S. valdiviana*, *thoracica*, *præcox*, and *vernalis*, *l. c.* p. 624; *S. aberrans*, *australis*, *pusilla*, and *ocreata*, *l. c.* p. 625.

Mycetobia? fulva, Phil. *l. c.* p. 626, from Chili.

Sciara domestica, *heteropus*, and *diminutiva*, Phil. *l. c.* p. 627, from Chili.

Sciara varipes and *S.? filipes*, Walk. *l. c.* p. 102, from New Guinea.

Bibionidæ.

Becker has some observations on the habits of two species of *Simulia* of the neighbourhood of Sarepta. Bull. Soc. Nat. Mosc. xxxvii. pt. i. p. 478.

Plecia similis (Rond.). Rondani (Archiv. Canest. vol. iii. p. 90) adds some distinctive characters of this species.

New genera and species:—

Lobogaster, g. n., Philippi, Verh. zool.-bot. Gesellsch. in Wien, xv. p. 632. Allied to *Rhyphus*; antennæ twice as long as head and thorax, cylindrical; abdomen with segments 4–6 dilated on each side. Sp. *L. paradoxus*, Phil. *l. c.* p. 632, pl. 24. fig. 16, from Chili.

Heptagyia, g. n., Philippi, *l. c.* p. 635. Allied to *Simulium*; antennæ 7-jointed; palpi long, 6-jointed; wings with 2 basal and posterior cells. Sp. *H. annulipes*, Phil. *l. c.* pl. 24. fig. 17, from Chili.

Penthera, g. n., Philippi, *l. c.* p. 639. Allied to *Plecia*; antennæ inserted at the level of the middle of the eyes; legs densely pilose. Sp. *P. nigra*, Phil. *l. c.* p. 640, pl. 24. fig. 18, from Chili.

Plecia vittata, Bellardi, Mem. R. Accad. Tor. ser. 2. tome xxi. p. 204, pl. 3. fig. 4, from Mexico.

Dilophus minutus, Bellardi, *l. c.* p. 204, from Mexico.

Dilophus vittatus, *pallidipennis*, *paulseni*, and *valdivianus*, Philippi, *l. c.* p. 636, from Chili.

Bibio longirostris, Rondani, Archivio Canestr. vol. iii. p. 89, and *B. brachiata*, Rond. ibid., from the Cape of Good Hope.

Simulium chilianum (Phil.), Rondani, *l. c.* p. 90, from Chili.

Simulium. Philippi describes *S. montanum* and *pulchrum*, *l. c.* p. 633; *S. annulatum*, *varipes*, *chilense* (=*chilianum*, Rond.?), and *tarsatum*, p. 634.

Simulium mexicanum, Bellardi, *l. c.* p. 203.

Rhyphus tæniatus, Bellardi, *l. c.* p. 202, pl. 3. fig. 15, from Mexico.

Scatopse transatlantica, *carbonaria*, and *hyalinata*, Phil. *l. c.* p. 640, from Chili.

Acanthocnemis (Blanch.). Philippi describes *A. nigripennis*, *thoracicus*, and *luteicollis*, *l. c.* p. 637; *A. lateralis*, *bimaculatus*, *gagatinus*, *ater*, *carbonarius*, and *ephippium*, p. 638; *A. dorsalis* and *rubripes*, p. 639.

Chironomidæ.

Podonomus, g. n., Philippi, Verh. zool.-bot. Gesellsch. in Wien, xv. p. 601. Allied to *Chironomus*; antennæ (♀) short, 8-jointed (?), with long hairs, last joint as long as two or three preceding together; wings with the basal cells equal, the marginal and four posterior cells subequal, anal and axillary cells imperfectly separated. Sp. *P. stigmaticus*, Phil. *l. c.* p. 602, pl. 23. fig. 10, from Chili.

Chironomus. Philippi describes *C. pictipennis*, *punctulatus*, and *eburneocinctus*, *l. c.* p. 599; *C. balteatus*, *lacteocinctus*, *carbo*, *melas*, *pica*, *delicatulus*, and *holochlorus*, *l. c.* p. 600; and *C. cinereus*, p. 601.

Chironomus instabilis, Walker, Proc. Linn. Soc. viii. p. 103, from New Guinea.

Ceratopogon chilensis, sp. n., Philippi, *l. c.* p. 601, from Chili.—*Ceratopogon genualis*, sp. n., Loew, Berl. ent. Zeitschr. 1865, p. 128, from Cuba.

Psychodidæ.

Psychoda punctata, *7-punctata*, and *tenella*, sp. n., Philippi, *l. c.* p. 631, from Chili.—*Psicoda* (sic) *pulla*, sp. n., Rondani, Arch. Canestr. iii. p. 90, from Chili.

Culicidæ.

Plettusa, g. n., Philippi, Verh. zool.-bot. Gesellsch. in Wien, xv. p. 597. Allied to *Culex*, but with the palpi rudimentary, 1-jointed, and the wings nearly as in *Tipula*. Sp. *P. virescens*, Phil. *l. c.* pl. 23. fig. 1; *P. testacea*, *fulvithorax*, and *stigmatica*, Phil. p. 598, from Chili.

Megarhina inornata, sp. n., Walker, Proc. Linn. Soc. viii. p. 102, from New Guinea.

Culex. Philippi describes as new *C. serotinus*, p. 595; *C. articularis*, *vittatus*, *apicinus*, and *pictipennis*, p. 596; and *C. marmoratus*, p. 597.

Culex bigoti, sp. n., Bellardi, Mem. R. Accad. Tor. ser. 2. tome xxi. p. 200, pl. 3. fig. 1, from Mexico.—*Culex ventralis*, sp. n., Walker, *l. c.* p. 103, from New Guinea.

Tipulidæ.

Osten-Sacken (Proc. Ent. Soc. Phil. vol. iv. p. 225) tabulates the genera of *Limnobiina* as follows:—

I. A single marginal cell.
  1. Limnobiæformia. Antennæ 14-jointed. (Genera: *Geranomyia*, *Rhipidia*, *Dicranomyia*, *Discobola*, *Limnobia*.)
  2. Anomala. Antennæ 16-jointed (or sometimes by coalescence of basal joints of flagellum 15- or 12-jointed, when *the proboscis is enormously prolonged*).
    a. *Rhamphidiæformia*. (Genera: *Rhamphidia*, *Elephantomyia*, *Toxorhina*.)
    b. *Cylindrotomæformia*. (Genera: *Cylindrotoma*, *Triogma*, *Phalacrocera*.)
    c. *Anomala vera*. (Genera: *Dicranoptycha*, *Antocha*, *Teucholabis*, *Plectromyia* (g. n.), *Elliptera*.)

II. Two marginal cells.

* No spurs at the tip of the tibiæ.
  3. Eriopteræformia. (Genera: *Erioptera*, *Symplecta*, *Trimicra*, *Gnophomyia*, *Cryptolabis*, *Cladura*, *Gonomyia*.)

† Tibiæ with spurs at the tip.

a. Auxiliary cross vein *posterior* to origin of second vein.
  4. Limnophilæformia. Antennæ 16-jointed. (Genera: *Epiphragma*, *Limnophila*, *Trichocera*.)
  5. Anisomeræformia. Antennæ 6- or 10-jointed. (Genera: *Anisomera*, *Eriocera*, *Penthoptera*.)

β. Auxiliary cross vein *anterior* to origin of second vein.
  6. Pediciæformia. (Genera: *Amalopsis*, *Pedicia*, *Ula*, *Dicranota*, *Astrolabis* (g. n.), *Rhapidolabis* (g. n.), *Tricyphona*.)

Toxorhina. Osten-Sacken (*l. c.* pp. 227–232) characterizes this genus, which he confines to the recent species, indicating that the existing *T. fragilis* (Loew) and those found in amber and referred to this genus by Loew himself cannot belong to the same generic group. He also points out its difference from *Limnobiorhynchus* (Westw.), and states that he entertains doubts as to the validity of the latter, of which he cites Westwood's characters.

Cylindrotoma (Macq.) and *Triogma* (Schin.) are characterized by Osten-Sacken, *l. c.* pp. 234 & 237. The author also quotes a communication from Loew, stating that the species described (*vide infrà*) under the name of *Triogma nodicornis* should be referred to *Cylindrotoma*, or constitute a new genus.

Loew (Wien. ent. Mon. Bd. viii. pp. 120–128) describes the cases in which the females of species of *Tipula* have the wings rudimentary, and refers in passing to other genera of Diptera in which analogous phenomena occur. The *Tipulæ* with rudimentary wings have been formed into a distinct genus (*Pteretachisus*) by Rondani, but Loew regards this as untenable. He describes as known European species *Tipula pagana* (Meig.) = *T. dispar* (Hal.), *l. c.* p. 125, and *Tipula berteii* (Rond.), *l. c.* p. 128, and adds the description of a new species.

Loew (*l. c.* p. 123) remarks that Zetterstedt describes both sexes of his *Limnobia* (*Idioptera*) *fasciata* as possessing fully developed wings, the ♀ of the true *Idioptera fasciata* having those organs rudimentary. Hence he concludes that a second nearly allied species may occur in Sweden.

The habits and characters of *Tipula cerealis* are described by Taschenberg, Naturg. wirbell. Thiere, pp. 158–161.

Ilisia (Rond.). Rondani gives a character of this genus=*Limnobia* and *Erioptera*, pp. Archivio Canestr. vol. iii. p. 91.

New genera:—

Ctedonia, g. n., Philippi, Verh. zool.-bot. Ges. in Wien, xv. p. 602. Allied to *Ctenophora*; antennæ 20-jointed, pectinated on one side in both sexes; terminal joint of palpi short; wings with 5 posterior cells, second stalked. Sp. *C. bicolor*, Phil. p. 603, pl. 23. fig. 2, *C. pictipennis* and *bipunctata*, Phil. p. 603, and *C. flavipennis*, Phil. p. 602, from Chili.

Polymoria, g. n., Philippi, *l. c.* p. 608. Allied to *Tipula*; wings with 6 posterior cells, third pedicellate. Sp. *P. irrorata*, Phil. p. 608, pl. 23. fig. 3, *P. cinerea*, *punctipennis*, and *tenella*, Phil. p. 609, from Chili.

Idioneura, g. n., Philippi, *l. c.* p. 615. Allied to *Limnobia*; wings with 2 marginal cells, first very wide, with 3 cells at its apex, second narrow; submarginal cell with a straight transverse vein; 5 posterior cells, all sessile; basal cells elongate. Sp. *I. macroptera*, Phil. *l. c.* pl. 23. fig. 4, from Chili.

Lachnocera, g. n., Philippi, *l. c.* p. 615. Antennæ as long as the body, of 13 (?) joints, with long spreading hairs; wings with two marginal cells, first very large, second short. Sp. *L. delicatula*, Phil. *l. c.* p. 616, pl. 23. fig. 5, from Chili.

Tanyderus, g. n., Philippi, *l. c.* p. 780. Allied to *Polymera*; antennæ of at least 25 joints, joint 2 about half the length of 1; prothorax deflexed, long, thin, and cylindrical; discoidal cell long. Sp. *T. pictus*, Phil. p. 781, pl. 29. fig. 57, from Chili.

New species :—

Tipula. Philippi (*l. c.*) describes *T. decorata* and *glaphyroptera*, p. 604; *T. subandina, concinna*, and *annulipes*, p. 605; *T. paulseni, valdiviana*, and *apterogyne*, p. 606; *T. vittigera* and *flavipennis*, p. 607.

Tipula autumnalis, Loew, Wien. ent. Mon. viii. p. 126, from Meseritz (♀ with rudimentary wings); *T. repanda*, Loew, p. 129, and *T. trianguliferа*, Loew, p. 130, from the south of Spain.

Tipula pallida, Walker, Proc. Linn. Soc. viii. p. 105, from New Guinea.

Erioptera? longipes and *E.? pallida*, Philippi, *l. c.* p. 616, from Chili.

Megistocera chilensis, Philippi, *l. c.* p. 617.

Limnobia. Walker (*l. c.*) describes the following six new species of this genus from New Guinea:—*L. plenipennis*, p. 103; *L. latifascia, infixa*, and *contingens*, p. 104; *L. exclusa* and *trisignata*, p. 105; also *L. filiformis*, *l. c.* p. 131, from Salwatty.

Limnobia. The following new Chilian species are described by Philippi (*l. c.*):—*L. flavida* and *vermalis*, p. 612; *L. infumata, guttata*, and *polysticta*, p. 613; *L. phatta* and *L. chlorotica*, p. 614.

Gnophomyia pusilla, Schiner, Verh. zool.-bot. Ges. in Wien, xv. p. 995, from Austria.

Limnophila. Philippi (*l. c.*) describes *L. stigmatica*, p. 610; *L.? pallens*, ibid.; *L. trichopus*, ibid.; *L. apœcila, verecunda, cineracea*, and *venosa*, p. 611.

Limnophila undulata, Bellardi, Mem. R. Accad. Tor. ser. 2. tome xxi. p. 200, pl. 3. fig. 2, from Mexico.

Pachyrhina tenuis, Walker, *l. c.* p. 106, from New Guinea; *P. colorata*, Walk. *l. c.* p. 131, from Salwatty.—*Pachyrhyna* (sic) *capensis*, Rondani, *l. c.* p. 91, from the Cape of Good Hope.

Toxorhina magna, Osten-Sacken, Proc. Ent. Soc. Phil. iv. p. 232, from New Jersey; and *T. muliebris*, O.-Sacken, p. 233, from Massachusetts.

Cylindrotoma americana, Osten-Sacken, p. 236, from the White Mountains.

Cylindrotoma hyaloptera, Philippi, *l. c.* p. 614, from Chili.

Triogma exsculpta, Osten-Sacken, p. 239, from Pennsylvania; *T. nodicornis*, O.-Sack. ibid., from Washington, New York, Illinois, &c.

Phalacrocera tipulina, Osten-Sacken, p. 241, from the White Mountains.

Gynoplistia insolita, Walker, *l. c.* p. 131, from Salwatty.

Aporosa mexicana, Bellardi, *l. c.* p. 201, from Mexico.

Stratiomydæ.

Hermetia. Rondani (Archivio Canestr. vol. iii. p. 86) proposes to regard *Hermetia* as the type of a distinct subfamily, *Hermetiinæ*, including the genus *Cyphomia* (Wied).

Bellardi describes a variety of his *Hermetia lativentris* from Mexico. Mem. R. Accad. Tor. ser. 2. tome xxi. p. 205.

Rondani states, from reexamination of the type, that the genus *Chrysomya* (Desv.) should be adopted, and proposes the name of *Myochrysa* for the synonymous genus of Stratiomydæ. Archivio Canestr. vol. iii. p. 28.

New genera :—

Stratiomys. Rondani (*l. c.* p. 77) discusses the question of the generic subdivision of the old genus *Stratiomys*, and proposes the establishment of three new genera, as shown in the following table:—

I. An oblique venule (beyond the stigmatic venules) uniting the marginal and costal veins.
  A. First joint of antennæ at least three times as long as the following one.
    1. Eyes naked .... Stratiomys (Geoff.) (type *S. chamæleon*).
    2. Eyes hairy .... Thyreodontha, g. n. (type *S. strigata*).
  B. First joint of antennæ not more than twice as long as the following one.
    1. Eyes hairy .... Psellidotus, g. n. (type *O. elegans*, Macq.).
    2. Eyes naked .... Odonthomya (Latr.) (type *O. furcata*).
II. No subapical oblique venule.
    Oplodontha, g. n. (type *O. viridula*, Lat.).

Cyanavges, g. n., Philippi, Ver. zool.-bot. Gesellsch. in Wien, xv. p. 732. Eyes smooth; scutellum with 8 spines, the lateral ones small. Sp. *C. valdivianus*, Phil. p. 733, pl. 26. fig. 34, from Chili.

New species :—

Stratiomyia (= *Stratiomys*). Loew describes fifteen new North American species of this genus (Berl. ent. Zeitschr. 1865):—*S. quadrigemina*, p. 129, from Connecticut; *S. normula*, p. 130, from New York; *S. unilimbata*, p. 131, from Wisconsin; *S. senaria*, p. 132, from Florida; *S. lativentris*, ibid., from Lake Superior; *S. barbata*, p. 133, from California; *S melastoma*, p. 134, from California; *S. obesa*, ibid., *S. quaternaria*, p. 135, *S. apicula*, p. 136, and *S. discalis*, ibid., from Illinois; *S. nigriventris*, p. 137, and *S. notata*, p. 139, from Nebraska; *S. angularis*, p. 138, and *S. marginalis*, ibid., from Philadelphia.

Stratiomys bimaculata, Bellardi, Mem. Accad. Tor. ser. 2. xxi. p. 207, pl. 3. fig. 7, from Mexico.—*S. atraria* and *S. parallela*, Walker, Proc. Linn. Soc. viii. p. 106, from New Guinea.

Odontomyia. Of this genus Loew describes the following ten new American species (Berl. ent. Zeitschr. 1865):—*O. nigrirostris*, p. 140, from Wisconsin; *O. megacephala*, ibid., from California; *O. varipes*, p. 141, from Carolina?; *O. binotata*, p. 142, from Illinois; *O. lasiophthalma*, ibid., from New York; *O. inæqualis*, p. 143, from Hudson's Bay Territory; *O. rufipes*, p. 144, and *O. scalaris*, p. 145, from Cuba; *O pilimana*, p. 146, from Illinois; and *O. microstoma*, ibid., from Massachusetts and New York.

Acanthina nana, Bellardi, *l. c.* p. 206, from Mexico.

Sargus lateritius, Rondani, Arch. Canestr. iii. p. 76, from Madagascar.

Sargus versicolor, Bellardi, *l. c.* p. 210, pl. 3. fig. 8, from Mexico; *S. fortis*, Walker, *l. c.* p. 107, from New Guinea.

Clitellaria (sic) *responsalis*, Walker, *l. c.* p. 106, from New Guinea; *C. subulata*, Loew, *l. c.* p. 147, from Virginia; *C. pygmæa*, Bellardi, *l. c.* p. 209, pl. 3. fig. 5, from Mexico.

Cyphomyia rubra and *C. marginata*, Loew, *l. c.* p. 148, from Cuba.—*Cyphomia* (sic) *pubiventris*, Rondani, *l. c.* p. 86, from the Cape of Good Hope.

Chordonota fuscipennis, Bellardi, *l. c.* p. 208, pl. 3. fig. 6, and *C. carbonaria*, Bell. ibid., from Mexico.

Ruba opponens, Walker, *l. c.* p. 107, from New Guinea.

Cyclogaster paulseni and *rubriceps*, Philippi, *l. c.* p. 732, from Chili.

Xylophagidæ.

Beris. Rondani (Arch. Canestr. iii. p. 87) proposes the following division of this genus into four:—

I. Eyes hairy, or distinctly pilose.
  A. Scutellum 4-spined .. Actina (Meig.) (type *A. nitens*, Meig.).
  B. Scutellum at least 6-spined or 6-dentate.
    Beris (Lat.) (type *B. vallata*, Fab.).

II. Eyes naked, or nearly so.
  A. Scutellum at least 6-spined or 6-dentate.
    Oplachantha, g. n.
  B. Scutellum 4-spined .. Chorisops (Rond.) (type *B. tibialis*, Meig.).

Actina=*Actina* of Meigen, not of authors; *Chorisops*=*Actina*, Schiner & Loew.

Hylorus, g. n., Philippi, Verh. zool.-bot. Gesellsch. in Wien, xv. p. 728. Allied to *Xylophagus*; eyes contiguous in ♂; antennæ with a tuft of short hairs at apex; wings with anterior margin convex, venation as in *Beris*. Sp. *H. krausei*, Phil. *l. c.* pl. 26. fig. 33, from Chili.

Lagarus, g. n., Philippi, *l. c.* Antennæ short, third joint indistinctly annulated; discoidal cell wanting. Sp. *L. paulseni*, Phil. p. 729, from Chili.

Oplachantha, g. n., Rondani, *l. c.* p. 87: see table, *supra*. Type *Beris mexicana* (Bellardi). N. sp. *O. valdiviana* (Phil.), Rond. p. 88, from Valdivia.

Chorisops philippii, sp. n., Rondani, *l. c.* p. 88, from Chili.

Cœnura xanthopleura and *biguttata*, sp. n., Philippi, *l. c.* p. 726, and *C. elegans*, sp. n., Phil. p. 727, from Chili.

Xylophagus carbonarius, sp. n., Philippi, p. 727, from Chili.

Beris. Philippi (*l. c.*) describes the following new Chilian species of this genus:—*B. luctifera*, p. 729; *trichonota*, *modesta*, *thoracica*, p. 730; *longicornis*, *luteiventris*, and *iridiventris*, p. 731.

Tabanidæ.

Walsh (Proc. Bost. Soc. Nat. Hist. ix. pp. 302–306) describes the metamorphoses of the aquatic larva of a *Tabanus*, the species of which he leaves undetermined. The larva, which is usually found among floating rubbish, feeds voraciously upon aquatic mollusca, and when full-grown measures upwards of two inches in length and swims vigorously; it is furnished with retractile false feet (called *pseudopodia* by Walsh) on the anterior portions of segments 4–10. Walsh conjectures that it possesses an anal branchial apparatus.

Tabanus. Rondani proposes (Archivio Canestr. iii. p. 78) to divide this genus into four, as follows:—

I. Fifth and sixth longitudinal veins produced separately to the margin.
  A. Third joint of antennæ furnished above with a long tooth.
    Dichelacera (Macq.)

  B. Third joint of antennæ with a small or scarcely produced tooth.
    1. Eyes hairy in ♂, tomentose in ♀ .... Agelanius, g. n.
    2. Eyes naked, or nearly naked, in both sexes.
      Tabanus (Linn.).

II. Fifth and sixth longitudinal veins united before the margin.
  Bellardia, g. n.

Tabanus unicolor (Macq.)=*T. lateritius*, Rond. *l. c.* p. 80, the former name being preoccupied by Meigen.

Pangonia (Latr.). Walker has divided the genus *Pangonia*, after separation of *Dicrania* (Macq.), into fourteen subgenera, which Rondani regards as insufficiently characterized (*l. c.* p. 84). He proposes the following division of the genus:—

I. Eighth and ninth longitudinal veins united before the margin of the wing..... Scione (Walk.)
  (type *P. incompleta*, Macq.).

II. Eighth and ninth longitudinal veins separate to margin.
  A. Fifth and sixth longit. veins united before margin.
    Pangonia (Lat.).
  B. Fifth and sixth longit. veins separate to margin.
    Diatomineura, g. n.

Pangonia may be subdivided into *Pangonia*, pr., with the eyes naked, or nearly naked: sp. *P. fuscipennis*, *atricornis* (Wied), *prasiniventris*, &c. (Macq.); and *Erephopsis* (Rond. *l. c.* p. 85), with the eyes hairy or pilose: sp. *P. margaritifera* (Wied), *longirostris*, *fenestrata*, &c. (Macq.).

New genera:—

Diatomineura, g. n., Rondani, *l. c.* p. 85: see table above. Subgenera: *Diatomineura* (pr.), sp. *P. depressa*, *albicostata*, &c. (Macq.); and *Corizoneura* (Rond.), sp. *appendiculata*, *dives*, &c. (Macq.).

Agelanius, g. n., Rondani, *l. c.* p. 79: see table above. Sp. *A. meridianus*, Rond. *l. c.* from Valdivia, and *A. philippi*, Rond. p. 80, from St. Jago.

Bellardia, g. n., Rondani, p. 79, pl. 5. figs. 12 & 13 (wing and antenna): see table above. Sp. *Tab. albonotatus* (Bellardi), *maculipennis*, *clausus*, and *limbatinervis* (Macq.).

Esenbeckia, g. n., Rondani, p. 83=*Silvius* (Meig.) ex parte. Fifth and sixth longitudinal veins convergent and united before the margin of the wing. Types, *Silv. vulpes* and *S. esenbeckii*, the latter name changed by Rondani to *E. pangonina*.

Veprius, g. n., Rondani, p. 83. Allied to *Silvius*, but with the eyes hairy. Sp. *V. presbiter*, sp. n., Rond. p. 84, from St. Jago.

Mycteromyia, g. n., Philippi, Verh. zool.-bot. Gesellsch. in Wien, xv. p. 712. Allied to *Pangonia*; head small, much produced in front; eyes naked; palpi biarticulate, second joint elongate, compressed. Type *Pangonia conica* (Bigot). N. sp. *M. fusca*, Phil. p. 712; *M. brevirostris* and *murina*, Phil. p. 713, from Chili.

Trichopalpus, g. n., Philippi, *l. c.* p. 724. Allied to *Chrysops*; antennæ short, joints gradually thickened, nearly equal in length, third globose; palpi porrect, biarticulate, very hairy; wings elongate, marginal cell distinct, two submarginals, five posterior cells, anal cell open. Sp. *T. obscurus*, *fulvus*,

cinerascens, Phil. p. 725; *T. pœcilogaster*, Phil. ibid., pl. 26. fig. 32, from Chili.

New species:—

Tabanus. Philippi (*l. c.*) describes numerous new Chilian species of this genus:—*T. nigripennis*, p. 714; *acutidens*, *xanthogaster*, *senilis*, p. 715; *tephrodes*, *molestissimus*, *andicola*, p. 716; *magellanicus*, *anachoreta*, p. 717; *infumatus*, *inornatus*, *coracinus*, p. 718; *T.? lugens*, *gagatinus*, *T.? hirtuosus*, p. 719; *T.? obscuratus*, *T. melanostoma*, *nigrifrons*, p. 720; *T.? annulicornis*, *T. paulseni*, p. 721; *obscuripennis*, *pullus*, p. 722; *rubricornis* and *fulvipes*, p. 723.

Tabanus subtilis, Bellardi, Mem. R. Accad. Tor. ser. 2. tom. xxi. p. 211, pl. 3. fig. 9, and *T. rubescens*, Bell. p. 212, from Mexico.

Tabanus cohærens, Walker, Proc. Linn. Soc. viii. p. 108; *T. papouinus*, Walk. ibid., and *T. breviusculus*, Walk. p. 109, from New Guinea.

Chrysops macula, Philippi, *l. c.* p. 724, from Chili.—*C. amazonius*, Rondani, *l. c.* p. 81, from Porto Rico.

Pangonia. Philippi (*l. c.*) describes the following new Chilian species of this genus:—*P. chlorogastra*, p. 708; *P. rufo-aurea*, *atra*, and *collaris*, p. 709; *P. subandina*, *australis*, and *obscuripennis*, p. 710; and *P. vittata*, p. 711.

Pangonia caliginosa, Walker, *l. c.* p. 108, from New Guinea.

Acanthomera bellardii (Bigot, MS.), Bellardi, *l. c.* p. 213, pl. 3. fig. 11, and *A. bigoti*, Bell. ibid., pl. 3. fig. 10, from Mexico.

Bombyliidæ.

Rondani (Canestr. Archivio, vol. iii. pp. 49–51) proposes to divide this family into two stirpes, *Falleniinæ* and *Bombyliuæ*, and gives the following characters of the former:—Longitudinal veins in the anterior part 7, 6 or 5 running nearly parallel; an oblique more or less angular vein arising before the middle of the costa and attaining or extending close to the posterior margin beyond the middle. The following genera belong to this group:—1. *Megistorhynchus* (Macq.); 2. *Nemestrina* (Lat.); 3. *Andrenomya* (Rond.); 4. *Trichophthalma* (Westw.); 5. *Hyrmoneura* (Wied); 6. *Hyrmophlœba* (Rond.); 7. *Fallenia* (Meig.); 8. *Trichopsidea* (Westw.).

Bombylisoma (Rond.). Rondani remarks (*l. c.*) that his genus of this name includes Loew's three previously published genera *Legnotus*, *Sparnopotius*, and *Dischistus*, his type, *B. sulphureus*, belonging to *Dischistus*. He now proposes to retain the name of *Bombylisoma* for a new species from Chili, and to distinguish the genus from *Dischistus* as follows:—

Dischistus (Loew). First joint of antennæ elongate, cylindrical, 2nd very short, subdisciform or cyathiform; anterior basal areola produced to but not beyond the origin of the 7th longitudinal vein.

Bombylisoma (Rond.). First two joints of antennæ rather long, subcylindrical, 2nd scarcely shorter than 1st; anterior basal areola produced beyond the base of the 7th longitudinal vein.

Rondani proposes to separate two new genera from *Exoprosopa* (Macq.), and gives the following table of the 4 groups into which the species may be divided (*l. c.* p. 57):—

I. Fifth and sixth longitudinal veins separately produced to the margin of the wing.

A. Fourth longitudinal vein united beyond the base with 3rd and 5th by transverse venules ..... Hyperalonia, g. n.

B. Fourth longitudinal vein, if springing from the 3rd, united with the 5th, if springing from the 5th, united with the 3rd, by a transverse venule.

1. Fourth longit. vein produced to margin, separate from the 3rd. Exoprosopa (Macq.) (type *E. capucina*, Macq.).

2. Third and fourth veins united before the margin. Heteralonia, g. n.

II. Fifth and sixth longitudinal veins united before margin. Argyrospyla (Rond.) (type *A. pandora*, Macq.).

Mulio holosericeus (Loew.), according to Rondani (*l. c.* p. 60), differs in certain characters both from the restricted genus *Mulio* and from the genus *Glossista* (Rond.), forming a new group intermediate between the latter and *Anthrax*. He gives the following tabular view of the four genera:—

I. Fourth longitudinal vein united at base with the 3rd and 5th; proboscis as long as the head ..... Mulio (Lat.) (type *M. obscurus*, Fab.).

II. Fourth longit. vein united only to 5th at base.

A. Proboscis as long as the head..... Glossista (Rond.) (type *M. infuscata*, Meig.).

B. Proboscis scarcely exceeding the epistome.

1. Third longitudinal vein arising against the root of the eighth; 3rd joint of antennæ lanceolate..... Logcocerius, g. n. (type *M. holosericeus*, Loew).

2. Third vein arising against or near the anterior transverse vein; 3rd joint of antennæ cæpiform or conical .. Anthrax (Linn.).

New genera:—

Hyperalonia, g. n., Rondani, p. 57: see table *suprà*. Type *H. erythrocephala* (auctt.); new sp. *H. surinamensis*, Rond. p. 58, from Surinam; *H. chilensis*, Rond. p. 59, from Chili.

Lyophlœba, g. n., Rondani, pp. 54–55 = *Comptosia* (Macq.) ex parte. Fourth longitudinal vein united, beyond its origin, with the third and fifth by two transverse venules. Sp. *L. lugubris*, sp. n., Rond. p. 55, from Chili.

Macrocondyla, g. n., Rondani, pp. 54–55 = *Comptosia* (Macq.) ex parte. First joint of antennæ very stout, third elongate, sublanceolate, style rather indistinct. Sp. *M. pictinervis*, Rond. p. 56, from Chili.

Alyosia, g. n., Rondani, p. 54 = *Comptosia* (Macq.) ex parte. Fourth vein not united by a transverse venule either with the third or fifth; submarginal areolæ only two. Sp. *A. maculipennis*, *geometrica*, and *apicalis* (Macq.).

Nomalonia, g. n., Rondani, p. 71 = *Cyllenia* (Lat.) ex parte. First joint of antennæ not thickened, shorter than third; proboscis longer than antennæ; third longitudinal vein originating from fifth far from the base and beyond the base of the discoidal areolet, not connected with second by transverse venules. Type *Cyllenia afra* (Macq.).

Alonipola, g. n., Rondani, p. 71. Allied to preceding, but third longitu-

dinal vein united with second by two transverse venules, one before, and one beyond the base of fourth. Type *C. pluricellata* (Macq.).

Truquia, g. n., Rondani, p. 72. Allied to *Thlypsomyza* (Wied); fourth longitudinal vein united at base only with fifth; submarginal cells 2; fifth and sixth longit. veins united far from margin of wing. Sp. *T. insularis*, Rond. p. 73, pl. 5. figs. 10 & 11 (wing and antenna), from the Greek islands.

Thlypsogaster, g. n., Rondani, p. 72. Allied to preceding, but fifth and sixth longit. veins reaching the margin of the wing separately, or scarcely contiguous at the margin. Sp. *T. castanea* and *heteroptera* (Macq.).

Nectaropota, g. n., Philippi, Verh. zool.-bot. Gesellsch. in Wien, xv. p. 679. Allied to *Anthrax*; eyes very large, hemispherical, distant; ocelli 0; joint 1 of antennæ long and cylindrical, joint 2 short; proboscis long, horizontally extended; wings with two submarginal and four posterior cells, the second of the latter closed far from the margin. Sp. *N. setigera*, Phil. *l. c.* pl. 28. fig. 53, from Chili.

New species:—

Bombylius. The following new Chilian species are described by Philippi (Verh. zoal.-bot. Gesellsch. in Wien, xv.):—*B. seniculus, transatlanticus, bullus*, and *valdivianus**, p. 649; *B. flavescens, melampogon, nigricornis*, and *landbeckii*, p. 650; *B. frontatus* and *paulseni*, p. 651.

Bombylius valdivianus (Phil.), Rondani*, *l. c.* p. 68, from Valdivia; *B. senex*, Rond. p. 69, from the Caucasus.

Bombylisoma decorata, Rondani, p. 68, from Chili.

Triplasius ornatus, Rondani, p. 69, from Chili.

Cyrthosia meridionalis, Rondani, p. 73, from Syria and Malta; *C. occidentalis*, Rond. p. 74, note, from Parma.

Phthiria. Philippi (*l. c.*) describes the following new Chilian species:—*P. vulgaris*, p. 652; *P. exilis, picta*, and *cana*, p. 653; and *P. barbata**, p. 654.

Phtyria chilena (Phil.), Rondani, *l. c.* p. 65; *P. barbata* (Phil.)*, Rond. ibid., and *P. philippiana*, Rond. p. 66, from Chili.

Geron canus, Philippi, *l. c.* p. 654, from Chili.

Systropus? *chilensis*, Philippi, *l. c.* p. 654.

Sistrophus (sic) *sallei*, Costa, Ann. Mus. Zool. Nap. ii. p. 151, and *S. funereus*, Costa, *l. c.* p. 152, origin not stated.

Hermoneura†. The following new Chilian species are described by Philippi (*l. c.*):—*H. eximia*, p. 656; *H. balteata*, p. 656, pl. 25. fig. 23; *H. pictipennis* and *picta*, p. 657; *H. landbecki* and *commutata*, p. 658; *H. ursula* and *andina*, p. 659; *H. articulata, cinerea*, and *punctipennis*, p. 660; *H. luctuosa*, p. 661; *H. bellula* and *modesta*, p. 662; and *H. anthracoides*, p. 663.

Hirmoneura fusca (Phil.), Rondani, Arch. Canestr. iii. p. 51, from Chili.

Trichophthalma nubipennis (Phil.), Rondani, *l. c.* p. 52, *T. zonalis*, Rond. ibid., and *T. philippii*, Rond. p. 53, from Chili.

* Rondani's description has the priority.

† Philippi indicates that this is the correct spelling of the name of this genus, not *Hirmoneura*.

Comptosia. Philippi (*l. c.*) describes *C. consobrina*, p. 676; *C. vulgaris, landbecki*, and *montana*, p. 677; *C. infumata, C. canescens*, and *C.*? *lugubris*, p. 678.

Exoprosopa truquii, Rondani, *l. c.* p. 59, from Cyprus.

Anthrax. Of this genus Rondani (*l. c.*) describes eight new species: namely, *A. quadricincta* (Phil.), p. 61, *A. corrigiolata* (Phil.), p. 62, *A. albifacies* (Phil.), p. 63, *A. fulvipeda* (Phil.), ibid., *A. inordinata*, p. 64, and *A. philippii*, p. 65, from Chili; *A. sejungenda*, p. 62, from South America; and *A. cyprigna*, p. 64, from Cyprus.

Anthrax. Numerous new Chilian species of this genus are described by Philippi (*l. c.*): namely, *A. mœrens, lemniscata*, and *semilugens*, p. 664; *A. semitristis* and *blanchardi*, p. 665; *A. chilensis* and *murina*, p. 666; *A. subandina* and *quadricincta*, p. 667; *A. festiva, argentiflua*, and *vulpecula*, p. 668; *A. fulvago* and *villica*, p. 669; *A. duodecimpunctata* and *caloptera*, p. 670; *A. vitripennis*, p. 671; *A. calogastra, leucomalla*, and *squalida*, p. 672; *A. calvescens* and *balteata*, p. 673; *A. pusio, conopas*, and *ingloria*, p. 674; and *A. bellula*, p. 675.

Anthrax apicifera, Walker, Proc. Linn. Soc. viii. p. 111, from New Guinea.

Acroceridæ.

Megalybus, g. n., Philippi, Verh. zool.-bot. Gesellsch. in Wien, xv. p. 641. Allied to *Cyrtus*; apical cell not pedicellate; antennæ inserted beneath a small tubercle; thorax very much humped. Sp. *M. pictus*, Phil. p. 642, *M. crassus*, Phil. ibid., pl. 25. fig. 19, *M. obesus*, Phil. p. 642, *M. gracilis* and *tristis*, Phil. p. 643, and *M. subcylindricus*, Phil. p. 644, from Chili.

Holops, g. n., Philippi, *l. c.* p. 645. Head almost entirely composed of the eyes; ocelli 2(?); antennæ 2-jointed, inserted halfway up the face; proboscis very short; wings as in *Panops*, but the posterior triangular cells do not reach the apex. Sp. *H. cyaneus*, Phil. *l. c.* pl. 25. fig. 20, and *H. inanis*, Phil. *l. c.*, from Chili.

Sphærops, g. n., Philippi, *l. c.* p. 646. Allied to preceding; antennæ inserted but little below the vertex. Sp. *S. appendiculatus*, Phil. *l. c.* pl. 25. fig. 27, from Chili.

Apelleia, g. n., Bellardi, Mem. R. Accad. Tor. ser. 2. tom. xxi. p. 214. Allied to *Eriosoma*; eyes naked; antennæ inserted on the vertex, longer than head, style wanting; submarginal cells 2. Sp. *A. vittata*, sp. n., Bell. p. 216, pl. 3. fig. 12, from Mexico.

Lasia cærulea, sp. n., Rondani, *l. c.* p. 74 (=*nigritarsis*, Macq. var.?), *L. metallica* and *L. cuprea*, sp. n., Rond. p. 75, from Chili.

Panops. Philippi (*l. c.*) describes the following new species from Chili:—*P. æneus*, p. 647; *P. carbonarius, rufus, nigripes*, and *pullus*, p. 648.

Oncodes pallidipennis, sp. n., Loew, Berl. ent. Zeitschr. 1865, p. 149, from [illegible] Pennsylvania.

Acrocera bimaculata, sp. n., Loew, *l. c.* p. 149, from Columbia (U.S.).

Opsebius (=*Pithogaster*, Loew) *gagatina*, sp. n., Loew, *l. c.* p. 150, from Philadelphia.

Scenopinidæ.

Scenopinus nigra (Deg.). The metamorphoses of this species are described by Damianitsch, Verh. zool.-bot. Ges. in Wien, xv. pp. 237–238, with figure of the pupa.

Asilidæ.

The following known species of this family are described as inhabitants of Mexico by Bellardi, Mem. R. Accad. Tor. ser. 2. tomo xxi. :—*Mydas rubidapex* (Wied), p. 105; *M. tibialis* (Wied), p. 106; *M. vittatus* (Macq.), p. 107; *M. basalis* (Westw.), p. 110; *Lampria mexicana* (Macq.), p. 113; *L. clavipes* (Macq.), ibid., pl. 1. fig. 15; *Laphria formidolosa* (Walk.), p. 116, pl. 1. fig. 18; *Mallophora infernalis* (Wied), p. 121; *Promachus fuscipennis* (Bell.), var., p. 124, pl. 2. fig. 1; *Ommatius pumilus* (Macq.), p. 159; *Ceraturgus rufipennis* (Macq.), p. 159; *C.? dimidiatus* (Macq.), p. 161; *Dasypogon secabilis* (Walk.), p. 163, pl. 1. fig. 4; *D. brunneus* (Wied), p. 167; *D. nigripennis* (Macq.), p. 175; *D. candidus* (Macq.), p. 178; *D. magnificus* (Walk.), p. 179, pl. 1. fig. 11; *Discocephala nitida* (Wied), p. 184.

Philammosius (Rond.). This genus is characterized by Rondani, Archivio Canestr. vol. iii. p. 45.

Mallophora rufipes (Macq. 1850)=*M. tisiphones* (Rond. 1848), Rondani, *l. c.* p. 47.

Trupanea (Macq.). Rondani (*l. c.* pp. 47–48) remarks that Loew, in subdividing this genus, has entirely eliminated the old name, and that Bigot has reintroduced it, but for a new species differing in certain characters from *Trupanea* as originally established. Rondani proposes to adopt the new genera *Alcymus* and *Philodicus* of Loew, and *Megaphorus* and *Eicoichemus* of Bigot, and to apply the name of *Trupanea* to the group named *Promacus* by Loew. For *Trupanea* (Big.) he proposes the new name of *Telejoneura*.

New genera :—

Apiophora, g. n., Philippi, Verh. zool.-bot. Gesellsch. in Wien, xv. p. 682. Allied to *Cephalocera*; antennæ 4-jointed; wings with a transverse venule in the middle of the posterior margin. Sp. *A. paulseni*, Phil. *l. c.* pl. 25. fig. 22, from Chili.

Megaschelus, g. n., Philippi, *l. c.* Allied to *Midas*; wings with all except the fourth posterior cells closed. Sp. *M. nigricornis*, Phil. p. 683, pl. 25. fig. 21, from Chili.

Dasypecus, g. n., Philippi, *l. c.* p. 692. Allied to *Dasypogon*; wings with four posterior cells, of which three are closed, the second and third remote from the margin. Sp. *D. heteroneurus*, Phil. *l. c.* pl. 28. fig. 54.

Clavator, g. n., Philippi, *l. c.* p. 699. Allied to *Asilus*; antennæ longer than head, first two joints thick, nearly equal, third longer than two preceding together, narrowed at the base, nearly ovoid towards apex, with a short thick style. Sp. *C. punctipennis*, Phil. *l. c.* pl. 26. fig. 31, *C. nigribarbis*, *rubricornis*, *brevicornis*, and *rufescens*, Phil. p. 700, from Chili.

Dasycyrton, g. n., Philippi, *l. c.* p. 701. Antennæ cylindrical, joint 3 twice as long as two preceding together, slender, style half its length; thorax very gibbous and compressed. Sp. *D. gibbosus*, Phil. *l. c.* pl. 26. fig. 30.

Anypenus, g. n., Philippi, *l. c.* p. 702. Mystax and head-bristles wanting; antennæ very short; wings resembling those of *Midas*, fourth cell closed. Sp. *A. brevicornis*, Phil. *l. c.* pl. 25. fig. 26, and *A. obscurus*, Phil. p. 703, from Chili.

Pachyrrhiza, g. n., Philippi, *l. c.* p. 703. Antennæ porrect, inserted at middle of face, basal joint very large and thick, cylindrical, with short spreading setæ, second very small, cyathiform, third half as long as first, style short, thick, and cylindrical; posterior cells open. Sp. *P. pictipennis*, Phil. p. 704, pl. 25. fig. 25, from Chili.

Cylindrophora, g. n., Philippi, *l. c.* p. 704. Antennæ with joint 3 twice as long as two preceding together, cylindrical; style short and thick; wings with the marginal and five posterior cells open; pulvilli very short. Sp. *C. murina*, Phil. *l. c.*, from Chili.

Deromyia, g. n., Philippi, *l. c.* p. 705. Allied to *Leptogaster*; head transverse; antennæ with first two joints elongate, subcylindrical, third nearly equal to two preceding, compressed, style short and thick; face naked; neck long; marginal cell open. Sp. *D. gracilis*, Phil. p. 706, pl. 26. fig. 29, and *D. fulvipes*, Phil. *l. c.*, from Chili.

New species :—

Asilus. Bellardi (Mem. Accad. Tor. ser. 2. xxi.) describes the following ten new species of this genus from Mexico :—*A. humilis*, p. 151; *A. truquii*, p. 152; *A. fuliginosus*, ibid.; *A. niveibarbus*, p. 153; *A. albospinosus*, p. 154; *A. taeniatus*, p. 155; *A. infuscatus*, p. 156, pl. 2. fig. 15; *A. apicalis*, p. 157; *A. megacephalus*, p. 158, pl. 2. fig. 14; and *A. turpanganus*, p. 219.

Asilus. Philippi (*l. c.*) describes the following new Chilian species :—*A. spectabilis*, p. 695; *A. nigriventris*, *occidentalis*, and *valdivianus*, p. 696; *A. poecilopus*, *incomptus*, and *megastylus*, p. 697; *A. brachypterus* and *eritrichus*, p. 698.

Erax. The following seventeen new Mexican species are described by Bellardi (*l. c.*) :—*E. anomalus*, p. 132, pl. 2. fig. 7; *E. comatus*, p. 134; *E. parvulus*, p. 135, pl. 2. fig. 8; *E. carinatus*, p. 136, pl. 2. fig. 9; *E. unicolor*, p. 137; *E. eximius*, p. 138; *E. cinerascens*, p. 139, pl. 2. fig. 10; *E. tricolor*, p. 140, pl. 2. fig. 12; *E. affinis*, p. 141; *E. cingulatus*, p. 142; *E. quadrimaculatus*, p. 144, pl. 2. fig. 13; *E. bimaculatus*, p. 145, pl. 2. fig. 11; *E. marginatus*, p. 146; *C. bicolor*, p. 147; *E. nigripes*, p. 148; *E. villosus*, p. 149; *E. loewi*, p. 218, pl. 3. fig. 17.

Erax speciosus, Philippi, p. 693, pl. 26. fig. 28, *E. cinereus*, Phil. p. 693, and *E. murinus*, Phil. p. 694, from Chili.

Atomosia nigripennis, Bellardi, p. 119, *A. macquarti*, Bell., and *A.? bigoti*, Bell. p. 120, from Mexico.

Mallophora craverii, Bellardi, p. 122, from Mexico.

Mallophora cruralis, Rondani, *l. c.* p. 46=*tibialis* (Macq. Dipt. Ex. 1846), *M. scopipeda*, Rond. ibid.=*scopifer* (Macq. non Wied), *M. scopitarsis*, Rond. ibid., from Brazil; and *M. pyrura*, Rond. p. 47, of unknown origin.

Promacus. Of this genus Bellardi (*l. c.*) describes six new Mexican species: namely, *P. cinctus*, p. 125, pl. 2. fig. 2; *P. magnus*, p. 126; *P. quadratus*, p. 127, pl. 2. fig. 3; *P. trapezoidalis*, p. 128, pl. 2. fig. 4; *P. pulchellus*, p. 129, pl. 2. fig. 5; *P. truquii*, p. 130, pl. 2. fig. 6.

Proctacanthus craverii, Bellardi, *l. c.* p. 150, from Mexico.

Trupanea cyprica, Rondani, *l. c.* p. 48, from Cyprus.

Trupanea apivora, Fitch, 9th Rep. Ins. New York, pp. 251–256, pl. 4. fig. 7. This insect is described as the "Nebraska Bee-Killer," and said to be particularly addicted to preying upon the Hive-Bees.

Ommatius fuscipennis, Bellardi, *l. c.* p. 220, from Mexico.—*Ommatius canus*, Walker, Proc. Linn. Soc. viii. p. 132, from Salwatty.

Pseudorus bicolor, Bellardi, *l. c.* p. 111, pl. 1. fig. 20, from Mexico.

Lampria circumdata, Bellardi, p. 115, pl. 1. fig. 17, and *L. cinerea*, Bell. p. 116, pl. 1. fig. 16, from Mexico.

Laphria cincta, Bellardi, p. 118, pl. 1. fig. 19, and *L. homopoda*, Bell. p. 217, pl. 3. fig. 16, from Mexico.

Laphria varia, Loew, Berl. ent. Zeitschr. 1865, p. 236, from Kutais.—*L. calogastra*, Philippi, *l. c.* p. 684, and *L. modesta*, Phil. p. 685, from Chili.—*L. tibialata, placens*, and *pipunculoides*, Walker, *l. c.* p. 110, from New Guinea.

Laphyctis erberi, Schiner, Verh. zool.-bot. Ges. Wien, xv. p. 996, from Corfu.

Ceraturgus vitripennis, Bellardi, *l. c.* p. 160, from Mexico.

Philammosius ocrealis, Rondani, *l. c.* p. 45, from Chili.

Cephalocera elegans, Phil. *l. c.* p. 680, *C. leucotricha* and *dimidiata*, Phil. p. 681, from Chili.

Midas lugens, Philippi, *l. c.* p. 684, from Chili; *M. fulvipes*, Walsh, Proc. Bost. Nat. Hist. Soc. ix. p. 306, from Rock Islands (described with its transformations, *l. c.* pp. 306–308).

Mydas bitæniatus, Bellardi, *l. c.* p. 107, pl. 1. fig. 1, *M. tricinctus*, Bell. p. 108, pl. 1. fig. 2, and *M. subinterruptus*, Bell. p. 110, pl. 1. fig. 3, from Mexico.

Dasypogon. The following new Chilian species are described by Philippi (*l. c.*):—*D. landbecki*, p. 686, pl. 25. fig. 24; *D. hirtus*, p. 686; *D. atratus* and *carbonarius*, p. 687; *D. pictus* and *tricolor*, p. 688; *D. lugens* and *venustus*, p. 689; *D. micans* and *splendens*, p. 690; *D. sericeus* and *rufipes*, p. 691.

Dasypogon. The following 18 new species from Mexico are described by Bellardi (*l. c.*):—*D. jalapensis*, p. 165, pl. 1. fig. 5; *D. gonostigma*, ibid., pl. 1. fig. 6; *D. cuantlensis*, p. 167; *D. craverii*, p. 168; *D. virescens*, p. 169; *D. sallei*, p. 170; *D. bigoti*, ibid.; *D. rubescens*, p. 171; *D. tricolor*, p. 172; *D. affinis*, p. 173; *D. dubius*, p. 174; *D. nigripes*, p. 175; *D. truquii*, p. 176, pl. 1. fig. 10; *D.? humilis*, p. 177; *D. quadrimaculatus*, p. 180, pl. 1. fig. 8; *D. lucasi*, p. 181, pl. 1. fig. 7; *D. spathulatus*, p. 182, pl. 1. fig. 9; and *D. pseudoialapensis*, p. 222.

Dasypogon indecorus, Walker, *l. c.* p. 109, from New Guinea.

Discocephala. Bellardi (*l. c.*) describes 4 new Mexican species: namely, *D. minuta*, p. 183; *D. deltoidea*, p. 185, pl. 1. fig. 12; *D. longipennis*, p. 186, pl. 1. fig. 14; and *D. affinis*, ibid., pl. 1. fig. 13.

Leptogaster truquii, Bellardi, *l. c.* p. 187, pl. 2. fig. 18, from Mexico.

Therevidæ.

Deuterogonista, g. n., Philippi, Verh. zool.-bot. Gesellsch. in Wien, xv. p. 770. Allied to *Thereva*; posterior cells 4; terminal style of antennæ 3-jointed. Sp. *D. bicolor*, Phil. p. 771, pl. 28. fig. 49, from Chili.

New species:—

Thereva morio, Rondani, Arch. Canestr. iii. p. 44 = *T. lugubris* (Macq.).

Thereva luteiventris and *vittata*, Philippi, *l. c.* p. 769, and *T. albiventris*, Phil. p. 770, from Chili.—*T. crassicornis*, Bellardi, *l. c.* p. 188, pl. 2. fig. 16, and *T. argentata*, Bell. *l. c.* p. 189, from Mexico.

Thereva ?? *funebris*, Walker, Proc. Linn. Soc. viii. p. 111, from New Guinea.

Psilocephala univittata, Bellardi, *l. c.* p. 190, *P. sumichrasti*, Bell. p. 191, and *P. nigra*, Bell. p. 192, from Mexico.

Leptidæ.

New species:—

Atherix latipennis, Bellardi, *l. c.* p. 193, and *A. longipes*, Bell. p. 194, pl. 2. fig. 17, from Mexico.

Leptis? cinerea, Bellardi, *l. c.* p. 195, from Mexico.

Leptis pilosa, Loew, Berl. ent. Zeitschr. 1865, p. 235, from Kutais.—*L. bitæniata*, Bell. *l. c.* p. 223, pl. 3. fig. 14, and *L. politæniata* (sic), Bell. p. 224, pl. 3. fig. 13, from Mexico.

Leptis. Philippi (*l. c.*) describes 9 new Chilian species:—*L. subannulata* (p. 771), *nemoralis, præfixa, nigrata, claripennis* (p. 772), *setosa, lugens, basalis* and (p. 773), and *grisea* (p. 774).

Chrysopila valdiviana, Philippi, *l. c.* p. 774, pl. 28. fig. 50, from Chili.—*C. mexicana*, Bellardi, *l. c.* p. 196, and *C. nigra*, Bell. p. 224, from Mexico.

Empidæ.

Pachymeria. Loew indicates (Wien. ent. Mon. Bd. viii. pp. 353–358) the difficulties in the way of dividing the old genus *Empis* into natural groups, and especially of limiting the genus *Pachymeria* satisfactorily. He also describes the species, 6 in number, of which 3 are new, belonging to the typical group of *Pachymeria*, allied to *P. femorata* (Fab.): namely, *P. palparis* (Egg.) = *scotica* (Curt.) = *femorata* (Walk.), *l. c.* p. 360; *P. femorata* (Fab.) = *ruralis* (Meig.) = *quinquevittata* (Macq.), *l. c.* p. 362; and *P. pudica* (Loew) = *P. tumida* (Loew), *l. c.* p. 364.

Loew (Wien. ent. Mon. Bd. viii. pp. 237–255) publishes descriptions of the Austrian species of *Hemerodromia*, 5 in number, including a new species. The known species are, *H. precatoria* (Fall.), with *monostigma* (Meig.), *melanocephala* (Hal.), and *flavella* (Zett.) as varietal synonyms, *l. c.* p. 238; *H. raptoria* (Meig.), *l. c.* p. 243; *H. oratoria* (Fall.), *l. c.* p. 244; and *H. unilineata* (Zett.), *l. c.* p. 247. The last portion of this paper (pp. 249–255) is devoted by Dr. Loew to a severe criticism of Schiner's treatment of the genus *Hemerodromia* in the Diptera of the 'Fauna Austriaca,' which appears to have been rather confused. The Austrian species cited by Schiner, *H. flavella* (Zett.), *stigmatica* (Schin.), and *precatoria* (Fall.), are regarded by Loew as varieties of a single species; and he also points out several

errors in connexion with the synonymy of the European species.

Schiner replies to the above criticism, removing some of Loew's objections, *l. c.* pp. 296–301.

Loew also (*l. c.* pp. 255–258) states that Schiner's union of *Empis morio* (Fab.), *E. cothurnata* (Brullé), and *E. hispanica* (Loew) is erroneous, and indicates the characters by which the three species may be distinguished.

Loew (Wien. ent. Mon. Bd. viii. p. 122) describes the male of *Rhamphomyia marginata* (Fab.) = *R. latipennis* (Meig.).

New genera —

Sphicosa, g. n., Philippi, Verh. zool.-bot. Gesellsch. in Wien, xv. p. 751. Allied to *Hybos*; 2 submarginal cells. Sp. *S. nigra*, Phil. *l. c.* pl. 28. fig. 48, from Chili.

Scelolabes, g. n., Philippi, *l. c.* Allied to *Hybos*; proboscis very short; anal cell small. Sp. *S. bivittatus*, Phil. *l. c.* pl. 28. fig. 45, from Chili.

Homalocnemis, g. n., Philippi, *l. c.* p. 752. Allied to *Hybos*; posterior femora not thickened; joint 2 of antennæ elongate, lanceolate-subulate. Sp. *H. nigripennis*, Phil. *l. c.* pl. 29. fig. 56, from Chili.

Apalocnemis, g. n., Philippi, *l. c.* Allied to *Leptopeza*; anal cell very small; submarginals 2, posterior 3. Sp. *A. obscura*, Phil. p. 753, pl. 29. fig. 55.

Ceratomerus, g. n., Philippi, *l. c.* p. 765. Antennæ with joint 1 elongate, 2 short, 3 equal to 1 and 2 together, tapering into a seta of half its length, proboscis perpendicular, palpi enclosed; wings with 2 submarginal and 3 posterior cells, first basal cell very short, anal wanting. Sp. *C. paradoxus*, Phil. p. 766, pl. 28. fig. 46, from Chili.

New species :—

Empis apicalis, Loew, Berl. ent. Zeitschr. 1865, p. 237, *E. fraterna*, Loew, p. 239, and *E. hirta*, Loew, p. 240, from Kutais.—*Empis bicolor*, Bellardi, Mem. Accad. Tor. ser. 2. xxi. p. 198, *E. cyaneus*, Bell. ibid., and *E. tolipennis*, Bell. p. 199, from Mexico.

Empis. Philippi (*l. c.*) describes the following new Chilian species of this genus :—*E. pœcila* (p. 753), *argyrozona*, *landbecki* (p. 754), *valdiviana*, *ochropus*, *flavinervis*, *tephrodes*, *gracilipes*, *brachystoma* (p. 755), *fulva*, *dumetorum*, *collina* (p. 756), *pachystoma* (p. 757), *E.? macrorrhyncha* (p. 757, pl. 28. fig. 47), *E. spinulosa* and *dumicola* (p. 757).

Pachymeria. The following new Chilian species are described by Philippi (*l. c.*) :—*P. argentata*, *annulata* (p. 758), *obscurata*, *brachygastra*, *modesta*, *obscuripennis* (p. 759), *rubripes*, and *fulvipes* (p. 760).

Pachymeria contigua, Loew, Wien. ent. Mon. Bd. viii. p. 360, from Greece; *P. mediterranea*, Loew, p. 364, from Greece and Asia Minor; and *P. ruficornis*, Loew, p. 365, from Bessarabia.

Rhamphomyia tephrodes, Philippi, *l. c.* p. 760, from Chili.

Rhamphomyia, sp., allied to *R. sulcata*, Loew, Berl. ent. Zeitschr. 1865, p. 241, from Kutais.

Hilara. Philippi describes as new Chilian species :—*H. lugens* (*l. c.* p. 760), *griseiventris*, *H.? pallida*, *argyrozona* (p. 761), and *breviventris* (p. 762).

Brachystoma. Of this genus Philippi describes the following new Chilian species :—*B. lepidea* (*l. c.* p. 762), *testacea*, *nigricornis*, *fusca*, and *stigmatica* (p. 763); subgenus *Heterophebus* (Phil.) : *B. melanogastra*, *thoracica*, *ambigua*, *nemoralis* (p. 764), and *vittigera* (p. 765).

Hybos dimidiata, Bellardi, *l. c.* p. 197, from Mexico.—*H. stigma*, Walker, Proc. Linn. Soc. viii. p. 111, from New Guinea.

Hemerodromia. Philippi describes *H. flavipes*, *semilugens*, *pratincola*, *pallida*, *bivittata* (*l. c.* p. 766), *bicolor* and *nigrimana* (p. 767).

Hemerodromia nigriventris, Loew, Wien. ent. Mon. Bd. viii. p. 242, from Austria.

Clinocera bivittata, Loew, *l. c.* p. 259, from Siberia.

Platypalpus chilensis and *testaceus*, Philippi, *l. c.* p. 767, and *P. paulseni*, Phil. p. 768, from Chili.

Drapetis valdiviana and *obscuripennis*, Philippi, *l. c.* p. 768, from Chili.

Cyrtoma? collina, Philippi, *l. c.* p. 768, from Chili.

Dolichopodidæ.

Förster discusses the characters of *Dolichopus pennatus* and *signatus* (Meig.), and comes to the conclusion that *D. pennatus* (Meig.) = *signatus* (Autor.), *D. signatus* (Meig.) = *argentifer* (Loew) ; *D. ornatipes* (Loew) = *D. argyrosis* (Wahlb.). Verh. zool.-bot. Ges. in Wien, xv. pp. 257–258.

Medeterus tristis (Zett.). The transformations of this species are described and figured by Damianitsch, Verh. zool.-bot. Gesellsch. in Wien, xv. pp. 238–239.

Hydatostega, g. n., Philippi, Verh. zool.-bot. Gesellsch in Wien, xv. p. 779. Allied to *Dolichopus*; antennal seta 3-jointed; anterior legs raptorial, femora incrassate with a double series of setæ, tibiæ inflexed, spinulous within. Sp. *H. poliogastra*, Phil. p. 780, pl. 28. fig. 52, from Chili.

Diaphorus subsejunctus, sp. n., Loew, Berl. ent. Zeitschr. 1865, p. 179, from Cuba.

Psilopus castus and *P. dorsalis*, sp. n., Loew, *l. c.* p. 180, Cuba; *P. extendens*, sp. n., Walker, Proc. Linn. Soc. viii. p. 111, New Guinea.

Rhaphium paulseni, sp. n., Philippi, *l. c.* p. 774, from Chili.

Chrysotus basalis and *thoracicus*, sp. n., Philippi, *l. c.* p. 775, from Chili.

Dolichopus. The following new Chilian species are described by Philippi :—*D. concolor* (*l. c.* p. 777), *exilis* (p. 778), *inornatus*, *punctiger*, and *collinus* (p. 779) ; also *D.? horticola* (p. 775), *lamprostethus*, *dubiosus* (p. 776), *nemoralis*, *flavifrons* (p. 777), and *longipes* (p. 778).

Dolichopus vicarius, sp. n., Walker, *l. c.* p. 112, from New Guinea.

Muscidæ.

Tachinides.

Tachina. Boie describes the occurrence of a species of *Tachina*? on larvæ of *Sphinx ligustri*. On the 2nd September the larvæ bore the eggs of the parasite attached to their thoracic segments; in a few days they changed to

pupæ in the sand, and on the 16th October the *Tachinæ* made their appearance. Boie describes the parasites, which he has been unable to determine, and inquires what would be their ultimate fate, as no larvæ of *S. lignstri* or any allied species were in existence at the time of their emergence. Verh. zool.-bot. Ges. in Wien, xv. pp. 241–242.

Rondani (Arch. Canestr. iii. p. 18) gives the following character of his genus *Cryptopalpus*:—Eyes hairy; third joint of antennæ longer than second, not dilatato-convex on the back, even in ♂; cheeks pilose, but not furnished with any large setæ; palpi wanting or nearly wanting; proboscis not distinctly produced beyond the epistome; arista either with joints 1 and 2 rather long, or with the second longer; fifth longitudinal vein bent not at an open angle, reaching the costal distinct from the fourth.

Frontina diabolus = *Tachina diabolus* (Wied) described by Rondani, p. 19.

Campogaster (Rond.) Rondani proposes to change this name to *Campylura*, *Campigaster* having been previously employed by Macquart, *l. c.* p. 22.

Amphibolia (Macq.). Rondani considers that this genus should not be separated from *Rutilia*. *L. c.* p. 23.

New genera:—

Spathipalpus, g. n., Rondani, Archivio Canestr. vol. iii. p. 20. Allied to *Tachina*?; proboscis slender, produced; palpi spatuliform, nearly as long as proboscis; eyes naked; antennæ springing from above the middle of the eyes, third joint about three times as long as the preceding; arista naked; fontal setæ descending upon the cheeks, not beyond the origin of the arista, oral setæ arranged in a tuft above the vibrissæ; cheeks naked; abdomen with no discoidal setæ; second and fourth longitudinal veins setulated; fifth cubitate with an open angle, cubitus not appendiculate; fourth and fifth separate to margin. Sp. *S. philippii*, sp. n., Rond. p. 21, and *S. flavifrons* (Phil.), Rond. ibid., from Valdivia.

Saralba, g. n., Walker, Proc. Linn. Soc. viii. p. 114. Allied to *Ocyptera*; body narrow, subcylindric; head rather wider than thorax; eyes naked; proboscis acute; palpi slender, subclavate; antennæ short, rather slender; third joint subfusiform, twice as long as second; abdomen subcompressed at base, nearly twice as long as thorax; legs robust, wings narrow. Sp. *S. ocypteroides*, sp. n., Walk. *l. c.*, from New Guinea.

Frauenfeldia, g. n., Egger, Verh. zool.-bot. Ges. in Wien, xv. p. 297. Allied to *Rhinophora* and *Phyto*; discoidal cell not pedunculated; cheeks bristled, a series of bristles between the anterior margins of the eyes and the facial ridges; abdomen cylindrical, bent round at apex, having a clavate sexual organ (♂) with two parallel spoon-shaped appendages. Sp. *Tachina rubricosa* (Meig.).

Ancistrophora, g. n., Schiner, Verh. zool.-bot. Ges. in Wien, xv. p. 997. Allied to *Leucostoma*; proboscis slender, very long and projecting, bigeniculate; wings with a closed and long-stalked first posterior marginal cell. Sp. *A. mikii*, sp. n., Schiner, *l. c.*, from Görz.

New species:—

Roeselia aberrans, Egger, Verh. zool.-bot. Ges. Wien, xv. p. 295, from the Engadine.

Gonia genèi, Rondani, *l. c.* p. 14 = *G. capitata* (Rond. olim, nec Meig.), from Venezuela.

Echinomyia ignobilis (Phil.) and *E. filipalpis*, Rondani, *l. c.* p. 15, Chili.

sp? *Ciphocera* (sic) *callipiga* (sic), Rondani, *l. c.* p. 16, from Chili and Valdivia, *C. pruinosa*, Rond. ibid., from Chili.

Dejeania podiceria, Rondani, *l. c.* p. 17, pl. 5. fig. 14 (antenna), from Equatorial America.

Histricia (sic) *flavipalpis*, Rondani, *l. c.* p. 17, from South America; *H. nigroscutata*, Rond. p. 18, from Columbia.

Thryptocera securicornis, Egger, Verh. zool.-bot. Ges. in Wien, xv. p. 296, locality not stated (Austria?).

Cryptopalpus histrix (sic), Rondani, *l. c.* p. 18, from Bogota.

Eurygaster fingens, Walker, Proc. Linn. Soc. viii. p. 132, from Salwatty.

Morinia bigoti, Millière, Icon. Lépid. tom. i. p. 385, pl. 46. figs. 4 & 5, from the south of France.

Dexia brevipalpis, Rondani, *l. c.* p. 22, from Australia.

Rutilia spinolæ, Rondani, *l. c.* p. 23, from Australia.—*Rutilia pectoralis*, Walker, Proc. Linn. Soc. viii. p. 114, from New Guinea.

Zeuxia fuscinervis, Egger, *l. c.* p. 293, locality not stated (Austria?).

Sarcophagides.

Sarcophaga philippii, sp. n., Rondani, *l. c.* p. 24, and *S. spinigena* (Phil.), Rond. p. 26, from Valdivia; *S. ruficrura*, Rond. p. 25, from Equatorial America; *S. chrysura*, Rond. ibid., from South America.—*Sarcophaga perpusilla*, sp. n., Walker, Proc. Linn. Soc. viii. p. 115, from New Guinea.

Muscides.

Kirk (Proc. Linn. Soc. viii. pp. 149–156) gives an analysis of previous notices of the "Tsetse" fly (*Glossina morsitans*, Westw.), with confirmatory details from his own experience. He also describes the structure of the mouth, chiefly in accordance with Westwood's description, the only important difference being that he regards the piercing organ as consisting only of a single seta instead of two as described by Westwood.

Bold records several instances of extraordinary virulence in the bite of *Stomoxys calcitrans* inflicted upon horses and cattle. Ent. M. Mag. ii. pp. 142, 143.

Stomoxys calcitrans occurs at the Cape of Good Hope, according to Rondani, *l. c.* p. 32.

Seseromya, g. n., Rondani, *l. c.* p. 32 = *Idia*, p. (Macq.). Arista ciliated above and below; palpi spathuliform; margins of the mouth not setose beneath. Type *I. punctulata* (Macq.).

New species:—

Cyrtoneura aculeata, Egger, Verh. zool.-bot. Ges. in Wien, xv. p. 291, and *C. penicillata*, Egger, p. 292, from Austria.

Cyrthoneura capensis, Rondani, *l. c.* p. 31, from the Cape of Good Hope.

Somomya acutangula (*Calliphora*?), Rondani, *l. c.* p. 28, *S. transmarina* (*Calliphora*), Rondani, p. 29, from South America; *S. americana* (*Calliphora*), Rond. ibid. = *C. rufipalpis* (Macq.). *S. anulipes* (sic) (*Lucilia*?), Rond. p. 30, from Chili.

Pyrellia fumipennis, Walker, Proc. Linn. Soc. viii. p. 115, from New Guinea.—*P. diversipalpis*, Rondani, *l. c.* p. 30 = *rufipalpis* (Macq. Dipt. Exot. Suppl. 5).

Dasiphora affricana (sic), Rondani, *l. c.* p. 31, from the Cape of Good Hope.

Anthomyides.

Myantha (Rond.). The distinctive characters of this genus and *Anthomyia* are given by Rondani, Arch. Canestr. iii. p. 34, pl. 5. fig. 5 (wing). Type *A. canicularis* (Linn.) of Europe, which also occurs in Chili.

Brachypalpus. This generic name has been used twice by Macquart among the *Syrphidæ* and *Anthomyides*; Rondani proposes *Palpibracus* for the Anthomyide genus. *L. c.* p. 35.

Taschenberg (Wirbell. Thiere) describes the characters and life-history of *Anthomyia brassicæ* (Bouché), *l. c.* pp. 172–175, pl. 3. figs. 16–20; *A. conformis* (Fall.), *l. c.* pp. 175–176; *A. coarctata* (Fall.), *l. c.* pp. 243–245; and *Psila rosæ* (Fab.), *l. c.* pp. 176–178, pl. 6. fig. 20.

Anthomyia. Damianitsch describes and figures the preparatory states of a species of this genus (named *A. damianitschi* by Schiner). Verh. zool.-bot. Ges. in Wien, xv. pp. 239–240.

Anthomyia damianitschi, Schiner, Verh. zool.-bot. Ges. in Wien, xv. p. 998, and *A. haberlandti*, sp. n., Schin. p. 999, from Austria.—*A. chrysostoma* (Phil.), Rondani, Arch. Canestr. iii. p. 33, pl. 5. fig. 6 (wing), from Chili.

Anthomyia pluvialis (Linn.) is found at the Cape. Rondani, *l. c.* p. 34.

Ophira leucostoma (Fall.) taken in Syria. Rondani, *l. c.* p. 33.

The larva of *Anthomyza coffeæ* mines the leaves of the coffee-trees in Ceylon, according to Nietner. See Guérin, Rev. et Mag. de Zool. 1864, p. 92.

Helomyzides.

Laboulbène states that he has reared specimens of *Helomyza olens* (Meig.) and *H. humilis* (Meig.) from decomposing truffles. He is also engaged in rearing the larva described by Réaumur as the *Ver à tête noire*. Bull. Soc. Ent. Fr. 1865, p. xix.

Peratochetus (Rond.). This genus is characterized by Rondani, Canestr. Arch. iii. p. 42, and the wing, head, and antenna figured, pl. 5. figs. 7–9.

The history of *Lipara lucens* is described by Winter, Entomologist, ii. pp. 172–174.

Tendeba, g. n., Walker, Proc. Linn. Soc. viii. p. 117. Allied to *Orygma* and *Cœlopa*; body robust, not setose; forehead flat, face somewhat impressed; palpi small; antennæ very short, third joint round, very small, seta subpubescent; scutellum conical, produced; abdomen elongate-ovate, shorter and narrower than thorax; legs robust, naked; wings rather broad. Sp. *T. testacea*, sp. n., Walk. p. 118, from New Guinea.

New species :—

Helomyza optatura and *ortalioides*, Walker, Proc. Linn. Soc. viii. p. 116, and *H. stelliplena*, Walk. p. 117, from New Guinea.

Seraca abbreviata, Walker, *l. c.* p. 117, from New Guinea.

Scatina estotilandica, Rondani, *l. c.* p. 35, from Labrador.

Elgiva (Meg.) = *Tetanocera* (Dum.). *E. truquii*, Rondani, *l. c.* p. 36, from Syria.

Tetanocera spinicornis, Loew, Berl. ent. Zeitschr. 1865, p. 181, from Cuba.

Eumetopia varipes, Loew, *l. c.* p. 181, from Cuba.

Cordylura. Of this genus Loew (Wien. ent. Mon. Bd. viii.) describes eight new species:—*C. unicolor*, p. 17, from Andalusia; *C. femoralis*, p. 18, *C. opaca*, p. 19, from Carinthia; *C. nigriventris*, ibid., from Posen; *C. biseta*, p. 21, from Denmark and Germany; *C. picticornis*, p. 22, from Siberia; *C. glaucescens*, p. 23, from Kreuth; and *C. dasyprocta*, p. 25, from Sweden.

Peratochetus limbipennis and *P. philippii*, Rondani, *l. c.* p. 43, from Chili.

Sapromyzides.

Sapromyza affra (sic), sp. n., Rondani, Arch. Canestr. iii. p. 36, from the Cape; *S. lateritia* (Phil.), Rond. ibid., from Cuba.

Ortalides.

Tephritis. Frauenfeld discusses the characters of various species of this genus, and enters upon a consideration of the nature of species, criticising some of Loew's views. Verh. zool.-bot. Ges. in Wien, xv. pp. 259–262.

New genera and species :—

Rhyncheterus, g. n., Rondani, Arch. Canestr. iii. p. 37. Allied to *Ensina*; antennæ reaching epistome, second joint not oblique at apex, third about twice its length; arista naked; proboscis produced, geniculate at apex; palpi somewhat porrect, subclavate; no spinule on the costa, anal areola not acuminately produced behind; scutellum with six marginal setæ. Sp. *R. damascenus*, sp. n., Rond. *l. c.*, from Syria.

Soita, g. n., Walker, Proc. Linn. Soc. viii. p. 135. Body elongate, slender; head with two thickened and curved bristles on the vertex; eyes naked; antennæ longer than face, third joint linear, four times as long as second; anterior feet short, slender, posterior elongate, with the tibiæ spinose. Sp. *S. psiloides*, sp. n., Walk. *l. c.* p. 136, from Salwatty.

Dorycera inornata, Loew, Wien. ent. Mon. viii. p. 8, from Corsica.

Ortalis. Five new European species of this genus are described by Loew (*l. c.*): namely, *Ortalis murina*, p. 10, from Carinthia; *O. fraudulosa*, p. 11, from the Balkan; *O. gyrans*, p. 12, from Dalmatia; *O. parva*, p. 14, from the Schneeberg; and *O. latifrons*, p. 16, from Andalusia.

Ortalis picipes, Loew, Berl. ent. Zeitschr. 1865, p. 242, from Spain.—*O. contigua*, Walker, Proc. Linn. Soc. viii. p. 123, and *O. semivitta*, Walk. p. 124, from New Guinea.

Trypeta diversata and *T. brevivitta*, Walker, *l. c.* p. 124, from New Guinea.

Tephritis heiseri, Frauenfeld, Verh. zool.-bot. Ges. in Wien, xv. p. 262, from Moravia.—*T. capensis*, Rondani, *l. c.* p. 39, from the Cape of Good Hope.

Nerius extorris, Rondani, *l. c.* p. 40, of unknown origin.

Grallomya albivola, Rondani, *l. c.* p. 41, from Equatorial America.

Tanipoda (sic) *brasiliana*, Rondani, *l. c.* p. 41.

Micropeza formicaria (Phil.), Rondani, *l. c.* p. 42, from Chili.

Lamprogaster bispinosa and *L. ochromyoides*, Walker, Proc. Linn. Soc. viii. p. 118, from New Guinea.

Poticara biarcuata, Walker, *l. c.* p. 133, from Salwatty.

Achias brachyophthalma and *A. venustula*, Walker, *l. c.* p. 119, from New Guinea; *A. dacoides*, Walk. *l. c.* p. 133, from Salwatty.

Platystoma. Walker (*l. c.*) describes the following five new species of this genus:—*P. brevis* and *inscripta*, p. 120, *P. devocata* and *diminutiva*, p. 121, from New Guinea; and *P. impingens*, p. 134, from Salwatty.

Platystoma lativentris, Loew, Berl. ent. Zeitschr. 1865, p. 241, from Kutais.

Dacus. Of this genus Walker (*l. c.*) describes six new species: namely, *D. speculifer* and *biarcuatus*, p. 122, and *D. lateralis* and *varialis*, p. 123, from New Guinea; *D. turgidus*, p. 134, and *D. detrudens*, p. 135, from Salwatty.

Sepsides.

Diopsis indica. Some notes on the habits of this species are published by Alexander, Ent. M. Mag. ii. p. 23.

Calobata tipuloides, sp. n., Walker, *l. c.* p. 125, from New Guinea.

Psilides.

Stymbara, g. n., Walker, Proc. Linn. Soc. viii. p. 127. Body slender; antennæ nearly reaching epistome, third joint linear, four times as long as second, arista very briefly pilose; wings very long, mediastinal and subcostal veins combined, radial vein undulated, cubital subundulated. Sp. *S. vagaria*, sp. n., Walk. *l. c.* from New Guinea.

Psila? calobatoides, sp. n., Walker, *l. c.* p. 125, and *P.? cruciata*, *P.? basalis*, and *P.? vittifera*, Walk. *l. c.* p. 126, from New Guinea.

Piophila? disjuncta, sp. n., Walker, *l. c.* p. 127, from New Guinea.

Oscinides.

The habits of the flies of the genus *Chlorops* and its allies are described by Taschenberg, Naturg. wirbell. Thiere, pp. 162–164; and the characters and mode of life of *Chlorops taeniopus*, *l. c.* pp. 164–165 and 275–278, pl. 4. fig. 21, *C. strigula*, *l. c.* pp. 165–166, *C. lineata*, *l. c.* pp. 166–167, *C. nasuta*, *l. c.* pp. 167–168, *C. cereris*, *l. c.* pp. 168–169, *Oscinis frit*, *l. c.* pp. 169–170 and 242, *O. pusilla*, *l. c.* pp. 170–171 and 242, and *Siphonella pumilionis*, *l. c.* pp. 171–172, are given.

Schwippel records that *Chlorops lineata* (Fab.) did much damage to wheat and barley in the neighbourhood of Ullersdorf in 1864. Verh. naturf. Gesellsch. in Brünn, Bd. iii. p. 74.

Chlorops? conclusata, sp. n., Walker, *l. c.* p. 128, from New Guinea.

Celiphus (sic) *inæqualis*, sp. n., Costa, Ann. Mus. Zool. Nap. ii. p. 152, from Australia?

Gitona formosa, sp. n., Loew, Wien. ent. Mon. viii. p. 306, from Northern Germany.

Geomyzides.

Noterophila. Loew remarks (Berl. ent. Zeitschr. 1865, p. 268) that as the name *Camilla*, applied by Haliday to the genus including *Drosophila glabra* (Fall.), had been previously employed, Rondani's name *Noterophila* must be adopted for it. Loew states that he possesses what appear to be three other species of this genus, one of which he describes.

Schiner replies to Loew's criticisms on his treatment of the species of *Opomyza* and *Geomyza*. Berl. ent. Zeitschr. 1865, p. 125. Loew maintains his previous statements. Ibid. p. 356.

Geomyza. Loew (Berl. ent. Zeitschr. 1865) discusses the characters of this genus as compared with those of *Diastata*, *Balioptera*, *Opomyza*, and *Anthomyza*. The differential characters of the first and last of these genera are shown, in parallel columns, *l. c.* pp. 15–16. The number of European species recognized by Loew is seven.

Opomyza florum (Fab.) is described by Taschenberg (Naturg. wirbell. Thiere, pp. 242–243) as feeding upon rye. It is also figured, pl. 7. fig. 10.

Opomyza. Loew (*l. c.*) indicates the distinctive characters of this genus and *Balioptera* (*l. c.* pp. 26–27) and describes five European species.

Rhicnoëssa (Loew). Loew characterizes this genus afresh (*l. c.* pp. 34–35) and describes four European species, namely *R. cinerea* (Loew), *R.* (*Opomyza*) *cinerella* (Halid.), and two new species.

New species:—

Geomyza. Loew (*l. c.*) describes *G. approximata*, p. 20, from Italy and Sicily; *G. canescens*, p. 21, from Silesia; *G. pedestris*, p. 23, from Rhodes, &c.; and *G. lurida*, p. 24, from Glatz.

Opomyza nigriventris, Loew, *l. c.* p. 32, from Russia.

Drosophila. Loew (*l. c.*) describes *D. flexa*, p. 182, *D. bimaculata*, p. 183, and *D. obscuripennis*, ibid., from Cuba; and *D. quinaria*, p. 182, New York.

Drosophila pinguis and *dorsalis*, Walker, Proc. Linn. Soc. viii. p. 128, from New Guinea.

Milichia minuta, Walker, *l. c.* p. 129, from New Guinea.

Noterophilus acutipennis, Loew, *l. c.* p. 269, from Rhodes.

Hippelates pallidus, *convexus*, and *flavipes*, Loew, *l. c.* p. 184, from Cuba.

Desmometopa tarsalis, Loew, *l. c.* p. 184, from Cuba.

Lobioptera lacteipennis, Loew, *l. c.* p. 185, from Cuba.

Rhicnoëssa coronata, Loew, *l. c.* p. 185, from Georgia; *R. longirostris*, Loew, *l. c.* p. 36, from Sicily; and *R. pallipes*, Loew, p. 37, from Greece.

Leucopis bella, Loew, *l. c.* p. 186, from Cuba.

Sigaloëssa bicolor, Loew, *l. c.* p. 186, from Cuba.

Phytomyzides.

Agromyza nigripes (Meig.) is mentioned, on the authority of Goureau, as injurious to clover and other fodder plants, by Taschenberg, *l. c.* p. 235.

Hydromyzides.

Notiphila unilineata and *carbonaria*, sp. n., Walker, Proc. Linn. Soc. viii. p. 129, New Guinea; and *N. ortalioides*, Walker, *l. c.* p. 130, Salwatty.

Discomyza tenebrosa, sp. n., Walker, *l. c.* p. 130, from New Guinea.

Ephydra crassimana, sp. n., Loew, *l. c.* p. 182, from Mexico.

Platypezidæ.

Callomyia notata and *C. divergens*, sp. n., Loew, Berl. ent. Zeitschr. 1865, p. 177, from Pennsylvania.

Platypeza velutina, Loew, p. 178, *P. flavicornis*, Loew, ibid., and *P. obscura*, sp. n., Loew, ibid., from Pennsylvania; and *P. pallipes*, sp. n., Loew, p. 179, from Columbia (U.S.).

Platycnema imperfecta, sp. n., Loew, p. 179, from Washington.

Pipunculidæ.

Pipunculus. Five new American species of this genus are described by Loew (Berl. ent. Zeitschr. 1865): namely, *P. fuscus*, p. 175, from Maryland; *P. nitidiventris*, ibid., and *P. cingulatus*, p. 176, from Columbia (U.S.); *P. subopacus*, p. 176, from Washington; and *P. nigripes*, ibid., from Pennsylvania.

Syrphidæ.

Rondani (Archivio Canestr. vol. iii. p. 5) gives the following table of the subdivision of the old genus *Eristalis* into three genera proposed by him, the characters being suited both to exotic and European forms:—

A. Third and fourth longitudinal veins produced separately to the margin (wing figured, pl. 5. fig. 4)..... Myathropa (Rond.) (type *E. florea*, Linn.).

AA. Third and fourth longitudinal veins united at the apex before the margin (wing figured, pl. 5. fig. 3).

B. Arista plumose or distinctly pilose..... Eristalis (type *E. arbustorum*, Lin.).

BB. Arista nearly naked or scarcely tomentose. Eristalomya (Rond.) (type *E. tenax*, Lin.).

Eristalis quadraticornis (Macq.) and *testaceiscutellata* (Macq.) are the sexes of the same species, according to Rondani, *l. c.* p. 6, and *E. limbatinervis* (Macq.) is probably synonymous with *E. agnata* (Rond.), *l. c.* p. 7.

Rondani also gives a tabular synopsis of the three genera proposed by him (in 1844) to be established at the expense of the genus *Milesia* (Lat.), *l. c.* p. 7:—

A. Second and third longitudinal veins united at the apex before the costal (wing, pl. 5. fig. 1)..... Sphixea (Rond.).

AA. Second and third longitudinal veins produced separately to the costal.

B. Last posterior longitudinal vein produced from its conjunction with the penultimate parallel to the posterior margin (wing figured, pl. 5. fig. 2) ..... Milesia.

BB. Last posterior longitudinal vein passing obliquely from its conjunction with the preceding one to the posterior margin. Calliprobola (Rond.).

Eumerus strigatus (Fall.) has been taken by Truqui near Damascus, according to Rondani, *l. c.* p. 10.

Volucella sexpunctata (Loew). Loew describes both sexes of this species, *l. c.* p. 151.

Syrphus simplex (Loew), the ♀ described by Loew, *l. c.* p. 154; *S. jactator* (Loew), the ♂ described, *l. c.* p. 156.

Xylota pretiosa (Loew), the ♂ is described by Loew, *l. c.* p. 161.

Temnocera pubescens (Loew). Loew describes the ♀, *l. c.* p. 150.

The aphidivorous habits of the species of the genus *Syrphus* are described by Taschenberg (Wirbell. Thiere, &c., p. 204), who also figures the larva, pupa, and imago of *S. pyrastri* (*l. c.* pl. 7. fig. 6).

Notes on the occurrence of *Volucellæ* in Wasps' nests are given by Stone. Proc. Ent. Soc. 1865, pp. 63–65.

New genera:—

Azpeytia, g. n., Walker, Proc. Linn. Soc. viii. p. 113. Body broad, stout; head somewhat produced in front; eyes pubescent; antennæ short, third joint elongate-conical, seta naked; scutellum very broad; legs robust; wings long. Sp. *A. scutellaris*, sp. n., Walk. *l. c.*, from New Guinea.

Cnemodon, g. n., Egger, Verh. zool.-bot. Ges. in Wien, xv. p. 573. Allied to *Pipiza*; antennæ short, joint 3 round, seta naked; thorax convex; scutellum unarmed. Sp. *C. latitarsis*, sp. n., Egger, p. 573, and *C. brevidens*, Egg. p. 574, from Vienna. (*Pipiza vitripennis* (Meig.) and *P. acuminata* (Loew) probably also belong to this genus.)

Planes, g. n., Rondani, Canestr. Archivio, vol. iii. p. 9. Allied to *Xylota*; third joint of antennæ prismatic and elongate, about three times as long as the preceding ones united; posterior tibiæ terminated by a strong internal apophysis. Sp. *Xylota vagans* (Wied).

Xiloteja, g. n., Rondani, *l. c.* p. 9 = *Myolepta*, p. (Newm.). Antennæ with third joint lenticular, seta naked; eyes naked; second and third longitudinal veins separate to apex, fourth and fifth united near apex, fourth not sinuate, fifth not appendiculate. Sp. *X. vara* (Fab.), *dubia* (Fab.), and *Helophilus luctuosus* (Bigot).

Palumbia, g. n., Rondani, Atti Soc. Ital. Sci. Nat. viii. p. 129. Allied to *Eristalis*; eyes naked; face excavated in the middle, not tuberculate above the mouth. Sp. *P. sicula*, sp. n., Rond. *l. c.* p. 130.

Eriophora, g. n., Philippi, Verh. zool.-bot. Gesellsch. in Wien, xv. p. 735. Allied to *Pelecocera*; body broad; antennæ with a long thin arista. Sp. *E. aureo-rufa*, Phil. p. 736, pl. 26. fig. 36, from Chili.

Stilbosoma, g. n., Philippi, *l. c.* p. 736. Antenniferous tubercle very much produced; eyes naked. Sp. *S. cyanea*, Phil. *l. c.*, and *S. nigrinervis*, Phil. p. 737, from Chili.

Sterphus, g. n., Philippi, *l. c.* p. 737. Allied to *Priomerus*; posterior femora not serrated; submarginal vein nearly straight. Sp. *S. antennalis*, Phil. *l. c.* pl. 27. fig. 37 (*autumnalis*), *S.? cyanocephalus*, Phil. p. 738, and *S.? flavipes*, Phil. ibid. (= *Cheilosia aurantipes*, Bigot?), from Chili.

Macrometopia, g. n., Philippi, *l. c.* p. 740. Eyes hirsute; forehead much produced as a tubercle for the antennæ; first basal cell very long, first posterior cell reaching the apical margin. Sp. *M. atra*, Phil. *l. c.* pl. 27. fig. 39.

Penium, g. n., Philippi, *l. c.* p. 741. Allied to *Eristalis*; eyes hirsute;

submarginal vein quite straight; face with no prominence. Sp. *P. triste*, Phil. *l. c.* pl. 27. fig. 38. (Perhaps *Cheilosia aurantipes*, Big.)

Pia, g. n., Philippi, *l. c.* p. 742. Allied to preceding; body nearly smooth; eyes naked; epistome prominent, antennæ on a protuberance, and beneath this a tubercle. Sp. *P. cyanea*, Phil. *l. c.* pl. 27. fig. 40, from Chili.

New species:—

Chrysotoxum alpinum, Rondani, Atti Soc. Ital. Sci. Nat. viii. p. 141, from Italy.

Volucella hybrida, Rondani, *l. c.* p. 127, *V. spuria*, *adulterina*, and *incestuosa*, Rond. p. 128, from Italy.—*V. apicalis*, Loew, Berl. ent. Zeitschr. 1865, p. 151, from Cuba.—*V. concinna*, Philippi, *l. c.* p. 733, and *V. azurea*, Phil. p. 734, pl. 26. fig. 35, from Chili.—*V. pectoralis*, Rondani, Arch. Canestr. iii. p. 3, and *V. transatlantica*, Rond. *l. c.* p. 4, from South America.

Criorhyna picciolii, Rondani, Atti Soc. Ital. Sci. Nat. viii. p. 133, from Tuscany.

Eristalis. The following ten new American species are described by Loew (*l. c.*):—*E. gundlachi*, p. 166, *E. atrimanus*, p. 167, and *E. semiculus*, p. 168, from Cuba; *E. atriceps*, p. 169, from New Hampshire; *E. latifrons*, ibid., from Matamoras; *E. hirtus*, p. 170, from California; *E. obscurus*, p. 171, and *E. inornatus*, p. 172, from the Red River; *E. melanostomus*, p. 173 (=*E. flavipes*, var. *β*, Walk.?), from Minnesota and Oregon; and *E. pilosus*, p. 174, from Greenland.

Eristalis chilensis and *concolor*, Philippi, *l. c.* p. 743, from Chili.

Eristalomya chilena, Rondani, Arch. Canestr. iii. p. 5, from Chili; *E. fulvitarsis*, Rond. p. 6=*rufitarsis* (Macq. Suppl. 5), the latter name having been previously used by Macquart for a species of the same genus.

Eristalomya auricalcica (sic), Rondani, Atti Soc. Ital. Sci. Nat. viii. p. 129, from the Abruzzi.

Helophilus pictus, Philippi, *l. c.* p. 743, from Chili.

Priomerus? luctuosus, Phil. *l. c.* p. 739, and *P.? hæmorrhoidalis*, Phil. *l. c.* p. 740, pl. 27. fig. 42, from Chili.

Merodon canipilus, Rondani, *l. c.* p. 131, from Parma.

Milesia manicata and *M. digitata*, Rondani, *l. c.* p. 132, from the Apennines.

Tropidia rubricornis, Philippi, *l. c.* p. 744, *T. nigricornis* and *flavimana*, Phil. p. 745, from Chili.

Xylota. Loew (*l. c.*) describes *X. pachymera*, p. 162, from Cuba; *X. obscura*, ibid., and *X. subfasciata*, p. 164, from the Red River; *X. quadrimaculata*, p. 163, and *X. angustiventris*, p. 164, from Illinois.

Syrphus vertebratus (Phil.), Rondani, Arch. Canestr. iii. p. 10, Chili; *S. columbianus*, Rond. p. 11, Columbia; *S. decemmaculatus* (Phil.), Rond. p. 12, Chili; and *S. plurimaculatus*, Rond. ibid., South America.

Syrphus nigripes and *S. præustus*, Loew, *l. c.* p. 155, from Cuba.

Syrphus pæcilogaster and *hortensis*, Philippi, *l. c.* p. 746, and *S. chalconotus* and *interruptus*, Phil. p. 747, from Chili.

Doros? odyneroides, Philippi, *l. c.* p. 747, pl. 27. fig. 44, from Chili.

Sphærophoria multipunctata, Rondani, Atti Soc. Ital. Sci. Nat. viii. p. 134, from Bologna.

Cheilosia albiseta, Rondani, *l. c.* p. 136, and *C. fuscicornis*, Rond. p. 137, from North Italy.

Chrysogaster virgo, Rondani, *l. c.* p. 138, from North Italy.

Paragus venosus, Walker, Proc. Linn. Soc. viii. p. 112; *P. luctiferus* and *P. incisuralis*, Walk. p. 113, from New Guinea.

Paragus lavendulæ and *P. tacchettii*, Rondani, *l. c.* p. 140, from Italy.

Pipiza. Loew (Berl. ent. Zeitschr. 1865) describes *P. femoralis*, p. 152, Illinois; *P. salax*, ibid., Pennsylvania; *P. nigribarba*, p. 153, New York; *P. fraudulenta*, ibid., Illinois; and *P. calcarata*, p. 154, New York.

Pipizella sculpeonata, Rondani, *l. c.* p. 139, from Italy.

Sphegina latifrons, Egger, Verh. zool.-bot. Ges. in Wien, xv. p. 294, from Austria.

Bacha. Philippi, *l. c.* describes the following new Chilian species:—*B. melanorrhina*, *flavicornis*, and *lugubris* (p. 749), *conopida* and *valdiviana* (p. 750).

Ocyptamus? valdivianus, Philippi, *l. c.* p. 748, pl. 27. fig. 43, from Chili.

Mesogramma. Loew (*l. c.*) describes *M. parvula*, p. 157, and *M. planiventris*, p. 158, from Florida; *M. subannulata*, p. 157, *M. laciniosa*, p. 159, *M. pæcilogastra*, ibid., and *M. arcifera*, p. 160, from Cuba.

Pteroptila decora, Loew, *l. c.* p. 165, from Cuba; and *P. zonata*, Loew, ibid., from Mexico.

Phalacromyia rufoscutellaris and *concolor*, Philippi, *l. c.* p. 735, from Chili.

Phalacromya subcærulea, Rondani, Canestr. Archivio, vol. iii. p. 3, from South America.

Conopidæ.

Conops segethi, sp. n. (Phil.), Rondani, Canestr. Archivio, iii. p. 13, Chili.—*C. vaginalis*, sp. n., Rondani, Atti. Soc. Ital. Sc. Nat. viii. p. 145, Italy.

Sphixosoma punctitarsis, sp. n., Rondani, *l. c.* p. 143, from Italy.

Zodion erythrurum, Rondani, *l. c.* p. 146, from Tuscany; and *Z. sardeum*, Rond. ibid., from Sardinia.

Sicus femoralis, Rondani, *l. c.* p. 146, from North Italy.

Hippoboscidæ.

Melophagus ovinus. The general mode of life of this species, and the treatment of the sheep affected by it, are described by Simonds, Journ. Agric. Soc. ser. 2. vol. i. pp. 43–56.

Hippobosca albonotata, sp. n., Rondani, Canestr. Archivio, vol. iii. p. 92, from Caffraria.

Aphaniptera.

Karsten has published (Bull. Soc. Nat. Mosc. xxxvii. pt. 2. pp. 72–156) an elaborate memoir on the Chigoe or Sand-flea of Tropical America, for which he adopts the generic name of *Rhynchoprion* proposed for the insect by Oken in 1815 under the notion of its being a species of Acarid. After giving a long series of extracts from the works of authors who have mentioned the Chigoe, the author proceeds to describe the natural history of the animal (of which he considers that we only know a single

species). It appears to reside not only in the feet of human subjects, but also in the skin of mice and other animals, which accounts for the presence and persistence of the Chigoes in deserted houses and huts. From Karsten's statements the presence of the Chigoe in the feet is by no means so dangerous as it has sometimes been represented; he is entirely opposed to the notion of the hatching of the larvæ in the skin, and declares that only the impregnated female is a parasite, the unfecundated females and the males living freely on the ground. In other words, the mode of life of the insect is the same as that of the other fleas, except as regards the parasitism of the impregnated females. These views are supported by a very detailed exposition of the anatomy of the female generative organs, by which it is clearly demonstrated that the eggs must be extruded in the usual manner. The author gives a very full account of the structure, both external and internal, of the male and female Chigoe, illustrated with numerous figures. The most remarkable fact announced by the author is, that during the parasitic existence of the female its trachea entirely lose their spiral character, become thickened, and contain no air, and the intestinal canal is at the same time considerably reduced; hence the author infers that the life of the animal during its parasitism becomes purely vegetative, the lymph of the nutritive organism being introduced into the body of the parasite probably chiefly by capillary action, and assimilated without undergoing any further change by the ovarian organs.

Westwood has communicated (Proc. Ent. Soc. 1865, p. 91) some remarks on Karsten's paper on the Chigoe. He objected to the generic name *Rhynchoprion* then applied to this insect, maintaining that his own name *Sarcopsylla* should be adopted. Professor Westwood seems to have missed noticing that Karsten denied the deposition of the ova in the skin of the person bearing the gravid female, and implies that the development of the larvæ takes place in freedom as does that of the common Flea.

NEUROPTERA.

A. *Separate Work.*

Pictet, A.-Edouard. Synopsis des Névroptères d'Espagne. Geneva, 1865, pp. 123, 14 plates.

In this work Pictet describes the whole of the Neuroptera (sensu Linn.) hitherto found in Spain. The descriptions are carefully prepared; and the synopsis will form an excellent guide in the study of the species of this group inhabiting the peninsula. The author concludes his work with a note on the geographical distribution of the Spanish Neuroptera, from which it appears that, out of 142 truly Iberian species, 49, namely 33 true Neuroptera and 16 Pseudo-Neuroptera, are peculiar to the peninsula. Of these 142 species, 68 belong to the latter group and 74 to the true Neuroptera, no fewer than 45 of the latter belonging to the *Hemerobiina* (incl. *Myrmeleontidæ*). The other groups represented are *Sialina* (incl. *Rhaphidiidæ*) 6 sp., *Panorpina* 2 sp., and *Phrygania* 21 sp.

B. *Papers published in Journals, &c.*

Bland, Th. Note on certain Insect larva-sacs, described as species of *Valvatæ*. Ann. Lyc. New York, viii. pp. 144–149: May 1865.

Brauer, F. Zweiter Bericht über die auf der Weltfahrt der kais. Fregatte Novara gesammelten Neuropteren. Verhandl. zool.-bot. Gesellsch. in Wien, Band xv. pp. 415–422. Vierter Bericht, &c. Ibid. pp. 903–908. Fünfter Bericht, &c. Ibid. pp. 975–978.

Contain descriptions of the *Phryganidæ*, *Hemerobiidæ*, *Myrmeleontidæ*, and *Odonata* collected on the voyage of the 'Novara.'

——. Bericht über die von Herrn Baron Ransonnet am rothen Meere und auf Ceylon gesammelten Neuropteren (L.). Ibid. pp. 1009–1018.

Frauenfeld, G. von. Zoologische Miscellen. IV. Ibid. pp. 264–266. (*Amnicola lustrica*, Say.)

Girard, M. Considérations générales sur le genre *Raphidia*, et note sur les espèces de ce genre qui se trouvent aux environs de Paris. Annales Soc. Entom. France, 4e série, tome iv. pp. 668–675: May 24, 1865.

Hagen, H. Beiträge zur Kenntniss der Phryganiden. Stettiner entom. Zeitung, 1865, pp. 205–214, June, and pp. 217–233, September 1865.

These papers on the *Phryganidæ* include: I. A bibliographical dissertation on the cases of *Helicopsyche* described as shells in America; II. An account of our knowledge of the *Phryganidæ* of Italy; III. Descriptions of new species from Madeira; IV. A catalogue of the *Phryganidæ* of the neighbourhood of Zurich; V. A catalogue of the *Neuroptera* (sens. lat.) of the same district; and VI. Some notes on cases of *Phryganidæ*.

——. The Neuroptera of Madeira. Ent. Monthly Mag. vol. ii. pp. 8–11, 25–28, 59–62, and 75–81: June to September 1865.

This paper includes an enumeration of the Madeiran species of the order Neuroptera in the old sense, with descriptions of new species.

M'Lachlan, R. *Sialis fuliginosa* (Pictet), a species new to Britain. Ent. Monthly Mag. vol. ii. pp. 107–108.

——. Trichoptera Britannica; a monograph of the British

species of Caddis-flies. Trans. Ent. Soc. London, 3rd series, vol. v. pp. 1–184, plates 1–14 (October 1865).

A most admirable monograph of the British *Trichoptera*, executed with the greatest care, and illustrated by a vast number of figures, chiefly drawn by the author, showing the peculiarities of the parts relied on as generic and specific characters. The number of known British species is stated by the author at 126. Stephens described 183; but these were reduced by Hagen to 108. The number of genera adopted is 43.

Shimer, H. Description of the imago and larva of a new species of *Chrysopa*. Proc. Ent. Soc. Philad. vol. iv. pp. 208–212: (16) March 1865.

Wallengren, H. D. J. Ytterligare bidrag till kännedomen af Sveriges Neuroptera. Œfvers. Kongl. Vetensk.-Akåd. Förhandl. 1865, pp. 143–144.

Walser, —. Trichoptera Bavarica. Die bisher in der Umgebung von Schwabhausen in Oberbayern aufgefundenen *Phryganiden*, deren bekannten Larven und Gehäuse, nebst generellen Notizen über letztere. Jahresber. xvii. des Naturhist. Vereins in Augsburg, 1864, pp. 47.

This memoir consists of a list of the species of Trichoptera observed by the author in Upper Bavaria, with descriptions of their larvæ and cases. The total number of species referred to is 52. The nomenclature adopted is that of Kolenati; but it does not appear that in all, or indeed in most instances the cases and larvæ are attributed to the different species in consequence of the author's having bred the perfect insects from them.

Hagen publishes (Stett. ent. Zeit. pp. 228–230) from Bremi's manuscripts, with some additions, a catalogue of the Neuroptera and pseudo-Neuroptera observed in the neighbourhood of Zurich. The total number of species recorded is 78, of which 19 belong to the former, and 59 to the latter group. The true Neuroptera belong to the families *Sialidæ* (2 sp.), *Hemerobiidæ* (10 sp.), *Myrmeleontidæ* (2 sp.), and *Panorpidæ* (5 sp.), the latter including 3 species (*variabilis*, *punctata*, and *impunctata*) separated by Bremi. The addition of 64 species of *Phryganidæ* makes the total number of Neuroptera found in the vicinity of Zurich 142.

Hagen has published (Ent. M. Mag. vol. ii.) an enumeration of the species of this order hitherto found in Madeira, chiefly from Wollaston's collections. The following families only are represented:—*Hemerobiidæ* (6 sp.) and *Phryganidæ* (8 sp.).

Myrmeleontidæ.

Two species of Ant-lions, *M. alternans* (Brullé) and *M. catta* (Fab.) are fully described from Madeiran specimens by Hagen, Ent. M. Mag. ii. p. 61.

M'Lachlan describes the habits of *Myrmeleon formicarius* as observed by him in some specimens brought to London from Fontainebleau. Ent. M. Mag. ii. pp. 73–75.

Berce records his experience of rearing *Myrmeleon formicarius* from the larva. Bull. Soc. Ent. Fr. 1865, p. xlvi.

Some notes on the habits of the larva of *Acanthaclisis* are published by Ferrari in Wien. ent. Mon. Bd. viii. p. 107.

Myrmeleon nicobaricus, sp. n., Brauer, Verh. zool.-bot. Ges. Wien, xv. p. 904, from the Nicobar Islands.

Formicaleo longicornis, sp. n., Brauer, *l. c.*, origin not stated.

Hemerobiidæ.

Isoscelipteron. Brauer (Verh. zool.-bot. Ges. in Wien, xv. p. 1018) indicates further distinctive characters of this genus, and gives a list of its known species, five in number.

Chrysopa. Wallengren (Œfvers. Kongl. Vet.-Akad. Förh. 1865) describes *C. tenella* (Schneid.), *l. c.* p. 143, and *C. pini* (Brauer), *C. prasina* (Burm.), and *C. abdominalis* (Brauer), *l. c.* p. 144, as species newly detected in Sweden.

Hagen (Ent. M. Mag. ii. pp. 59–60) cites four species of this family from Madeira, namely *Micromus aphidivorus* (Schr.), *Hemerobius humuli* (Linn.), *H. nervosus* (Fab.), and *Chrysopa vulgaris* (Schneider).

Mantispa perla, var. *icterica*, Pict., is figured by E. Pictet, Névr. d'Espagne, pl. 4. figs. 6–8.

Taschenberg (Wirbell. Thiere, &c. p. 204) describes the general habits of the species of the genus *Chrysopa* as destroyers of *Aphides*, and figures the larva and perfect insect of *C. vulgaris* (*l. c.* pl. 7. figs. 4 & 5).

Chrysopa. E. Pictet (*l. c.*) describes the following new Spanish species:—*C. nigropunctata*, p. 60, pl. 8. figs. 1–4; *C. geniculata*, p. 62, pl. 7. figs 5–8; *C. meyeri*, ibid., pl. 8. figs. 5–8; *C. guadarramensis*, p. 65, pl. 6. figs. 1–4; *C. thoracica*, p. 67, pl. 6. figs. 9–12; *C. granadensis*, p. 69, pl. 6. figs. 5–8; *C. riparia*, ibid., pl. 7. figs. 9–12; *C. monticola*, p. 70, pl. 7. figs. 1–4.

Chrysopa V-rubrum, sp. n., Brauer, Verh. zool.-bot. Ges. in Wien, xv. p. 903, from Tahiti; *C. næsonympha*, Brauer, ibid., from the island Karnicobar; and *C. atala*, Brauer, *l. c.* p. 904, from Rio de Janeiro.

Chrysopa illinoiensis, sp. n., Shimer, Proc. Ent. Soc. Phil. vol. iv. p. 208, from Illinois. The characters and habits of the larva and its transformations are also described.

Isoscelipteron indicum, sp. n., Brauer, *l. c.* p. 1015, from Ceylon.

Rhaphidiidæ.

Girard (Ann. Soc. Ent. Fr. 4ᵉ sér. tome iv. pp. 669–675) indicates the difficulties attending the investigation of the species of *Rhaphidia*, and the confusion which has arisen in the determination of some of the commonest species. The rather numerous species described by Stephens will probably prove to be either synonyms or varieties of those of Schummel and other continental authors. For the three species found about Paris Girard proposes the following nomenclature and synonymy:—1. *R. ophiopsis* (Linn., Fab., Perch.)=*R. xanthostigma* (Schum., Burm.); 2. *R. schummeli* (Girard) = *R. ophiopsis* (Schum., Burm.); 3. *R. notata* (Fab.). Girard concludes his paper with a very imperfect bibliography of the subject.

Girard publishes a further note on *Rhaphidia* in the Bull. Soc. Ent. Fr. 1865, p. xxx. In this he refers to two works omitted in his list, and communicates some observations made by M. Juste Bigot on the transformations of *R. ophiopsis*, from which it would appear that the insect is active in all stages.

Rhaphidia ophiopsis (Schum.) is described by Wallengren as a newly detected Swedish species. Œfvers. Kongl. Vet.-Akad. Förh. 1865, p. 143.

E. Pictet (Névr. d'Esp. pl. 5) figures *Rhaphidia hispanica* (Ramb.), figs. 1–6, *R. cognata* (Ramb.), figs. 7–9, and *R. bætica* (Ramb.), figs. 10–15.

Sialidæ.

Sialis fuliginosa. M'Lachlan describes this species as newly discovered in Britain. Ent. M. Mag. ii. pp. 107–108, and Proc. Ent. Soc. 1865, p. 112.

Sialis nigripes, sp. n., E. Pictet, *l. c.* p. 52, pl. 4. figs. 1–5, from San Ildefonso.

Panorpidæ.

Panorpa meridionalis (Ramb.), figured by Pictet, *l. c.* pl. 8. figs. 9–12.

Phryganidæ.

M'Lachlan, in his monograph of the British Trichoptera (Ent. Trans. 3rd ser. vol. v. pp. 1–184), treats this group as constituting an order of insects, the characters and general habits of which he describes. The classification adopted is nearly that of Hagen, except that the family *Chætopterygidæ* is suppressed, its members being amalgamated with the *Limnephilidæ*.

The following known species of this family are figured by Pictet (Névr. d'Espagne):—*Limnophila submaculata* (Ramb.), pl. 4. figs. 9–12; *Sericostoma vittatum* (Ramb.), pl. 10. figs. 1–11; *S. festivum* (Ramb.), pl. 10. figs. 12–20; *Goëra basalis* (Kol.), pl. 12. figs. 1–7; *Mystacides ferruginea* (Ramb.), pl. 13, figs. 1–6; *Hydropsyche stictica* (Hag.), pl. 14. figs. 1–7.

Hagen publishes (Stett. ent. Zeit. 1865, pp. 205–207) a bibliographical account of the descriptions of cases of *Helicopsyche* published in America under the supposition that these objects were shells of Mollusca. The cases have been described by different authors under the names of *Valvata arenifera* and *Paludina* or *Amnicola lustrica*. The latter has been declared by Frauenfeld to be a true *Paludina*; but Hagen states, from an inspection of specimens in Dunker's collection, that it is a case of *Helicopsyche*. In the hope that, by directing the attention of American entomologists to this subject, we may acquire some information as to the animal constructing these spiral cases, Hagen gives the following lists of the recorded localities in which they occur:—*Valvata arenifera*, Cumberland River near Nashville, New York, Massachusetts; *Paludina lustrica*, Vermont, Maine, Wisconsin, Boston, Cincinnati, Ohio, Lancaster County, Herkimer, and Ostego County.

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xv. p. 265) reiterates his opinion that *Paludina lustrica* (Say) is a true *Amnicola* and not the case of a *Helicopsyche*.

Bland (Ann. Lyc. New York, vol. viii. pp. 144–145) has called attention to the resemblance between the cases of *Helicopsyche* and shells of *Valvatæ*,

and to one or two instances in which they have been mistaken for the latter, including the form described in October 1864 by Guppy, under the name of *Valvata agglutinans*, from Trinidad (Ann. & Mag. Nat. Hist. xiv. p. 245). The author has obtained, from Troy, N. Y., living specimens of larvæ inhabiting these spiral cases, and has bred the perfect insect from them. This has been sent to Dr. Hagen for description. The remainder of Bland's paper is occupied with a long quotation from the Recorder's translation of Siebold's 'True Parthenogenesis' relating to this subject, pp. 28–30, note.

Brauer (Verhandl. zool.-bot. Gesellsch. in Wien, xv. pp. 975–977) indicates the general characters of the larvæ and pupæ found in a *Helicopsyche*-case from Ceylon, collected during the voyage of the 'Novara.' The case resembles the shell of a *Cyclotus*, and the larva and pupa present the closest similarity to those of the *Sericostomidæ*. The pupa shows only a single spur on the anterior tibiæ. Brauer considers that the insects forming the genus *Helicopsyche* will be found to belong to the *Sericostomidæ*.

Hagen (Stett. ent. Zeit. 1865, pp. 232–233) gives some addenda to the bibliographical part of his memoir on the cases of *Phryganidæ* published in 1864.

Hagen (Stett. ent. Zeit. 1865, pp. 207–213) publishes translations of Costa's descriptions of species of Italian *Phryganidæ*, which appeared in the Ann. Accad. Aspir. Natur., and in his Mémorie Entom. in 1847, and in Memor. Accad. Sci. di Napoli in 1857. The insects described are:—*Phryganea elegans* (Pict.), var.; *Phryganea maculata* (Costa), perhaps = *Limnephilus nobilis* (Kol.), according to Hagen; *P. testacea* (Gmel.) = *Limnephilus flavicornis* (Fab.), in Hagen's opinion; *P. fuliginosa* (Costa), position doubtful; *Hydropsyche pictetii* (Costa) belongs to *Polycentropus*; *Lasiocephala* (g. n.) *taurus* (Costa) = *Mormonia basalis* (Kol.), according to Hagen.

Hagen afterwards (*l. c.* pp. 213–214) discusses the present state of our knowledge of the *Phryganidæ* of Italy. The numbers of recorded species in the works of various authors are as follows:—6 by Costa, 9 by Rossi, 4 by Schneider, 2 by Hagen, and 10 by Kolenati (Hagen's collection contains 8 species): total 31. But this number must be reduced at least one-third, on account of the application of different names to the same species. Thus only about 20 species of Italian *Phryganidæ* are known, out of about 200 which may be estimated to inhabit that country.

Walser, in his "Trichoptera Bavarica" (Jahresber. Nat. Ver. Augsb. xvii.), refers to those conditions of the surface of Upper Bavaria which he regards as particularly favourable to the development of insects of this family, and indicates the connexion between this study and superficial geology. As his memoir is almost entirely devoted to the consideration of the larvæ, he classifies these objects as follows:—

A. Larvæ living in running water. Rhyacophilæ.
  I. Building with animals. *Zoolegæ.*
  II. Building with plants. *Phytolegæ.*
  III. Building with minerals. *Minerolegæ.*
    a. With small stones. *Chalicolegæ.*
    b. With sand. *Psammolegæ.*

B. Larvæ living in standing water. Limnophilæ.
  (Subdivisions as above.)

Some remarks springing from this mode of looking at the subject are of more value than the classification itself. At p. 46 we find a species cited, but not described, under the name of *Hydropsyche walseriana* (Kol. in lit.). It is said to be allied to *H. nebulosa* (Pict.).

Hagen has published (*l. c.* pp. 222–228) a catalogue of the *Phryganidæ* of the neighbourhood of Zurich, chiefly from Bremi's list of his collections, but with the addition of species from other parts of Switzerland (see above, p. 670). The number of species found about Zurich is 64; the total number cited in the catalogue is 101; but 61 species not included in it have been recorded by Pictet as occurring about the Lake of Geneva, which brings the whole of the recorded *Phryganidæ* of Switzerland to 162.

The whole of the eight Madeiran species of this family cited by Hagen (Ent. M. Mag. ii. pp. 75–81) appear to be peculiar to that island. Five of them are described as new; and three, namely, *Tinodes cinerea*, *T. grisea*, and *Agapetus punctatus*, were described by Hagen in Stettin. entom. Zeit. Bd. xxi.

Limnephilus subcentralis (Hagen) occurs in Britain, according to Eaton, Ent. M. Mag. ii. p. 158. [Subsequently this was found to be a mistake].

New genera :—

Sætotricha, g. n., Brauer, Verh. zool.-bot. Ges. Wien, xv. p. 416. Allied to *Sericostoma*; basal joint of antennæ rather longer than head; max. palpi five-jointed (♀), basal joint very long, second short, obcordate; posterior wings acute, angularly produced in the middle of anterior margin. Sp. *S. ptychopteryx*, sp. n., Brauer, p. 417, from Sydney.

Calamoceras, g. n., Brauer, p. 417. Allied to *Goëra*; basal joint of antennæ much shorter than the head; forehead tuberculiform; max. palpi (♀) long, joint 1 short, the rest longer but gradually diminishing in length; wings broad, anterior broad at apex and obliquely truncated. Sp. *S. marsupus*, sp. n., Brauer, *l. c.*, from Gibraltar.

Tetracentron, g. n., Brauer, p. 418. Allied to *Leptocerus*; spurs 2, 2, 4; max. palpi with joints 2 and 3 very long, 5 still longer. Sp. *T. sarothropus*, sp. n., Brauer, *l. c.*, from New Zealand.

Nyctiophylax, g. n., Brauer, p. 419. Allied to *Polycentropus*; joint 5 of max. palpi not longer than 3 and 4 together; spurs 3, 4, 4. Sp. *N. sinensis*, sp. n., Brauer, *l. c.*, from Shanghai.

Hydromanicus, g. n., Brauer, p. 420. Allied to *Tinodes*; joints 2–4 of max. palpi nearly equal, 5 as long as the preceding together; fore wings truncated at apex. Sp. *H. irroratus*, sp. n., Brauer, *l. c.*, from Java.

Anomalostoma, g. n., Brauer, p. 421. Allied to *Glossosoma*; spurs 2, 2, 4. Sp. *A. alloneura*, sp. n., Brauer, p. 422, from New Zealand.

*Tricnodes**, g. n., M'Lachlan, Ent. Trans. 3rd ser. vol. v. p. 110. Allied to *Mystacides*; second joint of max. palpi nearly equal to first, third joint elongate; anterior wings with first apical cell short. Sp. *Lept. bicolor* (Curt.) and *Myst. conspersa* (Ramb.).

Wormaldia, g. n., M'Lachlan, p. 140. Allied to *Philopotamus*; joints 1 and 2 short, stout, 3 very long, 4 scarcely longer than 2, 5 about equal to 3. Sp.

* *Triæna*, M'Lachlan (see 'Record,' 1864, p. 566).

P. occipitalis (Pict.); *W. subnigra*, M'Lachl. *l. c.* p. 142, pl. 13. figs. 24 & 25 = *P. columbina* (Hag. nec Pict.).

New species :—

Limnephilus politus, M'Lachlan, *l. c.* p. 39, pl. 9. fig. 24 (details) = *concentricus* (Kol., Hag., M'L., &c., nec Zett.) and *vibex* (Brauer nec Curt.); *L. extricatus*, M'Lachl. p. 49, pl. 10. figs. 11 & 12 (det.) = *hirsutus* (Kol., Hag., nec Pict.).

Limnephilus cinctus, Hagen, Stett. ent. Zeit. 1865, p. 217, from Madeira.

Stenophylax oblitus, Hagen, *l. c.* p. 218, from Madeira.

Stenophylax infumatus, M'Lachlan, *l. c.* p. 63, from Perthshire.

Halesus guttatipennis, M'Lachlan, *l. c.* p. 66, pl. 1. fig. 2 (imago), and pl. 11. fig. 10 (details), from the Trent?

Sericostoma. E. Pictet (*l. c.*) describes the following new Spanish species:—*S. bæticum*, p. 88, pl. 9. figs. 1–10; *S. pyrenaicum*, ibid., pl. 9. figs 11–20; *S. selysii*, p. 91, pl. 11. figs. 1–9; and *S. granjæ*, p. 92, pl. 11. figs. 10–16.

Silo fumipennis, M'Lachl. *l. c.* p. 83, pl. 12. figs. 3 & 4, south of England.—*Silo graellsii*, E. Pict. *l. c.* p. 93, pl. 11. figs. 17–24, from San Ildefonso.

Mormonia fimbriata, E. Pict. *l. c.* p. 95, pl. 12. figs. 8–12, from San Ildefonso.

Hydroptila angustella, M'Lachl. *l. c.* p. 95, pl. 1. fig. 5, south of England.

Hydroptila atra, Hagen, *l. c.* p. 218, from Madeira.

Mystacides brasilianus, Brauer, *l. c.* p. 418, from Rio Janeiro.—*Mystacides braueri*, E. Pict. *l. c.* p. 96, pl. 13. figs. 7–13, from Malaga.

Setodes intaminata, M'Lachlan, *l. c.* p. 117, from Norfolk; *S. reducta*, M'Lachl. *l. c.* p. 120, pl. 7. fig. 1, and pl. 13. fig. 5 = *L. bicolor* (Steph.).

Hydropsyche contubernalis, M'Lachlan, *l. c.* p. 129, pl. 13. fig. 12 (details), from the Thames.—*H. maderensis*, Hagen, *l. c.* p. 219.—*Hydropsyche pallida*, E. Pict. *l. c.* p. 100, pl. 14. figs. 8–14, from San Ildefonso.

Hydrorchestria insularis, Hagen, *l. c.* p. 219, from Madeira.

Polycentropus flavostictus, Hagen, *l. c.* p. 220, from Madeira.—*Polycentropus parfitti*, M'Lachlan, *l. c.* p. 147, from Taunton.

Tinodes cinerea, Hagen, *l. c.* p. 220, and *T. grisea*, Hagen, *l. c.* p. 221, from Madeira.—*T. pusilla* (Curt.), M'Lachl. *l. c.* p. 132, pl. 13. fig. 15 (details), from Folkestone; *T. assimilis*, M'Lachl. *l. c.* p. 133, pl. 13. fig. 16 (details), from Haslemere.

Rhyacophila septentrionis, M'Lachlan, *l. c.* p. 157 (= *R. ferruginea*, Hag.?), from Scotland.—*Rhyacophila meridionalis*, E. Pict. *l. c.* p. 101, pl. 12. figs. 13–16, from Eaux-Bonnes.

Macronema pseudoneura, Brauer, *l. c.* p. 420, from Ceylon.

Agapetus punctatus, Hagen, *l. c.* p. 221, from Madeira.

ORTHOPTERA.

(*Orthoptera genuina.*)

Assmuss, E. P. Symbola ad Faunam Mosquensem. Enumeratio Orthopterorum in Gubernio Mosquensi indigenorum. Bull. Soc. Nat. Moscou, xxxvii. pt. i. pp. 465–476: 1864.

This paper contains a simple catalogue of the species of Orthoptera genuina found in the neighbourhood of Moscow, with references to the descriptions and figures of Fischer de Waldheim and P. L. Fischer in the 'Orthoptera Rossica' and 'Orthoptera Europæa.' The total number of species cited is 44,—namely, *Forficulidæ* 3, *Blattidæ* 6, *Gryllidæ* 4, *Locustidæ* 10, and *Acrydiidæ* 21.

Bates, H. W. Descriptions of Fifty-two new species of *Phasmidæ* from the collection of Mr. W. Wilson Saunders, with remarks on the Family. Trans. Linn. Soc. vol. xxv. pp. 321–359, pls. 44 & 45 (the latter not yet published): 1865.

Costa, A. See Insecta, p. 381.

Dohrn, H. Versuch einer Monographie der Dermapteren (Schluss). Stettiner entom. Zeitung, 1865, pp. 68–99.

Vollenhoven, C. Snellen van. Beschrijving van eene nieuwe Tetrix-soort. Tijdsch. voor Entom. 1865, pp. 65–66, pl. 1.

——. Macrolyristes, een niew geslacht van Orthoptera. Ibid. pp. 106–110.

(*Pseudo-Neuroptera.*)

Brauer, F. Dritter Bericht über die auf der Weltfahrt der kais. Fregatte Novara gesammelten Libellulinen. Verhandl. zool.-bot. Gesellsch. in Wien, Bd. xv. pp. 501–512. Vierter Bericht, &c.: ibid. pp. 903–908. Fünfter Bericht, &c.: ibid. pp. 975–978.

——. Bericht über die von Herrn Baron Ransonnet am rothen Meere und auf Ceylon gesammelten Neuropteren (L.). Ibid. pp. 1009–1018.

Hagen, H. A. Synopsis of the *Psocina* without ocelli. Ent. Monthly Mag. vol. ii. pp. 121–124.

——. On some aberrant genera of *Psocina*. Ibid. pp. 148–152. (Not completed.)

——. See Neuroptera.

Sélys-Longchamps, E. de. Synopsis des Agrionines, 5me légion: Agrion. Bull. Acad. Roy. Belg. 2me sér. xx. (pp. 45). Read August 5, 1865.

Includes the synopsis of the genus *Argia*, to which Sélys refers 50 species.

(*Thysanura.*)

Laboulbène, A. Recherches sur l'*Anurida maritima*, Insecte Thysanoure de la famille des Podurides. Ann. Soc. Ent. Fr. 4e sér. tome iv. pp. 705–720, pl. 11: May 24, 1865.

Haliday, A. H. On *Dicellura*, a new genus of Insects belonging to the stirps *Thysanura*, in the order Neuroptera. Proc. Linn. Soc. vol. viii. pp. 162–163: December 5, 1865.

This paper evidently relates to the Insect described by Haliday under the name of *Iapyx*, as noticed in the 'Record' for 1864 (pp. 568–569). It is here mentioned as *Dicellura solifuga*, and as forming, with *Campodea*, the family *Dicelluridæ*.

Hermann, Otto. Weitere Beobachtungen über *Podura*. Verh. zool.-bot. Gesellsch. Wien, xv. pp. 485–490.

(*Anatomical paper.*)

Mulder, Claas. Ontleedkundige Aanteekening over *Macrolyristes imperator*, Voll., vergeleeken met eenige andere Regtvleugeligen. Tijdschrift voor Entomologie, 1865, pp. 110–121, plates 8 & 9.

Contains a detailed anatomy of the large species of Locustidæ described by Vollenhoven under the name of *Macrolyristes imperator*, compared with that of various other forms of saltatorial Orthoptera, such as *Ephippiger*, *Conocephalus*, *Gryllotalpa*, *Œdipoda*, *Pseudophyllus*, *Megalodon*, &c.

Thysanura.

Laboulbène has published (Ann. Soc. Ent. Fr. 4e sér. tome iv. pp. 705–720, pl. 11) a full and very interesting description of the external structure, internal anatomy, habits, and development of *Achorutes maritimus* (Guér.), which he regards as the type of a new genus, *Anurida*. The insect is very common between tide-marks at several points on the north coast of France.

Otto Hermann (Sitzungsber. zool.-bot. Ges. in Wien, xv. p. 25) records the occurrence near Hermannstadt of great quantities of a species of *Podura* on the surface of the melting snow on 9th March 1865. The insects were so numerous and so uniformly distributed over a considerable surface that the snow looked as if sprinkled with gunpowder. Hermann was unable to determine the species.

Hermann (Verh. zool.-bot. Gesellsch. in Wien, xv. pp. 485–490) reports further on the habits of this species of *Podura*. On the melting of the snow the *Podura* was found in great quantities lying on the surface of the water, which was covered by a tenacious film, probably a secretion of the insects. During this period the *Poduræ* are awaiting a change of skin, and this and copulation took place towards the end of March, when the insects were to be found hopping about upon new fallen snow. On the 26th April a new gene-

ration was found. The author explains the conditions under which these phenomena occur, which he considers to depend on the state of the weather.

Smynthurus (scr. *Symnthurus*). Fitch (8th Rep. Ins. New York) describes the following as new species of this genus injurious to plants in gardens and fields:—*S. hortensis* (=Garden-flea), *l. c.* pp. 186–191, fig. p. 188; *S. arvalis* (=Field-flea), *l. c.* pp. 191–192; also *S. novæboracensis*, *l. c.* p. 192, *S. elegans* ibid., and *S. signifer*, *l. c.* p. 193.

Mallophaga.

Trichodectes. The habits of *Trichodectes ovis* and *T. bovis* are described by Simonds, Journ. Agric. Soc. ser. 2. vol. i. pp. 46–47 and 62–65. The occurrence of *Trichodectes* on the dog and cat is also referred to by the same author. *L. c.* p. 68–69.

A long list of species of Mallophaga, presumably observed in Holland, is given in the Tijdschr. voor Entom. 1865, pp. 30–41, with the animals on which they are parasitic. Most of these are native species; but a few foreign ones occur.

Thysanoptera.

Thrips cerealium is described by Taschenberg as an insect injurious to agriculture. Wirbell. Thiere, &c. pp. 195–197, pl. 4. fig. 23.

Pseudo-Neuroptera.

Pictet (Névr. d'Espagne) describes 68 species of Pseudo-Neuroptera as inhabiting the Spanish peninsula—namely, *Termitina* 3, *Psocina* 1, *Perlina* 15, *Ephemerina* 7, and *Odonata* 42.

Hagen has published (Ent. M. Mag. vol. ii.) a list of the species of this group found in Madeira, including representatives of *Termitidæ* (2 sp.), *Psocidæ* (4 sp.), *Ephemeridæ* (2 sp.), and *Libellulidæ* (4 sp.).

Hagen's Catalogue of the Neuroptera of the neighbourhood of Zurich (see *ante* pp. 670 & 674) includes 59 species of the present group, distributed as follows in the various families:—*Psocidæ* (13 sp.), *Ephemeridæ* (12 sp.), *Libellulidæ* (23 sp.), and *Perlidæ* (11 sp.).

Termitidæ.

Of the two species of this family found in Madeira, one is the common *Termes lucifugus* (Rossi) of southern Europe; the other, *Calotermes præcox*, (Woll., Hag.) is a Madeiran species. Hagen, Ent. M. Mag. ii. pp. 8–9.

Stolotermes ruficeps, sp. n., Brauer, Verh. zool.-bot. Ges. in Wien, xv. p. 977, from New Zealand.

Eutermes fumigatus, sp. n., Brauer, *l. c.* p. 977, from Sydney.

Rhinotermes intermedius, Brauer, *l. c.* p. 977, from Sydney.

Psocidæ.

Hagen (Ent. M. Mag. ii. pp. 121–124) has published a synopsis of the known species of *Atropina*, which he divides into genera as follows:—

1. *Atropos* (Leach). *A. divinatoria* (Müll.)=*A. pulsatoria* (auctt. *nec* Linn.)=*Liposcelis muscorum* (Motsch.), and *A. fatidica* (Linn.).

2. *Clothilla* (Westw.). *C. pulsatoria* (Linn.)=*lignorum* (De G.)=*studiosa* (Westw.); *C. inquilina* (Heyden)=*Paradoxides psocoides* (Motsch.); and *C. picea* (Motsch.).

3. *Psoquilla*, g. n.

4. *Lachesilla* (Westw.). Sp. *L. fatidica* (Westw.).

Hagen (Ent. M. Mag. ii. p. 148) characterizes the genus *Amphientomum* (Pict.), and describes the type.

Hagen has published observations by Bremi on the eggs and larvæ of *Psocus*. Stett. ent. Zeit. 1865, pp. 230–231.

New genera and species:—

Psoquilla, g. n., Hagen, Ent. M. Mag. ii. p. 123. Tarsi 3-jointed; meso- and metathorax separated; thread of antennæ slender; wings short, veined; femora slender; joints 2 & 3 of tarsi short, equal. Sp. *P. margine-punctata*, sp. n., Hagen, *l. c.* p. 123, from Hamburgh?

Perientomum, g. n., Hagen, *l. c.* p. 151. Allied to *Amphientomum*, but differing in the venation of the wings. Type *A. trichopteryx* (Hagen). New sp. *P. mortuum*, Hag. *l. c.* p. 152, in gum Animé from Zanzibar; *P. P. triste* (Nietn. MS.), Hag. ibid., and *P. morosum*, Hag. ibid., from Ceylon.

Psocus nigricornis, Brauer, Verh. zool.-bot. Ges. in Wien, xv. p. 908, from Rio; *P. australis*, Brauer, ibid., from Australia.—*P. marmoratus*, Hagen, *l. c.* p. 9, *P. adustus*, Hagen, p. 10, and *P. personatus*, Hag. p. 11, from Madeira.

Amphientomum incultum, Hagen, p. 149, in gum Animé, from Zanzibar?; *A. gregarium* (Nietn. MS.), Hagen, ibid., *A. superbum* (Nietn. MS.), Hag. p. 150, and *A. caudatum* (Nietn. MS.), Hag. ibid., from Ceylon.

Atropos formicaria, Hagen, p. 121, from Prussia, and *A. oleagina*, Hagen, ibid., from Ceylon; *A. resinata*, Hagen, ibid. (not described), in gum Copal.

Clothilla annulata, Hagen, p. 122, Europe.

Libellulidæ.

The four species of this family recorded by Hagen as occurring in Madeira (Ent. M. Mag. ii. pp. 26–27) are all common in Europe, namely, *Libellula rubella* (Brullé)=*fonscolombii* (Ramb.), *L. striolata* (Charp.), *Anax formosa* (Van der, L.) and *Agrion pumilio* (Charp.). Hagen remarks that the insect recorded by Brullé as *Libellula olympia* (=*cærulescens*, Sélys) is probably *L. chrysostigma* (Burm.). The *Gomphus* taken in Madeira by Hartung is probably *G. simillimus*.

Brauer (Verh. zool.-bot. Ges. in Wien, xv. pp. 1013–1014) describes females of *Lib. pruinosa* (Burm.) and *Euphæa splendens* (Hag.). The latter is particularly interesting, as only males were known of all the species in the group to which it belongs.

Caspary records (Schr. phys.-ökon. Ges. zu Königsb. 5. Bericht, p. 13) that before the breaking of a storm in Königsberg in the middle of the day on 16th June 1864, a swarm of *Libellulæ* passed over the zoological garden there for about ten minutes. It was so dense as almost to darken the air. The species was said by Hagen to be *Libellula 4-maculata*.

M'Lachlan notices the occurrence of *Æschna borealis* (Zett.) at Rannoch in Perthshire, and discusses its characters. He also mentions a few other species taken in the same locality. Ent. M. Mag. ii. pp. 117–118, and P c. Ent. Soc. 1865, p. 112.

Argia. De Sélys-Longchamps (Bull. Acad. Roy. Belg. xx.) employs Rambur's name *Argia* for the generic group to which he refers *Argia impura* and *A. obscura* (Ramb.). Of 50 species here enumerated, 46 are peculiar to America, and 4 scattered in various parts of the world. The number of new species is 24. The genus is divided by the author into 3 subgenera, namely, *Hyponeura* (Sél.), including *H. funeki* (Sél.) and *H. lugens* (Hag.); *Argia*, including nearly all the rest of the species; and *Onychargia* (Hag.) with a single new species (*A. atrocyana*, Sél.). The last group is distinguished by having the two branches of the claws equal in length.

New genera and species :—

Staurophlebia, g. n., Brauer, *l. c.* p. 907. Allied to *Æschna*; subcosta crossing the nodulus and ending beyond it in a fork; subnodal sector divided far within the pterostigma; forehead narrow, very prominent: second abdominal segment auriculate. Sp. *S. magnifica*, sp. n., Brauer, *l. c.*, from Brazil.

Agrion. Brauer (*l. c.*) describes the following 5 new species of this genus:—*A.* (*Ischnura*) *asiaticum*, p. 509, and *A. hieroglyphicum*, p. 510, from China; *A.* (*Ischnura*) *aurora*, ibid., from Tahiti; *A.* (*I.*) *spinicauda*, p. 511, from Polynesia; and *A.* (*Pyrrhosoma*) *cerino-rubellum*, ibid., from Ceylon.

Agrionoptera nicobarica, Brauer, *l. c.* p. 978.

Tramea brevistyla, Brauer, *l. c.* p. 978, from Sydney.

Argia. De Sélys-Longchamps (*l. c.*) describes the following new species:—*A. dimissa*, p. 16, from Brazil; *A. optata* (Hag.), p. 18, from the Moluccas; *A. croceipennis*, p. 21, from Brazil; *A. elliptica*, ibid., from Brazil; *A. fumigata* (Hag.), p. 22, from Guiana; *A. collata*, p. 23, from Para and Surinam; *A. reclusa*, ibid., from Para; *A. tinctipennis* (Bates), p. 24, from the Amazons; *A. thespis* (Hag.), p. 25, from Bahia; *A. mollis* (Hag.), p. 26, from Minas Geraes; *A. kurilis* (Hag.), p. 28, from the Kurile Islands; *A. fissa*, p. 29, from Bogota; *A. albistigma* (Hag.), from Montevideo; *A. lilacina*, p. 33, from Brazil; *A. variabilis*, p. 34, from Vera Cruz; *A. vivida* (Hag.), ibid., from California; *A. ænea* (sic) (Hag.), p. 35, from Mexico; *A. jocosa* (Hag.), p. 36, from Bogota; *A. pulla* (Hag.), p. 38, and *A. translata* (Hag.), ibid., from Venezuela; *A. medullaris* (Hag.), p. 40, from Bogota; *A. difficilis*, p. 41, from Peru; *A. bipunctulata* (Hag.), p. 43, from Georgia and New Jersey; and *A. atrocyana*, p. 44, from Singapore and Java.

Æschna. Brauer (*l. c.*) describes 5 new species of this genus: namely, *Æ. macromia*, *excisa*, and *castor*, p. 906, from Brazil; *Æ. cornigera*, ibid., from Columbia; and *Æ. tahitensis*, p. 907, from Tahiti.

Anax julius, Brauer, *l. c.* p. 508, from Shanghai; *A. concolor*, Brauer, ibid., from Brazil.

Gynacantha idæ, Brauer, *c. l.* p. 908, from Borneo.

Cordulia novæ-zeelandiæ, Brauer, Verh. zool.-bot. Ges. in Wien, xv. p. 501.

Nannophya australis, Brauer, *l. c.* p. 502, from Sydney.

Libellula. Of this genus Brauer (*l. c.*) describes 10 new species: namely, *L.* (*Diplax*) *corallina*, p. 503, and *L.* (*D.*) *chloropleura*, p. 504, from Chili; *L.* (*D.*) *bipunctata*, p. 503, from Tahiti and New Caledonia; *L.* (*D.*) *anomala* p. 504, from Rio de Janeiro; *L. leontina*, p. 505, from Chili; *L. caledonica*, ibid., from New Caledonia; *L. petalura*, p. 506, from Hong Kong; *L. subfasciolata*, ibid., from the Cape of Good Hope; *L. infernalis*, p. 507, from Ceylon; and *L. albicauda*, p. 905, from China.

Libellula ransonneti, Brauer, *l. c.* p. 1009, from Tor on the Red Sea; *L. glauca*, Brauer, *l. c.* p. 1012, from Ceylon.

Macromia elegans, Brauer, *l. c.* p. 905, from China.

Ephemeridæ.

Müller states that the eggs of *Oligoneuria rhenana* (Imhoff) are attached to the last segment of the abdomen by a clear gelatinous substance which becomes hard and brittle. Ent. M. Mag. i. p. 262.

A. E. Eaton records the occurrence of females of *Cloëon rhodani* under submerged stones. Ent. M. Mag. ii. p. 14.

Cloë maderensis, sp. n., Hagen, Ent. M. Mag. ii. p. 25.

Bætis flavida, sp. n., E. Pict. *l. c.* p. 24, pl. 3. figs. 1–6, and *B. sylvicola*, sp. n., E. Pict. ibid., pl. 3. figs. 7–12, from San Ildefonso.

Perlidæ.

M'Lachlan records his having observed the female of *Leuctra geniculata* carrying her eggs upon the back of her abdomen. Ent. M. Mag. i. p. 216.

The following known species of this family are figured by Pictet (Névr. Espagne):—*Perla bætica* (Ramb.), pl. 1. figs. 1–3; *P. madritensis* (Ramb.), pl. 1. figs. 4–8.

Perla hagenii, sp. n., E. Pictet, *l. c.* p. 12, pl. 2. figs. 1–3, Granada; *P. viridinervis*, sp. n., E. Pict. p. 19, pl. 2. figs. 4 & 5, Eaux-Bonnes.

Nemoura umbrosa, sp. n., E. Pict. p. 20, pl. 2. figs. 6 & 7, and *N. lacustris*, sp. n., E. Pict. p. 21, pl. 2. figs. 8 & 9, from Peñalaras.

Gripopteryx reticulata, sp. n., Brauer, Verh. zool.-bot. Ges. in Wien, xv. p. 908, and *G. tessellata*, sp. n., Brauer, ibid., from Rio de Janeiro.

Orthoptera genuina.

Becker publishes a list of the Orthoptera genuina detected by him near Sarepta, in Bull. Soc. Nat. Mosc. xxxvii. pt. 1. pp. 492–493.

Forficulidæ.

H. Dohrn has concluded his monograph of the Insects of this family (Stett. ent. Zeit. 1865, pp. 68–90). He characterizes the known genera *Sparatta* (Serv.), *l. c.* p. 68, including of known species *S. pelvimetra* (Serv.), *Forf. plana* (Ill.), *S. rufina* (Stål), *S. nigrina* (Stål); *Lobophora* (Serv.), *l. c.* p. 70, to which he refers of known species *L. morio* (Fab.) = *rufitarsis* (Serv.) and *nigronitens*, *tartarea*, *cincticornis* (Stål), *Forf. australica* (Le Guillou), *Forf. simulans* and *F. modesta* (Stål), *Psalid. albomarginata* and *P. fuscipennis* (De Haan); *Forficula* (incl. *Apterygida*, Westw.), *l. c.* p. 84, with the known species *F. tæniata* (Dohrn), *percheroni* (Guér.), *lutcipennis* (Serv.), *ruficeps* (Burm.), *nigripennis* (Motsch.), *macropyga* (Westw.), *biguttata* (Lat.), *brachynota* (De Haan), *orsinii* (Géné), *smyrnensis* (Serv.), *ruficollis* (Fab.), *serrata* (Serv.), *auricularia* (Linn), *decipiens* (Géné), *albipennis* (Meg.), and *pubescens* (Géné).

Dunlop states that he observed a species of Earwig in India using its for-

ceps in folding up its wings after flight, and also for the purpose of holding larvæ to its mouth while eating them. Ent. M. Mag. ii. p. 158.

Opisthocosmia, g. n., Dohrn, *l. c.* p. 76 (= *Ancistrogaster*, Stål, part.). Body rather convex; antennæ 10–15-jointed, with first joint long, obconical, second very short, remainder long; pronotum much narrower than head; second joint of tarsi short, dilated; second and third segments of abdomen with folds; legs long and slender. Known species: *Ancistrogaster spinax* (Dohrn), *A. luctuosus* (Stål), *Forf. armata* (De Haan), *F. forcipata* (De Haan), *F. longipes* (De Haan), *F. insignis* (De Haan), *F. vigilans* (Stål), *F. tenella* (De Haan), and *Labia ceylonica* (Motsch.). New species: *Opisthocosmia maculifera*, *l. c.* p. 77, and *O. variegata*, *l. c.* p. 78, from Venezuela; *O. devians*, *l. c.* p. 79, from Brazil; and *O. centurio*, *l. c.* p. 79, from Luçon.

Sparatta schotti, sp. n., Dohrn, *l. c.* p. 69, from Brazil.

Lobophora. Dohrn describes the following new species:—*L. superba*, *l. c.* p. 71, Malacca; *L. lætior*, *l. c.* p. 73, Batchian; *L. ludekingi*, ibid., Sumatra, *L. melanocephala*, *l. c.* p. 75, Tranquebar.

Forficula. Of this genus as restricted by him Dohrn describes as new species:—*F. californica*, *l. c.* p. 85, *F. africana*, *l. c.* p. 86, from Southern Africa; *F. wallacei*, *l. c.* p. 88, from New Guinea; *F. cingalensis*, *l. c.* p. 89, *F. metallica*, *l. c.* p. 90, from Assam; *F. ancylura*, *l. c.* p. 91, from the Philippines; *F. huegeli*, *l. c.* p. 92, from the East Indies; *F. jagori*, *l. c.* p. 94, from Luçon; *F. circulata*, *l. c.* p. 95, from Madras; *F. lobophoroides*, *l. c.* p. 96, from the Philippines; *F. lucasi*, *l. c.* p. 98, from Syria and Egypt.

Blattidæ.

Van Hasselt quotes a report of Vinson, that *Blatta americana* is thought in the Mauritius and Bourbon to possess a certain vesicant property, which causes a peculiar affection of the lips of persons to whom the insects may have been attracted by the smell of their food or drink, and cites some other observations which he thinks renders the subject worthy of further investigation. Tijdschr. voor Entom. 1865, pp. 98–99.

Phasmidæ.

Bates (Trans. Linn. Soc. xxv. pp. 321–326) indicates the progress of our knowledge of the insects of this family. In 1835 G. R. Gray enumerated 108 described species; and in 1859 Westwood, in his monograph, described in all 471 species. Other authors (chiefly Saussure) have since described 17 new species; and these, with the 52 species described by Bates, increase the number of known species to 540. Bates also remarks upon the peculiarities presented by the *Phasmidæ*, and indicates that the difficulty experienced in classifying them is due to the multiplicity of imitative modifications which they present, which he explains in accordance with the theory of natural selection. He holds that these modifications have affected all parts of the organism in such a manner that we can no longer find those more or less fixed starting-points for the establishment of a system which are necessary for the definition of well-marked

groups, and therefore that Gerstäcker's objections to Westwood's classification might be paralleled by others to any system that might be proposed.

Bates remarks that *Linocerus* (Gray) appears to be identical with *Ramulus* (Sauss.), which he regards as a subgenus of *Bacillus*. If the genus be adopted, Gray's name has the precedence (Trans. Linn. Soc. xxv. p. 329). *B. scytale* (Bates) belongs to this group.

Platycrania alpheus (Westw.). Bates has some remarks on the characters of specimens of this species from various localities in the Eastern archipelago. *L. c.* p. 347. Bates also remarks upon the characters of *Acrophylla tessellata* (Westw.), ibid., and gives a detailed description of *Podacanthus viridiroseus* (G. R. Gray), *l. c.* p. 348.

Bacillus. Bates (Trans. Linn. Soc. xxv.) describes the following five new species of this genus:—*B. gramineus*, p. 326, pl. 44. fig. 4, *B. aspericollis* (perhaps *gramineus* ♀), p. 327, *B. gueinzii*, ibid., from Natal; *B. patellifer*, p. 328, from Darjeeling; and *B. scytale*, ibid. pl. 44. fig. 9, from Ceylon.

Bacteria. Bates (*l. c.*) describes seven new species of this genus: namely, *B. cyrtocnemis*, p. 329, pl. 44. fig. 10, *B. laticauda*, ibid., pl. 44. fig. 11 *a* (caudal extremity), *B. amazonica*, p. 330, *B. serricauda*, p. 331, pl. 44. fig. 13 *a* (caudal extremity), and *B. sakai*, p. 332, pl. 44. fig. 1, from Ega; *B. comis*, p. 330, pl. 44. fig. 12 *b*, from Bogota; and *B. culmus*, p. 331, from Brazil.

Bacteria unifoliata, Philippi, Stett. ent. Zeit. 1865, p. 64, from Valdivia.

Lonchodes. Bates (*l. c.*) describes thirteen new species of this genus: namely, *L. doreyanus*, p. 332, from Dorey; *L. hispa*, p. 333, from Salwatty and New Guinea; *L. flavicornis*, ibid., *L. grallator*, p. 334, *L. auscultator*, ibid., *L. furcatus*, p. 335, pl. 44. fig. 6, and *L. denticauda*, p. 336, from Ceylon; *L. personatus*, ibid., pl. 44. fig. 7, from Bouru; *L. phalangodes*, p. 337, from Batchian; *L. dispar*, ibid., from Sarawak; *L. forcipatus*, p. 338, from Menado and Tondano; *L. asperatus*, p. 339, and *L. russellii*, ibid., from Darjeeling.

Phibalosoma extensum, Bates, *l. c.* p. 340, locality unknown; *P. maximum*, Bates, *l. c.* p. 341, Sumatra; and *P. calametum*, Bates, ibid., Caffraria.

Acanthoderus mouhotii, Bates, *l. c.* p. 342, from Cambodia; *A. gravidus*, Bates, *l. c.* p. 343, from Gilolo; and *A. spiniventris*, Bates, ibid., pl. 44. figs. 2 *a*, *b*, from Timor and Bouru.

Heteropteryx westwoodii, Bates, *l. c.* p. 345, from Menado.

Dimorphodes mancus, Bates, *l. c.* p. 345, pl. 44. figs. 3 & 8, from Batchian and Ternate.

Phasma castaneum, Bates, *l. c.* p. 348, Pará; *P. putidum*, Bates, *l. c.* p. 349 [pl. 45. fig. 2], Peru; and *P. quadratum*, Bates, *l. c.* p. 350, the Tapajos.

Necroscia. Bates (*l. c.*) describes the following sixteen new species of this genus:—*N. longiceps*, p. 350 [pl. 45. fig. 6], from Kaioa; *N. cephalotes*, p. 351, from New Guinea; *N. pictipes*, p. 352, and *N. torquata*, p. 359 [pl. 45. fig. 3], from Cambodia; *N. viridilineata*, p. 352, from Ceram; *N. frondosa*, p. 353, and *N. agrionina*, p. 356 [pl. 45. fig. 9], from Menado; *N. lacteipennis*, p. 353, from Gilolo; *N. acutipennis*, p. 354 [pl. 45. fig. 5], and *N. tenebrosa*, p. 357, from Ceylon; *N. janus*, p. 354 [pl. 45. fig. 4], from Tondano; *N. styligera*, p. 355 [pl. 45. fig. 1], *N. mustea*, ibid. [pl. 45. fig. 8], from the Sula Islands; *N. graminea*, p. 356, from Batchian; *N. smaragdula*, p. 357 [pl. 45. fig. 7], from Batchian and Gilolo; and *N. conicipennis*, p. 358, from Sumatra.

Gryllidæ.

Gryllotalpa vulgaris. The characters and mode of life of this insect are described by Taschenberg, Wirbell. Thiere, &c., pp. 181–186, pl. 1. fig. 15.

Locustidæ.

Saunders gives an account of the habits of a species, most probably of *Steirodon*, the larvæ of which were found in a stove containing Orchids lately imported from Mexico. The insect was nocturnal in its activity. Bates adds some remarks. Proc. Ent. Soc. 1865, p. 107.

Lucas describes the female of *Gampsocelis gratiosa* (Brunner). Bull. Soc. Ent. Fr. 1865, pp. xiv–xv.

Taschenberg describes the characters and mode of life of *Decticus verrucivorus* (Naturg. wirbell. Thiere, &c. pp. 186–189, pl. 5. fig. 3).

Some account of the habits of a species of "Grasshopper," evidently belonging to this family, and found in vast numbers in some parts of Upper California, is given in a Report by the late J. Feilner. Smithsonian Report for 1864 (publ. 1865), pp. 429–430.

Macrolyristes, g. n., Vollenhoven, Tijdschr. voor Entom. 1865, p. 107. Allied to *Mecopoda*; forehead with two small quadrangular processes; eyes hemispherical; prothorax with a strongly toothed keel on each lateral margin; apex of the posterior femora with a spine on each side. Sp. *M. imperator*, sp. n., Voll. *l. c.* p. 108, pl. 7 ♀, from Java and Borneo.

Acrydiidæ.

Becker remarks (Bull. Soc. Nat. Mosc. xxxvii. pt. 1. pp. 477–478) on the habits of *Caloptenus italicus*, which is very destructive about Sarepta.

Acrydium migratorium. Malinowski (Verh. zool.-bot. Ges. Wien. xv. pp. 67–76) publishes a long description of the habits of the Migratory Locust as observed by him in 1864 near Tuldscha.—Taschenberg also describes this species (Naturg. wirbell. Thiere, &c., pp. 189–195, pl. 1. fig. 16).

Lucas publishes a letter from M. Suquet relative to the ravages of Locusts in the neighbourhood of Beyrouth in the early part of last year. The species referred to is *Acrydium peregrinum*. Bull. Soc. Ent. Fr. 1865, p. xxxii.

Walsh refers to papers published by him in the Journal of the Illinois State Agric. Soc. 1862, and Prairie Farmer, 1863, on Insects of this family. Proc. Bost. Nat. Hist. Soc. ix. p. 312.

The injury done by *Phymatea punctata* to the coffee-plantations in Ceylon is recorded by Nietner, see Guérin, Rev. et Mag. de Zool. 1864, pp. 92–93.

Discotettix, g. n., Costa, Ann. Mus. Zool. Nap. ii. p. 59. Allied to *Tettix*; antennæ with the two joints preceding the last three compressed and dilated into a lamella. Sp. *D. armatus*, sp. n., Costa, *l. c.* p. 59, from Borneo?

Tettix limosina, sp. n., Vollenhoven, Tijdschr. voor Entom. 1865, p. 65, pl. 1. figs. 6–8, from the island of Gebeh.

Tettix bufo, sp. n., Costa, Ann. Mus. Zool. Nap. ii. p. 58, from Natal.

Choriphyllum granulatum, sp. n., Costa, *l. c.* p. 58, origin unknown.

Stenobothrus formosus, sp. n., Becker, *l. c.* p. 488, from Sarepta.

Porthetis brevicornis, sp. n., Costa, *l. c.* p. 129, pl. 1. fig. 2, from South Italy.

RHYNCHOTA.

A. *Works in progress.*

Douglas, J. W., and Scott, J. The British Hemiptera, vol. i. Hemiptera-Heteroptera. 8vo, pp. xii and 627, 21 plates. Ray Society, London, 1865.

In this bulky volume the authors have described the species of British Heteroptera, which they appear to have collected very diligently. There is, however, but little originality about the work, which is founded chiefly upon Fieber's "Europäischen Hemiptera." The species are almost all named in accordance with Fieber's views; indeed it would appear from numerous remarks scattered through the work that many of them are determined by him. The majority of Fieber's genera are adopted; and this, of course, has rendered the establishment of new generic groups almost unnecessary, the few new genera proposed by the authors consisting chiefly of amalgamations of two or more of Fieber's genera. The illustrative plates, by Mr. E. W. Robinson, are very nicely executed; and on the whole, although Messrs. Douglas and Scott's work can by no means be regarded as a satisfactory production, it may still serve to enable our British entomologists to pay some little attention to the group of insects of which it treats. Its chief defect consists in the excessive multiplication of families, or, more properly, subfamilies, which is carried to an extent quite unnecessary, considering the comparatively small number of British species, not warranted in many cases by structural peculiarities, and tending always not to the elucidation, but to the obscuration of the subject. This defect, which prevails to an injurious extent almost throughout the work, reaches an absurd climax in the group of *Capsina*, which is broken up into no fewer than twenty families! Every one who is at all acquainted with these insects knows that they present the most striking uniformity in their more important structural characters, so that there is really a difficulty in dividing them at all; how, then, can characters be found to enable us to split them up into twenty groups of the value of families? There is only one excuse for the formation of numerous subordinate groups of a more or less artificial cast, namely the desire to facilitate the study of a very extensive series of genera; but this can hardly be urged in the present case, considering that ten out of the twenty families contain only a single genus each, and three of the remainder are composed each of only two genera. This defect would hardly be so injurious to the usefulness of the book if these numerous groups were tabulated; but this is done neither for the families nor for the genera, nor are any diagnoses of the latter given. These deficiencies will all affect the usefulness of the volume.

In some respects, as in the adoption of the sections *Scutata* (absurdly altered to *Scutatina* *), *Reduvina*, *Hydrometrina*, and *Notonectina*, the authors have taken a step in the right direction, namely towards the recognition of those great natural groups or families which it is so much the tendency of modern entomology to ignore; but as a general rule their sections will be seen to correspond exactly with Fieber's families. But in the arrangement of the groups there are several changes which are not for the better, such as the placing of the *Membranacea* (Burm.) = *Tingidina* and *Corticicolina* between the *Lygæina* and *Capsina*, and the removal of the *Anthocorina* from the *Lygæina* to a position below the *Capsina*. That they are related to the latter cannot be denied; but they are certainly intermediate between the *Lygæina* and the *Capsina*. Moreover *Acanthia* (*lectularia*) has certainly nothing to do with the true *Anthocorina*.

Mulsant, E., and Rey, C. Histoire Naturelle des Punaises de France (part i.). 8vo, pp. 112. Paris, 1865.

MM. Mulsant and Rey have commenced a natural history of the French Heteroptera, of which the first part, apparently reprinted from the 'Annales de la Société Linnéenne de Lyon,' was published last year. It includes only the *Scutellérides* (= *Orbiscuti*, A. & S.), and is executed in the same elaborate fashion, as regards the descriptions and synonymy of the species, which is characteristic of all the authors' works. This part is accompanied by a plate illustrative of the terminology.

Stål, C. Hemiptera Africana. Tomus i. 8vo. Stockholm, 1864, pp. 256.

In this work Stål has commenced a systematic description of the species of Hemiptera inhabiting Africa. The first volume includes the Scutata. It is characterized by the careful elaboration which the author gives to all his writings, and also by the tendency to excessive multiplication of genera, which he shares, unfortunately, with too many of his contemporaries. It is to be remarked that the author has limited his subject by omitting those species inhabiting only the Mediterranean region of Africa, with the exception of some of the more striking Egyptian forms, the animals of this district having a preeminently European character. The work is written throughout in Latin, and is provided with analytical tables of the genera and higher groups; it constitutes a most valuable addition to our knowledge of the entomology of Africa.

* The same mistaken use of the termination *-ina* occurs in the names of several other groups—*Cœcigenina*, *Corticicolina*, *Oculatina*.

B. *Papers published in Journals, &c.*

Bold, T. J. List of a few local Homoptera. Nat. Hist. Trans. Northumb. and Durham, vol. i. pp. 128–131 : 1865.

This paper contains a list of species of Homoptera observed by the author in his district, with occasional notes on the mode of occurrence of the insects. The lower forms (*Aphides, Psyllidæ, Coccidæ*) are omitted, and the number of species of the other groups recorded is thirty-five.

Castillo, A. del. Una rectificacion mas acerca del Animal-Planta, y descripcion de ¿un nuevo Insecto? Mexico, 1865. From the 'Boletin de la Sociedad de Geografia y Estadistica.'

Costa, A. See Insecta, p. 381.

Fieber, F. X. Neuere Entdeckungen in europäischen Hemipteren. Wien. ent. Monatssch. viii. pp. 65–86, 205–234, and 321–335 : 1864.

——. Synopse der europ. Arten *Tettigometra*. Verh. zool.-bot. Gesellsch. in Wien, xv. pp. 561–572.

Frauenfeld, G. von. Zoologische Miscellen. VI. Ueber einen eigenthümlichen Parasiten bei Cicaden. Verh. zool.-bot. Gesellsch. in Wien, xv. pp. 900–902.

Frey-Gessner, E. Verzeichniss schweizerischen Insekten. Mittheil. Schweiz. ent. Gesellsch. 1865, pp. 304–310. (*Continued.*) (See Record, 1864, p. 574.)

This portion includes the continuation of the *Lygæodæ*.

Marshall, T. A. An Essay towards a Knowledge of British Homoptera (*continued*). Entom. M. Mag. 1865, vol. i. pp. 198–201, 226–229, 251–253, 272–275, and vol. ii. pp. 31–35, 53–59, 82–85, 102–105, 124–126, and 145–146.

Mayr, G. L. Diagnosen neuer Hemipteren. II. Verh. zool.-bot. Gesellch. Wien, xv. pp. 429–446.

A continuation of the diagnoses of species in the collection made during the voyage of the 'Novara.'

Signoret, V. Descriptions de quelques Hémiptères nouveaux. Ann. Soc. Ent. Fr. 4e série, tome v. pp. 115–130: August 23, 1865.

Stål, D. Hemiptera nova vel minus cognita. Ibid. pp. 163–188: October 25, 1865.

——. Homoptera nova vel minus cognita. Œfvers. Kongl. Vetensk.-Akad. Förhandl. 1865, pp. 145–165.

Vollenhoven, C. Snellen van. Un genre nouveau d'Hé-

miptères scutellérides. Tijdschrift voor Entomologie, 1865, pp. 63–64, pl. 1.

WALSH, B. D. See INSECTA, p. 385.

C. *Anatomical and Physiological Papers.*

LANDOIS, L. Untersuchungen über die auf dem Menschen schmarotzenden Pediculinen. III. Abhandlung. Anatomie des *Pediculus vestimenti* (Nitzsch); und IV. Abhandl. Zur Anatomie des *Pediculus capitis*. Zeitschrift für wiss. Zoologie, Band xv. pp. 32–55, & 494–503, Tafeln 2–4 & 38.

SCHIÖDTE, J. C. Phthiriasis og Mundens Bygning hos Pediculus. Naturhist. Tidsskrift, 3rd scr. vol. iii. pp. 48–69: 1864. Translated in Ann. & Mag. Nat. Hist. 3rd series, vol. xvii. pp. 213–230. [Phthiriasis and the structure of the mouth in *Pediculus*.]

HETEROPTERA.

Walsh (Proc. Bost. Soc. Nat. Hist. ix. p. 313) refers to articles published in agricultural journals in which the following species of Heteroptera are noticed:—*Phytocoris linearis* (Beauv.) = *Capsus oblineatus* (Say), *Micropus leucopterus* (Say), and *Reduvius raptatorius* (Say).

Bold (Nat. Hist. Trans. North. & Durh. i. p. 134) records the capture of several rare and local species of Heteroptera.

SCUTATA.

This group is divided into the following families by STÅL (Hemiptera Africana, i.):—*Arthropterida* (Fieb.), *Cydnida*, and *Pentatomida* (Stål) incl. *Scutellerida*, *Asopida*, *Pentatomida*, *Phyllocephalida*, *Acanthosomida*, and *Tessaratomida*. The *Arthropterida* = *Plataspidæ* (Dall.) = *Thyreocoridæ* (Am. & Serv.), and the *Cydnida* = *Cydnidæ* (Dall.) = *Spinipèdes* (Am. & Serv.), except that, according to Stål, the genera *Chlænocoris* (Burm.) and *Strombosoma* (A. & S.) have to be transferred from the former to the latter *. Stål does not give his reasons for this opinion, which seems to the Recorder not to be well founded; but, however this may be, the two groups just mentioned are undoubtedly well marked. This, however, is by no means the case with the third family, which consists of such heterogeneous materials that literally the only positive character distinguishing it from the *Cydnida* is the partial exposure of the first abdominal segment. The author's subfamilies constitute groups more nearly equivalent to his *Arthropterida* and *Cydnida*, except that his *Acanthosomida* must be combined with the *Pentatomida*, the possession of two-jointed tarsi being a character quite insufficient for the separation of *Acanthosoma*, for example, from such forms as *Rhynchocoris* and its allies. Of the remaining subfamilies the *Asopida*, *Tessaratomida*, and *Phyllocephalida* call for no remarks, and the *Scutellerida* are identical with the *Pachycoridæ* (Dall.) + *Eurygaster*, except that the curious and rather puzzling genus *Cyptocoris* is transferred to the *Pentatomida*. To the last-mentioned group

* It would appear also that the *Odontoscelides* are referred by Stål to the *Cydnida* (see p. 31).

are referred, besides the groups of which *Sciocoris*, *Halys*, and *Pentatoma* may be regarded as the types, the remainder of the *Eurygastridæ* (Dall.), *Podops* and its allies, and *Aspongopus* and *Dinidor* (= *Cyclopelta*); the last two are certainly not in their proper position. This group also includes a portion of the *Megarhynchi*, referred to various genera, whilst others are placed among the *Phyllocephalida*. The total number of species described is 340, of which 51 are new. Seventeen new genera are also characterized, and the references to the previously described genera and species include many valuable notes on synonymy. Under some of the subfamilies the author has tabulated genera not represented in Africa; these seem all to belong to the eastern hemisphere, but do not include the whole of the old-world genera.

MULSANT & REY (Punaises de France) divide their tribe of *Scutellérides* into five families:—1. *Coptosomiens*; 2. *Eucoriens* (= *Odontoscelides*); 3. *Psacastiens*; 4. *Trigonosomiens*; 5. *Graphosomiens*: each of which is again subdivided into "branches" and "rameaux." It is almost unnecessary to say that all these subdivisions are not only useless but positively inconvenient; with so small a number of species, they neither facilitate determination nor assist in giving a clear idea of the relations of the forms under consideration.

DOUGLAS & SCOTT divide the British species of this group into nine families, namely *Cydnidæ*, *Odontoscelidæ*, *Scioridæ*, *Eurygastridæ*, *Ælüidæ*, *Podopidæ*, *Pentatomidæ*, *Asopidæ*, and *Raphigastridæ* (British Hemiptera, vol. i.).

Scutellerides.

Douglas & Scott (Brit. Hemiptera, i.) figure *Eurygaster maurus* (Linn.), pl. 2. fig. 5, and *Podops inunctus* (Fab.), fig. 8.

New genera and species:—

Procilia, g. n., Stål, Hem. Afr. i. p. 35. Allied to *Scutellera*; tibæ and abdomen not sulcate. Sp. *Calliph. nigricornis* (Sign.). N. sp. *P. scintillans*, Stål, p. 36, from Calabar; *P. prætoria*, Stål, p. 37, from the Gaboon.

Graptocoris, g. n., Stål, *l. c.* p. 37 (= *Cryptacrus*, Mayr). Allied to *Eucorysses* (*Callidea*); joint 3 of antennæ not more than twice as long as 2. Sp. *Tetyra comes* (Fab.), *Scut. pinguis* (Germ.), *Callidea novemmaculata* (Sign.), *Chærocoris nigricollis* (Sign.), and *Pachycoris aulicus* (Germ.).

Sergia, g. n., Stål, *l. c.* p. 56 (= *Argocoris*, Mayr). Allied to *Hotea*, but with the lateral angles of the thorax neither acuminate nor produced. Known sp. *Odontotarsus obscurus* (Dall.), *O. illotus* (Stål), *Cimex silphoides* (Thunb.), *O. coquerelii* (Sign.), and *Psacasta afra* (H.-Sch.). N. sp. *S. obesa* and *nigropunctata*, Stål, *l. c.* p. 57, from Senegal.

Cryptodontus, g. n., Mulsant & Rey, Pun. de Fr. p. 36. Allied to *Psacasta*; prebasilar pieces with a tooth behind on the margin of the rostral canal; second joint of antennæ scarcely one-third longer than third. Sp. *Cimex tuberculatus* (Rossi).

Glypheria, g. n., Mulsant & Rey, *l. c.* p. 72. Allied to *Trigonosoma*; abdomen unarmed; rostrum produced beyond the posterior coxæ, received in a ventral furrow; lateral angles of prothorax not dilated. Sp. *Cimex æruginosus* (Cyrillo) = *nigellæ* (Fab.).

Thoria, g. n., Stål, *l. c.* p. 90. Allied to *Podops*, but scutellum considerably shorter than abdomen. Sp. *Podops natalensis* (Stål) and *P. sinuatus* (Sign.).

Teucrus, g. n., Stål, Ann. Soc. Ent. Fr. v. p. 168. Allied to *Eurhinocoris*; thick, tuberculate; head thick, deflexed, lateral lobes meeting in front; bucculæ much elevated; posterior angles of thorax slightly prominent posteriorly; scutellum large, covering the inner half of the hemelytra, with a large tubercle; membrane with longitudinal veins; sternum sulcate. Sp. *Tarisa dromedarius* (Voll.).

Hotea acuta, Stål, Hem. Afr. i. p. 55, from Calabar; *H. denticulata*, Stål, *l. c.* p. 56, from Madagascar.

Alphocoris indutus, Stål, *l. c.* p. 61, from Caffraria; *A. crassus*, Stål, ibid., from Senegal.

Trigonosoma lehmanni, Fieb. Wien. ent. Mon. viii. p. 334, Turcomania; *T. obesum*, Stål, *l. c.* p. 84, from Egypt.

Odontoscelides.

The following species are figured by Douglas & Scott, Brit. Hem. i. pl. 2:—*Corimelæna scarabæoides*, fig. 2, and *Odontoscelis fuliginosus*, fig. 3.

Eucoria, g. n., Mulsant & Rey, Pun. de France, p. 12. Allied to *Corimelæna* (?); joint 2 of antennæ scarcely one-fifth the length of 3; middle lobe passing the lateral ones; tibiæ not spinous. Sp. *E. marginipennis*, sp. n., Muls. & Rey, *l. c.* p. 13, from Marseilles.

Plataspides.

Tarichea, g. n., Stål, Ann. Soc. Ent. Fr. v. p. 163. Allied to *Plataspis*; head narrower; ocelli further from each other than from the eyes; scutellum suddenly enlarged at base. Sp. *Plataspis chinensis* (Dall.) and *P. nitens* (Dall.).

Calacta, g. n., Stål, *l. c.* p. 163. Allied to *Plataspis*; ocelli nearly twice as far from each other as from the eyes; lateral margins of thorax rotundato-dilated, anterior angles produced as far as apex of head; hemelytra with the costal margin widely lobate at base. Sp. *C. lugubris*, sp. n., Stål, *l. c.*, from Hong-Kong; *C. rufo-notata*, sp. n., Stål, p. 164, from Siam.

Poseidon, g. n., Vollenhoven, Tijdschr. voor Entom. 1865, p. 63. Allied to *Heterocrates*, but with the head armed with three horns in the ♂, semicircular in ♀, with lateral lobes meeting; antennæ of five joints, first long, second minute, third shorter than first, fourth and fifth decreasing; ocelli much nearer to each other than to the eyes. Sp. *P. malayanus*, Voll. p. 64, from Malacca.

Coptosoma conspersum, Stål, Hem. Afr. i. p. 12, from Calabar; *C. afzelii*, Stål, p. 13, from Sierra Leone; *C. pictulum*, Stål, p. 14, from Natal; *C. inclusum*, Stål, p. 17, from Caffraria.

Asopides.

The following species of this group are figured by Douglas & Scott (*l. c.*):—*Zicrona cærulea* (Linn.), pl. 3. fig. 3; *Jalla dumosa* (Linn.), fig. 4; *Rhacognathus punctatus* (Linn.), fig. 5; *Asopus luridus* (Fab.), fig. 6; and *Picromerus bidens* (Linn.), fig. 7.

Pentatoma schellembergii (Guér.)=*P. consociale* (Boisd.), according to Stål, and belongs to his genus *Æchalia*. Ann. Soc. Ent. Fr. v. p. 164.

Claudia, g. n., Stål, Hem. Afr. i. p. 74. Allied to *Zicrona*; abdomen with a spine at the base. Sp. *Pent. pavonina* (Westw.); *C. mediiventris*, sp. n., Stål, p. 75, from Sierra Leone.

Marmessus, g. n., Stål, *l. c.* p. 75. Allied to *Asopus*; abdomen unarmed; [illegible]rum and legs stout; bucculæ elevated. Sp. *M. nigricornis*, sp. n., Stål, p. 76, from Natal.

Platynopus innocuus, sp. n., Stål, *l. c.* p. 71, from Guinea.

Cydnides.

Schirus morio is figured by Douglas & Scott, Brit. Hem. i. pl. 2. fig. 1.

Cydnus helferi (Fieb.)=*C. punctulatus* (Costa), according to Fieber, Wien. ent. Mon. Bd. viii. p. 233.

Amaurocoris, g. n., Stål, Hem. Afr. i. p. 31. (*Schirid.*). Oval, convex; head deflexed, broader than long, rounded in front, lobes equal; antennæ with joint 1 reaching apex of head, 2 shorter than 3; scutellum rather broad at apex. Sp. *A. laticeps*, sp. n., Stål, ibid., from Nubia.

Eurycoris, g. n., Signoret, Ann. Soc. Ent. Fr. 4e sér. tome v. p. 115. Allied to *Hiverus*; eyes of ordinary form; antennæ with last three joints elongate. Sp. *E. niger*, sp. n., Sign. *l. c.*, from Syria.

Cydnus aciculatus, sp. n., Fieber, Wien. ent. Mon. viii. p. 233, from Crefeld.

Sciocorides.

Sciocoris terreus (Schr.)=*umbrinus* (Wolff) is figured by Douglas & Scott, Brit. Hem. i. pl. 2. fig. 4.

Pododus obtusangulus, sp. n., Stål, Hem. Afr. i. p. 125, from the Cape.

Drinostia fissipes, sp. n., Stål, Ann. Soc. Ent. Fr. v. p. 168, from China.

Halydides.

Stål states that *Halys winthemii* (Guér.), which he describes as belonging to his genus *Coctoteris*, is identical with *Spudæus fœtidus* (Montr. & Sign.), and with *C. acutangula* (Stål). Ann. Soc. Ent. Fr. v. pp. 167–168.

New genera and species:—

Memmia, g. n., Stål, Hem. Afr. i. p. 99. Allied to *Atelocera*; second joint of antennæ long, cylindrical, not thickened. Sp. *Atelocera femoralis* and *vicina* (Sign.).

Scribonia, g. n., Stål, *l. c.* p. 102. Allied to *Cœnomorpha*; pilose, lateral lobes rounded externally; joint 1 of antennæ reaching apex of head. Sp. *Cœn. pilosa* (Stål).

Afrania, g. n., Stål, Ann. Soc. Ent. Fr. v. p. 180. Allied to *Agœus* (?); abdomen not sulcate. Sp. *Strachia wahlbergi* (Stål).

Halys helenborgi, Stål, Hem. Afr. i. p. 100, from Nubia; *H. maculipennis*, Stal, ibid., from Senegal.

Orthoschizops. Stål (*l. c.*) describes four species of this genus:—*O. obsoleta*, incasecata, p. 107, and *lineaticeps*, p. 108, from the Cape, and *O. humeralis*, Sp. ?, of unknown origin.

Platycoris umbrosus, Stål, Ann. Soc. Ent. Fr. v. p. 164, Moreton Bay.

Notius conputus, Stål, *l. c.* p. 164, from North Australia.

Omyta delineata, Stål, *l. c.* p. 165, from North Australia.

Pœcilometis. Stål describes *P. fasciatus*, *l. c.* p. 165, *P. eximius*, ibid., and *P. histricus*, p. 166, North Australia; and *P. modestus*, p. 166, Moreton Bay.

Ectenus pudicus, Stål, p. 167, Mysol; *E. generosus*, Stal, ibid., Manilla.

Pentatomides.

Pentatoma. Stål (Hem. Afr. i.) divides this genus as defined by him into the following subgenera:—*Eysarcoris* (Hahn), *Aspavia* (=*Mormidea*, p.), *Carbula*, *Durmia*, (=*Mormidea*, p.), *Ilipla*, *Veterna*, *Cappæa* (Ellenr.), *Caura*, *Ilerda*, *Theloris*, and *Æliomorpha* (=*Ælia*).

Stål describes *Pentatoma perrondi* (Montr. & Sign.) as a species of his genus *Antestia*, and *Nezara confluenta* (M. & S.) as a species of *Pizeodorus* (Fieb.). Ann. Soc. Ent. Fr. v. p. 169. The same author (p. 170) refers the following described species to the genus *Cappæa* (Ellenr.):—*Pentatoma halys* (Stål), *Halys timorensis* (Hope) and *Pentatoma ventralis* (Dall.), *trinotata* (Hope), *latipes* (Dall.), *scoruba* (Dall.), *trivialis* (Dohrn), and *boitardi* (Montr. & Sign.). The last-named species is described.

Signoret discusses the synonymy of *Pentatoma perlatum* (Panz.) and the other species of the genus *Ælioides* (Dohrn)=*Platysolen* (Fieb.). Ann. Soc. Ent. Fr. v. p. 116.

The following species of this group are figured by Douglas & Scott, *l. c.*:—*Ælia acuminata* (Linn.), pl. 2. fig. 6; *Ælioides inflexa* (Wolff), fig. 7; *Eysarcoris melanocephalus* (Fab.), fig. 8; *Pentatoma dissimile* (Fab.), pl. 3. fig. ; *Strachia oleracea* (Linn.), fig. 2; *Tropicoris rufipes* (Linn.), fig. 8; *Piezodorus purpureipennis* (Hahn), fig. 9; and *Acanthosoma hæmorrhoidale*, pl. 4. fig. .

New genera :—

Sepontia, Stål, Hem. Afr. i. p. 133. Allied to *Eysarcoris*; head nearly perpendicular; scutellum very large, little narrower than the body, frena very short. Sp. *Bolbocoris miscllus* (Stål).

Vitellus, Stål. Ann. Soc. Ent. Fr. v. p. 170. Allied to *Rhynchocoris*; head triangular, rounded at apex, bucculæ percurrent, with a tooth at apex; prothorax sinuated between the prominent posterior angles; mesosternum and metasternum elevated, the lamina of the former sometimes reaching apex of head. Known sp. *Rhynchocoris australis* (Montr. & Sign.) and *R. pungens* (M. & S.). New sp. *V. insularis*, Stål, p. 170, from Fiji; *V. pugionatus*, Stål, p. 171, from Aru; and *V. mucronatus*, Stål, ibid., from North Australia.

Flaminia, Stål. Hem. Afr. i. p. 199. Allied to *Rhaphigaster*; scutellum broad and rounded at apex, frena not reaching its middle. Sp. *Eysarcoris natalensis* (Dall.).

Antestia, Stål, *l. c.* p. 200. Allied to preceding genus (=*Pentatoma*, p., and *Rhaphigaster*, p., auctt.); anterior and antero-lateral margins of thorax reflexed or callous; scutellum broad at apex; mesosternum not carinated; abdomen with or without a basal spine. Known sp. *Pentatoma maculata* (Dall.), *P. confusa*, *marginata*, *perpunctata* (Sign.), *Cimex olivaceus* (Thunb.), *Mormidea rotundata* (Sign.), *Pentatoma mauritii* (Stal), *Cimex bicinctus loriventris* (Germ.), *Rhaphigaster maculiventris* (Dall), *decoratulus*, Stål, (Stål), *transversus*, *parvulus* (Sign.), and *Pentatoma versicolor* (Pal. B.). N sp. *A. inermiventris*, Stål, *l. c.* p. 205, from South Africa; *A. sparmanni*, Stål, ibid., from the Cape; and *A. gratiosa*, Stål, *l. c.* p. 209, from Calabar.

Plautia, g. n., Stål, *l. c.* p. 191. Allied to *Nezara* (A. & S.); anterior margin of thorax callous. Sp. *Cimex fimbriatus* (Fab.); *Pent. crossota*, *affinis*, and *inconspicua* (Dall.).

Anubis, Stål, *l. c.* p. 220. Allied to *Anischys*; first joint of rostrum nearly equal in length to the bucculæ; antennæ filiform. Sp. *Cimex sparsus* (Germ.), *lugubris* (Thunb.), *Rhaphigaster fusco-irroratus* (Stål).

New species :—

Eusarcorus grenieri, Signoret, Ann. Soc. Ent. Fr. 4ᵉ sér. v. p. 116, from the south of France.

Æschrus tuberculatus, Stål, ibid. p. 169, from the East Indies.

Pentatoma (see p. 692). Stål (Hem. Afr. i.) describes the following new species:—*P.* (Aspavia) *pallidispina*, p. 137, from the Cape; *longispina*, ibid., from the Mauritius; *P.* (Carbula) *capito*, p. 146, from Guinea; *P.* (Durmia) *bellicosa*, p. 147 (*Morm. albidofuscata*, Stål, olim), from Caffraria; *capreola*, p. 149, from Madagascar; *hoedula*, ibid. (=*C. typhœus*, H.-Sch.), from Caffraria; *P.* (Veterna) *unicolor*, p. 158, Guinea; *P.* (Cappæa) *tæniata*, p. 162, Cape; *P. pavida*, p. 163, Caffraria; *P.* (Ilerda) *rubicunda*, p. 170, and *petulans*, p. 171 (=*Morm. annulicornis*, Sign.), Madagascar.

Pentatoma porphyrea, Fieb. Wien. ent. Men. viii. p. 334, from Amasia.—*Pentatoma baerensprungi*, Mulsant & Rey, Ann. Soc. Linn. Lyon, tome x. p. 185, from Germany.

Strachia cognata, Fieber, *l. c.* p. 231, and *S. cyanea*, Fieb. p. 232, from the Pyrenees.

Bathycœlia ovalis, Stål, *l. c.* p. 190, from Calabar.

Nezara dohrni, Stål, *l. c.* p. 195, from Calabar; *N. fieberi*, Stål, *l. c.* p. 196, from the Gaboon; *N. teretipes*, Stål, *l. c.* p. 198, from Nubia.

Edessides.

Edessa hamifera, sp. n., Costa, Ann. Mus. Zool. Nap. ii. p. 148, pl. 1. fig. 9, origin not stated.

Dinidor tristis, Stål, Hem. Afr. i. p. 212, from Calabar.

Aspongopus sepulcralis, Stål, *l. c.* p. 214, and *A. femoralis*, Stål, *l. c.* p. 215, from Grand Bassam; and *A. mysticus*, Stål, *l. c.* p. 318, from Caffraria.

Phyllocephalides.

Antonia, g. n., Stål, Hem. Afr. i. p. 128. Allied to *Diploxys*; obovate; joint 2 of antennæ nearly thrice length of 3; legs stout. Sp. *Cimex comma* (Thunb.).

Curatia, g. n., Stål, *l. c.* p. 130. Allied to *Diploxys*; bucculæ less elevated, not produced behind; anterior angles of thorax projecting forward. Sp. *C. denticornis*, sp. n., Stål, ibid., of unknown origin; *C. truncaticornis*, Stål, ibid., from Keis Kaama.

Gellia, g. n., Stål, *l. c.* p. 243. Allied to *Tetroda*; sides of head distinctly incised at the eyes, lateral lobes broad, rounded externally, not divergent. Sp. *Ælia albivittis* (Germ.), *Tetroda angulicollis* (Stål), and *Phyllocephala dilatata* (Sign.).

Diploxys confusa, Stål, *l. c.* p. 127, and *D. fallax*, Stål, p. 129, from Caffraria.

Supericornia.

The following species of this family are figured by Douglas and Scott:—(Coreides) *Syromastes marginatus* (Linn.), pl. 4. fig. 3; *Enoplops scapha* (Fab.), fig. 4; *Gonocerus venator* (Fab.), fig. 5; *Verlusia rhombea* (Linn.), fig. 6; *Coreus hirticornis* (Fab.), fig. 7; *Spathocera dalmani* (Schil.), fig. 8; *Pseudophlœus falleni* (Schil.), fig. 9; *Ceraleptus squalidus* (Costa), pl. 5. fig. 1. (Corizides) *Therapha hyoscyami* (Linn.), pl. 5. fig. 2; *Corizus capitatus* (Fab.), fig. 3; *Myrmus miriformis* (Fall.), fig. 4; *Chorosoma schillingi* (Schil.), fig. 5: (Stenocephalides) *Stenocephalus agilis* (Scop.), fig. 6: (Alydides) *Alydus calcaratus* (Linn.), fig. 7: (Berytides) *Metacanthus punctipes* (Germ.), fig. 8; *Metatropis rufescens* (H.-Sch.), fig. 9; *Berytus minor* (H.-Sch.), pl. 6. fig. 1.

Neides. Fieber gives a new tabular arrangement of the species of this genus, founded on the form of the pronotum. Wien. ent. Mon. Bd. viii. p. 323.

Douglas publishes some notes on the habits of *Gonocerus venator*. Ent. M. Mag. ii. p. 46.

According to Stål, *Mozena spinicrus* (A. & S.)=*Archimerus brunnicornis* (H.-Sch.). Ann. Soc. Ent. Fr. v. p. 175.

Stål states that his *Anasa lugens* (Ent. Zeit. 1862)=*Gonocerus andresii* (Guér. Hist. Cuba), ibid., p. 186.

New genera and species:—

Mictides.

Thasus, g. n., Stål, *l. c.* p. 174. *Pachylis*, auctt. ex parte; head subquadrate, lobes not produced beyond antenniferous tubercles; prothorax with a collar; posterior legs very distant, post. tibiæ dilated within and without in both sexes. Sp. *Pachylis gigas, acutangulus*, and *heteropus*.

Saguntus, g. n., Stål, *l. c.* p. 176. Allied to *Nematopus*; eyes very prominent; second and third joints of antennæ nearly equal; posterior angles of prothorax produced into an oblong lobe; posterior thighs much shorter than abdomen; tibiæ equal to the thighs, with a superior apical and an inferior subapical tooth. Sp. *S. lobulatus*, sp. n., Stål, p. 176, from North Brazil.

Quintius, g. n., Stål, *l. c.* p. 177. Allied to *Nematopus*; third joint of antennæ shortest; posterior angles of prothorax obtuse; membrane with simple veins; posterior tibiæ simple. Sp. *Q. marginatus*, sp. n., Stål, p. 177, from North Brazil.

Salapia, g. n., Stål, *l. c.* p. 179. Allied to *Petalops*; body oblong or subelongate; frontal lamina produced beyond antenniferous tubercles; second joint of rostrum longest; scutellum rather longer than broad; posterior femora somewhat thickened. Sp. *Petalops dimidiatus, signatus*, and *abdominalis* (Dall.).

Junia, g. n., Stål, *l. c.* p. 179. Allied to *Petalops*; frontal lamina not very prominent; second and third joints of rostrum nearly equal, second not longer than third; scutellum equilateral; posterior femora much thickened in ♂, slender in ♀; first joint of tarsi longer than the other two together. Sp. *Petalops fasciatus* (Dall.), *cardinalis* (Stål), *megæra* (Burm.), *fenestratus* (Burm.), and *rubricatus* (Guér.)=*dorsalis* (Stål). New sp. *Junia ducalis*, Stål, p. 179, from North Brazil.

Lucullia, g. n., Stål, *l. c.* p. 180. Allied to *Petalops*; body narrow, compressed; frontal lamina produced; third joint of rostrum longest; scutellum longer than broad; posterior femora thickened, posterior tibiæ dilated. Sp. *L. flavo-vittata*, sp. n., Stal, p. 180, from North Brazil.

Trematocoris, g. n., Mayr, Verh. zool.-bot. Ges. Wien, xv. p. 431. Allied to *Mictis*; ventral stigmata very large, oval; posterior tibiæ foliaceous at base; lateral angles of prothorax dilated and produced forward; antenniferous tubercles distinctly separated. Sp. *Lygæus tragus* and *Myctis lobipes*.

Sagotylus, g. n., Mayr, ibid. Allied to *Crinocerus*; antenniferous tubercles distant, unarmed; median lobe sellate, separated from the cheeks by short furrows; fourth joint of antennæ slightly incrassate; anterior and intermediate femora with two spines, posterior incrassate, with some spinules beneath towards apex. Type *Crinocerus triguttatus* (H.-Sch.).

Athaumastus, g. n., Mayr, ibid. Allied to *Crinocerus*; margin of pronotum smooth; femora not tuberculate. Type *Crinocerus lugens* (Stål).

Euthochtha, g. n., Mayr, ibid. Allied to *Crinocerus*; antenniferous tubercles rather remote; antero-lateral margins of pronotum denticulate, posterior margin very straight, posterior angles obtuse; femora tuberculate. Type *Coreus galeator* (Fab.).

Aeroelytrum, g. n., Mayr, *l. c.* p. 432. Allied to *Rhombogaster*; head narrowly triangularly excised between the antenniferous tubercles; antennæ short, basal joint very long and stout, apical very short. Sp. *A. muricatum*, sp. n., Mayr, ibid., from New Holland.

Mictis. Stål (Ann. Soc. Ent. Fr. v.) describes *M. malaya*, *l. c.* p. 172, *M. albo-vittata*, ibid., and *M. macra*, *l. c.* p. 173, from Malacca; *M. acutangula*, *l. c.* p. 173, from Borneo; and *M. caja*, ibid., from Moreton Bay.

Petillia mormo, Stål, *l. c.* p. 174, from Port Natal.

Melucha quinquelineata, Stål, *l. c.* p. 175, from the Amazons.

Cnemyrtus eremita, Stål, *l. c.* p. 175, from Ega.

Nematopus amazonus, Stål, *l. c.* p. 178, and *N. æneicrus*, sp. n., Stål, ibid., from North Brazil.

Amorbus robustus, Mayr, *l. c.* p. 432, from Sydney.

Capaneus ventralis, Mayr, ibid., from Mexico.

Metapodius mercur, Mayr, *l. c.* p. 433, from Brazil.

(*Homœocerides.*)

Odontoparia, g. n., Mayr, *l. c.* p. 433. Allied to *Paryphes*; head somewhat pentagonal, produced beyond antenniferous tubercles; antennæ slender, apical joint longest and a little thickened; apical joint of rostrum shortest; pronotum trapezoidal. Sp. *O. nicobarensis*, sp. n., Mayr, ibid., from Sambelong.

Galæsus bellus, Stål, Ann. Soc. Ent. Fr. v. p. 184, from Fiji.

Marcius generosus, Stål, *l. c.* p. 186, from New Guinea.

Cnemonis cognata, Stål, *l. c.* p. 186, from North Brazil.

Paryphes tricolor, Mayr, *l. c.* p. 433, from Brazil.

Theognis (Stål). Mayr (*l. c.* p. 434) describes the following new species of this genus:—*T. excellens*, from Georgia (U.S.); *T. erythrinus, ingens*, and *pulcher*, from Brazil.

Cebrenis colorata and *clavicornis*, Mayr, *l. c.* p. 435, from Brazil.

Catorhintha pallida, Mayr, *l. c.* p. 435, from Brazil.

(*Anisoscelides.*)

Malvana, g. n., Stål, *l. c.* p. 183. Allied to *Leptoscelis*; head immersed to the eyes, produced in front beyond the antenniferous tubercles; thorax without a collar; apical angle of corium narrowly produced; posterior femora thickened; posterior tibiæ simple; posterior tarsi with the basal joint longer than the other two together. Sp. *M. serrulata*, sp. n., North Brazil.

Copium (sic) *scenicum*, Stål, *l. c.* p. 180, *C. vinulum*, Stål, p. 181, and *C. brevicorne*, Stål, ibid., from North Brazil.

Leptoscelis excellens, *L. fasciifera*, and *L. egregia*, Stål, *l. c.* p. 182, from North Brazil.

Phthia ornata, Stål, *l. c.* p. 183, from Bolivia; *P. decorata*, Stål, p. 184, from North Brazil.

Lybas inermis and *L. egregius*, Stål, *l. c.* p. 184, from Mysol.

(*Alydides.*)

Lyrnessus limbaticollis, Stål, p. 185, from Mysol, New Guinea, and Aru.

Noliphus papuensis from New Guinea, and *N. insularis* from Fiji, Stål, p. 185.

Camptopus bifasciatus, Fieber, Wien. ent. Mon. viii. p. 324, from Amasia.

(*Coreides.*)

Berytus commutatus (Fieb. MS.), Dougl. & Scott, Brit. Hem. i. p. 158.

Neides parallelus, Fieber, Wien. ent. Mon. Bd. viii. p. 323, from England = ? *N. depressus* (Fieb. MS.), Dougl. & Scott, *l. c.* p. 161, pl. 6. fig. 2.

(*Rhopalides.*)

Myrmidius, g. n., Costa, Ann. Mus. Zool. Nap. ii. p. 135. Allied to *Chorosoma*; median lobe of head passing the lateral lobes, subacuminate; rostrum reaching middle coxæ; antennæ stout, less than half the length of body, joints 1–3 triquetrous, 4 minute, ovoid; pronotum subquadrate, narrowed in front, margined at sides; elytra and wings rudimentary. Sp. *M. flavidus*, sp. n., Costa, p. 136, pl. 1. fig. 7, from Italy.

Lygæodea.

Douglas & Scott refer *Zosmerus* to this group, the British species of which they refer to five families, namely *Rhyparochromidæ*, *Phygadicidæ*, *Henestaridæ*, *Cymidæ*, and *Zosmeridæ*. British Hemiptera, vol. i.

The following species of this family are figured by Douglas & Scott (*l. c.*): —*Gastrodes ferrugineus* (Linn.), *Plociomerus fracticollis* (Schil.), *Calyptonotus pini* (Linn.), *Eremocoris erraticus* (Fab.), *Dieuches luscus* (Fab.), pl. 6. figs. 4–8; *Peritrechus luniger* (Schil.), *Trapezonotus agrestis* (Fall.), *Pionosomus varius* (Wolff), *Drymus brunneus* (Sahlb.), *Tropistethus holosericeus* (Scholtz), *Rhyparochromus dilatatus* (H.-Sch.), *Hypnophilus micropterus* (Curt.), *Plinthisus brevipennis* (Lat.), *Stygnocoris rusticus* (Fall.), pl. 7. figs. 1–9; *Acompus rufipes* (Wolff), *Ischnodemus sabuleti* (Fall.), *Phygadicus urticæ* (Fab.), *Nysius thymi* (Wolff), *Henestaris laticeps* (Curt.), *Chilacis typhæ* (Perr.), *Ischnorhynchus resedæ* (Panz.), *Cymus claviculus* (Fall.), pl. 8. figs. 1–8.

Plinthisus. Fieber (Wien. ent. Mon. Bd. viii. pp. 213–214) divides this genus into two subgenera: *Plinthisomus*, with *P. pusillus* as type, and *Plinthisus*, with *P. brevipennis*, &c. *P. brevipennis* is described, p. 215.

Plociomerus. Stål (Ann. Soc. Ent. Fr. v. p. 187) states that his *Plociomerus fœdus* differs from *Beosus minimus* (Guér.) only in wanting the fuscous ring on the femora and having the membrane abbreviated. *P. servillei* (Guér., Stål) = *Pamera bilobata* (Say); *P. vinulus* (Stål) = *Rhyp. parvulus* (Dall.) = *P. amyoti* (Guér.); *P. burmeisteri* (Guér.) = *P. maculatus* (A. & S.).

Pachymerus distinguendus (Flor) is described by Fieber, and referred to *Trapezonotus*. *L. c.* p. 216.

New genera :—

Engistus, Fieber, Wien. ent. Mon. viii. p. 67, taf. 1. fig. 2. Allied to *Henestaris* (Spin.); head transversely triangular; eyes sessile; rostrum reaching the end of the metasternum, its basal joint enclosed in a deep canal. Sp. *Engistus brucki*, sp. n. (Mink), Fieb. *l. c.* p. 68, from Pau.

Notochilus, Fieber, *l. c.* p. 68, taf. 1. fig. 3. Allied to *Scolopostethus* (Fieb.); anterior margin of pronotum thickened; basal joint of rostrum much shorter than head; basal joint of antennæ as long as the others; anterior femora strong, compressed, with a strong tooth in the middle, a row of small ones between this and the apex, and a large oblique tooth near the latter beneath. Type *Pachymerus ferrugineus* (Muls.).

Diomphalus, Fieber, *l. c.* p. 70, taf. 1. fig. 4. Allied to *Hyalochilus* (Fieb.); pronotum elongate-trapezoidal, with the sides waved and three keels on the surface; scutellum with a Y-shaped keel; antennæ short, second joint longest; eyes prominent, separated from the anterior angles of the prothorax; elytra without membrane; anterior femora toothed beneath. Sp. *D. hispidulus*, sp. n., Fieb. p. 71, from Sarepta.

Chilacis, Fieber, *l. c.* p. 72, taf. 1. fig. 5. Allied to *Holcocranum* (Fieb.); rostrum reaching the end of the mesosternum, its basal joint as long as the head; basal joint of antennæ not reaching apex of head. Sp. *Heterogaster typhæ* (Muls.).

Acanthocnemis, Signoret, Ann. Soc. Ent. Fr. v. p. 124. Anterior tibiæ strongly curved, finely crenulated beneath in the basal two-thirds, then dilated, and with several spines or teeth, three principal ones on the outside, and two at the apex inside; anterior femora much thickened, furrowed and spined beneath. Sp. *Rhyp. pallens* (Dall.), and *A. brachiidens*, sp. n., Sign. p. 124, from Algeria, Syria, and south of France.

Calyptonotus, Dougl. & Scott, Brit. Hem. p. 171 = *Rhyparochromus* (Fieb.), the latter name being applied to *Megalonotus* (Fieb.).

Hypnophilus, Dougl. & Scott, *l. c.* p. 208 (= *Ischnocoris*, p., Fieb.). Antennæ with joints 3 and 4 nearly equal, shorter than 2. Sp. *Rhyp. micropterus* (Curt.) and *Pachym. hemipterus* (Schill.).

Stygnocoris, Dougl. & Scott, *l. c.* p. 213 = *Stygnus* (Fieb.), preoccupied in Arachnida.

New species :—

Lygæus augur, Stål, Ann. Soc. Ent. Fr. v. p. 187, from Moreton Bay; *L.*

bisbipunctatus, Costa, Ann. Mus. Zool. Nap. ii. p. 106, from Piedmont; *L. amboinensis*, Mayr, Verh. zool.-bot. Ges. in Wien, xv. p. 435.

Atractophora longicornis, Stål, *l. c.* p. 188, from Mysol.

Canocoris nicobarensis, Mayr, *l. c.* p. 436, from Sambelong.

Plociomerus piratoides, Costa, *l. c.* p. 78, origin unknown.

Ophthalmicus albovittatus, Costa, *l. c.* p. 99, from Parma; *O. genei*, Costa, *l. c.* p. 107, from Sardinia.

Plinthisus minutissimus (Mink), Fieber, *l. c.* p. 213, from the south of France, and *P. convexus*, Fieb. *l. c.* p. 214, from Sarepta.

Trapezonotus distinctus, Fieb. *l. c.* p. 215, from England.

Beosus douglasi, Fieb. *l. c.* p. 217, from Corsica.

Microplax limbatus, Fieb. *l. c.* p. 322, from Asia Minor and Vienna.

Scolopostethus adjunctus, Dougl. & Scott, *l. c.* p. 183, pl. 6. fig. 9.

Pterotmetus antennatus, Signoret, Ann. Soc. Ent. Fr. 4e sér. tome v. p. 122, from the south of France and Syria.

Ischnocoris flavipes, Sign. *l. c.* p. 123, south of France and Algeria.

Macrodema nigra, Sign. *l. c.* p. 123, from Paris-Bourray.

Anthocoridæ.

The following species referred to this group are figured by Douglas & Scott, Brit. Hemiptera, i.:—*Myrmedonia coleoptrata* (Fall.), *Zygonotus elegantulus* (Bär), *Z. pselaphiformis* (Curt.), *Tetraphleps vittatus* (Fieb.), *Temnostethus lucorum* (Fall.), *Anthocoris nemorum* (Linn.), pl. 16. figs. 1–6; *Lyctocoris domesticus* (Hahn), *Piezostethus galactinus* (Fieb.), *Triphleps minutus* (Linn.), *Brachysteles pilicornis* (Muls.) (also in pl. 21. fig. 4), *Cardiastethus testaceus* (Muls.), *Xylocoris ater* (L. Duf.), *Dipsocoris alienum* (H.-Sch.), pl. 17. figs. 1–6 & 8; *Ceratocombus muscorum* (Fall.), pl. 21. fig. 5.

Scoloposcelis, g. n., Fieber, Wien. ent. Mon. Bd. viii. p. 66, taf. 1. fig. 1. Allied to *Xylocoris*; anterior femora with eight or nine teeth on the inner edge, and four larger ones on the outer; rostrum reaching the middle of the mesosternum, with its first joint about two-thirds length of second. Type *Xylocoris crassipes* (Flor), *l. c.* p. 66.

Anthocoris sarothamni, Dougl. & Scott, Brit. Hem. i. p. 497.

Cæcigenia.

Pyrrhocoris apterus (Linn.) figured by Douglas & Scott, i. pl. 6. fig. 3.

Dyndimus tricolor, Mayr, Verh. zool.-bot. Ges. in Wien, xv. p. 436, from Amboyna.

Theraneis ferruginea, Mayr, *l. c.* p. 436, from Brazil.

Astacops plagiata, Stål, Ann. Soc. Ent. Fr. v. p. 186, from Mysol; *A. degeeri*, Stål, p. 187, from North Australia; and *A. fieberi*, Stål, ibid., from Waigiou.

Capsina.

The following species of this group are figured by Douglas & Scott (*l. c.*):—*Bryocoris pteridis* (Fall.), *Monalocoris filicis* (Linn.), *Pithanus märkeli* (H.-Sch.), *Miris lævigatus* (Linn.), *Acetropis seticulosa* (Fieb.), *Lopomorphus fer-*

rugatus (Fall.), *Miridius quadrivirgatus* (Costa), *Phytocoris tiliæ* (Fab.), pl. 10. figs. 1–8; *Deræocoris fulvo-maculatus* (De G.), *Pantilius tunicatus* (Fab.), *Litosoma nassatum* (Fab.), *Ætorhinus angulatus* (Fall.), *Sphyracephalus ambulans* (Fall.), *Byrsoptera caricis* (Fall.), *Phylus melanocephalus* (Linn.), *Camaronotus cinnamopterus* (Kirschb.), pl. 11. figs. 1–8; *Globiceps flavonotatus* (H.-Sch.), *Systellonotus triguttatus* (Linn.), *Cyllocoris histrionicus* (Linn.), *Idolocoris errans* (Wolff) and *pallicornis* (Fieb.), *Macrolophus nubilus* (H.-Sch.), *Malacocoris chlorizans* (Panz.), *Anoterops setulosus* (Mey.), *Macrocoleus molliculus* (Fall.), pl. 12. figs. 1–10; *Oncotylus decolor* (Fall.), *Hoplomachus thunbergii* (Germ.), *Conostethus roseus* (Fall.), *Plagiognathus arbustorum* (Fab.), *Sthenarus rotermundi* (Scholtz), *Psallus varians* (H.-Sch.), *Apocremnus quercus* (Kirschb.), *Neocoris bohemanni* (Fall.), pl. 13. figs. 2–9; *Agalliastes pulicarius* (Fall.), *Orthocephalus saltator* (Hahn), *Heterocordylus leptocerus* (Kirschb.), *Atractotomus magnicornis* (Fall.), *Heterotoma merioptera* (Scop.), *Eroticoris rufescens* (Burm.), *Rhopalotomus ater* (Linn.), *Capsus capillaris* (Fab.), *Systratiotus nigritus* (Fall.), pl. 14. figs. 1–9; *Charagochilus gyllenhalii* (Fall.), *Lygus pratensis* (Linn.), *Harpocera thoracica* (Fall.), *Liocoris tripustulatus* (Fab.), *Orthops pastinacæ* (Fall.), *Pœciloscytus unifasciatus* (Fab.), *Dichrooscytus rufipennis* (Fall.), *Camptobrochis punctulatus* (Fall.), pl. 15. figs. 1–4 and 8 & 9; *Halticocoris luteicollis* (Panz.), pl. 21. fig. 1; *Stiphrosoma leucocephala* (Linn.), pl. 21. fig. 2.

Agalliastes. Fieber describes *A. evanescens* (Boh.), *A. pulicarius* (Fall.), *A. kolenatii* (Flor), *A. nigritulus* (Zett.), and *A. modestus* (Mey.), with a new species (*A. meyeri*), as forming a peculiar group distinguished by a particular arrangement of colours. Wien. ent. Mon. Bd. viii. pp. 229–231.

Capsus oculatus (Kirschb.) is described by Fieber as a species of *Atractotomus*. *L. c.* p. 225.

Systellonotus triguttatus. Douglas describes the habits of this species, which he found at Weybridge in company with *Formica fusca*. Ent. M. Mag. ii. pp. 30–31.

New genera:—

Microsynamma, Fieber, *l. c.* p. 74, taf. 1. fig. 6. Allied to *Orthotylus*; second cell of membrane scarcely perceptible; rostrum reaching the end of the posterior coxæ, basal joint longer than the head. Sp. *Microsynamma scotti*, sp. n., Fieb. p. 75, from England.

Bothynotus, Fieber, *l. c.* p. 76, taf. 2. fig. 7. Allied to *Pachypterna* (Fieb.); head from above quadrangular; pronotum trapezoidal, with a transverse pit behind the swelled anterior margin; elytra densely hairy; rostrum reaching nearly to the end of the mesosternum. Sp. *Bothynotus minki*, sp. n., Fieb. p. 77, from Cassel.

Stethoconus, Fieber, *l. c.* p. 79, taf. 2. fig. 8. Allied to *Camptobrochys* (Fieb.); proxiphus conical, elevated; head transversely quadrangular; scutellum with a compressed tubercle. Sp. *Capsus mamillosus* (Flor), p. 80.

Exæretus, Fieber, *l. c.* p. 81, taf. 2. fig. 9. Allied to *Camptobrochys*; principal cell of wings with a recurrent vein; proxiphus triangular, very convex; scutellum convex, without a tubercle. Sp. *Camptotylus meyeri* (Frey), p. 81.

Tytthus, Fieber, *l. c.* p. 82, taf. 2. fig. 10. Allied to *Cyrtorhinus* (Fieb.);

prothorax without transverse ridges; proxiphus elongato-triangular, convex at apex; second joint of posterior tarsi shorter than third. Sp. *Capsus pygmæus* (Zett.), p. 83, and *Capsus geminus* (Flor), p. 84.

Dasyscytus, Fieber, *l. c.* p. 84, taf. 2. fig. 11. Allied to *Pachylops*; proxiphus triangular, quite flat. Sp. *Dasyscytus sordidus*, sp. n., Fieb. p. 85, from Malaga.

Lopomorphus, Dougl. & Scott, Brit. Hem. i. p. 293 = *Acetropis*, p., and *Leptopterna* (Fieb.).

Sphyracephalus, Dougl. & Scott, p. 348 = *Mecomma* and *Cyrtorhinus* (Fieb.).

Idolocoris, Dougl. & Scott, *l. c.* p. 374 = *Brachycerœa* and *Dicyphus* (Fieb.).

Neocoris, Dougl. & Scott, p. 423; type *Plagiognathus bohemanni* (Fieb.).

Systratiotus, Dougl. & Scott, *l. c.* p. 443 = *Polymerus* (Hahn, Fieb.).

Eroticoris, Dougl. & Scott, *l. c.* p. 471 = *Allodapus* (Fieb.), name preoccupied in Hymenoptera.

Halticocoris, Dougl. & Scott, *l. c.* p. 478 = *Halticus* (Hahn, Fieb.), the latter name suppressed on account of the Coleopterous genus *Haltica*.

Aspicelus, Costa, Ann. Mus. Zool. Nap. ii. p. 146. Antennæ very long, last joint longest; scutellum truncated and rounded behind, with a funnel-like spine from its centre; membrane with one cell; legs elongate, femora nodulose. Sp. *A. podagricus*, sp. n., Costa, p. 147, pl. 2. fig. 6, hab. —?

New species :—

Capsus halimocnemis, Becker, Bull. Soc. Nat. Mosc. xxxvii. pt. i. p. 485, on *Halimocnemis*; *C. pyrethri*, Beck. ibid., and *C. freyi*, Beck. ibid., on *Pyrethrum*; *C. artemisiæ*, Becker, *l. c.* p. 487, *C. desertus*, Beck. ibid., *C. volgensis*, Beck. *l. c.* p. 488: all from Sarepta.

Capsus apicalis, Signoret, Ann. Soc. Ent. Fr. v. p. 125, south of France.

Capsus miniatus, Parfitt, Ent. M. Mag. ii. p. 130, from Exeter.

Halticus intricatus, Fieber, *l. c.* p. 220, from South Germany.

Orthocephalus bivittatus, Fieber, *l. c.* p. 221, *O. rhyparopus*, Fieb. p. 222, and *O. freyi*, Fieb. p. 223, from Sarepta.

Atractotomus punctipes, Fieber, *l. c.* p. 224, from Sarepta; *A. pini* (Dougl. & Scott), Fieb. ibid., Dougl. & Scott, *l. c.* p. 436, from England.

Oncotylus pilosus, Dougl. & Scott, *l. c.* p. 395.

Oncotylus punctipennis, Fieber, *l. c.* p. 225, from Sarepta.

Tinicephalus obsoletus, Fieb. *l. c.* p. 226, and Dougl. & Scott, *l. c.* p. 391, pl. 13. fig. 1.

Criocoris tibialis, Fieber, *l. c.* p. 227, from the south of France.

Psallus fieberi (Dougl. & Scott, *l. c.* p. 420), Fieber, *l. c.* p. 227, from England.—*Psallus alni*, Dougl. & Scott, *l. c.* p. 414, and *P. fieberi*, Dougl. & Scott, p. 420.—*Psallus? fuscovenosus*, Fieb. *l. c.* p. 330, from Sarepta.

Agalliastes prasinus, Fieber, *l. c.* p. 228, and *A. tibialis*, Fieb. ibid., from Sarepta; *A. meyeri*, Fieb. *l. c.* p. 231, from Switzerland.

Teratocoris dorsalis, Fieb. *l. c.* p. 325, from Prague?

Homodemus angularis, Fieb. *l. c.* p. 325, from Mehadia and Amasia.

Calocoris nebulosus, Fieb. *l. c.* p. 326, from Lussin; *C. fornicatus*, Fieber.

p. 218, from England (= *Derœocoris*, Dougl. & Sc. p. 329); and *C. kolenatii*, Fieb. *l. c.* p. 219, from Moravia.

Phytocoris juniperi, Frey-Gessner, Mitth. Schw. ent. Ges. 1865, p. 302, from Switzerland.—*P. distinctus*, Dougl. & Scott, *l. c.* p. 302, and *P. dubius*, Dougl. & Scott, p. 305.—*P. incanus*, Fieb. *l. c.* p. 326, from Sarepta.

Allæonotus egregius, Fieb. *l. c.* p. 328, from South-east Europe.

Lopus bicolor, Fieb. *l. c.* p. 328, from Tauria.—*L. miles*, Dougl. & Scott, *l. c.* p. 476, pl. 15. fig. 7.

Stiphrosoma atrocærulea, Fieb. *l. c.* p. 329, from the south of Europe.

Orthotylus ochrotrichus, Fieb. *l. c.* p. 330, from England.

Macrotylus nigricornis, Fieb. *l. c.* p. 331, from South Europe.

Amblytylus affinis, Fieb. *l. c.* p. 332, Dougl. & Scott, *l. c.* p. 389, pl. 21. fig. 3, from North Germany and England.

Macrocoleus chrysotrichus, Fieb. *l. c.* p. 332, from South Russia; *M. pictus*, Fieb. *l. c.* p. 333, from South Europe.

Systellonotus thymi, Sign. *l. c.* p. 125, from Bourray.

Litocoris? annulicornis, Sign. *l. c.* p. 126, from the south of France.

Litosoma virescens, Dougl. & Scott, *l. c.* p. 339; *L. ochrotrichus* (Fieb. MS.), Dougl. & Scott, *l. c.* p. 342.

MEMBRANACEA.

The following species of this group are figured by Douglas & Scott (*l. c.*) :—*Zosmerus quadratus* (Fieb.), pl. 8. fig. 9; *Agramma læta* (Fall.), *Monanthia dumetorum* (H.-Sch.), *Derephysia foliacea* (Fall.), *Dictyonota crassicornis* (Fall.), *Campylostira brachycera* (Fieb.), *Orthostira cervina* (Germ.), *Aneurus lævis* (Fab.), *Aradus depressus* (Fab.), pl. 9. figs. 1–9; and *Acanthia lectularia* (Linn.), pl. 17. fig. 7.

Phymata spinosissima, sp. n., Mayr, Verh. zool.-bot. Ges. in Wien, xv. p. 442, from Brazil; *P. carneipes*, Mayr, ibid., from Brazil and Georgia.

Aradus. Signoret, in opposition to Fieber, regards *A. cinnamomeus* (Panz.) and *A. leptopterus* (H.-Sch.) as two distinct species, of which he describes the characters. Ann. Soc. Ent. Fr. v. pp. 119–120.

Aradus leucotomus, sp. n., Costo, *l. c.* p. 143, pl. 2. fig. 2, hab. —?.—*A. aterrimus*, sp. n., Fieber, Wien. ent. Mon. Bd. viii. p. 210, Dougl. & Scott, *l. c.* p. 274, from England.

Aradosyrtis, g. n., Costa, Ann. Mus. Zool. Nap. ii. p. 132. Allied to *Aradus*; body depressed; antennæ very short, rather stout, filiform; rostrum hardly reaching posterior margin of head; scutellum very large, covering nearly the whole of the elytra. Sp. *A. ghiliani*, sp. n., Costa, p. 133, pl. 1. fig. 6 (*nec* 5 *ut cit.*), from Italy.

Aradacanthia, g. n., Costa, *l. c.* p. 142. Allied to *Aradus*; depressed, subdiscoid; antennæ short, joints 1 and 2 subglobose, 3 and 4 elongate, the last slightly thickened; rostrum scarcely reaching prosternum; scutellum covering a great part of the abdomen. Sp. *A. multicalcarata*, sp. n., Costa, p. 142, pl. 2. fig. 3, origin not stated.

Stenopterus, g. n., Signoret, Ann. Soc. Ent. Fr. v. p. 120. Allied to *Aradus*; elytra forming a very short basal piece, from which springs a long narrow membrane, dilated at the extremity into a rounded lobe, and having

two longitudinal veins; wings absent. Sp. *S. perrisi*, sp. n., Sign. p. 120, from Algeria (Bône).

Zosmenus atriplicis, sp. n., Becker, Bull. Soc. Nat. Mosc. xxxvii. pt. 1, p. 488, from Sarepta.

Diconocoris, g. n., Mayr, Verh. zool.-bot. Ges. Wien, xv. p. 442. Head with four acute porrect spines and a median erect one; third joint of antennæ very long, slender; pronotum with a vesicle in front and a strong rounded cone on each side, a median keel continued to the apex of the process, which has a short keel on each side; elytra long, flat, truncate at apex. Sp. *D. javanus*, sp. n., Mayr, ibid.

Teleonemia, g. n., Costa, *l. c.* p. 144. Allied to *Monanthia* (*Tropidocheila*); body long and narrow; antennæ not clavate, last joint elongate; sides of the pronotum margined, not dilated, disk tricarinate. Sp. *T. funerea*, sp. n., Costa, p. 145, pl. 2. fig. 5, origin not stated.

Monanthia lunulata, sp. n., Mayr, *l. c.* p. 441, from Rio Janeiro; *M.* (*Gargaphia*) *tricolor*, Mayr, p. 442, from Venezuela.—*Monanthia* (*Monosteira*) *parvula*, sp. n., Sign. *l. c.* p. 117, from the south of France.

Monanthia humuli (Fieb.). Müller (Ent. M. Mag. ii. p. 118) calls attention to a statement of Menzel's that Bremi had observed the young larva to be a miner.

Dyctionota (sic) *aubei*, sp. n., Sign. *l. c.* p. 118, from the south of France.

Tingis cyathicollis, sp. n., Costa, *l. c.* p. 146, pl. 2. fig. 4, hab. —?

Orthostira. Fieber describes *O. cervina* (Germ.) and states that his *O. platychila* is synonymous with it. Wien. ent. Mon. Bd. viii. p. 212.

Orthostira concinna, sp. n., Fieber, *l. c.* p. 211, from England.

Acanthia valdiviana, sp. n., Philippi, Stett. ent. Zeit. 1865, p. 63, from Valdivia, under bark.

Reduvina.

The following species of this group are figured by Douglas and Scott, Brit. Hemiptera, i.:—*Ploiaria vagabunda* (Linn.), *Coranus subapterus* (De G.), *Reduvius personatus* (Linn.), *Pygolampis bifurcata* (Gmel.), *Nabis flavomarginatus* (Scholtz), and *Metastemma guttula* (Fab.), pl. 18. figs. 1–6.

New genera and species:—

Ptilocnemus sidnicus, Mayr, Verh. zool.-bot. Ges. in Wien, xv. p. 437, from Australia.

Ectomocoris, g. n., Mayr, *l. c.* p. 438. Allied to *Pirates*; posterior lobe of pronotum only two-fifths the length of the anterior, the latter with no longitudinal furrow; metasternum elevated between the posterior coxæ, excised for the reception of the short ventral keel. Sp. *E. colyratus*, sp. n., Mayr, ibid., of unknown origin.

Dieraotropis, g. n., Mayr, *l. c.* p. 438. Allied to *Pirates*; head with two divergent keels; joint 1 of antennæ very short, 2 very long, 3 shorter; ocelli on a large tubercle; joint 2 of rostrum twice as long as 1; transverse furrow of pronotum deep and broad; anterior femora much thickened, unarmed. Type *Pirates pictus* (H.-Sch.).

Sphinctomerus g. n., Mayr, *l. c.* p. 440. Allied to *Mendis* (Stål); head

ovate, subsemiglobose behind eyes, neck short; antennæ 7-jointed, basal joint subclavate, passing the apex of the head; basal joint of rostrum much longer than 2nd; scutellum with 2 distant spines; metasternum elevated; apical joint of posterior tarsi as long as the others together. Sp. *S. pulcher*, sp. n., Mayr, p. 441, from Java.

Metastemma serripes, Costa, *l. c.* p. 134, pl. 1. fig. 5. (*nec* 6 *ut cit.*), from Italy.

Loricerus axillaris, Costa, *l. c.* p. 79, from Japan.

Hammatocerus mixtus, Costa, *l. c.* p. 80, from Cayenne?—*Hammatocerus minutus*, Mayr, *l. c.* p. 439, of unknown origin.

Pirates albomaculatus, Mayr, *l. c.* p. 438, from Brazil.

Spiniger miniaceus, *brunneus*, and *flavipennis*, Mayr, *l. c.* p. 439, from Brazil.

Larymna colorata, Mayr, *l. c.* p. 439, from Java.

Harpactor cingulatus, Fieber, Wien. ent. Mon. Bd. viii. p. 321, from Sicily.

Plæogaster? flavopustulatus, Costa, *l. c.* p. 139, pl. 1. fig. 8, origin not stated. Costa considers that this may form a new genus, for which he proposes the name of *Gastroplæus*, *l. c.* p. 140.

Sycanus tricolor, Mayr, *l. c.* p. 436, from Java.

Phemius rubripennis, Mayr, *l. c.* p. 437, from Manilla.

Debilia longicornis, Mayr, *l. c.* p. 441, from Surinam; and *D. inermis*, Mayr, ibid., from Brazil.

Rihirbus dentipes, Mayr, *l. c.* p. 437, origin unknown.

Diplodus cognatus, Costa, *l. c.* p. 81, from Mexico.

Saccoderes trinotatus, Costa, *l. c.* p. 140, pl. 2. fig. 1, origin not stated.

Sphæridops inermis, Mayr, *l. c.* p. 438, from Brazil.

Sphinctocoris, g. n., Mayr, *l. c.* p. 440. Allied to *Cimbus*; head with a lamina between the antennæ, neck cylindrical; antennæ 8-jointed, joint 1 passing the apex of the head; basal joint of rostrum much longer than the other two together. Sp. *S. corallinus*, sp. n., Mayr, ibid., Sunda Islands.

Labidocoris, g. n., Mayr, *l. c.* p. 440. Allied to preceding genus; a lamelliform tooth outside the base of each antenna; joint 1 of rostrum about equal to 2. Sp. *L. elegans*, sp. n., Mayr, ibid., of unknown origin.

Centromelus stâli Mayr, *l. c.* p. 437, from Brazil.

Petalochirus gazella, Costa, *l. c.* p. 141, origin not stated.

Lisarda javana, Mayr, *l. c.* p. 437, from Java.

Saldidæ.

Salda pulchella (Curt.) figured by Douglas & Scott, pl. 17. fig. 9.

Salda gamma, sp. n., Fieber, Wien. ent. Mon. Bd. viii. p. 212, from the south of France.

Leptopus dufourii, sp. n., Signoret, Ann. Soc. Ent. Fr. 4e sér. tome v. p. 121, from the south of France.—*L. sardous*, sp. n., Costa, Ann. Mus. Zool. Nap. ii. p. 106, from Sardinia.

Hydrometridæ.

The following species of this group are figured by Douglas & Scott, Brit. Hemiptera, i.:—*Hydrometra gibbifera* (Schum.), *Velia currens* (Fab.),

Microvelia pygmæa (L. Duf.), *Hebrus pusillus* (Westw.), pl. 19. figs. 1–4, and *Limnobates stagnorum* (Linn.), fig. 7.

Limnometra, g. n., Mayr, Verh. zool.-bot. Ges. in Wien, xv. p. 443. Allied to *Hydrometra*; antennæ very slender, as long as the body; posterior femora very long, intermediate bidenticulate at apex; first joint of anterior tarsi at least as long as second. Sp. *L. femorata*, *nigripennis*, Mayr, ibid., and *inermis*, Mayr, p. 444, from the Philippines; *L. pulchra*, Mayr, p. 443, and *ciliata*, Mayr, *l. c.* p. 444, from Java; and *L. minuta*, Mayr, ibid., from Sambelong.

Brachymetra, g. n., Mayr, *l. c.* p. 445. Allied to *Halobates*; posterior process of prothorax rounded; prothorax neither keeled nor constricted, with no tubercles in front. Type *H. albinervus* (A. & S.).

Metrocoris, g. n., Mayr, *l. c.* p. 445. Allied to preceding genus; head very obtuse in front; process of pronotum acute; basal joint of antennæ very long, apical one very short; basal joint of anterior tarsi very short. Sp. *M. brevis*, sp. n. Mayr, ibid., from Ceylon.

Rhagovelia, g. n., Mayr, *l. c.* p. 445. Allied to *Velia*; head truncate in front; eyes approximate; intermediate tarsi long, with a very minute basal joint, second and third joints long, cylindrical, third with a longitudinal fissure beneath, from which two very long claws arise. Sp. *Velia armata*, *collaris*, and *nigricans*, Burm.

Hydrometra pectoralis and *nitida*, sp. n., Mayr, *l. c.* p. 443, from Ceylon.

Cylindrostethus fieberi, sp. n., Mayr, *l. c.* p. 444, from Ceylon.

Hebrus fuscus, sp. n., Costa, Ann. Mus. Zool. Nap. ii. p. 125, from Naples.

Aphelochiridæ.

Aphelocheirus æstivalis (Westw.) is figured by Douglas & Scott, Brit. Hem. i. pl. 19. fig. 5.

Nepidæ.

Naucoris cimicoides is figured by Douglas & Scott, Brit. Hem. i. pl. 19. fig. 6.

Nepa cinerea and *Ranatra linearis* (Lin.) are figured by Douglas & Scott, Brit. Hem. i. pl. 20. figs. 1 & 2.

Ranatra chinensis, sp. n., Mayr, *l. c.* p. 446, from China; and *R.* (*Cercotmetus*) *parmata*, sp. n., Mayr, ibid., from Batavia.

Notonectidæ.

The following species of this group are figured by Douglas & Scott, Brit. Hemiptera, i.:—*Corixa geoffroyi* (Leach), pl. 20. fig. 5, & pl. 21. fig. 7, and *Sigara minutissima* (Linn.), pl. 20. fig. 6, and *Cymatia bonsdorffii* (Sahlb.), pl. 21. fig. 6, *Notonecta glauca* (Linn.), pl. 20. fig. 4, and *Plea minutissima* (Fab.), pl. 20. fig. 3, & pl. 21. fig. 8.

Corixa wollastoni, sp. n., Douglas & Scott, Brit. Hem. i. p. 603; *C. douglasi* (Fieb. MS.), Dougl. & Scott, *l. c.* p. 612.

Corisa coxalis, sp. n., Fieb. Wien. ent. Mon. Bd. viii. p. 207, from North Germany; *C. fussi*, Fieb. p. 208, from Siebenbürgen; and *C. rogenhoferi*, Fieb. ibid., from Austria.

Homoptera.

Marshall has continued his revision of the British species of Homoptera (Ent. M. Mag. vols. i. & ii.), the particulars of which will be given further on under the different families. The portions published in 1865 include the conclusion of the *Fulgoridæ*, the *Membracina*, and the *Cicadellina* as far as the commencement of the genus *Acocephalus*. This work is not yet completed.

Fieber reports on the number of European species of *Cicadæ* and *Fulgoridæ*, the existence of which he has ascertained. Sitzungsber. Wien. zool.-bot. Ges. 1865, pp. 43–44.

Stridulantia.

Hagen (Ent. M. Mag. i. p. 205) calls attention to the fact that *Cicada anglica* (Leach) is identical with *C. montana* (Scop.). *C. hæmatodes* (Linn.) is distinct from *C. hæmatodes* (Scop.); and as the latter has the priority, the Linnean species will require a new name.

Milde (Verh. zool.-bot. Ges. in Wien, xv. p. 961) records the occurrence of *Cicada argentata* (Oliv.) at Meran, and remarks upon its habits.

According to Stål (Ann. Soc. Ent. Fr. 4e sér. tome v. p. 188), *Cicada cerisyi* (Guér.) = *Tettigia orni* (Linn.).

Plautilla, g. n., Stål, Œfvers. Kongl. Vet.-Akad. Förh. 1865, p. 155. Allied to *Zammara*; head small, not half so wide as prothorax; sides of metanotum dilated; elytra widened beyond the middle, their ulnar veins contiguous towards base; wings with anal area very narrow, apical areolæ six; anterior femora thickened, with a tooth beneath near apex. *P. stalagmoptera*, sp. n., Stål, p. 155, from Quito.

Mogannia venustissima, sp. n., Stål, *l. c.* p. 154, East Indies; *M. funebris*, Stål, p. 155, Silhet; and *M. chinensis*, Stål, ibid., North China.

Fulgoridæ.

Marshall (Ent. M. Mag. vols. i. & ii.) has continued his description of the British species of this family, which are included by him under the genera *Delphax*, *Araeopus*, *Asiraca*, and *Issus*. Of *Delphax* he describes 17 species (*l. c.* pp. 198–201, 226–229, 251–253, and 272–275), paying particular attention to the brachypterous forms which are often neglected; of *Araeopus* (Spin.) 1 species (*A. crassicornis*, Fab.), *l. c.* ii. p. 31; of *Asiraca* 1 species (*A. clavicornis*, Fab.), *l. c.* ii. p. 32; and of *Issus* 1 species (*I. coleoptratus*, Fab.), *l. c.* ii. p. 33. Of the species of *Delphax* a tabular analysis is given (*l. c.* p. 199).

Tettigometra. Fieber (Verh. zool.-bot. Ges. in Wien, xv. pp. 561–572) tabulates the European species of this genus. The number of species of other authors described is 10; the author is unacquainted with the following:—*T. impressopunctata* (L. Duf.) and *T. umbrosa* (Germ.). The total number of species known to the author is 23.

Stål describes *Pochazia* (*Ricania*) *obscura* (Guér.), *l. c.* p. 160. The same author describes *Ricania marginata* (Montr. & Sign.) as a species of his genus *Armacia*. *L. c.* p. 164.

Phyllyphanta fimbriolata (Stål) = *Ricania marginella* (Guér.), according to Stål, *l. c.* p. 159.

The luminosity of *Fulgora laternaria* is affirmed, from personal observation, by W. T. Evans of Belize. Proc. Ent. Soc. 1865, p. 102. See also Smith, Entomologist, ii. p. 303.

Hagen (Ent. M. Mag. i. p. 250) suggests that the discrepancy between the statements of observers as to the luminosity of the *Fulgoræ* may be due to the possession of that property by only one sex of the insects, or to its being manifested only at a certain season.

New genera and species:—

Hyalesthes, g. n., Signoret, Ann. Soc. Ent. Fr. 4e sér. tome v. p. 128. Allied to *Cixius*; vertex longer than broad; keels of scutellum scarcely visible; nine terminal cells in elytra. Sp. *H. obsoletus*, Sign. *l. c.* p. 128=*Hyalesthes* (Amyot), from the south of France.

Lystra cerifera mexicana, Castillo, Bol. Soc. Geogr. Mexico, 1865, with a coloured plate.

Cixius obscurus and *C. distinctus*, Signoret, *l. c.* p. 127, South of France.

Delphax flavipes, Sign. *l. c.* p. 129, Paris; *D. quadrimaculatus*, Sign., *l. c.* p. 130, La Teste and St. Valéry; and *D. lugubris*, Sign. ibid., Meudon.

Issus ergenensis and *I. montanus*, Becker, Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 482; and *I. arundinus*, Becker, *l. c.* p. 489, from Sarepta.

Histeropteron (sic) *limbatum*, Costa, Ann. Mus. Zool. Nap. ii. p. 137, from Palermo.

Flata desertorum and *F. artemisiæ*, Becker, *l. c.* p. 489, from Sarepta.

Flatoides principalis, Stål, Œfvers. Kongl. Vet.-Akad. Förh. 1865, p. 159, from Malacca.

Pochazia sinuata, Stål, *l. c.* p. 160, from Malacca; and *C. funebris*, Stal, *l. c.* p. 161, from Bourou.

Ricania. Stål describes the following new species:—*R. discoptera*, *l. c.* p. 161, from Java; *R. limitaris*, ibid., and *R. pulverosa*, p. 162, from Cambodia; *R. albo-signata*, p. 161, and *R. margine-notata*, p. 163, from Mysol; *R. episcopalis*, p. 162, from North China and Formosa; *R. plebeja*, ibid., from Siam; *R. subfusca*, ibid., from Borneo; *R. tristicula*, p. 163, from Fiji; and *R. hedenborgi*, p. 162 (from Rhodes? Nubia?).

Armacia tagalica, Stål, *l. c.* p. 163, from Manilla.

Miriza osmyloides, from Borneo; *M. sororcula*, from Cambodia; and *M. hilaris*, from Mysol. Stål, *l. c.* p. 164.

Cromna elegans, Costa, *l. c.* p. 149, pl. 1. fig. 10, from Australia?

Tettigometra. Fieber (*l. c.*) describes the following new European species:—*T. fusca*, p. 563, from Belgrade and Austria; *T. depressa*, ibid., from Sarepta; *T. brachynota*, p. 565, from Switzerland; *T. peliotænia*, ibid., from Sarepta and Trieste; *T. helferi*, p. 566, from the Euphrates; *T. vitellina*, ibid., from South Russia; *T. varia*, p. 567, from Sarepta; *T. frontalis*, ibid., from Germany, Switzerland, and Spain; *T. brachycephala*, ibid., from Sicily; *T. hispidula*, p. 568 (=*hexaspina*, Kol.), *T. macrocephala*, p. 569, from Germany and Switzerland; *T. picta* (Mey.-Dür), p. 570, from Spain; *T. griseola* (Mey.-Dür), ibid., from Sarepta, Hyères, &c.; *T. sordida*, p. 571, from Dalmatia; *T. fasciata* (Mey.-Dür), ibid., from Granada; and *T. costulata*, p. 572, from the Euphrates and Spain.

MEMBRACIDÆ.

Marshall describes the two British species of this family, *Centrotus cornutus* (Linn.) and *Oxyrrhachis genistæ* (Fab.). Ent. M. Mag. ii. p. 34.

Machærota pugionata, sp. n., Stål, Œfvers. Kongl. Vet.-Akad. Förh. 1865, p. 154, from North Australia.

Sphongophorus livexillifer, sp. n., Costa, Ann. Mus. Zool. Nap. ii. p. 150, pl. 1. fig. 11 (pronotum), origin not stated.

CICADELLINA.

MARSHALL has commenced the revision of the British species of this family (Ent. M. Mag. ii.). He characterizes the genera *Ledra*, with 1 species (*l. c.* p. 54); *Tricephora*, 1 species (ibid.); *Ptyelus*, 3 species (*l. c.* pp. 55–57); *Aphrophora*, 2 species (*l. c.* pp. 57–58); *Ulopa*, 1 species (*l. c.* pp. 58–59); *Megophthalmus*, 1 species (*l. c.* pp. 82–83); *Tettigonia*, 1 species (*l. c.* p. 83); *Euacanthus*, 2 species (*l. c.* pp. 84–85); *Macropsis*, 1 species (*l. c.* p. 102); *Idiocerus*, 5 species (*l. c.* pp. 102–105); and *Pediopsis*, 4 species (*l. c.* pp. 124–126). Of the genus *Acocephalus* only 2 species are described, in the December number of the Magazine (pp. 145–146).

Eurymelides.

Eurymela generosa, sp. n., Stål, Œfvers. Kongl. Vet.-Akad. Förh. 1865, p. 156, from Moreton Bay; and *E. rubro-fasciata*, Stål, ibid., from Australia.

Cercopides.

Cercopis. Stål (*l. c.*) gives descriptions of the following known species and their varieties:—*C. d'urvillei* (Le P. & S.), p. 145; *C. xanthorhina* (Boisd.), p. 146; and *C. discolor* (Boisd.), incl. var. *C. boisduvallii* (Le Guil.), p. 148.

Cercopis (*Tomaspis*) *dorsimacula* (Walk.)= *C. stellata* (Guér.), according to Stål, *l. c.* p. 150.

New genera and species:—

Considia, g. n., Stål, *l. c.* p. 152. Allied to *Tomaspis*; oblong; head flat above, forehead rather convex; ocelli about equidistant from each other and from the eyes; thorax deeply sinuated behind; scutellum longer than broad; posterior tibiæ bispinose. Sp. *C. oblonga*, sp. n., Stål, p. 152, from Java.

Callitettix, g. n., Stål, *l. c.* p. 152. Allied to *Considia*; elongate; thorax with the antero-lateral margins straight, longer than postero-lateral; elytra gradually enlarged at apex; legs long, posterior tibiæ unispinose. Sp. *C. melanochra*, sp. n., Stål, p. 152, and *C. producta*, Stål, p. 153, from the East Indies; and *C. capitata*, Stål, p. 153, from Ceylon.

Cercopis. Stål (*l. c.*) describes the following new species of this genus:—*C. circe*, p. 145, from Celebes; *C. amabilis*, p. 146, from New Guinea; *C. daphne*, p. 147, from Manilla; *C. inclusa*, ibid., from Ceylon; *C. malaya*, ibid., from Malacca; *C. undata*, p. 148, from the Himalayas; *C. submaculata*, p. 149, from Java; *C. rotundata*, ibid., from Laos; and *C. lydia*, ibid., from the East Indies.

Cercopis ducens, Stål, Ann. Soc. Ent. Fr. v. p. 188, from the East Indies.

Tomaspis. Stål describes as new species:—*T. cynthia*, Œfvers. Kongl. Vet.-Akad. Förh. 1865, p. 150, from Bourou; *T. nympha*, ibid., from Malacca; *T. circumducta*, ibid., from the East Indies; *T. semele*, p. 151, from Malacca and Laos; *T. costalis*, ibid., from Malacca; *T. signifera*, ibid., from the East Indies; *T. pudens*, ibid., from Silhet; *T. larinia*, p. 152, East Indies.

Lepyronia ampla, Stål, *l. c.* p. 153, from Borneo.

Ptyelus malayus, Stål, *l. c.* p. 153, from Malacca; *P. nitidus*, Stål, ibid., from New Guinea; and *P. multilineatus*, Stål, p. 154, from North China.

Jassides.

Walsh (Proc. Bost. Soc. Nat. Hist. ix. p. 315), in a paper reprinted from the 'Prairie Farmer' of Sept. 6, 1862, describes twelve new species of the group representing the old genus *Typhlocyba* (Germ.), which he proposes to divide into genera as in the following table:—

I. Elytra bordered by a vein on the inner terminal margin. *Typhlocyba.*

II. Elytra not bordered.

A. Outer apical cell of elytra triangular.

1. Terminal cells of wings bordered ..... *Empoasca* (g. n.).
2. Terminal cells of wings not bordered..... *Empoa* (Fitch).

B. Outer apical cell of elytra quadrangular.

1. Terminal cells of wings bordered ..... *Chloroneura* (g. n.).
2. Terminal cells of wings not bordered..... *Erythroneura* (Fitch).

The elytra and wings of *Typhlocyba* (without discoidal cell), *Empoasca*, and *Erythroneura* are represented in outline on p. 314. figs. 4–6. Fig. 7 (*l. c.*) shows the ovipositor of *Erythroneura*.

Frauenfeld (Verh. zool.-bot. Ges. in Wien, xv. pp. 900–902) calls attention to a singular example of parasitism observed in a species of *Typhlocyba*, in which the parasite attaches itself to the first abdominal segment, from which it hangs like a small free sac.

Walsh has noticed the habits of *Proconia undata* (Fab.) and *Erythroneura tricincta* (Fitch). See Proc. Bost. Soc. Nat. Hist. ix. p. 313.

New genera and species:—

Tartessus, g. n., Stål, Œfvers. Kongl. Vet.-Akad. Förh. 1865, p. 156. Allied to *Bythoscopus*; oblong; head very broad, seen from above obtusely rotundato-angulate and very short, apical margin obtuse, bearing the ocelli close to the large, obliquely transverse eyes. Known sp. *Bythoscopus malayus* (Stål); n. sp. *T. fieberi*, Stål, p. 156, from Mysol.

Rhothidus, g. n., Stål, *l. c.* p. 157. Allied to *Bythoscopus*; elongate, narrowed behind; head rounded or triangularly produced, forehead occupying one-third the breadth of the face; ocelli remote from the eyes; elytra scarcely overlapping at apex. Sp. *R. navicula*, Stål, p. 157, and *R. convivus*, Stål, ibid., from Moreton Bay; *R. leucostictus*, Stål, ibid., from North Australia; and *R. breviceps*, Stål, ibid., from Adelaide.

Abelterus, g. n., Stål, *l. c.* p. 157. Allied to *Bythoscopus*; elongate, convex; head obtuse, face horizontal; ocelli on the vertex, twice as far from each other as from the eyes; elytra overlapping, with four apical cells. Sp. *A. incarnatus*, Stål, p. 158, from North Australia.

Petalocephala (*Tituria*) *expansa*, Stål, *l. c.* p. 158, and *P.* (*T.*) *nigromarginata*, Stål, ibid., from Malacca; *P.* (*Rubria*) *sanguinosa*, Stål, ibid., and *P.* (*R.*) *carnosa*, Stl, p. 159, from North Australia.

Cœlidia tiarata, Stål, *l. c.* p. 159, from Mysol.

Typhlocyba. Walsh (Proc. Bost. Soc. Nat. Hist. ix. p. 315) gives descriptions, reprinted from the 'Prairie Farmer' of 1862, of *T. aurea*, *pallidula*, and *binotata*, all from Illinois.

Empoasca (g. n.) *viridescens*, *E. consobrina* (var. of preceding), and *E. obtusa*, Walsh (Prairie Farmer, 1862), *l. c.* p. 316.

Empoa albicans, Walsh (ibid.), *l. c.* p. 316.

Chloroneura (g. n.) *abnormis*, Walsh (ibid.), *l. c.* p. 316, *C. malifica*, Walsh (ibid.), pl. 317. figs. 1 & 2 (p. 314), and *C. maligna*, Walsh (ibid.), pl. 317. fig. 3 (p. 314).

Erythroneura australis, Walsh (ibid.), *E. zizzac*, Walsh (ibid.), *l. c.* p. 317, and *E. octonotata*, Walsh (ibid.), p. 318.

Jassus artemisiæ, Becker, Bull. Soc. Nat. Mosc. xxxvii. pt. 1. p. 489, and *J. tamaricis*, Beck. p. 490, from Sarepta.

Aphididæ.

The general history and mode of life of the insects of this family are described by Taschenberg (Wirbell. Thiere, &c. pp. 198–205), who also specially describes the following injurious species:—*Aphis papaveris* (Fab.), *l. c.* pp. 205–207, pl. 7. figs. 7–9; *A. brassicæ* (Linn.), *l. c.* p. 207; *A. avenæ* (Fab.), and *A. cerealis* (Kalt.), *l. c.* p. 208; *A. ulmariæ* (Schr.), *l. c.* p. 209; *A. viciæ* (Kalt.), *l. c.* p. 210; *A. humuli* (Schr.), *l. c.* p. 211; *A. solani* (Kalt.), *l. c.* p. 234.

Bold (Nat. Hist. Trans. North. & Durh. i. pp. 124–126) notices the occurrence of great numbers of *Aphides* in Northumberland in 1864, and describes the mischief done by them to various cultivated plants, such as turnips (*Aphis rapæ*, Curt.), corn of various kinds (*Siphonophora cerealis*, Kalt.), clover (*S. pisi*, Kalt.), beans (*A. fabæ*), and cabbages (*A. brassicæ*).

Balbiani maintains that the viviparous *Aphides* are hermaphrodite, and states that he has discovered the reproductive organs of both sexes. Bull. Soc. Ent. Fr. 1865, p. xlv.

Haswell records the occurrence of immense swarms of *Aphides* in various parts of Scotland in September 1865. Ent. M. Mag. ii. p. 142.

Coccidæ.

Coccus (*hesperidum*?) is said by Naysser to have been of late very injurious to the orange-trees between Cannes and Antibes. He remarks on its mode of occurrence, and recommends for its destruction nocturnal fumigations by burning damp straw or seaweed. Bull. Soc. Ent. Fr. 1865, pp. lv–lvi.

Ralph gives some account (Trans. Roy. Soc. Victoria, vol. vi. pp. 10–13) of the natural history of the *Coccus* of the orange.

Fauvel states that *Saissetia coffeæ* (Deplanche) is identical with *Lecanium coffeæ*. Bull. Soc. Linn. Norm. tome ix. p. 127.

Delaharpe notices the occurrence of a *Coccus* on leaves of *Chamærops humilis*. Bull. Soc. Vaudoise des Sci. Nat. tome viii. pp. 25–26.

J. W. Dunning communicated to the Entomological Society of London a translation of Dr. Icery's memoir on the 'Pou à poche blanche' of the Mauritius. (Proc. Ent. Soc. 1864, pp. 51–55.)

ANOPLURA.

When Burmeister published Nitzsch's drawings of the mouth in the Lice, Erichson declared them to be erroneous, and described the mouth as possessing mandibles and palpi. Simon adopted this view, as does Landois (Zeitschr. für wiss. Zool. xiv.), who explains the supposed occurrence of phthiriasis by representing the Lice as eating their way through the skin. In confirmation of his views, he cites some cases published by Gaulke. Upon these Schjödte remarks (Naturh. Tidsskr. 3rd ser. vol. iii. p. 48), and shows that they really prove nothing, not even that the Lice had anything to do with the diseases manifested in the cases referred to. Schjödte then discusses the descriptions of the mouth in the Lice given by Erichson, Simon, and Landois, and points out the discrepancies and the incompatibility of the structure described in them with what we know of the constitution of the mouth of an insect. The true structure as described by Schjödte is as follows :—

The lower lip, which is capable of being retracted within the head, is of a tubular form, and has numerous small hooks surrounding its margin, which are everted and recurved when the lip (haustellum) is fully protruded. From this haustellum the delicate setiform mandibles and maxillæ (the former said to be united by a fine membrane, which forms a closed tube) can be pushed forth to a considerable length, so that, as Schjödte indicates, the mouth is formed strictly on the type of the Rhynchota. The hooks at the extremity of the protruded haustellum enable it to cling to the orifice of one of the pores of the skin, into which the slender tube, with the mandibles and maxillæ, is then pushed, and the blood constituting the food of the insect is sucked up through it. The author finally explains how the erroneous statements of most previous authors have arisen from their mode of examining this mechanism, of the nature of which, however, Swammerdam seems to have been well aware.

Hæmatopinus. Simonds (Journ. Agric. Soc. ser. 2. vol. i.) describes the habits of *H. equi*, its effects upon the health of the horse, and the mode of treatment for its removal, *l. c.* pp. 60–62, and gives the same details as to *H. suis*, *l. c.* pp. 66–68. He also refers to *H. vituli*, *l. c.* p. 65, and to the occurrence of *Hæmatopini* on the dog and cat, *l. c.* p. 68.

A list of parasites of this family, apparently observed in Holland, is given in the Tijdschr. voor Entom. 1865, p. 39. It includes two species of *Pediculus* and six of *Hæmatopinus*, part of the latter from exotic mammals. *Phthirius pubis* is omitted; does it not occur in Holland?

ANNELIDA

BY

E. PERCEVAL WRIGHT, M.A., M.D., F.L.S.

AGASSIZ, A. On Alternate Generation in the Annelida, and the Embryology of *Autolytus cornutus*. Abstracted from Journ. Bost. Soc. Nat. Hist. viii. p. 392, in Ann. & Mag. Nat. Hist. 1864, April*, p. 343.

BAIRD, W. On new Tubicolous Annelids in the collection of the British Museum. Part 2. Journ. Linn. Soc. vol. viii. Nos. 31 & 32, Dec. 5, 1865, pp. 157–160, pl. 5.

——. Contributions towards a Monograph of the Species of Annelides belonging to the *Aphroditacea*, containing a List of the known Species, and a Description of some new Species contained in the British Museum. *L. c.* pp. 172–202.

BAUDELOT, E. Observations sur la structure du système nerveux de la *Clepsine*. Ann. des Scien. Nat. 5e sér. Zool. tome iii. 1865, pp. 127–136, pl. 2. Abstract in Compt. Rend. Nov. 1864, *vide* 'Record,' 1864. This abstract is translated in Ann. & Mag. Nat. Hist., 1865, xv. p. 78.

DORNER, H. Ueber die Gattung *Branchiobdella*, Odier. Zeitsch. für wiss. Zool. Bd. xv. pp. 464–493, Taf. 36 & 37.

EHLERS, E. Ueber die Bildung der Borsten und Ruderfortsätze bei den Borstenwürmern. Nachr. Gesellsch. Wissensch. Göttingen, 1865, Aug. 16, pp. 335–342.

FILIPPI, F. de. Viaggio in Persia, 1865, pp. 196 & 197. *Vide anteà*, p. 2.

Describes three new species of Leeches from Lake Goktscha.

GRUBE, A. E. Vorkommen eines Generationswechsels bei den Anneliden. Jahresber. der Schlesischen Gesellsch. Breslau, 1864, p. 57.

JOHNSTON, G. A Catalogue of the British Non-parasitical Worms in the collection of the British Museum. London, 1865, 8vo, pp. 1–366, pls. 1–20.

* An abstract of this paper will be found in Nat. Hist. Review, July 1865, p. 367. The paper itself is wrongly quoted in the 'Annals.' It will be found in the Boston Journal of Nat. History, vol. vii. no. 3. pp. 384–409, pls. 9, 10, 11.

The publication of this catalogue was delayed, owing to the lamented death of the author while it was still in the press. Dr. Baird has, however, prepared a supplement containing addenda, corrigenda, and a notice of additional species found since Dr. Johnston's death. We must content ourselves with simply mentioning the publication of this volume, which makes its appearance so many years after the death of its author, and which, however much it may be now out of date, must be consulted by all taking any interest in the subject of British Worms, especially the Annelids. The British non-parasitical worms are divided by Dr. Johnston into the following orders:—1. *Turbellaria*; 2. *Bdellomorpha*; 3. *Bdellidea*; 4. *Scoleces*; 5. *Gymnocopa*; and 6. *Annelida*. The various new genera and species for the first time described will be found mentioned under their respective orders and families; but we have not attempted to correct the synonymy or to refer the species to more recently described genera; to do so would be to rewrite the volume.

Jourdain, S. Recherches sur l'anatomie des Siponcles. Compt. Rend. tome lx. no. 20, 15 Mai 1865 (extrait), p. 1042.

These anatomical researches were made on *Sipunculus gigas*, De Quat., and *S. obscurus*, De Quat. In *S. obscurus* the circulatory system is composed of a flexuous reddish tube, which makes its way underneath the first unrolled portion of the alimentary canal; in *S. gigas* this tube is double. In both species it terminates posteriorly in a slightly swollen *cul de sac*; anteriorly it debouches into a circular sinus which encircles the pharynx and which communicates freely with the circlet of tentacles; its walls contain muscular fibre, and are consequently contractile: the interior is filled with a fluid containing numerous corpuscles, like those found in the fluid of the general cavity, but very much smaller in diameter. The circulation of this fluid is effected, not by the contractility of the vessels, but by many vibratile cilia placed either continuously or in bunches on the inner surface of the walls. Traces of a urinary system were also apparently met with.

Keferstein, W. Beiträge zur anatomischen und systematischen Kenntniss der Sipunculiden. Zeitschr. f. wiss. Zool. xv. Band, 1865, pp. 404–445, Taf. xxxi.–xxxiii., Nachricht. Gesellschaft Wissenschaften, Göttingen, March 4, 1865, pp. 189–209.

The anatomical details in this monograph are considered under the heads of Outer Skin, Muscular System, Alimentary Tract, Nervous System, Blood System, and Generative System. In the systematic part a list of the genera and species of the *Sipunculidæ* is given.

Kinberg, J. G. H. Annulata nova. Œfvers. af K. Vet.-Akad. Förh. Arg. 21, Stockholm, 1865, pp. 559–574.

Descriptions of some new genera and species of *Eunicea*.

Lankester, E. R. On the anatomy of the Earthworm (*Lumbricus terrestris*). Part 1. Quart. Journ. of Micr. Scien. Oct. 1864, pp. 258–268, pl. 7. Part 2: same Journal, Jan. 1865, pp. 7–18, pls. 2 & 3. Part 3: same Journal, April, 1865, pp. 99–116, pl. 6.

Leydig, F. Ueber die Annelidengattung *Æolosoma*. Reichert und Du Bois Raymond's Arch. für Anat. 1865, pp. 360–366, Taf. viii. B.

——. Ueber *Phreoryctes menkeanus*, Hoffm., nebst Bemerkungen über den Bau anderer Anneliden. Archiv für mikr. Anat. August 1865, pp. 249–294, taf. 16–18.

This paper is a most elaborate account of the habits, anatomy, and affinities of a genus of the natural family of the *Lumbricina*. Some account of their development is alone wanting to complete our knowledge of these worms. In treating of the tegumentary system, it is compared with that met with in *Lumbricus*, in *Sœnuris*, *Enchytræus*, *Nais*, and *Chætogaster*.

Lütken, Chr. En ny Vestindisk Sandorm *Arenicola* (*Pteroscolex*) *antillensis*, Ltk. Vidensk. Medd. fra den Naturhist. Foren. i Kjöbenhavn, 1864, pp. 120–122.

Malmgren, A. J. Nordiska Hafs-annulater. Œfvers af K. Vet-Akad. Förh. 1865. Part i. pp. 51–110, pls. viii.–xv. Part ii. pp. 181–192. Part iii. pp. 355–410, pls. xviii.–xxix.

In these important papers the author describes many new genera and species of *Polychæta* from the northern seas, which will all be referred to more fully under their respective families.

Mecznikow, Elis. Beiträge zur Kenntniss der *Chætopoda*. Zeitsch. f. wiss. Zool. xv. 1865, pp. 328–341, taf. 24 & 25.

Describes a new genus belonging to the *Hesionea*, and gives anatomical details of several genera. There is also appended some remarks on the Chætopod fauna of Heligoland.

Pagenstecher, H. A. Ueber den Blutegel in Rücksicht auf Bdellotomie. Verhand. des naturhist.-mediz. Verein. Heidelberg, Band iii. 1864, pp. 137–146.

Quatrefages, A. de. Mémoire sur la distribution géographique des Annélides. Nouv. Archives du Muséum, tom. i. April 20, 1865.

——. On the Geographical Distribution of the Annelida. Abstracted from 'Comptes Rendus,' tom. lix. no. 4, 25 Juillet 1864, in Ann. & Mag. Nat. Hist. Sept. 1864, pp. 239 & 240.

——. Notes sur la Classification des Annélides. Comptes Rendus, tom. lx. no. 13, 27 Mars 1865, pp. 5860–60. Ann. Sc. Nat. tom. iii. 1865, pp. 253–296.

SCHMIDT, OSCAR. Ueber den Bau und die systematische Stellung von *Aspidosiphon mülleri*, Diesing (*Lesinia farcimen*, Schmidt). Mittheil. naturwissen. Verein. für Steiermark. Heft iii. Graz, 1865, pp. 56–66, Taf. i.

SEMPER, CARL. Reisebericht (Fortsetzung). Zeitschr. f. wiss. Zool. Band xiv. 1864, pp. 416–426, Taf. xli.

Some anatomical details are given of several genera of *Sipunculoidæ*.

VAILLANT, L. Note sur un cas nouveau de reproduction par bourgeonnement, observé sur une Annélide de la rade de Suez. Comptes Rendus, tom. lx. no. 9, 27 Février 1865, p. 441; Ann. & Mag. Nat. Hist. April 1865, p. 358; Ann. Sci. Nat. tom. iii. 1865, pp. 243–250, pt. 3.

The annelid observed was found unattached in a cavity of a sponge, and apparently belongs to the Syllidæ. On the dorsal surface of, we presume, the cephalic segment, and on what the author calls the superior or dorsal lip, are found an immense number of buds, placed very close to each other, all over the surface; their points of insertion are arranged quite regularly in quincunces. In form these buds call to mind some of the lower Nemertoid or Planarian worms. They have a very contractile body, almost equalling the annelid itself in length, and are flattened and blunt at their free extremity, which presents two or four small black eye-like spots. The author combats the objections that these buds are simply parasites, by calling attention to the continuity of the tissues, and to their being only a peculiar form of eyed tentacles, and by referring to the fact that it is rare to find a single tentacle supporting several eye dots. The observation must stand on its own merits until further opportunities arise for investigating the subject.

ANNELIDA POLYCHÆTA.

M. QUATREFAGES (Ann. Sc. Nat. 1865, iii. p. 253) proposes the following arrangement of the *Annelida polychæta* :—

ANNELIDA.

Class ANNELIDA.
(2 Orders, 4 Suborders, 23 Families.)

Suborder I. E. ABERRANTES. — *Aphroditea. Palmyrea.*

Order I. Regions of the body similar.
A. ERRATICÆ.

Suborder II. E. PROPELÆ.

I. Segments dissimilar
- With elytra — *Eunicea.*
- No elytra
  - Buccal armature complex
    - Branchiæ — *Lumbrinerea.*
    - No branchiæ — *Amphinomea.*
  - No rotatory apparatus
    - Head of ordinary form
      - True branchiæ
        - Arborescent — *Nephthydea.*
        - Branchiæ somatic
          - No true tentacles — *Nerinea.*
          - True tentacles
            - Short — *Cirratulea.*
            - Cirriform
              - Elongated, filiform — *Chloræmea.*
              - Branchiæ cephalic — *Nereidea.*
      - No true branchiæ
        - Jaws, one pair; denticles
          - Proboscis not exsertile — *Syllidea.*
          - Pr. exsertile
            - Cirri simple — *Hesionea.*
            - Cirri lamellar — *Phyllodocea.*
        - Jaws seldom present, sometimes denticles, never both — *Glycerea.*
    - Head conical, composed of distinct segments — *Polyophthalmea.*

II. Segments similar or subsimilar
- A rotatory apparatus — *Chætopterea.*

Suborder III. S. ABERRANTES.

Segments of one or more regions very dissimilar to each other

Suborder IV. S. PROPELÆ.

Order II. Regions of the body dissimilar.
A. SEDENTARIÆ.

Segments of one or more regions always similar or subsimilar to each other.
- No setæ on feet — *Tomopteridea.*
- Setæ on all or almost all the feet
  - No branchiæ — *Clymenea.*
  - Branchiæ
    - Thoracic — *Arenicolea.*
    - Somatic or subdominal
      - Arborescent — *Ophelica.*
      - Cirriform or lacciniate
        - No tentacles
          - Rami indistinct — *Ariciea.*
          - Rami distinct — *Leucodorea.*
        - Tentacles
          - Prehensile cirri — *Hermellea.*
          - Operculum formed of setæ — *Prectinarea.*
      - Thoracic exclusively
        - No operculum — *Terebellea.*
        - Cephalic branchiæ — *Serpulea.*

Family 1. APHRODITEA (15 genera).

I. Elytra only dorsal.
  A. Elytra confined to a portion of the feet.
    a. No dorsal cirri ..... 1. *Pholoë.*
    b. Dorsal cirri.
      * Dorsal cirri alternating with the elytra.
        a. Jaws none or rudimentary.
          a. Hairs on the feet ..... 2. *Aphrodite.*
          b. No hairs on the feet.
            ** 3 antennæ ..... 3. *Hermione.*
            †† 2 antennæ ..... 4. *Milnesia.*
        β. Jaws corneous.
          a. 4 antennæ ..... 5. *Polyodontes.*
          b. 3 antennæ.
            ** Pseudobranchial tubercles ..... 6. *Acoëtes.*
            †† No pseubranchial tubercles.
              1. Elytra all along the body ..... 7. *Polynoë.*
              2. Elytra leaving the posterior part of the body naked ..... 8. *Lepidonotus.*
    c. 2 antennæ ..... 9. *Iphione.*
      † Dorsal cirri on all the feet.
        a. Elytra covering the whole body.
          a. 3 antennæ ..... 10. *Sthenelaïs.*
          b. 2 antennæ ..... 11. *Sigalion.*
          c. 1 antenna ..... 12. *Psammolyce.*
        β. Elytra leaving the posterior part naked . 13. *Hemilepidia.*
  B. Dorsal cirri on all the feet ..... 14. *Pelogenia.*
II. Elytra dorsal and abdominal ..... 15. *Gastrolepidia.*

Genera incertæ sedis 2: *Hermenia, Eumolphe.*

Family II. PALMYREA (4 genera).

I. Somites not numerous.
  A. Feet biramose.
    a. 1 antenna ..... 1. *Palmyra.*
    b. 3 antennæ ..... 2. *Chrysopetalon.*
  B. Feet uniramose ..... 3. *Paleanotus.*
II. Somites numerous ..... 4. *Bhawania.*

Family III. EUNICEA (4 genera).

I. Antennæ 5.
  A. Tentacles ..... 1. *Eunice.*
  B. No tentacles ..... 2. *Marphysa.*
II. Antennæ 7.
  A. Tentacles ..... 3. *Diopatra.*
  B. No tentacles ..... 4. *Onuphis.*

Family IV. LUMBRINEREA (8 genera).

I. Antennæ wanting.
  A. No dorsal cirrus ..... 1. *Lombrinereïs**.

* *Lumbriconereïs*, Blainville.

  B. With a dorsal cirrus ..... 2. *Notocirrus.*
II. Antenna single.
  A. No dorsal cirrus ..... 3. *Blainvillea.*
  B. With a dorsal cirrus ..... 4. *Nematonereïs.*
III. Antennæ 2 ..... 5. *Œnone.*
IV. Antennæ 3.
  A. Head free ..... 6. *Lysidice.*
  B. Head concealed ..... 7. *Aglaura.*
V. Antennæ 5 ..... 8. *Plioceras.*

Genus incertæ sedis: *Zygolobus.*

Family V. AMPHINOMEA (7 genera).

I. Feet biramose.
  A. With antennæ and tentacles.
    a. Branchiæ pinnatifid ..... 1. *Chloë.*
    b. Branchiæ arborescent ..... 2. *Amphinome.*
    c. Branchiæ cirriform ..... 3. *Linophera.*
  B. With one antenna ..... 4. *Euphrosyne.*
II. Feet uniramose.
  A. With antennæ and tentacles ..... 5. *Hipponoë.*
  B. Antennæ and tentacles wanting.
    a. Branchiæ in rows ..... 6. *Lophonota.*
    b. Branchiæ in groups ..... 7. *Didymobranchus.*

Genera incertæ sedis 2: *Aristenia, Cryptonotus.*

Family VI. NEPHTHYDEA (3 genera).

I. Head bearing antennæ.
  A. Antennæ 4 ..... 1. *Nephthys.*
  B. Antennæ 2 ..... 2. *Portelia.*
II. Antennæ wanting ..... 3. *Diplobranchus.*

Family VII. NERINEA (6 genera).

I. Feet biramose.
  A. Feet without cirri.
    a. No uncini ..... 1. *Nerine.*
    b. Uncini present ..... 2. *Uncinia.*
  B. Feeting bearing cirri.
    a. Inferior cirri only ..... 3. *Aonis.*
    b. Inferior and superior cirri.
      * No eyes ..... 4. *Malacocera.*
      † Eyes present ..... 5. *Colobranchus.*
II. Feet uniramose ..... 6. *Pygospio.*

Genera incertæ sedis 2: *Pygophyllum, Clytia.*

Family VIII. CIRRATULEA (6 genera).

I. Branchiæ on nearly all the somites.
  A. Branchiæ both pedal and dorsal.
    a. The two sorts of branchiæ appearing at the same time ..... 1. *Cirratulus.*
    b. Pedal branchiæ preceding the dorsal ..... 2. *Audouinia.*
  B. Pedal branchiæ only ..... 3. *Cirrinereïs.*

II. Branchiæ only on the first somites.
A. No tentacles ..... 4. *Dodecaceræa.*
B. One pair of tentacles ..... 5. *Heterocirrus.*
C. Three pairs of tentacles ..... 6. *Nagarauseta.*

Family IX. CHLORÆMEA (2 tribes, 5 genera).

I. Body covered with hairs (Tribe *Chloræmea prop.*) 1. *Chloræma.*
II. Body without hairs, or with very short hairs. (Tribe *Chloræmea nuda*).
A. Head protected by setæ.
a. All the feet biramose.
* Head very distinct ..... 2. *Siphostomum.*
† Head indistinct ..... 3. *Pherusa.*
b. Only the first feet biramose ..... 4. *Lophiocephala.*
B. Head entirely uncovered ..... 5. *Brada.*

GENERA INCERTÆ SEDIS 4: *Spinther, Flemingia, Stylaroïdes, Tecturella.*

Family X. NEREIDEA (2 tribes, 4 genera).

I. Body forming one region (Tribe *Nereïdea prop.*).
A. Feet uniramose ..... 1. *Lycastis.*
B. Feet biramose ..... 2. *Nereïs.*
II. Body forming two regions (Tribe *Heteronereïdea*).
A. All the setæ like those of *Nereïs* ..... 3. *Nereïlepas.*
B. Part or the whole of the setæ remiform ..... 4. *Heteronereïs.*

GENERA INCERTÆ SEDIS 2: *Micronereïs, Zothea.*

Family XI. SYLLIDEA (31 genera).

I. Feet moveable.
A. With dorsal and abdominal cirri.
a. No tubercles on the body.
* Gizzard armed.
α. 4 antennæ.
a. 12 tentacles ..... 1. *Syllidia.*
b. No tentacles ..... 2. *Prionognathus.*
β. 3 antennæ ..... 3. *Gnathosyllis.*
* Gizzard unarmed.
α. Head and buccal somite distinct.
a. With frontal lobes.
** Antennæ 5 ..... 4. *Pterosyllis.*
** Antennæ 4 ..... 5. *Brania.*
** Antennæ 3.
1. Tentacles 8 ..... 6. *Procoma.*
2. Tentacles 4.
Eyes 4 ..... 7. *Syllis.*
Eyes 6 ..... 8. *Ehlersia.*
3. Tentacles 0 ..... 9. *Exogone.*
** Antennæ 2 ..... 10. *Grubea.*
b. No frontal lobes.
** Antennæ 4.
1. Tentacles 16 ..... 11. *Keferstеinia.*
2. Tentacles 0 ..... 12. *Eucerastes.*

** Antennæ 3.
1. Tentacles 4.
Eyes 4 ..... 13. *Autolytus.*
Eyes 0 ..... 14. *Trichosyllis.*
2. Tentacles 2 ..... 15. *Heterosyllis.*
3. Tentacles 0 ..... 16. *Gossia.*
β. Head and buccal somite confounded.
a. With frontal lobes.
** 3 antennæ and 4 tentacles determinable ..... 17. *Claparedia.*
** Antennæ and tentacles indeterminable .... 8 ..... 18. *Cystonereïs.*
5 ..... 19. *Sphærosyllis.*
4 ..... 20. *Oophylax.*
3 ..... 21. *Isosyllis.*
b. No frontal lobes; antennæ and tentacles indeterminable ..... 7 ..... 22. *Thylaciphora.*
5 ..... 23. *Ambliosyllis.*
0 ..... 24. *Tetraglena.*
b. With tubercles on the body ..... 25. *Eurysyllis.*
B. No abdominal cirri.
a. With frontal lobes ..... 26. *Sylline.*
b. No frontal lobes.
* Antennæ 3.
a. Tentacles 4 ..... 27. *Myrianida.*
β. Tentacles 2 ..... 28. *Ioïda.*
† Antennæ 2 ..... 29. *Mycrosyllis.*
C. Neither dorsal nor abdominal cirri ..... 30. *Schmardia.*
II. Feet immoveable ..... 31. *Dujardinia.*

GENERA INCERTÆ SEDIS 17: *Polybostricus, Sacconereïs, Polynice, Diploceræa, Photocharis, Macrochæta, Syllia, Crithida, Anisoceras, Staurocephalus, Sigambra, Diplotis, Ephesia, Sphærodorum, Pollicita, Aporosyllis, Cirroceros.*

Family XII. HESIONEA (10 genera).

I. Feet uniramose.
A. Size comparatively large.
a. Somites very numerous ..... 1. *Myriana.*
b. Somites few.
* Antennæ 4 ..... 2. *Hesione.*
† Antennæ 2 ..... 3. *Fallacia.*
B. Size small.
a. Antennæ 4.
* Tentacles 14 ..... 4. *Peribea.*
† Tentacles 8 ..... 5. *Psamathe.*
§ Tentacles 6 ..... 6. *Lopadorhynchus.*
b. Antennæ 5.
* Tentacles 12 ..... 7. *Podarcus.*
† Tentacles 10 ..... 8. *Mania.*
II. Feet biramose.
A. Antennæ 8 ..... 9. *Pseudosyllis.*
B. Antennæ 4 ..... 10. *Castalia.*

GENERA INCERTÆ SEDIS 5: *Pisione, Oxydromus, Halimede, Cirrosyllis, Orseïs.*

Family XIII. PHYLLODOCEA (2 tribes, 12 genera).

I. Eyes of ordinary size (Tribe *Phyllodocea prop.*).
  A. Feet uniramose.
    a. Antennæ 5.
      * Tentacles 10 ..... 1. *Kinbergia.*
      † Tentacles 8 ..... 2. *Eulalia.*
      § Tentacles 6 ..... 3 *Eracia.*
    b. Antennæ 4.
      * Tentacles 8 ..... 4. *Phyllodoce.*
      † Tentacles 6 ..... 5. *Carobia.*
      § Tentacles 4 ..... 6. *Eteone.*
      ‡ Tentacles 2 ..... 7. *Lugia.*
    c. Antennæ 2 ..... 8. *Macrophyllum.*
  B. Feet biramose ..... 9. *Notophyllum.*
II. Eyes very large (Tribe *Phyllodocea Alciopea*).
  A. Feet bearing two glandular organs ..... 10. *Alciope.*
  B. Feet with a single glandular organ.
    a. Antennæ 5 ..... 11. *Krohnia.*
    b. Antennæ 0 ..... 12. *Torrea.*

GENERA INCERTÆ SEDIS 2: *Eumenia, Liocope.*

Family XIV. GLYCEREA (3 genera).

I. Feet biramose.
  A. Rami approximate ..... 1. *Glycera.*
  B. Rami distant ..... 2. *Goniada.*
II. Feet uniramose ..... 3. *Hemipoda.*

GENERA INCERTÆ SEDIS 2: *Glycinide, Proboscidia.*

Family XV. POLYOPHTHALMEA (1 genus, *Polyophthalmus*).

Family XVI. CHÆTOPTEREA (1 genus, *Chætopterus*).

GENUS INCERTÆ SEDIS: *Spiochætopterus.*

Family XVII. TOMOPTERIDEA (1 genus, *Tomopteris*).

Family XVIII. CLYMENEA (2 tribes, 10 genera).

I. Body in three regions (Tribe *Clymenea prop.*).
  A. With an anal funnel.
    a. No respiratory cæca.
      * Cephalic plate developed ..... 1. *Clymene.*
      * Cephalic plate none, or rudimentary ..... 2. *Leiocephalus.*
    b. Respiratory cæca present ..... 3. *Johnstonia.*
  B. With an anal plate.
    a. With a cephalic plate ..... 4. *Maldane.*
    b. No cephalic plate ..... 5. *Petaloproctus.*
  C. Neither plate nor funnel ..... 6. *Ammochares.*
II. Body in two regions (Tribe *Clymenea degrad.*).
  A. Head truncate ..... 7. *Clymenidia.*
  B. Head not truncate.
    a. Head acute.
      * Posterior region with simple setæ ..... 8. *Arenia.*

      * Posterior region with only uncini ..... 9. *Ancistria.*
    b. Head club-shaped ..... 10. *Clymenia.*

GENERA INCERTÆ SEDIS 3: *Capitella, Notomastus, Dasybranchus.*

Family XIX. ARENICOLEA (2 genera).

I. Branchiferous feet consecutive ..... 1. *Arenicola.*
II. Branchiferous feet separated by abranchiate ones. 2. *Chorizobranchus.*

GENERA INCERTÆ SEDIS 2: *Scalibregma, Polyphysia.*

Family XX. OPHELIEA (3 genera).

I. Feet with a single branchia.
  A. On the middle region ..... 1. *Ophelia.*
  B. Nearly on the whole body ..... 2. *Travisia.*
II. Feet with several branchiæ ..... 3. *Branchoscolex.*

GENERA INCERTÆ SEDIS 3: *Ophelina, Ammotripane, Sclerocheilus.*

Family XXI. ARICIEA (5 genera).

I. Trunk of ordinary form.
  A. Lower ramus of anterior feet bearing uncini.
    a. No antennæ ..... 1. *Aricia.*
    b. With antennæ ..... 2. *Orbinia.*
  B. Lower ramus of anterior feet with simple setæ.
    a. No caruncle ..... 3. *Scoloplos.*
    b. Caruncle present ..... 4. *Porcia.*
II. Trunk divided into foliaceous lobes ..... 5. *Anthostomum.*

GENERA INCERTÆ SEDIS 4: *Magelona, Gisela, Theodisca, Hermandura.*

Family XXII. LEUCODOREA (5 genera).

I. Feet different.
  A. Feet biramose.
    a. Branchiæ superior ..... 1. *Leucodore.*
    b. Branchiæ inferior.
      * Third somite abnormal ..... 2. *Disoma.*
      * Fifth somite abnormal ..... 3. *Polydora.*
  B. Feet uniramose ..... 4. *Spione.*
II. Feet similar ..... 5. *Spiophanes.*

GENUS INCERTÆ SEDIS: *Spio.*

Family XXIII. HERMELLEA (3 genera).

I. Body in 3 regions.
  A. Operculum with 3 ranges of setæ ..... 1. *Hermella.*
  B. Operculum with 2 ranges of setæ ..... 2. *Pallasia.*
II. Body in 2 regions ..... 3. *Centrocorone.*

GENERA INCERTÆ SEDIS 2: *Branchiosabella, Uncinocheta.*

Family XXIV. PECTINAREA (2 genera).

I. Branchiæ 2 pairs ..... 1. *Pectinaria.*
II. Branchiæ 3 pairs ..... 2. *Scalis.*

Family XXV. TEREBELLEA (3 tribes, 11 genera).

I. Body in 2 regions (*Terebellea prop.*).

A. With dorsal branchiæ (Tribe *T. branchiata*).
  a. Dorsal branchiæ arborescent { 3 pairs ..... 1. *Terebella.* / 2 pairs ..... 2. *Physelia.* / 1 pair ..... 3. *Idalia.*
  b. Dorsal branchiæ pectinated, median ..... 4. *Terebellides.*
  c. Dorsal branchiæ cirriform.
    * Buccal cirri simple ..... 5. *Phenacia.*
    * Buccal cirri pinnate ..... 6. *Sabellides.*
  d. Dorsal branchiæ cirriform and pinnate .... 7. *Isidda.*
B. No dorsal branchiæ (Tribe *T. abranchiata*).... 8. *Apneumea.*

II. Body in one region (Tribe *Heteroterebellea*).
A. Dorsal branchiæ arborescent { 3 pairs..... 9. *Heteroterebella.* / 2 pairs..... 10. *Heterophyselia.*
B. Branchiæ cirriform ..... 11. *Heterophenacia.*

GENERA INCERTÆ SEDIS 7: *Rhytocephalus, Amphic'eis, Polycirrus, Sabellina, Anisomelas, Piratesa, Lumara.*

Family XXVI. SERPULEA (3 tribes, 21 genera).

I. Head without an operculum.
A. Regions distinct (Tribe *S. Sabellea*).
  a. Tube membranous.
    * Branchiæ with a circular base.
      a. Cirri free.
        a. No caudal eyes ..... 1. *Sabella.*
        b. Caudal eyes.
          1. Antennæ present.
            With a collar ..... 2. *Oria.*
            With no collar..... 3. *Amphiglena.*
          2. No antennæ..... 4. *Fabricia.*
      β. Branchial cirri united ..... 5. *Chonea.*
    * Branchiæ with a spiral base.
      α. A single branchia in spiral ..... 6. *Spirographa.*
      β. Both branchiæ in spiral ..... 7. *Distylia.*
  b. Tube calcareous.
    * Branchiæ with a spiral base ..... 8. *Protula.*
    * Branchiæ with a circular base ..... 9. *Pygmobranchus.*
B. Regions indistinct (Tribe *S. Heterosabellea*).
  a. With feet.
    * Branchial cirri free.
      α. With barbules..... 10. *Anamobæa.*
      β. No barbules..... 11. *Amphicorine.*
    * Branchial cirri united ..... 12. *Myxicola.*
  b. Without feet.
    Branchiæ with barbules ..... 13. *Gymnosoma.*
    Branchiæ without barbules..... 14. *Thoronis.*

II. Head with an operculum (Tribe *Serpulea prop.*).
A. Two or more false opercula ..... 15. *Filigrana.*
B. With true opercula.
  a. Tube completely rolled up..... 16. *Spirorbis.*
  b. Tube more or less sinuous.
    * Two symmetrical opercula ..... 17. *Codonytes.*

    * One operculum.
      α. Tube free..... 18. *Ditrupa.*
      β. Tube attached.
        a. Branchiæ with a circular base.
          1. Operculum corneous ..... 19. *Serpula.*
          2. Operculum corneo-calcareous .... 20. *Vermilia.*
        b. Branchiæ with a spiral base ..... 21. *Cymospira.*

GENERA INCERTÆ SEDIS 5: *Spiramella, Apomatus, Spiroglypha, Stoa, Vermiculum.*

APHRODITEA.

Dr. BAIRD, in the first part of his Monograph of the Aphroditacea (Journ. Linn. Soc. viii. pp. 172–202), in which he follows the arrangement of Kinberg, describes the following new genera and species:—

Thormora, Baird (p. 199). Bases of the antennæ produced from the anterior margin of the cephalic lobe; elytra 12 pairs, not covering the middle of the back, and leaving the posterior segments of the body naked, setæ of dorsal branch of feet of two kinds; body elongated. *T. jukesii* (p. 199).

Nosepea, Baird (p. 200). Head three-lobed, tentacle attached to the margin of the centre lobe; palpi attached to the side lobes; no antennæ; elytra 14 pairs, covering the back entirely; body short. *N. peronea* = *Polynoë peronea*, Schmarda.

Aphrodita australis (p. 176), Australian seas; *Hermione chrysocoma* (p. 178), South of Europe, perhaps *Halithea aurata* of Risso; *Lætmatonice kinbergi* (p. 180), the Shetland Islands; *Lepidonotus sinclairi* (p. 184), New Zealand; *L. oculatus* (p. 185), Australia; *L. stellatus* (p. 185), Australia; *L. bowerbankii* (p. 185), Australia; *Harmothoë unicolor* (p. 196), Vancouver Island; *Hermadion feroz* (p. 197), dredged from a depth of 300 fathoms in lat. S. 74½°, long. E. 175½°; *H. fuligineum* (p. 198), taken with the last species.

Halosydna. The following species are redescribed from more perfect specimens:—*H. insignis*, Baird (p. 188), *H. grubei*, Baird (p. 189), *H. lordii*, Baird (p. 190), *H. fragilis*, Baird (p. 191).

Dr. Johnston (*l. c.*) describes *Lepidonotus* (*Antinoë*) *pharetratus* (p. 113), *L.* (*A.*) *semisculptus*, Leach, MS. (p. 116), *L. pellucidus*, Dyster, MS. (p. 117), *Phloe eximia*, Dyster, MS. (p. 122).

Dr. Baird describes a variety of *Lepidonotus cirratus*, found living parasitic in the lobes of *Chætopterus insignis*, Baird: it differs from the type in being much broader, in being at the anterior extremity narrower than at the posterior, and in the cirri not being swollen or enlarged a little below the apex. Journ. Linn. Soc. viii. 1865, p. 161.

Dr. MALMGREN (Œfvers. Vet. Ak. Förh. 1865, p. 56) proposes the following arrangement of the genera of northern *Polynoida*:—

I. Corpus ovato-oblongum vel lineare, haud auguste elongatum. Elytra paria 12–18, totum dorsum omnino aut maxima parte tegentia. Segmenta pauciora quam 45.
A. Antennæ sub basi tentaculi orientes, incisuram lobi cephalici occupante.
  1. Elytra paria 15 (13–15).

a. Setæ rami inferioris apice haud bidentato.
  α. Setæ rami superioris tenuiores quam setæ rami inferioris; corpus breve, lineare:
    Nychia, n. g., p. 57; type *Aphrodita cirrhosa* (Pall.).
  β. Setæ rami superioris crassiores quam setæ rami inferioris.
    aa. Elytra dorsum medium anterioris partis corporis haud tegentia; setæ rami superioris paucæ, admodum crassæ, subulatæ, lævissimæ:
      Melænis, n. g., p. 78; type *Melænis lovéni*, sp. n.
    bb. Elytra totum dorsum perfecte tegentia; setæ rami superioris numerosæ, seriatim transverse spinulosæ:
      * Setæ rami inferioris apice leviter curvato, haud tenue elongato, paullo tenuiores quam setæ rami superioris.
        Eunoë, n. g., p. 61; type *Lepidonote scabra* (Oerst.).
      * Setæ rami inferioris apice elongato, tenuissime attenuato, multo tenuiores quam setæ rami superioris:
        Antinoë (Kinb.).
b. Setæ rami inferioris apice conspicue vel obsolete bidentato vel angustissime fisso.
  α. Corpus ovato-oblongum; setæ rami inferioris apice plus minusve curvato.
    aa. Elytra totum dorsum ultimis segmentis decem exceptis tegentia; setæ rami inferioris apice haud vel obsolete bidentato:
      Lagisca, n. g., p. 65; type *Polynöe varispina* (Sars).
    bb. Elytra totum dorsum perfecte tegentia.
      * Elytra granulosa vel scabriuscula; setæ rami inferioris plerumque apice bidentato, dente longiore valde curvato.
        † Setæ rami inferioris paullo tenuiores quam setæ rami superioris, omnes apice semper bidentato:
          Harmothoë (Kinb.).
        † Setæ rami inferioris multo tenuiores quam setæ rami superioris, infimis exceptis apice bidentato:
          Ecarne, n. g., p. 71; type *Polynoë impar* (Johnst.).
      * Elytra lævia; setæ rami inferioris apice integro vel bidentato, dente longiore perpauleum curvato:
        Lænilla, n. g., p. 72; type *Lænilla glabra*, sp. n.
  β. Corpus lineare; setæ rami inferioris apice recto, angustissime fisso:
    Eucranta, n. g., p. 79; type *Eucranta villosa*, sp. n.
2. Elytra paria 16–18.
  a. Elytra paria 18; huc pertinet
    Polynoë asperrima, Sars, 1861.
  b. Elytra paria 16; huc pertinet
    Polynoë nivea, Sars, 1862.

B. Antennæ e margine anteriore lobi cephalici productæ.
1. Elytra paria 12, totum dorsum omnino tegentia; setæ rami inferioris apice haud bidentato:
  Lepidonotus (Leach).
2. Elytra paria 18, dorsum medium haud perfecte tegentia; setæ rami inferioris apice bidentato:
  Alentia, n. g., p. 80; type *Polynoë gelatinosa* (Sars).

II. Corpus elongatum, lineare vel postice attenuatum. Elytra paria 15, solum in anteriore parte dorsi obvia. Segmenta numerosa, plura quam 45.
A. Setæ rami inferioris apice acuminato, haud bidentato, cirri anales duo.
1. Corpus valde angustum, postice attenuatum; lobus cephalicus rotundatus; oculi 4 conspicui:
  Enipo, n. g., p. 83; type *Enipo kinbergi*, sp. n.
2. Corpus lineare, haud angustum; lobus cephalicus subquadrangularis, antice in prominentias conicas productus, oculi haud conspicui (vel nulli?):
  Nemidia, n. g., p. 84; type *Nemidia torelli*, sp. n.

B. Corpus lineare; setæ rami inferioris apice bidentato; cirrus analis unus:
  Polynoë (Sav.).

Malmgren (*l. c.*) gives detailed diagnoses of the following new species:—*Lænilla glabra* (p. 73), *L. alba* (p. 73), *Melænis lovéni* (p. 78), *Eucranta villosa* (p. 78), *Enipo kinbergi* (p. 83), *Nemidia torelli* (p. 84).

Eunicea.

Kinberg (Œfvers. Vet. Ak. Förh. 1865, p. 559 *et seq.*) proposes to divide the group of the *Eunicea* as follows:—

A. *Partes labii inferioris coadnatæ, longitudine maxillarum; quarum par primum lamina præditum est.*

Subfamily 1. Onuphlea. Maxillæ 7, paris primi edentatæ; tentacula 5; antennæ 2; palpi 2; segmentum buccale unicum.

Branchiæ { plumosæ ..... *Diopatra.*
{ pectiniformes l. cirriformes ..... *Onuphis.*

Subfam. 2. Eunicea. Maxillæ 7–9, paris primi edentatæ; tentacula 5; nec antennæ, nec palpi; segmenta buccalia bina.

Lobus cephalicus { quadrilobatus; maxillæ 9 ..... *Eriphyle.*
{ bilobatus; maxillæ 7; { cirri tentaculares 2; { branchiæ pectiniformes .. *Eunice.*
{ branchiæ nullæ .... *Nicidion.*
{ cirri tentaculares nulli; { branchiæ pectiniformes .. *Nauphanta.*
{ branchiæ cirrosæ .... *Nausicaa.*

Subfam. 3. Lycidicea. Maxillæ 7, paris primi edentatæ; tentacula 3; nec antennæ, nec palpi; segmenta buccalia bina.

Branchiæ { pectiniformes ..... *Amphiro.*
{ nullæ ..... *Lycidice.*

Subfam. 4. Ninoidea. Maxillæ 8, paris primi edentatæ, paris terti et quarti fere æquales; tentacula nulla vel tuberculiformia; segmenta buccalia bina; branchiæ terminales ..... *Ninoe.*

Subfam. 5. Lumbriconereida. Maxillæ 8, paris primi edentatæ; tentacula tuberculiformia; antennæ nulla; branchiæ veræ nullæ.

Tentacula { tuberculiformia, bina ..... *Eranno.*
{ nulla vel obsoleta ..... *Lumbriconereis.*

Subfam. 6. Lysaretea. Maxillæ 10, paris primi dentatæ; tentacula tria. *Lysarete.*

B. *Partes labii inferioris coadnatæ, maxillis breviores; quarum par primum radicibus longissimis præditum est.*

Subfam. 7. ŒNONIDEA. Maxillæ 9–12; branchiæ foliosæ.

Maxillæ { 9; { tentacula nulla ..... *Œnone.* / tentacula 3 ..... *Aglaura.* / 11, 1, 12; tentacula 3 ..... *Danymene.* / 10; tentacula 2 ..... *Andromache.*

Subfam. 8. LAIDEA. Maxillæ 10; tentacula nulla; branchiæ cirrosæ, mammillæformes vel nullæ.

Maxillæ { dentatæ nec uncinatæ; { oculi 2, branchiæ nullæ .... *Lais.* / oculi nulli, branchiæ mammillæformes .... *Notocirrus.* / dentatæ, uncinatæ ..... { inæquales ..... *Larymna.* / æquales ..... *Aracoda.*

C. *Partes labii inferioris separatæ, maxillis breviores; quarum par primum radicibus longissimis præditum est.*

Subfam. 9. LARANDIDEA. Maxillæ 8, paris primi dentatæ . . *Laranda.*

D. *Partes labii inferioris fissæ, seriebus maxillarum breviores: radices maxillares breves.*

Subfam. 10. STAUROCEPHALEA. Maxillæ numerosissimæ, series 4 laterales fingentes, dentatæ ..... *Staurocephalus.*

Kinberg (*l. c.*) describes the following new species. Detailed descriptions, accompanied by figures of many of the species, will be found in the 'Voyage of the Eugenie.'

Diopatra leuckarti (p. 559), *D. viridis*, *D. amœna*, *D. brasiliensis* (p. 559), *D. dentata*, *D. longicornis*, and *D. splendidissima* (p. 560), *Onuphis verugreni*, *O. intermedia*, *O. setosa* (p. 560), *O. fragilis* (p. 561), *Eriphyle capensis* (p. 561), *Eunice indica*, *E. tentaculata*, *E. havaica*, *E. pacifica*, *E. pellucida*, *E. tahitana* (p. 562), *E. longinqua*, *E. prayensis*, *E. atlantica*, *E. arenosa*, *E. brasiliensis* (p. 563), *Nicidion longicirrata*, *N. cincta*, *N. gallapagensis* (p. 564), *Nauphanta novæ-hollandiæ*, *N. corallina* (p. 564), *Nausicaa striata* (p. 565), *Amphiro atlantica* (p. 565), *Lycidice brevicornis*, *L. pectinifera*, *L. natalensis*, *L. lunæ* (p. 566), *Ninoe chilensis* (p. 566), *N. brasiliensis*, *N. oculata* (p. 567), *Errano bifrons* (p. 567), *Lumbriconereis magalhaensis*, *L. virgini*, *L. borealis*, *L. futilis*, *L. atlantica*, *L. mirabilis*, *L. quinquedentata* (p. 568), *L. madeirensis* (p. 569); the foregoing species of *Lumbrineris* have the maxillæ paris tertii unidentatæ; *L. jacksoni*, *L. obtusa*, *L. funchalensis*, *L. indica*, *L. chilensis*, *L. sarsi*, *L. havaica* (p. 569), *L. oceanica*, *L. dübeni* (p. 570); these latter have the maxillæ paris tertii bidentatæ; *Lysarete brasiliensis* (p. 570), *Danymene fouensis* (p. 571), *Lais acuta* (p. 572), *Larymna cirrosa* (p. 572), *Aracoda capensis*, *A. virginis* (p. 573), *Laranda gracilis*, *L. sulcata* (p. 574), *Staurocephalus lovéni*, *S. grubei* (p. 574).

Northea, Johnston (*l. c.* p. 136), is a new genus, differing from *Onuphis* by the absence of pectinate branchiæ, and contains *N. tubicola*, Müll., and *N. conchilega*, Sars.

Staurocephalus erucæformis, sp. n., Malmgren (*l. c.* p. 184).

Lumbrinereis tricolor, Johnston (*l. c.* p. 142), from South Devon.

NEPHTHYDEA.

Malmgren describes (*l. c.*) two new species: *Nephthys incisa* (p. 105) and *Heteronereis glaucopis* (p. 181).

NEREIDEA.

Malmgren describes (*l. c.*) the following new genera:—

Iphinereis, p. 181 (*Heter nereis*, Oersted p. p.) Corpus lineare ut in Heteronereidibus ex duabus partibus valde difformibus constans: pars antica subteres pedibus brevibus absque lamellis, setis compositis, falcatis et spinosis; pars postica lateribus profunde incisis, pedibus lamellis præditis, setis compositis solummodo cultratis. Proboscis exserta maxillis duabus et pectinibus minutis transversalibus nigrescentibus gregatim et annulatim dispositis, e nodulis corneis cylindrico-conicis connatis constantibus. Lobus cephalicus suborbiculatus, paullo latior quam longior, basi leviter emarginata vel cordata, margine antico subarcuato, oculis 4 admodum magnis. Cirri duo anales sub ano.—*I. fucicola* (Oersted).

Eunereis, p. 182 (*Heteronereis*, Oersted p. p.). Corpus lineare ex duabus partibus difformibus constans, ut in Heteronereidibus, pars antica corporis pedibus absque lamellis, setis compositis solummodo spinosis; pars postica pedibus lamellis præditis, setis compositis, modo cultratis in mare, in femina autem cultratis et spinosis. Proboscis exserta maxillis duabus validis modo ad basin obsolete crenulatis armata, nodulis corneis conicis dentiformibus minimis aut omnino evanescentibus. Lobus cephalicus e basi subrectangulari lata conico-attenuatus, apice truncato. Oculi 4 mediocres in parte basali lobi cephalici. Cirri anales duo sub ano.—*E. longissima* (Johnston).

SYLLIDEA.

Autolytus. The species of this genus exhibit a most striking polymorphism, the males being so different from the females as to have been referred to distinct genera; and, in addition, there is now found to exist a third form, which is a sexual, producing the sexual individuals by gemmation at its posterior extremity. Agassiz, *l. c.* p. 343.

Tetraglene rosea (Grube). Prof. Grube (Jahresber. Schles. Gesellsch. Breslau, 1864, p. 67) describes an alternation of generations occurring in this species.

Gattiola, g. n., Johnston (*l. c.* p. 195). Body consisting of about fifteen segments, deeply indented at the sutures and narrowed in front; head small, flattened, rounded and entire in front, with three long filiform unjointed antennæ and two lobe-like processes on the occiput; eyes four, the pairs coalescent so that there are apparently two only; tentacular cirri two pairs, similar to the antennæ; foot uniramous, the dorsal cirrus filiform and greatly elongated; the bristles compound, falcate; anal segment small, with two elongated styles.—*G. spectabilis*, Johnst. This genus was published in 1861 by Dr. Baird, in article "Annelida" in 'Museum of Natural History,' vol. ii. p. 298 (note).

HESIONEA.

Microphthalmus, g. n., Mecznikow, Zeitschr. wiss. Zool. 1865, p. 334. This annelid is 2–3 millims. in length; the body consists of about 33 somites; the cephalic segment carries five tentacles, the two middle larger than the other three; on each side of the head are a pair of very small eyes. Tentacular cirri one pair on either side, the dorsal cirrus scarcely larger than the ventral one; the first three somites after the head carry no bristles; the cirri

of the bristle-bearing somites are shorter than the others; the last somite but one carries two short cirri; the last is in the form of a half-moon and has two long cirri.—*M. sczelkowii*. Hab. Heligoland.

Phyllodocea.

Malmgren (*l. c.*) describes the following new genera:—

Genetyllis (p. 93). Corpus depressum, lineare, antice posticeque paullo attenuatum. Lobus cephalicus ovato-rotundatus, oculis duobus mediocribus. Tentacula 5 brevia, e basi ovata breviter subulata, utrinque bina, alterum super alterum, de apice capitis prominentia, unum impar in vertice. Cirri tentaculares utrinque 4, antici posticis breviores. Appendix superior lamellæformis admodum magna, verticalis, pinnam et partem dorsi tegens. Appendix inferior pedis lamellæformis verticalis. Setæ compositæ, capillares, articulo terminali tenuissime attenuato margine altero concavo, obsolete et subtilissime denticulato.—*G. lutea*, Malmgren.

Anaitis, p. 94. Corpus depressum, sublineare, antice posticeque paullo angustatum, dorso convexo, ventre plano. Lobus cephalicus latus, antice rotundatus postice utrinque leviter sinuatus (basi haud cordato), sulco haud profundo e primo segmento (collari) tumido, longo latoque separatus. Tentaculis 4 brevibus. Oculi 2 mediocres. Cirri tentaculares utrinque 4, par primum, secundum et tertium in segmento primo (collari), par quartum in secundo affixum. Appendices superiores lamellæformes, magnæ, retrorsum imbricatæ. Appendix inferior compressa, paullo longior quam setigera pars pedis. Hæc ovata extrorsum attenuata, apice obtuso leviter inciso. Setæ numerosæ capillares compositæ, articulo terminali longe attenuato, obsolete et subtiliter denticulato. Cirri duo anales in sola specie cognita subglobosi. —*A. wahlbergi*, Malmgren.

Eumida (p. 97). Corpus lineare, antice posticeque paullum attenuatum, subteres, ventre planiusculo. Lobus cephalicus subrotundatus, basi cordata. Tentacula 5 brevia, subulata: 4 in apice lobi cephalici, bina utrinque alterum super alterum, unum impar in vertice. Oculi duo mediocres, conspicui. Cirri tentaculares subulati utrinque 4, par primum sub basi lobi cephalici, secundum et tertium in segmento primo et par quartum in segmento secundo affixum. Proboscis exserta, sat longa, subglabra, subcylindrica, antrorsum sensim paullo incrassata, apice truncato mamillis uniserialibus coronato. Setæ capillares compositæ, articulo terminali longe attenuato, leviter curvato, margine concavo subtiliter denticulato. Appendix superior lamellæformis, mediocris, extrorsum et sursum porrecta. Appendix inferior lamellæformis. Pars setigera pedis apice rotundato leviter inciso. Cirri anales duo.—*E. sanguinea*, Oersted.

Sige (p. 100). Corpus lineare, utrinque paullum attenuatum, postice magis notabiliter quam antice, depressiusculum, ventre plano. Lobus cephalicus latus, a basi subcordata rotundatus. Tentacula 5 brevia, subulata: 4 in apice lobi cephalici, bina utrinque alterum super alterum, unum impar in vertice. Oculi duo mediocres conspicui. Cirri tentaculares subulati utrinque 4: par primum sub basi lobi cephalici, secundum et tertium in segmento primo et par quartum in segmento secundo affixum. Proboscis exserta, longa, cylindrica, glabra, apice papillis haud coronato, infra apicem sulco transversali prædita. Setæ capillares, compositæ, articulo terminali longe attenuato leviter curvato, margine concavo subtilissime denticulato. Appendix superior fusiformis, extrorsum porrecta, plus minusve compressa. Appendix inferior eadem forma ac appendix superior. Pars setigera pedis in apicem acuminatum extenuata. Cirri anales duo?—*S. fusigera*, Malmgren.

Mysta (p. 100). Corpus lineare antice posticeque paullum attenuatum, subdepressum. Lobus cephalicus e basi lata angustatus. Tentacula 4 brevia, subulata, in apice truncato lobi cephalici affixa, bina utrinque alterum super alterum. Oculi duo conspicui, mediocres. Cirri tentaculares duo inæquales, subulati, in segmento primo affixi. Proboscis exserta, longa, subcylindrica, antrorsum incrassata, versus apicem papillis numerosis, ovato-fusiformibus brevibus, utrinque in ordine longitudinali dispositis, ornata. Setæ capillares compositæ, articulo terminali longe attenuato leviter curvato, margine concavo subtilissime denticulato. Appendix superior mediocris, lamellæformis, subverticalis, extrorsum porrecta. Appendix inferior compressa ovalis. Pars setigera pedis apice rotundato leviter inciso. Cirri duo anales.—*M. barbata*, Malmgren.

Malmgren (*l. c.*) describes as new species:—*Genetyllis lutea* (p. 93), *Anaitis wahlbergi* (p. 94), *Phyllodoce citrina* (p. 95) (we have taken this species on the west coast of Ireland, and always believed it to be the one referred to by Johnston as *P. maculata*), *P. teres* (p. 97), *Eulalia problema* (p. 99), *Sige fusigera* (p. 100), *Mysta barbata* (p. 101), *Eteone spetsbergensis* (p. 102), *E. depressa* (p. 103).

Dr. Johnston (*l. c.*) describes *Phyllodoce griffithsii*, sp. n. (p. 180), Torbay; *P. cordifolia*, Dyster, MS. (p. 181).

Glycerea.

Eone, g. n., Malmgren (*l. c.* p. 400). Corpus ex duabus partibus difformibus compositum: pars antica teres antrorsum æqualiter attenuata, pedibus anticis uniremibus lingulis tribus; pars postica latior, sublinearis depressa, postice angustior, pedibus biremibus, ramis distantibus lingulis binis. Setæ rami superioris paucæ parum prominentes apice infra mucronem brevem diaphanum tuberculo minuto rotundato. Setæ ceteræ capillares numerosæ compositæ spinulosæ articulo terminali elongato recto, acie subtilissime et crebre serrulata. Lobus cephalicus conico-acuminatus ex c. 10 annulis constans, apice tentaculis 4 brevissimis, ad basin oculis duobus minutis, uno utrinque in latere annuli primi sito. Maxillæ numerosæ, c. 22, apicem pharyngidis haud exsertilis coronantes, duæ majores inferiores 5-dentatæ et utrinque c. 10 minores 3–4-dentatæ. Maxillæ angulatæ laterales nullæ. Cirri duo anales sub ano.—*E. nordmanni*, Malmgren.

Glycera mitis, sp. n. Johnston (*l. c.* p. 185), Scotland; *G. nigripes*, sp. n., Johnston (p. 188), Scotland.

Clymenea.

Dr. Johnston (*l. c.* p. 67) characterizes a new genus, *Vala*, for *Lumbricus ciliatus*, Müll. Grube long ago pointed out (Wiegm. Archiv, 1862) that this species is the same as *Capitella* (*Lumbricus*) *capitata*, Fabr. sp. Dalyell's *Lumbricus capitatus* does not, however, belong here.

Malmgren (*l. c.*) describes the following new genera:—

Rhodine (p. 189). Corpus subcylindricum. Numerus segmentorum ignotus;

setigerorum autem plus quam 19. Lobus cephalicus cum segmento buccali et primo setigero prorsus connatus, inclinatus haud limbatus antice pau lo angustatus convexus. Setæ superiores capillares lævos, longiores anguste, breviores late limbatæ. Setæ inferiores in segmentis 4 anticis setigeris nullæ, in ceteris vero uncini numerosi *biseriales*, rostrati, vertice rostri uni- vel obsoletissime bidentato, sine fasciculo setularum sub rostro, manubrio elongato superne valde dilatato, sub rostro in angulum apice sinuato-incisum mucronatumque producto. Segmenta postrema ignota.—*R. loveni*, sp. n.

Nicomache (p. 189). Corpus subcylindricum postice sensim attenuatum segmentis 26, quorum 22 setigeris, duobus brevibus anteanalibus nudis. Lobus cephalicus cum segmento buccali nudo prorsus coalitus, ovalis, convexus, inclinatus, haud limbatus. Setæ superiores capillares: aliæ crassiores, lævos, limbatæ, apice longe attenuato, aliæ tenuiores breviores haud limbatæ inferne lævos, superne spinulis minimis adpressis biseriatis obsitæ. Setæ inferiores: in segmentis 3 anticis setigeris seta solummodo unica, valida conica; in ceteris uncini multi minuti uniseriales, vertice rostri 3-dentato, infra rostrum fasciculo capillorum sursum flexorum. Segmentum anale infundibuliforme margine cirris brevibus cincto. Anus terminalis in fundo infundibuli.—*N. lumbricalis*, Fabr.

Axiothea (p. 190). Corpus subcylindricum, segmentis 24, quorum 18 setigeris et 4 anteanalibus nudis. Lobus cephalicus, cum segmento primo nudo, prorsus coalitus, inclinatus, limbatus, antice in processum brevem desinens. Setæ superiores capillares: aliæ longiores limbatæ lævos, aliæ breviores et tenuiores, apicem versus utrinque subtilissime pennatæ. Setæ inferiores uncini uniseriales in omnibus segmentis setigeris numerosi, in 3 anterioribus tamen paucioribus quam in sequentibus, vertice rostri 4-dentato, dente quinto minimo obsoleto vel evanido interdum prædito, sub rostro fasciculo capillorum sursum flexorum. Segmentum ultimum infundibuliforme, margine ciliato. Anus terminalis in fundo infundibuli.—*A. catenata*, sp. n.

Praxilla (p. 191). Corpus subcylindricum postice sensim tenuius, segmentis 26, quorum 19 setigeris et 5 anteanalibus nudis. Lobus cephalicus cum segmento buccali nudo prorsus connatus inclinatus ovalis plerumque limbatus, antice in processum brevem subglobosum aut conico-acuminatum desinens. Setæ superiores capillares, lævos, limbatæ. Seta inferiores uncini: in segmentis 3–4 anticis setigeris pauciores quam in sequentibus, interdum solummodo unicus validus subconicus obvius, in ceteris numerosi uniseriales rostrati, vertice rostri 4–6-dentato, sub rostro fasciculo capillorum sursum reflexorum. Segmentum ultimum subinfundibuliforme, margine cirris tenuibus cincto. Anus in fundo infundibuli conico-elevatus.—*P. prætermissa*, sp. n.

Maldane (*Clymene*) *sarsi*, sp. n., Malmgren, *l. c.* p. 188.

Arenicolea.

Lütken describes a new species of *Arenicola* inhabiting the coast of the Antilles, which he calls *Arenicola* (*Pteroscolex*) *antillensis*. Vid. Medd. Naturh. Foren. Kjöbenh. 1864, p. 120.

Amphictenea.

Malmgren (*l. c.*) describes the following new genera :—

Cistenides (p. 360). Area pone palmulas subplana leviter excavata sub-

margine integro. Limbus areæ oris sub palmulis cirrato-lacerus. Fasciculi setarum capillarium utrinque 17, duo paria ultima minima a pinnula non prominentia, pari ultimo interdum toto evanido. Pinnulæ uncinigeræ utrinque 12 a segmento quarto setigero incipientes. Uncini pectiniformes: dentibus majoribus validis curvatis *inæqualibus* 3, minoribus *mediocribus sæpe inconspicuis* c. 3–4. Spinulæ scaphæ apice geniculatim curvato. Tubus arenarius leviter curvatus.—*C. granulata* (L. *non* Johnston).

Lagis (p. 360). Area pone palmulas subplana leviter excavata, margine integro prominente. Limbus areæ oris sub palmulis cirrato-lacerus. Fasciculi setarum capillarium utrinque 15, omnes subæquales conspicui. Setæ: aliæ longiores tenuiores limbatæ apice subrecto attenuato, aliæ breviores crassiores limbatæ limbo apicis curvati striato-serrulato. Pinnulæ uncinigeræ a segmento quarto setigero incipientes utrinque 12. Uncini pectiniformes fere eadem forma ac in *Amphictene* n. dentibus majoribus c. 6–7 æqualibus curvatis, minoribus nullis vel admodum inconspicuis. Spinulæ scaphæ apice arcuato-curvato. Tubus arenarius leviter curvatus.—*L. koreni*.

Petta (p. 361). Area pone palmulas margine integro. Limbus areæ oris sub palmulis integer, margine haud laciniato. Margo anticus inferior segmenti primi medio late emarginatus et utrinque crenulato-dentatus. Margo anticus inferior segmenti secundi medio ter incisus, lobulis binis æqualibus subrotundatis. Fasciculi setarum capillarium 17. Pinnulæ uncinigeræ 14 a segmento tertio setigero incipientes. Uncini pectiniformes: dentibus validis curvatis subæqualibus tantummodo 2, dente minore unico. Spinulæ ad basin scaphæ apice vix vel paulo curvato. Tubus leviter curvatus e conchyliis minutis in sola specie cognita confectus.—*P. pusilla*, sp. n.

Ampharetea.

Malmgren proposes the following arrangement of the genera of this family (*l. c.* p. 362) :—

1. *Segmenta corporis circa* 20–40. *Pars frontalis lobi cephalici conspicua.*

A. *Palmulis prædita.*

Fasciculi setarum capillar. 14, tentacula ciliata:
Ampharete, g. n., p. 362; type *A. grubei*, sp. n.

Fasciculi setarum capillar. 16, tentacula lævia:
Lysippe, g. n., p. 367; type *L. labiata*, sp. n.

Fasciculi setarum capillar. 17, tentacula lævia:
Amphicteis (Gr.).

Fasciculi setarum capillar. 15, tentacula lævia:
Sosane, g. n., p. 367; type *S. sulcata*, sp. n.

B. *Palmulis destituta.*

Fasciculi setarum capillar. 14, tentacula ciliata, branchiæ utrinque 4:
Sabellides (M.-E.).

Fasciculi setarum capillar. 14, tentacula lævia, branchiæ utrinque 4:
Amage, g. n., p. 370; type *A. auricula*, sp. n.

Fasciculi setarum capillar. 17, tentacula lævia, branchiæ 3:
Samytha, g. n., p. 370; type *Sabellides sexcirrata* (Sars).

2. *Segmenta corporis circa* 70. *Pars frontalis lobi cephalici nulla.*

Fasciculi setarum capillar. 18, tentacula lævia, branchiæ 4:
Melinna, g. n., p. 371; type *Sabellides cristata* (Sars).

Besides the species mentioned, Malmgren describes as new three other species of *Ampharete*, viz.: *A. goesi*, p. 364; *A. arctica*, p. 364; *A. gracilis*, p. 365; and *Amphicteis sundevalli*, p. 366.

Terebellacea.

Malmgren (*l. c.*) divides this family as follows:—

Subfamily I. Amphitritea (p. 373). Lobus cephalicus brevis truncatus antice tentaculis numerosis longitudinaliter canaliculatis marginibus conniventibus plus minusve elongatis sat numerosis, pone tentacula margine verticali sæpe punctis nigris oculis dictis postice prædito, infra tentacula in labium os supra tegens antice productus. Vasa sanguifera conspicua. Branchiæ sæpissime adsunt. Setæ capillares plus minusve limbatæ, sæpissime modo in anteriore parte corporis, interdum per totum corpus obviæ. Uncini in toris insidentes, aviculares vel rarius pectiniformes, per totum corpus eadem forma.

Subfamily II. Polycirridea (p. 390). Lobus cephalicus labium magnum integrum vel rarius tripartitum formans supra prope marginem tentaculis numerosissimis canaliculatis obsitum. Setæ capillares haud limbatæ, sæpissime tantummodo in anteriore parte obviæ. Uncini aut hamati aut elongati sublineares, aut nulli. Branchiæ nullæ. Oculi nulli. Vasa sanguifera nulla conspicua.

Subfamily III. Artacamacea (p. 394). Segmentum buccale antice in proboscidem magnam papillosam productum.

Subfamily IV. Trichobranchidea (p. 395). Lobus cephalicus ut in Amphitriteis. Branchiæ filiformes. Uncini in anteriore parte corporis rostrati, in posteriore aviculares.

Subfamily V. Canephoridea (p. 396). Branchia sola quadripartita pectinata. Uncini in anteriore parte corporis rostrati, in posteriore pectiniformes.

Subfamily I. Amphitritea.

A. Fasciculi setarum capillarium modo in anteriore parte corporis.
  1. Branchiæ ramosæ.
    a. Branchiarum paria tria.
      a. Branchiæ fere æquales, subfruticosæ:
        Amphitrite (Müll.).
      β. Branchiæ arborescentes, postice sensim breviores.
        aa. Uncini pectiniformes:
          Loimia, g. n., p. 380; type *Terebella medusa* (Sav.).
        bb. Uncini aviculares.
          aa. Segmentum buccale in labium magnum latumque productum:
            Lanice, g. n., p. 379; type *Nereis conchilega* (Pall.).
          ββ. Segmentum buccale labium angustum breveque formans:
            Terebella (L.).
    b. Branchiarum paria duo.
      a. Fasciculi setarum capillarium in 15 segmentis:
        Nicolea, g. n., p. 380; type *N. arctica*, sp. n.

      β. Fasciculi setar. capill. in 17 segmentis:
        Pista g. n., p. 382; type *Amphithrite cristata* (Müll.).
    c. Branchiarum par unum.
      a. Fasciculi setar. capill. in 16 segmentis:
        Scione, g. n., p. 383; type *S. lobata*, sp. n.
      β. Fasciculi setar. capill. in 15 segmentis:
        Axionice, g. n., p. 384; type *Terebella flexuosa* (Grube).
  2. Branchiæ nullæ.
    a. Fasciculi setar. capill. in 10 segmentis:
      Leæna, g. n., p. 385; type *L. abranchiata*, sp. n.
    b. Fasciculi setar. capill. in 15 segmentis:
      Lanassa, g. n., p. 385; type *L. nordenskiöldi*, sp. n.
    c. Fasciculi setar. capill. in 17 segmentis:
      Laphania, g. n., p. 386; type *L. boecki*, sp. n.

B. Fasciculi setarum capillarium per totum corpus obvii.
  1. Branchiæ ramosæ, arborescentes, paria plerumque tria:
    Lepræa, g. n., p. 389; type *Terebella textrix* (Johnst.).
  2. Branchiæ filiformes, numerosæ.
    a. Br. in segmentis 2, seriem transversam contiguam utrinque formantes:
      Thelepus (Leuck.).
    b. Br. in segmentis 3.
      a. Fas. setar. incipientes a segmento secundo branchifero:
        Neottis, g. n., p. 388; type *Terebella triserialis* (Grube).
      β. Fasc. setar. incipientes a segmento primo branchifero:
        Grymæa, g. n., p. 388; type *G. bairdi*, sp. n.

Subfamily II. Polycirridea.

Malmgren divides this subfamily thus:—

A. Uncini nulli. Fasciculi setarum in 6 segmentis:
  Lysilla, g. n., p. 392; type *L. loveni*, sp. n.

B. Uncini hamati.
  1. Fasc. setar. capill. in 13 segmentis:
    Ereutho, g. n., p. 391; type *E. smitti*, sp. n.
  2. Fasc. setar. capill. in 19–22 segmentis:
    Leucariste, g. n., p. 390; type *L. albicans*, sp. n.
  3. Fasc. setæ capill. in 40 segmentis vel ultra:
    Polycirrus (Grube).

A. Uncini elongati, sublineares, aciculiformes. Fasc. setar. in 10 segmentis:
  Amæa, g. n., p. 392; type *Polycirrus trilobatus* (Sars).

Subfamily III. Artacamacea.

One genus only: *Artacama proboscidea*, g. & sp. n., Malmgren, *l. c.* p. 394.

Subfamily IV. Trichobranchidea.

One genus only: *Trichobranchus glacialis*, g. & sp. n., Malmgren, *l. c.* p. 395.

Subfamily V. Canephoridea.

This subfamily contains Sars's genus *Terebellides*.

Besides the species mentioned, Malmgren describes the following as

new:—*Amphitrite affinis* (p. 375), *A. intermedia* (p. 376), *A. palmata* (p. 376), *A. grœnlandica* (p. 376), *A. grayi* (p. 377), *A. johnstoni* (p. 377), *Terebella debilis* (p. 378), *T. danielsseni* (p. 379).

Baird (Journ. Linn. Soc. vol. viii.) describes as new species *Terebella flabellum* (p. 157), Narrow Island, Antarctic Region; and *T. bilineata* (p. 157), Falkland Islands.

Dr. Johnston (*l. c.*) characterizes a new genus, *Venusia* (p. 241), for the *Sabella conchilega* of Montague. The synonomy of this genus, however (*fide* Malmgren), is *Thelepus*, Leuckart, 1849; *Lumaria*, Stimpson, 1855; *Venusia*, Johnston, 1865.

Sabellacea.

Malmgren (*l. c.*) describes the following new genera:—

Laonome (p. 400). Corpus lineare elongatum subteres vix depressiusculum ano terminali. Sulcus ventralis conspicuus, etiam in dorso anterioris partis corporis distincte continuatus. Collare humile, branchiis non adpressum, dorso latissime hians, laciniis ventralibus reflexis. Tubercula setigera a segmento secundo h. e. postcollari incipientia setis in anteriore corporis parte biformibus: longioribus apice attenuato limbatis, brevioribus infra apicem acutum brevissimum utrinque æqualiter limbatis, peripheria limborum circulum describente; setis in posteriore corporis parte apice attenuato late limbatis, omnibus fere eadem forma. Tori uncinigeri a segmento secundo setigero incipientes uncinis per totum corpus uniserialibus avicularibus, manubrio postice haud producto ut in *Potamilla* et *Sabella*. Branchiæ utrinque semiorbem formantes inferiores breviores, appendicibus dorsualibus et punctis ocularibus carentes. Tentacula mediocria, utrinque unum, membranacea, cucullata, marginibus conniventibus, paulum attenuata obtusa.—*S. krøyeri*, sp. n.

Potamilla (p. 401). Corpus sublineare postice sensim attenuatum depressiusculum ano terminali. Sulcus ventralis conspicuus, in dorso anterioris partis corporis haud continuatus. Collare humile dorso perparum hians, laciniis ventralibus plerumque reflexis. Tubercula setigera a segmento collari incipientia setis in anteriore parte corporis biformibus: longioribus apice attenuato limbatis, brevioribus subspathulatis, infra apicem brevissimum acuminatum utrinque inæqualiter limbatis, limbo altero latiore quam altero. Tori uncinigeri a segmento secundo setigero incipientes uncinis in anteriore parte corporis biserialibus biformibus, altera serie avicularibus, altera apice dilatato ovato oblique acuminatis, in posteriore parte corporis modo avicularibus uniserialibus. Branchiæ utrinque semiorbem formantes tantum ad basin connexæ, appendicibus dorsualibus nullis, interdum punctis ocularibus præditæ. Tentacula, unum utrinque, brevia lata compressa.—*P. neglecta* = *Sabella neglecta* (Sars).

Euchone (p. 405). Corpus subteres sublineare postice perpaulo attenuatum, apice acuminato, rima ventrali longitudinali profunda plus minusve hiante per 8–12 ultima segmenta extensa. Anus ventralis in extrema parte rimæ situs, subterminalis. Sulcus abdominalis bene conspicuus, etiam in dorso anterioris partis corporis plus minusve distincte continuatus. Collare humile vel mediocre branchiis non adpressum, dorso dimidiatum, lateraliter integrum, incisura ventrali plerumque brevissima. Anterior corporis pars 8 segmentis composita infra sulco transverso bipartitis. Segmenta sequentia

usque ad rimam ventralem scutis binis ventralibus contiguis subrectangularibus vel minutis admodum sejunctis oblongis vel subrotundis utrinque prædita. Tubercula setigera a segmento collari incipientia in anteriore parte corporis setis plerumque biformibus, longioribus paulo curvatis apice attenuato limbatis, brevioribus subspathulatis infra apicem brevem acuminatum utrinque latissime breviter limbatis, rarius eadem forma limbatis longioribus et brevioribus; in posteriore parte vero setis capillaribus anguste limbatis elongatis omnibus eadem forma. Tori uncinigeri a segmento secundo setigero incipientes uncinis uniserialibus, in anteriore parte corporis rostratis manubrio sat elongato vertice rostri serrulato, in posteriore parte vero brevibus avicularibus. Branchiæ semiorbem utrinque formantes, ultra dimidiam earum longitudinem aut fere totæ cute connexæ, apice nudo acuminato appendicibus dorsualibus nullis, punctis ocularibus nullis. Cirri tentaculares teretes filiformes inæquales, utrinque c. 2–10.—*E. analis* (Kr.).

Malmgren describes as new species *Sabella spetsbergensis* (p. 399), *Laonome krøyeri* (p. 400), *Potamilla torelli* (p. 402).

Sabella bipunctata (p. 158), Island of St. Thomas, *S. nigromaculata* (p. 159), Island of St. Vincent, *S. occidentalis* (p. 159), same locality, *S. grossæ* (p. 160), St. Helena, and *S. grandis*, New Zealand, are described as new by Dr. Baird, Journ. Linn. Soc. vol. viii.

Serpulea.

Johnston describes (*l. c.*) the following new species:—*Serpula berkeleii* (p. 271), pl. xx. fig. 4; *S. dysteri* (p. 272), pl. xx. fig. 3.

Cailliaud in his 'Catalogue des Radiaires, des Annélides &c. recueillis dans le département de la Loire-Inférieure,' Paris, 1865, mentions nothing but extremely common forms, many of them, we should fancy from the list, badly determined.

E. Beltremieux, 'Faune du département de la Charente-inférieure,' La Rochelle, 1864, pp. 94, plates 1–8, gives a list of a few of the more ordinary forms of Annelids met with on the coasts of Rochelle.

ANNELIDA OLIGOCHÆTA.

Naidina.

Lumbricus terrestris. The first part of Mr. Lankester's anatomical memoir treats of the tegumentary, muscular, and digestive systems. The author would seem to regard the setæ as secretions of the so-called setigerous glands; but may they not be the products of excretion, and may not the functions of the glands be somewhat more commonplace? The *digestive system* consists of a mouth situated in the first anterior segment of the body, of an oral muscular pharynx extending to the eighth segment, of a narrow contracted œsophagus expanding in the fifteenth or sixteenth ring into a muscular crop, followed by a hard fibrous ring; from this the intestine, a plicated, delicate, elastic tube, covered by a membrane of granular cells, winds its way to the last ring. Connected with the pharynx are three convoluted bodies, regarded as salivary organs; and attached

to the œsophagus are three pairs of glands in the twelfth and thirteenth segments, the two posterior pairs of which secrete a milky fluid, probably to promote digestion. These glands are now for the first time described.

Part 2 treats of the secreting and reproductive systems. In treating of the reproductive system, Mr. Lankester shows the fallacies of the strange views of Dr. Williams, and concludes that the *generative system* consists of two pairs of testes, situated in the eleventh and twelfth segments, connected with two seminal vesicles; a pair of bifurcated ciliated vasa deferentia, connected with each testis by means of a ciliated receptacle, enveloped in the fibrous sheath of the testis and opening in the fifteenth segment; a pair of minute transparent ovaries, situated in the thirteenth segment, opposite the orifices of two oviducts, placed in the fourteenth; a pair of spermatic reservoirs in the tenth and eleventh segments; five pairs of capsulogenous glands, and the cingulum.

In Part 3 the hæmal and nervous systems are described. The *hæmal system* consists of a corpusculated colourless fluid contained in the somatic cavity, and provided with exits and a series of capillary canals for the entrance of fluid, and of a red-coloured non-corpusculated fluid contained in three longitudinal trunks and their ramifications; both are albuminous: the former is homologous with the blood of Insects and Crustacea, and probably performs a nutritive function; the latter is homologous with the water-vascular system of *Scolecida*, and has an excretory or urinary function through the segmental organs and a respiratory function in connexion with the oxygen absorbed by the perivisceral fluid. The *nervous system* consists of a supra- and a subintestinal portion, both of which present the usual components of fibres and cells. The principal centre is the cephalic bilobed ganglion, homologous with the corpus callosum and the commissure prolonged through the corpora quadrigemina. From this in one direction pass the cephalic nerves, in the other the pharyngeal crura, uniting beneath the pharynx to form the subventral cord and ganglia. From the pharyngeal crus four branches on either side unite to form the supraintestinal chain or plexus discovered by Lockhart Clarke, and homologous with the sympathetic and visceral ganglia of Mollusca. Four other twigs on either side are distributed to the pharynx. The muscles of the segments are presided over by the subventral cord. There are no special organs of sense, unless the labial segment should be so considered. The memoir concludes with a tolerably complete bibliographical record of all writings on the anatomy of the Earthworm. The plates, four in number, are from original drawings.

Leydig (*l. c.* p. 365), after describing in detail the anatomical structure of *Æolosoma quaternarium*, Ehrbg., figures (fig. 3, pl. viii.) and describes a supposed new species, *A. niveum*; but we are inclined to think that this is but a young form of some other Naid.

Here we would call attention to Leydig's memoir (*l. c.*) on the anatomy of *Phreoryctes menkeanus*.

ANNELIDA DISCOPHORA.

Hirudinea.

Murie gives an account of the discovery of a large specimen of *Trocheta subviridis* among the viscera of a Moluccan deer. He calls attention to the fact that the generic name was originally written *Trocheta*, though, from following Lamarck, and probably believing in the correctness of Agassiz's 'Nomenclator,' it has been generally spelt *Trochetia*. Proc. Zool. Soc. 1865, pp. 659–662.

Hæmopis incerta, sp. n., De Filippi, Viaggio in Persia, p. 196; and *Nephelis persa*, sp. n., De Filippi, *l. c.* p. 196: both from Lake Goktscha, and characterized by the coloration only.

Clepsinea.

Clepsine beryllina, sp. n., De Filippi, *l. c.* p. 197, from Lake Goktscha.
Glossophonia granifera, sp. n., Johnston, *l. c.* p. 51.

Branchiobdellea.

Branchiobdella astaci (Odier). Dr. Dorner (Zeitschr. wiss. Zool. xv. pp. 464–493) gives a very detailed account of the anatomy of this species, adding an historical review of the genus. He also gives amended diagnoses of *B. astaci* and *B. parasita* (Henle).

ANNELIDA GEPHYREA.

Quatrefages (Ann. Sc. Nat. 1865, iii. p. 296) proposes the following arrangement for this group:—

I. Body bearing setæ ..... Order I. G. armata.
  A. Several anterior bundles ..... 1. *Sternaspidea.*
  B. Two simple anterior setæ.
    a. With posterior setæ ..... 2. *Echiurea.*
    b. No posterior setæ ..... 3. *Bonellica.*
II. Body not bearing setæ ..... Order II. G. inermia.
  A. Anus terminal.
    a. With external posterior branchiæ ..... 4. *Priapulea.*
    b. No external posterior branchiæ ..... 5. *Loxosiphonea.*
  B. Anus dorsal.
    a. Scutes present ..... 6. *Aspidosiphonea.*
    b. No scutes ..... 7. *Sipunculea.*

Family I. STERNASPIDEA (1 genus) *Sternaspis.*
Family II. ECHIUREA (1 genus) *Echiurus.*
Family III. BONELLIEA (2 genera).

I. Cephalic appendage simple ..... *Thalassema.*
II. Cephalic appendage bifurcated ..... *Bonellia.*

Genera incertæ sedis 3: *Ochetostoma, Lesinia, Halicryptus.*

Family IV. PRIAPULEA (3 genera).

I. Branchiæ inserted on a stem { 1 ..... *Priapula.* / 2 ..... *Chetoderma.*
II. Branchiæ on a prolongation of the body ..... *Trypania.*

Family V. LOXOSIPHONEA (2 genera).

I. Body carrying one scute ..... *Loxosiphon.*
II. Body carrying two scutes ..... *Diesingia.*

Family VI. ASPIDOSIPHONEA (1 genus) *Aspidosiphon.*

Family VII. SIPUNCULEA (2 genera).

I. Buccal cirri simple ..... *Sipunculus.*
II. Buccal cirri pinnate or ramified ..... *Dendrostoma.*

GENERA INCERTÆ SEDIS 2: *Ascosoma, Anoplosomatum.*

Keferstein (Zeitschr. wiss. Zool. 1865, p. 418) proposes to subdivide the order SIPUNCULIDÆ as follows:—

Family I. SIPUNCULACEA.

1. *Sipunculus nudus, S. tessellatus, S. phalloides, S. indicus, S. robustus.*
2. *Phascolosoma.* Section I. With hooks on the proboscis: *P. australe, P. noduliferum, P. nigrescens, P. varians, P. granulatum, P. lævе, P. cylindratum, P. elongatum, P. vulgare, P. margaritaceum, P. strombi, P. coriaceum, P. pellucidum, P. papilliferum.* Section II. Without hooks on the proboscis: *P. gouldii, P. antillarum, P. ærstedii, P. riiseii, P. boreale.*
3. *Petalostoma*: *P. minutum.*
4. *Dendrostoma*: *D. pinnifolium.*

Family II. PRIAPULACEA.

1. *Priapulus*: *P. caudatus, P. glandifer, P. brevicaudatus.*
2. *Halicryptus*: *H. spinulosus.*
3. *Chætoderma*: *C. nitidulum.*
4. *Anoplosomatum*: *A. antillense.*

Dr. Keferstein describes the following new genus and species:—

Petalostoma, g. n., Keferstein (p. 438), characterized by having two large, solid leaf-shaped tentacles over the mouth, and no vascular system.—*P. minutum*, Kef., coast of Normandy.

Sipunculus robustus (p. 421), *Phascolosoma australe* (p. 422, taf. 32. figs. 12 & 13), *P. nigrescens* (p. 424, taf. 31. fig. 2, taf. 32. figs. 14 & 15), *P. cylindratum* (p. 428, taf. 33. figs. 40 & 41), *P. coriaceum* (p. 432, taf. 32. figs. 23 & 24), *P. pellucidum* (p. 433, taf. 32. figs. 26 & 27), *P. papilliferum* (p. 433, taf. 32. figs. 18 & 19), *P. ærstedi* (p. 436, taf. 31. fig. 8, taf. 33. fig. 39), *P. riiseii* (p. 437, taf. 33. fig. 38), *P. boreale* (p. 437, taf. 31. fig. 7, taf. 33. fig. 33), *Dendrostoma pinnifolium* (p. 439, taf. 33. figs. 42 & 43), *Anoplosomatum antillense* (p. 443, taf. 33. figs. 44, 45, 46).

Jourdain (*l. c.*) and Semper (*l. c.*) give anatomical details of several species of *Sipunculidea*. See above, p. 712, 714.

Aspidosiphon mülleri (Diesing). Schmidt (Mittheil. ntrw. Ver. Steiermark. 1865, p. 56) recognizes in this species one described by himself in 1854 as *Lesinia farcimen*. He gives now a detailed account of its habits and anatomy, and considers the genus *Aspidosiphon* sufficiently distinct from *Sipunculus* and *Phascolosoma*. The following are the amended characters:—Proboscis a corpore discreta, inde a basi et crassitie et colore ab anteriori corporis parte differens. Supra basin proboscidis squamulæ chitineæ aggregatæ scutelli speciem formant, ejusdemque generis scutellum ad apicem caudalem observatur. Anus pone scutellum anterius.

SCOLECIDA

BY

E. PERCEVAL WRIGHT, M.A., M.D., F.L.S.

BAIRD, W. Description of a new species of Entozoon from the Intestines of the Diamond-Snake of Australia (*Morelia spilotes*). Proc. Zool. Soc. 1865, p. 58; Ann. & Mag. Nat. Hist. 1865, July, p. 52. [*Bothridium arcuatum.*]

BASTIAN, H. C. Monograph on the *Anguillulidæ*, or Free Nematoids, marine, land, and freshwater, with descriptions of 100 new species. Trans. Linn. Soc. vol. xxv. pp. 73–180, pls. 9–13.

This memoir must be consulted by every one interested in the subject. The author first gives a short history of what is known as to this family of the Nematoid worms, then a tabular list of genera, which we give further on, and, lastly, full diagnoses of the genera and the species. This monograph being published in the Transactions of an English Society, we should prefer to have had the specific descriptions all in one language, not, as at present, partly English, German, French, and Latin.

——. On the Anatomy and Physiology of the Nematoids, parasitic and free; with observations on their zoological position and affinities to the Echinoderms. Proc. Roy. Soc. June 15, 1865, p. 371–374 (abstract); Ann. & Mag. Nat. Hist. 1865, September, pp. 197–200.

It would trespass too much on the space of the Record to give even a brief epitome of this important paper. In the latter part the author discusses at great length the systematic position of the Nematoids; between them and the Echinoderms he finds several strong points of resemblance. The nervous system of the former differs notably from that of the Annelida or Scole-

cida, but resembles very much that met with among the Echinoderms. The integumental pores of the Nematoids he compares to the ambulacral and other pores met with among the Echinoderms. He would regard the Nematoidea as an aberrant division of the class Echinodermata, connecting it, however, with the Scolecida; and though in some points they show close affinities to the Echinoderms, still, as regards the structure and different modifications of their ventral excretory apparatus, they agree more closely with the Trematoda.

Boogaard. Over het voorkomen van bandwormen te Leiden. Versl. en Mededeel. Akad. Amsterdam, 1865, pp. 212–214.

Cobbold, T. S. On Animal Individuality from an entozoological point of view. Journ. Linn. Soc. vol. viii. Zool. pp. 163–169.

The author gives a philosophical explanation of the agamogenetic or non-sexual phenomena of development as they occur in Entozoa generally. He separates the phenomena into life-epochs, which he calls "biotomes," and which may be primary, secondary, or tertiary in certain species. He gives tabular views of these life-stages, and contrasts them in different parasites. If the principles of interpretation be accepted, the results obtained by this method are certainly very curious.

——. Remarks on the best Methods of displaying Entozoa in Museums. *L. c.* pp. 170–172.

A short paper describing the plan which the author has pursued in revising and enlarging the important collection of Entozoa contained in the Museum of the Royal College of Surgeons of England.

——. New Entozootic Malady; being observations on the probable introduction of parasitic diseases by sewage utilization. London, 1865 (pp. 15).

In this brochure the author especially dwells upon the *Bilharzia hæmatobia*, and gives proofs of its existence in England, in man and in a monkey (*Cercopithecus fuliginosus*) imported from Africa.

——. On the Production of Cystic Entozoa in the Calf (with Prof. J. B. Simonds). Proc. Roy. Soc. May 4, 1865.

In this memoir the authors confirm the researches of Leuckart and Mosler respecting the source of the larvæ of *Tænia mediocanellata*. By administering the proglottides of this tapeworm to a calf they succeeded in rearing several thousand larvæ (*Cysticercus bovis*, Cobbold). The experimental animal almost succumbed to the so-called "acute cestode tuberculosis" thus produced, but it ultimately recovered. The animal was killed at

the expiration of thirteen weeks (see also 'Lancet,' vol. ii. p. 249: 1865).

Cobbold, T. S. Report of Experiments respecting the Development and Migrations of the Entozoa. Brit. Assoc. Reports, 1864 (publ. in 1865), pp. 111–120.

——. Brief notice of results obtained by Experiments with Entozoa. Journ. Linn. Soc. vol. viii. Zool. pp. 141–143.

These papers chiefly relate to the development of the embryos of various species of *Ascaris* during a more or less prolonged immersion of the ova in water. Ciliated embryos were also obtained in *Fasciola hepatica*, and likewise sexually mature tapeworms (*Tænia serrata*), from the pea-shaped bladderworms (*Cysticercus pisiformis*) of rabbits.

——. Note on Entozoa collected by Mr. C. W. Devis. Proc. Zool. Soc. 1865, p. 325.

——. Notes on Entozoa of interest to the Surgeon. Nunn's 'Ward Manual,' pp. 57. London, 1865.

Davaine, C. Recherches sur l'Anguillule du Vinaigre (*Rhabditis aceti*, Dujardin). Compt. Rend. tom. lxi. 7 Août 1865, p. 259.

Foot, A. W. Notes on the Dissections of some animals from the Zoological Gardens, Phœnix Park. Proc. Dubl. Nat. Hist. Soc. vol. iv. pt. 1, 1864, pp. 42–49.

Records the existence of some common Nematoid and Tænioid worms in the animals dissected.

Greeff, R. Untersuchungen über den Bau und die Naturgeschichte von *Echinorhynchus miliarius*, Zenk. Arch. für Naturg. 1864, pp. 98–140, Taf. ii. & iii.

——. Ueber die Uterusglocke und das Ovarium der Echinorhynchen. Ibid. p. 361–375, Taf. vi.

The first of these papers gives the result of very careful observations on the development from the ovum of *E. miliarius*, and describes its nervous, muscular, and reproductive systems. The latter treats more particularly of the female generative organs, especially of the appendage to the uterus called Uterusglocke, and gives some further details of the development of the ova.

——. Ueber die hier lebenden Nematoden (*Anguillulinen*). Verhand. natur. Ver. Preuss. Rhein. 1864, pp. 112–113.

Guyon, M. Sur le Dragonneau, ou Ver de Médine (*Filaria medinensis*). Compt. Rend. lxi. Septembre 1865, p. 475.

The author inclines to the belief that this worm is introduced into the human subject through the alimentary system. This opinion is also held by the natives of the west coast of Africa and by those of Egypt, Arabia, and Persia.

——. Sur un nouveau cas de Filiare sous-conjunctival, ou

Filaria oculi des auteurs, observé au Gabon (côte occidentale d'Afrique). Compt. Rend. lix. Novembre 7, 1864, pp. 743–748.

Heck, M. Van den. Sur les Tænia d'Abyssinie, extrait d'une lettre à M. van Beneden. Bull. Acad. de Bruxelles, 2e sér. t. xviii. 1864, pp. 386–387.

Knappert, B. Bijdragen tot de ontwikkelingsgeschiedenis der Zoetwater Planarien. Utrecht, 1865, pp. 1–39, two plates (reprint).

Krabbe, H. Die Echinococcen der Isländer. Arch. für Naturg. 1865, pp. 110–126.

Lespès, Ch. Sur quelques points de l'Organisation des *Echinorhynques*. Revue des Sociétés savantes, p. 370, Paris, 1864; and extract in Journ. de l'Anat. et Physiol. p. 683, 1864.

Leuckart, R. Zur Entwickelungsgeschichte der *Ascaris nigrovenosa*. Zugleich eine Erwiederung gegen Herrn Candidat Mecznikow. Reichert u. Du Bois-Reymond's Archiv, 1865, pp. 641–658.

——. Helminthologische Experimentaluntersuchungen. Nachr. Gesellsch. Wiss. Gött. 1865, pp. 219–232.

Lindemann, K. Zur Anatomie der Acanthocephalen. Bull. Soc. Nat. de Moscou, 1865, pp. 484–498, pls. 10–12.

The author describes a new genus and two new species.

Macalister, A. On the presence of certain secreting organs in Nematoidea. Ann. & Mag. Nat. Hist. 1865, July, pp. 45–48.

The author describes a series of four small pyriform bodies, with long fine ducts opening just above the anus, which he regards as the representative of the Malpighian tubes in the Articulata.

Marcet, W. Chemical examination of the fluid from the peritoneal cavity of *Ascaris megalocephala*. Proc. Roy. Soc. vol. xiv. No. 72, p. 69 (read Feb. 9, 1865).

The author concludes that nutrition in these Nematode worms can be carried on by means of a fluid containing few other substances besides albumen and phosphate of potash. The principal constituent of the juice of flesh, however, is phosphate of potash, both tri- and bibasic: the ascaris- and flesh-fluid are both acid; in both there is but a very small quantity of chloride, very little or no soda, and little or no lime; so that here we have an interesting parallel between the assimilation in the highest and lowest animals.

Mecznikow, E. Ueber die Entwickelung von *Ascaris nigrovenosa*. Reichert u. Du Bois-Reymond's Archiv, 1865, pp. 409–420, pl. x.

From these observations it would appear that in *A. nigrovenosa* the embryos attain sexual maturity while they have all the appearance of worms belonging to the genus *Rhabditis*, that while living in this stage they feed and grow as if they had to carry on a free existence throughout their lives; but their progeny becomes truly parasitic, and both these forms are sexually developed. Both spring from ova.

——. Zur Naturgeschichte der Rhabdocœlen. Arch. für Naturgesch. 1865, pp. 174–181, taf. iv.

M'Intosh, W. C. On a Trematode Larva and on a Ascaris of the *Carcinus mœnas*. Quart. Journ. Micr. Science, July 1865, p. 201, with a plate.

Pagenstecher, H. A. Die Trichinen, mit Rücksicht auf den jetzigen Standpunkt der Parasitenlehre. Der Zoologische Garten, 1864, pp. 33–39, 64–74, 96–108.

——. Ueber das Vorkommen von *Trichina spiralis*, beim Igel. Verhand. nat.-hist.-med. Ver. Heidelberg, Bd. iv. p. 11.

——. Ueber Trichinen und Psorospermien beim Maskenschweine. *L. c.* pp. 20–22.

Rindfleisch, E. Zur Histologie der Cestoden. Archiv für mikroscop. Anat. 1865, 1. Band, pp. 138–142, Taf. vii.

Stieda, L. Ein Beitrag zur Anatomie des *Bothriocephalus latus*. Reichert u. Du Bois-Reymond's Archiv, July 1864, pp. 174–212, with two plates. Noticed in Quart. Journ. Micr. Science, January 1865, p. 53; Ann. Sci. Natur. 5e sér. Zoologie, t. iii. 1865, pp. 93–126.

Entozoa in Museums. Dr. Cobbold (Lancet, May 13, 1865, p. 503) gives a brief record of no less than 632 preparations of Entozoa examined by himself contained in ten different museums and representing 377 human cases, of which latter 199 were referable to the *Echinococcus* or hydatid disease.

Dr. Cobbold states what is known respecting the source of all the species of Entozoa liable to infest the human body in Brit. Assoc. Report, 1864, pp. 119 & 120; Pop. Science Rev. 1865, pp. 163–170; and in Journ. Bath Soc. of Agricul. 1865, pp. 149–156.

Nematoidea.

Davaine (*l. c.*) notices the opinions that were held on the subject of the production of the Vinegar-Eels by Buffon, Dujardin, and others, and then proceeds to lay the results of his own investigations, carried on for more than ten years, before the reader. Wine-vinegar, no matter how long it may be exposed to the air, will not produce them; nor will vinegar poured over paste produce them, if they were not previously in the vinegar. Acidity

is not a necessary condition for the existence of these creatures; such acids as oxalic, acetic, or citric, if added to pure water so as to make it as acid as the vinegar in which they live, will speedily destroy them. On the contrary, they live and increase rapidly in a liquid not acid, but containing *sugar*, while they will live in pure water for about eight days; they will live in the same water, if 1 to 2 grains of sugar be added to every 1000 of water, for many weeks, and for many months if 3 to 5 grains be added. In water containing 5 per cent. of sugar they increase and multiply in great numbers, and this increase is in proportion to the quantity of sugar contained in the water; it increases up to 30 per cent., it remains stationary at about 40 per cent., and at 50 per cent. the eels cease to propagate or live. To keep the water from becoming too acid in these experiments, a little chalk must be added to it.

In a fluid constantly neutral the eels multiply in much greater numbers than in an acid fluid. Guided by these results, eels placed in neutral or very slightly acid fruits, such as peaches, cherries, plums, &c., were found to propagate in enormous numbers; and in vegetables the same was the case; the increase appeared to be in a ratio with the amount of sugar in the vegetable, beetroot and the onion being in the first rank, then the carrot and tomato, and lastly the turnip. Amidst all these experiments, the eels never showed any specific change; whether they were scarcely nourished, or whether they lived in abundance, they never appeared to vary either in length, thickness, or appearance. Such facts point at once to the origin of these worms. They live and are reproduced in abundance in the fruits which fall on the ground, or in the sugary roots which grow in it (it is remarkable that they can live for upwards of three weeks in the damp clay itself without any nourishment); they thus get into the vinegar made from such substances, when they rapidly increase and so are distributed with the vinegar. As the eel (so the author concludes) lives only in vinegar made from fruits, it is easy to account for the fact that though once very common, it is now-a-days very rare"—a hint not to be lost sight of by housekeepers.

Bastian (*l. c.*) describes the following new species of *Anguillulidæ*:—

Monhystera stagnalis, M. dispar, M. rivularis (p. 97), *M. longicaudata, M. filiformis, M. disjuncta* (p. 98), *M. ambigua* (p. 99), *Trilobus gracilis* (p. 99), *T. pellucidus* (p. 100), *Mononchus truncatus, M. papillatus, M. macrostoma* (p. 101), *M. tunbridgensis, M. cristatus* (p. 102), *Ironus ignavus* (p. 104), *Dorylaimus carteri, D. obtusicaudatus* (p. 106), *D. tenuicaudatus, D. tritici, D. filiformis* (p. 107), *D. polyblastus, D. papillatus, D. torpidus* (p. 108), *D. iners* (p. 109), *Tripyla glomerans* (p. 115), *T. salsa* (p. 116), *Diplogaster fictor* (p. 118), *D. albus, D. filiformis* (p. 117), *Plectus parietinus* (p. 118), *P. cirratus, P. tenuis, P. velox* (p. 119), *P. acuminatus, P. parvus, P. tritici, P. granulosus* (p. 120), *P. fusiformis* (p. 121), *Aphelenchus avenæ* (p. 122), *A. villosus, A. parietinus, A. pyri* (p. 123), *Cephalobus persignis* (p. 124), *C. striatus* (p. 125), *Tylenchus davainii* (p. 126), *T. terricola* (p. 127), *T. obtusus* (p. 128), *Rhabditis marina* (p. 129), *R. longicaudata, R. ornata, R. acris* (p. 130), *Symplocostoma longicollis, S. vivipara* (p. 133), *Oncholaimus vulgaris* (p. 135), *O. glaber, O. viscosus, O. fuscus* (p. 136), *O. albidus, O. viridis* (p. 137), *Anticoma eberthi, A. limalis* (p. 141), *A. pellucida* (p. 142), *Phanoderma cocksi, P. albidum* (p. 143), *Leptosomatum elongatum, L. gracile* (p. 145), *L. figuratum* (p. 146), *Enoplus communis* (p. 148), *E. dujardinii, E. pigmentosus* (149), *E. inermis, E. brevis* (150), *Linhomœus hirsutus* (p. 154), *L. elongatus* (p. 155), *Tachyodites natans* (p. 155), *T. parvus* (p. 156), *Theristus acer* (p. 157), *T. velox* (p. 157), *Sphærolaimus hirsutus* (157), *Comesoma vulgaris* (p. 158), *C. profundi* (p. 159), *Spira parasitifera* (p. 159), *S. lævis, S. tenuicaudata* (p. 160), *Cyatholaimus ocellatus, C. cæcus, C. ornatus* (p. 163), *C. punctatus, C. striatus* (p. 164), *Spilophora elegans* (p. 165), *S. inæqualis, S. robusta, S. costata* (p. 166), *Chromadora vulgaris* (p. 167), *C. nudicapitata, C. natans* (p. 168), *C. cæca, C. filiformis, C. sabelloides* (p. 169), *C. papillata* (p. 170).

Bastian (*l. c.* p. 93) gives the following tabular list of genera of *Anguillulidæ*, which we slightly condense:—

I. Land and Freshwater.

Spicules two, equal, with or without a single posterior median accessory piece.

* Integument plain, or with longitudinal markings. No ventral excretory gland.

† Caudal sucker small.

1. Pharyngeal cavity *none*. Œsophagus *cylindrical*. *Monhystera*, g. n.
2. Pharyngeal cavity large, with one upper *tooth-like* projection. Canal of œsophagus indicated by three bright lines. *Mononchus*, g. n.
3. Pharyngeal cavity *cup-shaped*; *no* teeth. Œsophagus having three lobes at termination ..... *Trilobus*, g. n.

†† Caudal sucker absent.

4. Pharyngeal cavity small, long, and narrow. Œsophageal canal bounded by three bright lines..... ..... *Ironus*, g. n.
5. Œsophageal canal as in 4. *Spear exsertile* at its commencement. *Dorylaimus*, Duj.
6. Œsophagus with oval swelling at its termination, containing a simple valvular apparatus ..... *Anguillula*, Ehr.

** Integument with transverse striæ. Ventral gland present or absent.

† Caudal sucker present.

7. *No* pharyngeal cavity. Œsophagus with constricted portion at *termination* ..... *Tripyla*, g. n.
8. Pharyngeal cavity cup-shaped, with small horny plates at bottom. Œsophagus with large muscular swelling at *middle of length*. *Diplogaster*, Schultze.
9. Pharyngeal cavity *long and narrow*. Œsophagus with *oval swelling* at its *termination*, with complex valvular apparatus. *Ventral gland opening* by twisted duct, near middle of œsophagus. *Plectus*, g. n.
10. Œsophagus terminating in a large rounded muscular swelling. *Ventral gland opening* posterior to termination of œsophagus. *Aphelenchus*, g. n.

†† Caudal sucker absent.

11. Œsophagus with rounded swelling posteriorly, containing simple valvular apparatus. *Ventral gland opening* as in 10. *Males with caudal alæ* ..... *Cephalobus*, g. n.
12. Œsophagus with *rounded swelling* about its middle. *Ventral gland opening* as in 11. Caudal alæ *narrow, unsupported*. *Tylenchus*, g. n.

13. Pharyngeal cavity cylindrical. Œsophagus with *elongated* swelling at middle, with rounded one at termination as in 11. Caudal alæ large, *supported by rays*..... *Rhabditis*, Duj.

II. Marine.

Spicules two, equal, solitary, or with 1, 2, or 4 accessory pieces. Occasionally a single supplemental organ in ventral region, above anus. Ventral excretory gland present in all (?). Caudal sucker universal.

* Integument plain, or with longitudinal markings. Œsophagus embraced by glandular (?) ring.

† Spicules solitary or with a single posterior median piece.

14. Pharyngeal cavity long, complex, crossed by lines or bars, with a *funnel-shaped body* on its inferior aspect..... *Symplocostoma*, g.n.
15. Pharyngeal cavity large, with *three tooth-like* projections. *Oncholaimus*, Duj.
16. Pharyngeal cavity *none* ..... *Enchelidium*, Ehr.
17. Integument having a row of opposite *setæ* on dorsal and ventral surfaces. Ocelli *none* ..... *Anticoma*, g. n.
18. Pharyngeal cavity *small*. Ocelli *distinct* and *lateral*. *Phanoderma*, g. n.

†† Spicula having two equal accessory pieces.

19. Pharyngeal cavity none. Ocelli distinct, dorsal. Excretory glandular organs two, opening on either side of the head. *Leptosomatum*, g. n.
20. Pharyngeal cavity indistinct, surrounded by three separate teeth. Ocelli not distinct. No œsophageal ring, and integument with delicate transverse as well as longitudinal striæ. *Enoplus*, Duj.
21. Pharyngeal cavity cup-shaped. Œsophagus enlarged behind pharynx. Anal glands large. Accessory pieces recurved. *Linhomœus*, g. n.

** Integument with transverse striæ or dots. No œsophageal ring.

† Ocelli absent.

‡ Uterus unsymmetrical.

22. Pharyngeal cavity absent. No vaginal glands .. *Tachyhodites*, g. n.
23. Pharyngeal cavity hemispherical, vaginal glands two, unequal. *Theristus*, g. n.
24. Pharyngeal cavity large, somewhat spherical. Vaginal gland single, posterior ..... *Sphærolaimus*, g.n.

‡‡ Uterus symmetrical.

25. Pharyngeal cavity very small. Spicules with or without a very small posterior accessory piece ..... *Comesoma*, g. n.
26. Pharyngeal cavity none. Spicules stout, curved, with two accessory pieces ..... *Spira*, g. n.
27. Pharyngeal cavity none. Teeth doubtful. Spicules as in 26. *Odontobius*, Roussel.

†† Ocelli present or absent.

28. Œsophagus cylindrical. Accessory pieces strong, in two pairs. *Cyatholaimus*, g. n.
29. Œsophagus having well-marked swelling posteriorly. Accessory pieces two, rather indistinct ..... *Spiliphera*, g. n.
30. Pharyngeal cavity rather indistinct. Accessory pieces two, strong, hooked ..... *Chromadora*, g. n.

Filaria medinensis. Notes by Guyon, see p. 741.

Filaria oculi. Guyon (*l. c.* p. 743) mentions that this Nematoid worm, which he suggests may ultimately prove to be but a young stage of the *Dracunculus medinensis*, has been several times met with under the conjunctiva of negroes, both on the west coast of Africa and in parts of America. In this paper M. Guyon records the occurrence of perhaps the largest specimen yet met with, beneath the conjunctiva of a negro at the Gaboon; it measured nearly six inches in length. A short history of the various instances met with since 1777 is given by M. Guyon, who alludes to a case submitted to the French Academy by himself in 1838, of two *Filariæ* existing one in each eye of the same negro: that of the right eye being removed, in a few hours afterwards that of the left eye made its appearance in the right eye and was also removed. These specimens measured from one inch to an inch and a half in length.

Ascaris nigrovenosa. On its development, see Mecznikow's paper referred to above (p. 743); and Leuckart (in reply to Mecznikow) in Reichert and Du Bois-R. Archiv, 1865, pp. 641–658.

Laboulbène describes a parasitic worm (*Mermis* or *Gordius*) found in abundance in a species of *Mantis* in New Caledonia. Ann. Soc. Ent. Fr. 4 sér. tome iv. p. 678.

Acanthocephala.

Echinorhynchus. In the memoir above cited (Journal de l'Anatomie, 1864, p. 683), M. Lespès gives a very elaborate account of the anatomy of a species of this genus. M. Lespès has for some three years particularly investigated the structure and development of one species, *Echinorhynchus clavæceps*, which is found in numbers in the intestines of the minnow and bleak of a little river at Dijon. The paper is not as elaborate a one as the author could have wished; but not finding the species at Marseilles, where he is now resident, he has come to the determination to publish the principal result of his researches. These chiefly relate to the organization of the proboscis, of the female sexual organs, and to the hatching of the ova. The proboscis is composed of two parts,—the proboscis, properly so called, forming about a third of the organ and carrying eighteen recurved hooks; and the sheath of the proboscis, on which one can distinctly see three muscular layers, enclosing a structure considered, very rightly, by Siebold to be a nervous ganglion. It is to this sheath that the four muscles are attached; and it is from its lower portion that the suspensory ligament takes its origin. In the true proboscis, and scarcely below the last row of hooks, one sees a pyriform body, often of a yellowish tinge, which many anatomists have considered to be the remains of the alimentary system, which has become aborted in the last stage of development. It is, according to the author, a *complete alimentary system*. It opens at the extremity of the proboscis by a very minute pore placed on the summit of a terminal papilla, which, while the animal is living, is extremely mobile. Through this aperture M. Lespès has seen it reject a considerable quantity of the contents of the pouch: on this point he is completely satisfied. The digestive cavity is furnished with a few large non-nucleated cells, forming a single epithelial layer. The pouch generally contains a pulpy mass full of small granules, exactly like the mucus from the intestine of a fish; the bottom of this pouch is adherent to a glandular organ, variable in size, without any

proper cavity, and containing cells differing from those of the intestinal epithelium in their smaller size and in containing a large transparent nucleus. The smaller the individuals, the easier was it both to see and to isolate the alimentary system. The female sexual organs have long been known as peculiar. The origin of the floating ovaries, or egg-masses, has long been doubtful; and an examination of nearly a thousand specimens of *Ech. clavæceps* did not satisfy the author as to the views of either Dujardin or Von Siebold; but an examination of *Ech. proteus*, also parasitic in the minnow, demonstrated the perfect accuracy of the opinion of Siebold and the recent researches of Pagenstecher on this point, viz. that it is most certainly in the ligamentum suspensorium that the egg-masses take their origin, and at a point corresponding to where in the males the testes are found. At the pavilion a muscular tube arises which opens at the posterior extremity of the body; it presents two glandular bodies, one above the pavilion, another at the inferior opening; the latter is generally of a yellow colour and plays an important part, as it secrets the cocoon for the eggs. These eggs are not laid singly, but in spherical cocoons containing from 150 to 200 ova. The cocoons can sometimes be found suspended to the extremity of the body of the female; the cocoons become free in the intestine of the fish, soon become broken up, and the ova escape. The embryo forms of *Echinorhynchus* have been investigated by Siebold and, more recently, by Guido Wagner. The embryo of *Ech. clavæceps* is remarkable for the complete absence of all hooks, not only from its body but also from its head. The embryos are immoveable in the egg, and in this condition the author has kept some alive for more than a year. By feeding some snails on flour mixed with the ova of the *Ech. gigas*, the hatching of the embryo was observed. It first of all ruptures the internal membrane, not the outer covering (coquille), when it is free in the intestine of the snail. It then so remarkably changes its form, that had the author not watched it hatching he would have hesitated to recognize it. The mouth-opening is terminal. Two pairs of large hooks, at first recumbent, are elevated and diverge; the entire animal is elongate and takes the form of a club. At this stage it executes most rapid and wonderful movements: advancing its head with the hooks diverging, it supports itself on them and withdraws the rest of its body. From these movements and their great resemblance to some of the cestoid embryos there would be little doubt but their ultimate destination was to traverse the tissues of animals. Once M. Lespès found one in the liver of a snail. At this stage in their existence his experiments came to an end: as to what ultimately became of them he was unable to determine; and this perhaps was in some measure due to the artificial means taken to hatch the eggs; for it is pretty certain that they are not generally developed in the Mollusca, and after the lapse of a few days not an embryo would be found in the snail's intestine, they having all made their escape with the excreta. He tried to watch the hatching of *Ech. clavæceps* by feeding some of the common species of *Limnæi* with them; but though he has seen them at different stages of their hatching, he never witnessed any such remarkable movements as in the case of those of *Ech. gigas*. To see the larvæ in a living state, the best plan is to mix the pellets of a snail fed on the ova, passed one or two days after the ova have been given, with some sugar and water: plain water kills them and rapidly changes their form.

On Greeff's researches into the anatomy of *Echinorhynchus*, especially *E. miliarius*, see p. 741.

*Paradoxites**, g. n., Lindemann, *l. c.* p. 492. This very remarkable genus differs from all other known Acanthocephala, indeed from all other Nematelminthic worms, in having the cylindrical-shaped body divided into a large number of equidistant rings or joints resembling those of a Tænioid worm. All these rings are of the same structure, save the first and three last; the first is almost as large as the six following, and in it is found, as in *Echinorhynchus*, the proboscis invaginated in its sheath. *Paradoxites renardi*, sp. n., p. 495, pl. 12, from the intestine of *Strix passerina*, taken at Wilna, and *P. tænioides*, sp. n., p. 496, taken with the preceding.

Echinorhynchus roseus. Lindemann, *l. c.* p. 484, found 29 examples of this parasite in a *Leuciscus* taken at St. Petersburg; he gives an account of its anatomy, illustrated with some excellent figures.

Trematoda.

Costa has found a Distoma in abundance in some Acalephæ, and names it provisionally *Macrurochæta acalepharum*. Rend. Accad. Napoli. iii. 1864, pp. 86–91.

Distoma lorum. Mecznikow has published brief anatomical details in Arch. f. Naturg. 1865, pp. 49–55, taf. 3.

Cestoidea.

Bothridium arcuatum, sp. n., Baird (Proc. Zool. Soc. 1865, p. 58), found in the intestines of *Morelia spilotes*.

Bothriocephalus latus. Stieda (*l. c.* p. 174) gives a very elaborate description of the anatomy of this Tænioid worm; from the concluding portion we extract the following *résumé*:—

1. The body-substance of *B. latus* consists of a simple cellular connective tissue.
2. The external layer of the body is made up of a structureless cuticle.
3. The muscular fibres are of the type of those called spindle-shaped in vertebrated animals; they are arranged in three directions, and form either, *a.* circular or ring-like muscles, or, *b.* long muscles, or, *c.* isolated scattered oblique muscles.
4. *B. latus* has a genital pore.
5. The male generative organs are composed of—*a.* the testes situated on the lateral portions of the joints; *b.* a common excretory duct for the whole testes; *c.* a muscular sac through which passes the seminal duct, and the anterior end of which, folding in on itself, forms *d.* the penis, in the central portion of which the genital pore opens.
6. The female genital organs are, *a.* a close vaginal canal opening below the genital pores and in front of the muscular sac; *b.* a compact H-shaped ovary; *c.* yelk-sacs and yelk-ducts, joining one with the other, are disposed through a large portion of the sides of each joint; from them there is an outer communicable canal-system formed in the middle of each joint; *d.* the oviduct receives both a canal given off from the end of the vagina and the yelk-duct, which opens into it in the middle; *e.* the uterus is a very much convoluted canal, which possesses an independent opening of its own below that of the

* This name approaches too closely to *Paradoxides*, Brongn., a genus of Trilobites.

vagina; *f.* between the first commencement of the uterine canal and the termination of the oviduct there is an enlargement of the latter. In fig. 28, pl. 5, we have a very useful diagrammatic representation of the relative position of these various parts. The paper is a most valuable contribution to the anatomy of the Tænioid worms.

Cœnurus. Dr. Cobbold (Quart. Journ. Mic. Scien. January 1865, pp. 96–98) describes a species of *Cœnurus* from the viscera of an American squirrel.

Echinococcus. Krabbe gives a complete *résumé* of all that is known at present on the *Echinococcus* of the Icelanders. Arch. f. Naturg. 1865, pp. 110–126.

Planaria.

Knappert (*l. c.*) gives the following *résumé* of his observations on the development of some species of the genus *Planaria*:—

1. The egg-cocoons of the freshwater Planaria contain from six to ten small ova, surrounded by a mass of nutrient matter (voedingsmassa). 2. The development begins by the segmentation of the contents of the ovum. 3. The delicate ovarian membrane disappears altogether in development. 4. The contents of the ovum very speedily become distinguished into a central and peripheral portion. 5. This latter becomes divided into two layers. 6. The more central of these layers developes into the alimentary canal. 7. The peripheral stratum becomes developed into the epidermal and muscular systems. 8. From the space between these two layers arises the general cavity of the body. 9. In the fully grown freshwater Planaria the integumentary as well as the alimentary system contains muscular fibres. 10. The general cavity of the body in fully grown examples is also traversed by muscular fibre.

Planaria fusca appears to have been the species principally observed; and its development is figured on two plates accompanying the memoir.

ROTIFERA.

[The Recorder has not met with any papers published in 1865 relating to this class.]

ECHINODERMATA

BY

E. Perceval Wright, M.A., M.D., F.L.S.

Bölsche, W. Zusammenstellung der bis jetzt bekannten Echiniden aus der Gruppe Diademiden. Arch. für Naturg. xxxi. 1865, pp. 324–336, taf. xiii.

Carpenter, W. B. Researches on the Structure, Physiology, and Development of *Antedon* (*Comatula*, Lamk.) *rosaceus*. Abstract in Proc. Roy. Soc. vol. xiv. no. 77 (read June 15, 1865) p. 376; Ann. & Mag. Nat. Hist. 1865, Sept. p. 200.

The author proposes to give a most complete account of the minute structure, living actions, and developmental history of this Crinoid, tracing its development from the point to which it had been brought in the elaborate memoir of Prof. Wyville Thomson. In the present memoir the calcareous skeleton only is described.

Duncan, P. M. On some fossil Echinoderms from the South-Australian Tertiaries. Ann. & Mag. Nat. Hist. September 1864, pp. 165, pl. vi. fig. 3.

A new species of *Hemipatagus*, *H. forbesii*, is described. It had been figured in Rev. J. Wood's 'South Australia,' but not described. It is found very commonly in the South Australian Tertiaries, along with *Clypeaster folium*, Agass.

Herapath, W. B. On the genus *Synapta*, with some new British species. Quart. Journ. Micr. Science, 1865, pp. 1–7, with plate 1 (original communication); also abstract in Report Brit. Assoc. Bath, 1864, Trans. p. 97.

The author seems inclined to think that full reliance can be placed on the calcareous bodies met with among the Synaptidæ for specific characters. The last paragraph but one in this paper is so very indefinite and full of mistakes that we quote the following from an abstract of the same paper in the British Association Report. "In *Synapta* the perforated plates are the analogues of the pentagonal plates of the *Echinus*-corona. The anchors are merely modifications of the spines, and are used as organs of prehension or locomotion; they assist the animal in raising its vermiform body to the mouth of its tube, and are withdrawn during the period of contraction; they contribute little or nothing to the defence of the animal."

Herapath, W. B. On the Pedicellariæ of the Echinodermata. Ibid. July (original communication), pp. 175–184, with two plates.

In this paper, the completion of which has not yet appeared, the author describes the pedicellariæ of *Asterias rubens*, Linn., and contrasts them with those occurring on *A. glacialis*.

Hodge, G. Report on the Echinodermata of the Coasts of Northumberland and Durham. Nat. Hist. Trans. North. & Durh. vol. i. pt. 1, 1865, pp. 42–45.

A catalogue of all the species found (thirty-eight) is given.

Jourdain, S. Sur les yeux de l'*Asteracanthion rubens* (Müll. et Trosch.). Compt. Rend. tome lx. no. 3, 16 Janvier 1865, p. 103 (extrait); Ann. & Mag. Nat. Hist. Mar. 1865, p. 238.

Ljungman, A. Tillägg till kännedomen af Skandinaviens Ophiurider. Ofvers. af K. Vet.-Akad. Förh. 1864, pp. 359–367, pl. 15.

Lütken, Ch. Kritiske Bemærkninger om forskjellige Söstjerner (Asterider), med Beskrivelse af nogle nye Arter. Videns. Meddel. Natur. For. Kjöb. 1864, pp. 123–169.

——. Om Vestindiens Pentacriner med nogle Bemærkninger om Pentacriner og Sölilier i Almindelighed. Naturhist. Foren. Vidensk. Meddel. 1864, pp. 195–245, pls. iv. & v.

——. Bidrag til Kundskab om Echiniderne. Kjöbenhavn, 1864. 8vo. p. 140, pls. 1 & 2.

Lyman, Th. Illustrated Catalogue of the Museum of Comparative Zoology at Harvard College. No. 1. Ophiuridæ and Astrophytidæ. Cambridge, Mass. 1865, pp. 1–200, with two coloured plates and many woodcuts.

This valuable Catalogue consists of a preface, an introduction, a list of the more important works on the subject, a table of the known species of Ophiuridæ and of Astrophytidæ, and descriptions of the genera and species of these families. Twenty-six genera are given, and one hundred and five species. Five genera and twenty-six species are described as new.

Martens, E. von. Ueber zwei Seesterne von Costa Rica. Monatsber. Ak. Wiss. Berlin, 1865, Jan. p. 65; Ann. & Mag. Nat. Hist., May 1865, p. 433.

——. Ueber zwei neue ostasiatische Echiniden. Ibid. March, p. 140; Ann. & Mag. Nat. Hist.. June 1865, p. 497.

——. Ueber ostasiatische Echinodermen. Arch. für Naturgesch. xxxi. 1865, pp. 345–360.

Norman, A. M. On the genera and species of British Echinodermata. Part 1. Crinoidea, Ophiuroidea, Asteroidea. Ann. & Mag. Nat. Hist., Feb. 1865, pp. 98–129.

Stuart, A. Ueber die Gewebe der Echinodermen. Zeitschr. f. wiss. Zool. xv. 1865, pp. 104–105, taf. vii. figs. 14 & 15.

Thomson, W. On the Embryogeny of *Antedon rosaceus*, Linck (*Comatula rosacea*, Lamarck). Phil. Trans. 1865, pp. 513–544. pls. 23–27.

Verrill, A. E. Preservation of Starfishes with their natural colours. Silliman's Journal, March 1865; Ann. & Mag. Nat. Hist. May 1865, p. 436.

Immerse the living Echinoderms in alcohol of moderate strength for a minute or two, and then dry them rapidly by artificial heat. This is best effected by placing them upon a cloth stretched tightly on a frame and held over a stove. The heat must be kept below that of boiling water.

Walker, R. Note on *Ophiolepis gracilis* (Allman) from the Brick-clay of Seafield. Ann. & Mag. Nat. Hist. Jan. 1864, p. 111.

Mr. R. Walker gives some further details relative to this interesting Starfish. The Seafield Brick-clay is about two miles from St. Andrews. The specimens are preserved in the most perfect condition, the arms being attached to the disk. In the largest specimen the disk is $\frac{3}{8}$ inch in diameter, and each arm is about 2 inches long.

Crinoidea.

Antedon rosaceus. Wyville Thomson (*l. c.* p. 513 *et seq.*) gives a most elaborate account of the embryogeny of this Crinoid, of which the following is an abstract:—

The ovaries of *Antedon* are short, entire, fusiform glands distending widely the integument of the pinnules, and provided with a special aperture surrounded by an elastic sphincter. The testes occupy the same position on the pinnules of the male individual, and consist of the usual massed "parent cells," including numerous "vesicles of evolution," each of which finally contains three or four large club-shaped spermatozoa of the usual character, with long vibratile appendages. The development of the eggs and the process of segmentation subsequent to impregnation are fully described. The ripe ova are protruded from the ovarian apertures in grape-like bunches entangled in the stroma of the ovary; and in that position impregnation seems to take place. The development of the ova and their early changes differ in no essential point from the ordinary invertebrate type.

The Echinoderms present in the most marked degree a peculiarity which seems to be only imperfectly indicated in the other invertebrate subkingdoms. This peculiarity consists in the successive development from a single egg of two organisms, each apparently presenting all the essential characters of a perfect animal. These two beings seem to differ from one another entirely in plan of structure. The first, derived directly from the germ-mass, would

appear at first sight to homologate with some of the lower forms of the Annulosa; the second, subsequently produced within or in close organic connexion with the first, is the true Echinoderm. The extreme form of this singular cycle, in which the development of a provisional zooid as a separate, independent, living organism is carried to its full extent, is by no means constant throughout the whole subkingdom, although its existence has been established for all the recent orders. In each order it appears to be exceptional; and in certain cases it is known to be carried to its most abnormal degree in one species, while in a closely allied species of the same genus the mode of reproduction differs but slightly from the ordinary invertebrate type.

To avoid ambiguity in the discussion of such singular relations, I believe it is necessary to introduce certain new terms. For an organism which possesses all the apparent characters of a distinct animal, which is developed from the germ-mass, and which maintains a separate existence before the appearance of the embryo, I would propose the term *pseudembryo*; and for all the appendages which homologate with the whole or with parts of such a pseudembryo, even although they do not assume fully the characters of a distinct animal form, I would propose the term *pseudembryonic appendages*. The same prefix may distinguish the organs of the temporary zooid, where such exist—*pseudostome*, *pseudocele*, *pseudoproct*, &c. The reasons for the adoption of this series of terms, and the rejection, as applied to the provisional organisms, of the ordinary terms "embryo" and "larva," are discussed in a subsequent part of this memoir.

A few hours after segmentation has been completed, the surface of the mulberry mass still presents the mammillatic appearance due to the persistence of the ultimate yelk-segment. This, however, gradually disappears, and the superficial layer becomes fused into a sheet of structureless sarcode. Observed during the process of development within the vitelline membrane, the pseudembryo is at first nearly regularly oval, with a uniformly ciliated surface. Usually, however, before the rupture of the vitelline sac, the ciliated bands characteristic of the free condition of the pseudembryo are evident, and a large depression indicates the position of the pseudostome, a smaller spot immediately behind the pseudostome affording the first trace of the pseudoproct.

On escaping from the vitelline sac, the pseudembryo is about 8 millims. in length, oval, slightly enlarged towards one extremity, and girded by four nearly equidistant transverse bands of long cilia. It consists throughout of structureless sarcode studded with oil-cells, endoplasts, and granules—semifluid towards the centre, where it is somewhat darker in colour and exhibits active molecular motion, and becoming more consistent towards the periphery, where it forms a firm smooth surface.

At this stage the pseudembryo is irregularly oval and in form slightly contracted posteriorly, expanded and gibbous anteriorly, the anterior extremity flattened or slightly cupped. The posterior extremity expands into a small rounded disk. Slightly compressed and examined by transmitted light, the pentacrinoid larva has but little altered from the description given above; the joints of the stem are somewhat lengthened, and the cup is rather more open by the growth and slight separation of the upper portions of the plates of the upper tier. The whole of the pentacrinoid is entirely invested by a thick layer of transparent sarcode, which is merely the substance of the body

of the larva, which has contracted uniformly over the body and stem of the crinoid, its surface retaining, with the exception of the absence of the bands of cilia, the same character as the surface of the pseudembryo, with the same pyriform oil-cells arranged in the same way, and leaving the same interstices of nearly transparent delicately vacuolated sarcode. The head of the crinoid now becomes more regularly pyriform, and the stem rapidly lengthens. The posterior disk becomes firmly and permanently fixed to its point of attachment.

The cup of the crinoid gradually expands and increases in size. The five basal plates enlarge and become more definite in form. Their upper edges are still irregular in outline, somewhat crescentic, arching upwards towards the bases of the orals; but the lateral edges are now bounded by smooth straight calcareous bands, the sides of each plate applied, with the intervention of a narrow band of sarcode, to the similar edges of the two contiguous plates. The narrow lower edges of the basals are rough and irregular, resting on the upper surface of the irregular ring-like rudiment of the centrodorsal plate. The oral plates likewise undergo a change in form. They become wider inferiorly, and the sides of the plates towards the lower margin curve outwards, the lower borders thus becoming concave, the convexity turned inwards towards the centre of the body. At the same time the upper edges, which remain narrow and rounded, curve slightly forwards and inwards towards the opening of the cup. If the animal remain undisturbed in well aërated water, when the development of the skeleton has reached this stage, the five lobes (the "oral lobes") forming the edge of the calyx gradually expand, till the cup assumes the form of an open bell. Immediately on opening, at least five, and more usually fifteen, delicate, extremely extensile tentacles are protruded from the cup. The mouth, with the organs immediately surrounding it, is formed even before the separation of the oral lobes. It may be seen occupying the centre of the cup immediately after its expansion, as a large patent aperture. When the cup is fully expanded, the transparent tissue continuous with the five oral lobes, and forming the margin of the disk, seems to curve over uniformly into the wide funnel-shaped central opening. The mouth, however, frequently contracts, though it never appears to close completely; and when contracted it is bordered by a slightly thickened very contractile rim, which projects over the cavity of the œsophagus and forms an imperfect sphincter. When this sphincter is relaxed and the mouth fully open, it is easy to see down to the very bottom of the digestive cavity, a sac-like space apparently simply hollowed out in the general sarcode-body.

Commencing immediately within the mouth, a series of irregularly lobed glandular masses, of a pale yellowish-brown colour, project into the cavity of the stomach, curving in an irregular spiral down to the bottom of the cup. These glandular folds are richly clothed with long vibratile cilia. The merest film of sarcode separates their secretion from the stomach-cavity. The slightest touch, even of a hair, ruptures them and causes the effusion of a multitude of minute granules, some colourless and transparent, and others of a yellow or brownish hue. There can be little doubt, from their position and colour, that these lobes form a rudimentary liver. They appear very early in the pentacrinoid, colouring the lower portions of its body in the earlier stages of growth within the pseudembryo. They increase steadily in bulk during every stage, and with but little change of character make up a large portion of the visceral mass in the adult *Antedon*.

A wide vascular ring surrounds the mouth, occupying nearly the whole of the space between the lip and the base of the oral lobes.

Radially, this ring gives off five highly mobile, irritable and extensile tubular tentacles, one opposite each of the intervals between the oral lobes. The cavity of these tentacles is continuous throughout, and immediately continuous with the cavity of the oral ring. Their wall seems to consist of a simple contractile sarcode-layer, studded with oval yellowish endoplasts. There is no definite differentiation of a contractile fibrous tissue. Under a high power, however, the sarcode appears to have a longitudinal arrangement; this may possibly be due to motion among the particles producing a play of light. The walls of these tentacles are produced into numerous delicate tubular processes, their cavities continuous with those of the tentacles. These processes are arranged in three or four irregular longitudinal rows. They are extensile; their walls when extended are extremely delicate, transparent, and apparently structureless. When contracted, two or three delicate ring-like rugæ appear on the walls of each. Each process is terminated by a minute three-lobed slightly granular head. At the base of each of these processes there is a delicate crescentic leaf-like fold, slightly granular, and most distinctly marked when the tentacle is retracted. When one of the extensile tentacles is wholly or partially retracted, it is thrown into obscure transverse wrinkles, which give it at first sight the appearance of being divided by a series of dissepiments. When the tentacle is fully extended these folds totally disappear. At the base of each of these five "azygous tentacles" there is a conical thickening and enlargement of the sarcode-tissue, contracting ontwards towards the tentacle which is continuous with its apex, and whose cavity passes through it to unite at its base with the c vascular ring. This conical projection is the commencement of the you arm. The azygous tentacle terminates it, and leads it out, as it were, up to the point of bifurcation. The tentacle remains persistent for some time in the angle between the first two brachial joints, and finally becomes absorbed and disappears. These five azygous tentacles are the first of a system of "extensile tentacles," which are subsequently developed in very extended series as appendages of the radial and brachial tentacular canals. In almost all cases, as soon as the interior of the cup can be examined after its expansion, the number of extensile tentacles has reached fifteen; but, from the one or two instances in which the ten additional tentacles have been absent, there can be no doubt that they are developed somewhat later than the five already described. They arise in five pairs, one tentacle on either side of and slightly within the base of each of the azygous tentacles, which they resemble closely in character. They commence as minute cæcal diverticula from the canal which passes through the enlarged base of the azygous tentacle, and become rapidly developed into tubular prolongations. At this stage, when the cup is open, the fifteen tentacles are usually fully extended, curving over the edge of the cup in the angles between the oral lobes, in threes, the azygous tentacle somewhat longer in the centre, and one of the paired tentacles on either side.

Interradially, opposite each of the oral lobes, there is a pair of short tubu tentacles, their cavities likewise continuous with that of the ora of the ring. These tentacles appear simultaneously with the five azygou vested by a tentacles, immediately on the expansion of the cup. They are fle f the body

not extensile, slightly club-shaped towards the distal extremity, which is fringed on either side by a single row of short conical tubercles. The base of these tentacles is involved in the contractile sarcode-ring surrounding the mouth. When the disk is fully expanded they lie in pairs up against the inner surface of the oral lobes. They are frequently, however, gathered inwards together, or singly curving over the mouth. They form part of a very characteristic system of "non-extensile tentacles," which afterwards fringe the radial and brachial grooves. At this stage, then, the oral ring usually gives off twenty-five tentacular appendages, of which fifteen are radial and extensile, and ten are interradial and non-extensile.

Imbedded in the sarcode at the base of each of the azygous tentacles, a peculiar glandular body is very early developed. At first it consists of a minute vesicle containing a transparent fluid. The vesicle gradually increases in size till it attains a diameter of about 0·08 millim. in diameter. Its contents become granular; and at length it has the appearance of a large cell with a special wall, included in a capsule formed of a fine sarcode-layer, from which the cell can be turned out unbroken.

The stem now gradually lengthens, by additions to either end of the sheaf-like calcareous cylinders which form the axis of the stem-joints, and by the addition of new rings which rapidly become filled up by the vertical tissue at the top of the stem, immediately beneath the rudiment of the centrodorsal plate. The disk of attachment becomes opake by the addition of calcareous matter, and is firmly fixed. The centrodorsal ring is more definite in form, though it is still simply perforated in the centre, and in connexion with the sarcode-axis of the stem, and bears no traces of dorsal cirri. The basals expand and form a wide, nearly continuous cup. By the rapid extension of the body, five diamond-shaped spaces are left at the points where the upturned angles of two oral plates are opposed to the bevelled-off upper angles of two adjacent basals. In these spaces cylindrical spicula appear, which soon become club-shaped, dichotomize, branch, and anastomose into delicate net-like superficial plates, irregularly oval, slightly produced superiorly, their upper, narrower portions resting beneath, and supporting the gradually extending sarcode-projections which are terminated by the azygous tentacles. The equatorial portion of the body, the band between the upper edges of the basals and the lower edges of the orals, now rapidly expands. The five young arms extend outwards, their bases carrying out with them a zone of sarcode which gives the central portion of the body a great additional width. The oral plates maintain their original position; so that they are now completely separated from the basals by this intervening equatorial band, and are left (a circle of five separate plates, each enclosed in its sarcode-lobe) on the centre of the upper surface, surrounding the mouth and enclosing the ten non-extensile tentacles only. The first radial plates begin to thicken, especially towards the upper margin; and this thickening is produced by the growth, beneath the cribriform superficial calcareous film, of a longitudinal mass of tissue of the same character as that which forms the cylindrical axis of the stem-joints. On the lower surface of each arm, in linear series, immediately above the first radials, two spicula, horseshoe-shaped, with the open-ends above, appear almost simultaneously, and become quickly filled up with diverging sheaves of longitudinal trelliswork. These extend along beneath the extending arms, and indicate the second radials and the radial axillaries.

The upper surface of the arms now becomes grooved by the development, on either side of the central vessel, of a series of delicate crescentic leaves. These leaves are hollow, communicating by special apertures with the radial vessel, and filled with fluid from it. At the base of each of the leaves there is a pair of tentacles forming a group with the leaf, and along with it communicating with the vessel. One of these tentacles (the distal one) is somewhat larger than the proximal; they are both slightly club-shaped, the club-shaped extremity fringed on either side with conical papillæ. They are non-extensile, and resemble in every particular the ten non-extensile tentacles early developed from the oral ring. A group consisting of a crescentic leaf and two non-extensile tentacles lies immediately at the base of each extensile tentacle, and a little lower down the arm. Minute spicules, some of them simple or key-shaped, and others expanding into a cribriform film, appear in the superficial sarcode-layer along the back or edges of the arms; and, usually at the base of each of the tentacles, irregularly imbedded in the sarcode-substance, there is one of the calcareous glands.

Immediately on the expansion of the equatorial portion of the cup, the wall of the stomach becomes separated, by a distinct body-cavity filled with fluid, from the body-wall. The stomach seems to hang in this cavity as a separate sac, attached to the body-wall here and there by sarcodic bands and threads. As the disk expands, the radial canal may be distinctly seen, rising from the oral ring, crossing the narrow disk, and running along the upper surface of the arm, communicating on either side with the various tentacles and respiratory leaves, and ending at the extremity of the arm in the azygous tentacle. Beneath the radial canal a tubular extension of the perivisceral space passes along the radial grooves. This series of vessels, for which Dr. Carpenter proposes the term "cœliac canals," afterwards extends throughout the whole length of the arms. In the mature *Antedon* Dr. Carpenter has observed a third vessel, intermediate between the cœliac and tentacular canals; but no trace of this vessel can be detected in the earlier stages in the development of the pentacrinoid.

A little later, the end of the arm shows a tendency to bifurcate, and two half rings, with their enclosed sheaves of calcified tissue, give the first indication of the first two brachials. At the stage described, the arm is free from the base of the second radial; at a later stage the visceral sac extends to the bifurcation, and the whole of the radial portion of the arm becomes included in the cup and disk. The azygous tentacles go no further than the bifurcation. They remain for some time in the centre, between the two divisions of the arm, while secondary branches from the radial canal run on in the brachial grooves. About the period of the development of the second radials, a forked spicule makes its appearance in one of the interradial spaces between the upper portions of two of the first radial plates. This gradually extends in the usual way till it becomes developed into a round cribriform superficial plate.

Simultaneously with the appearance of this "anal" plate, a cæcal process, like the finger of a glove, rises from one side of the stomach and curves towards the plate. The plate increases in size, becomes enclosed in a little flattened tubercle of sarcode, and maintaining its upright position it [illegible] of the slightly outwards, leaving a space on the edge of the disk between itself [illegible]ed by a the base of the oral plate immediately within it. [illegible] body

Towards this space the cæcal intestinal process directs itself. It rises up through it in the form of an elongated tubular closed papilla. The summit of the papilla is finally absorbed, and a patent anal opening is formed.

The pseudembryo attains its mature form in from 36 to 48 hours. It is from 1·5 to 2 millims. in length, shaped somewhat like a kidney bean or a slipper, enlarged at the anterior extremity and somewhat contracted at the posterior. Its smooth structureless surface is studded with imbedded pale yellow oil-cells and covered with very small cilia. The four ciliated bands are still strongly marked, but the third (from the anterior extremity) has slightly changed its position. On one side of the body it has formed an arch forwards, its apex nearly touching the second band; and in the wider space thus left between the third band and the fourth, the pseudostome forms a deep involution of the sarcode, keyhole-shaped, richly ciliated, shallow anteriorly, and deepening posteriorly into the short curved pseudocele, which merely dips under the fourth band, breaking through immediately behind it as a small round anal aperture. Behind the pseudoproct, and in the centre of the posterior extremity of the pseudembryo, there is a tuft of very long cilia, which moves with a peculiar rippling lash, and assists greatly in the locomotion of the zooid. The pseudembryo moves rapidly in the water, rolling round and swinging from side to side; as a rule, and especially when at rest, the surface bearing the pseudostome and pseudoproct is turned downwards.

Very early in the development of the pseudembryo there is an accumulation of dark granules in the widest part, towards the anterior extremity; and a few hours after the rupture of the vitelline sac two rows, one row superposed upon the other, each of five minute stellate spicules, appear in the sarcode-wall of the zooid round this granular mass, which now acquires a most distinctly globular form. As the development of the pseudembryo proceeds, these spicules gradually expand till they form a delicately trellised basket of ten perforated plates entirely enclosing the granular globe.

At the same time, from the point of meeting of the lower edges of the five plates of the lower row, a series of open calcareous rings curves downwards towards the posterior extremity of the pseudembryo, immediately within which, behind the pseudoproct, it ends in a round cribriform plate. Within each of these calcareous rings a hollow cylinder of parallel calcareous rods, united by cross trabeculæ, now arises, the rods bound in the centre like a sheaf by the original ring. All the joints thus formed are placed end to end, but not connected, forming a jointed stem, supporting above the trellised basket, and abutting beneath against the terminal cribriform plate.

The two tiers of plates are the oral and the basal plates of this pentacrinoid, plates which afterwards become absorbed or regularly modified. The rings with their enclosed calcareous sheaves are the joints of the stem of the pentacrinoid, and the cribriform plate finally forms its base of attachment. The skeleton of the pentacrinoid is thus mapped out within the body of the pseudembryo, while the latter still retains its full activity, its special organs, and its characteristic form.

It is utterly impossible at this stage to trace the formation of the viscera of this young pentacrinoid, on account of the close calcareous network in which the nascent organs are enveloped. From its colour and position, however, there can be no doubt that the mass occupying the base of the cup represents the origin of the stomach, with its granular hepatic folds, while

the upper more transparent sarcode-hemisphere indicates the nascent tissues of the vault, and at a subsequent stage originates the ambulacral ring with its radial branches and the tissues of the young arms. From six to twenty-four hours later the pseudembryo becomes more sluggish in its movements, and begins to lose its characteristic contour. The anterior extremity beomes somewhat flattened, and then slightly depressed in the centre. The stem of the included crinoid lengthens, and the sarcode of the body of the pseudembryo contracts towards it. The pseudostome and pseudoproct become obscure and are shortly obliterated, the sarcode forming a thick, smooth, uniform layer over the stem and over its terminal disk. The two posterior ciliated bands disappear, the anterior bands remaining entire a little longer, and still subserving the locomotion of the pseudembryo. The anterior bands then likewise gradually disappear, the pseudembryo sinking in the water and resting upon a sea-weed or a stone, to which it becomes finally adherent.

Norman (*l. c.* p. 102) records the following as British:—*Antedon rosaceus* (Linck), *A. milleri* (J. Müll.), *A. sarsii* (D. & K.), and *A. celticus* (Barrett).

Pentacrinus. Lütken (*l. c.*) informs us:—

There are three specimens of a recent species of the genus *Pentacrinus* in the Museum of the University of Copenhagen, which have been procured from time to time from the Danish West-Indian possessions.

One of these specimens was briefly described by Prof. Oersted in 1856, and distinguished by him from the *Pentacrinus* described by Johannes Müller (*P. asteria*, L.). All the three Copenhagen specimens are to be referred to one form, *P. mülleri* (Oersted).

One of the most marked distinctions between *P. asteria* (L.) and *P. mülleri* (Oerst.) is, that in the former from 15 to 18 joints intervene between the cirrigerous joints of the stem, while in the latter the number is reduced to from 5 to 10. In *P. asteria* the peculiar pores between the stem-joints are continued much further down the stem than in *P. mülleri*. In *P. asteria* the cirrigerous joints are a little thicker than the ordinary joints of the stem, while in *P. mülleri* they are three or four times as thick. In the latter species, however, these joints are actually double, composed of two joints more or less closely united together, the cirri being placed on the upper. Even in *P. asteria* there is a peculiarly close junction between the cirrigerous joint and that immediately beneath it. In *P. mülleri* the cirri are slightly toothed beneath towards the tips.

In *P. mülleri* the basalia form a complete circle below the first radial, below the centre of each of which the short suture uniting the basals is very distinct. The second and upper radials are united by a syzygial suture, and not by a true joint.

Perhaps the most prominent character of the new species is the mode of branching of the arms. The ten arms constantly bifurcate after the second joint; of these two primary branches the inner usually does not divide, whereas the outer again bifurcates over the third or fourth joint of the secondary branch. The outer again divides over the third joint into the tertiary branches, the inner remaining entire; the outer of these may again bifurcate over the third or fourth joint into two quaternary arms. Thus in *P. mülleri* the outer arm only divides, but the bifurcation takes place more frequently and at shorter intervals than in *P. asteria*. Professor Oersted's specimen has the ventral perisome preserved; the mouth is central, and the anal tube occupies one of the interpalmar compartments; the tentacular grooves are similar to those of *Alecto*. As in *P. asteria*, the soft ventral membrane is covered with small plates; the arm-branches are round and smooth as in *P. asteria*. In one arm ninety joints were counted. The pinnules are short and flat, composed of from nine to twelve joints, the number of joints diminishing to one at the end of the arm.

The author does not insist with certainty, in his *résumé* of their characters, upon the specific distinctness of *P. asteria* and *P. mülleri*—which, however, he regards as highly probable. He points out that many of the characters, especially the number of stem-joints intervening between the cirrigerous joints, the mode of branching of the arms, and the number of arm-joints between the bifurcations, are liable to variation in different individuals of the same species. To certain characters, however, *e. g.* the form of joint between the second and third radials, he attaches a specific value, and suggests the importance of a reexamination of the specimens in the various European Museums with a view to ascertaining such point with certainty.

Dr. Lütken enumerates the species of recent sea-lilies which have been noticed, or which are more or less perfectly known. A third species of *Pentacrinus*, from the West Indies (*P. decorus*), is noticed by Prof. Wyville Thomson. In a short paper read before the German Nat. Hist. Association in Carlsruhe in 1858, Prof. Max Schultze mentions three species, one of which he had procured from Amboyna. These species, however, were not distinguished. Prof. Owen briefly notices a small form dredged in 8 fath. in St. George's Sound, West Australia. An attached stalkless form, *Holopus rangii*, has been described by D'Orbigny, who finally, in his imperfect work on Crinoids, refers some doubtful fragments of stems from a recent breccia in the West Indies to a recent species of *Bourgueticrinus*.

The author regards *Alecto* as the only recent Crinoid referable to the same family as *Pentacrinus*. He does not regard the two forms, however, as by any means generically identical, and points out very marked distinctions between them.

Dr. Lütken concludes his paper with an interesting outline of the relation of the leading fossil forms of the group. He notices the singular absence of the tentacular grooves and of a central oral aperture in most of the palæozoic series, and discusses at length the probable function of the "proboscis." On this vexed question he arrives at no satisfactory conclusion, but appears rather upon the whole inclined to regard the proboscis as an anal tube.

Ophiuridea and Asteroidea.

Norman (*l. c.* p. 104) records the following as British:—(Asteroidea) *Astropecten irregularis* (Pen.), *A. aciicularis* (Norman), *Luidea savignii* (Aud.), *L. sarsii* (D. & K.), *Archaster parelii* (D. & K.), *Palmipes placenta* (Pen.), *Asterina gibbosa* (Pen.), *Solaster papposus* (Lin.), *S. endeca* (Lin.), *Porania pulvillus* (O. F. Müll.), *Goniaster phrygianus* (Parelius), *Cribrella sanguinolenta* (O. F. Müll.), *Stichaster roseus* (O. F. Müll.), *Asterias glacialis* (Lin.), *A. mülleri* (Sars), *A. rubens* (Lin.), *A. violacea* (O. F. Müll.), *A. hispida*, Pen.: (Ophiuroidea) *Astrophyton linckii* (M. & T.), *Asteronyx lo évi* (M. & T.), *Ophiothrix fragilis* (O. F. Müll.), *Amphiura filiformis* (O. F. Müll.), *A. chiajii* (Forbes), *A. brachiata* (Mont.), *A. elegans* (Leach), *A. ballii* (Thomp.),

Ophiopeltis securigera (D. & K.), *Ophiocoma nigra* (O. F. Müll), *Ophiopholis aculeata* (O. F. Müll.), *Ophiura lacertosa* (Pen.), *O. sarsii* (Lüt.), *O. albida* (Forbes), *O. affinis* (Lüt.), *O. squamosa* (Lüt.).

Martens describes the following new species in Arch. f. Naturg. 1865:—*Linckia* (*Scytaster*) *semiseriata*, p. 355, South Chinese Sea; *Goniaster* (*Stellaster*) *tuberculosus*, p. 358, hab. unknown; *G.* (*Stellaster*) *mülleri*, p. 359, Japan; a new subgenus, *Ogmaster* (p. 359), distinguished by having the five innermost ventral plates deeply sulcated on their sides—*Ogmaster capella* (Müll. & Trosch. sp.); *Astropecten velitaris*, p. 360, South China Sea. *Astropecten calacanthus* (Monatsber. Ak. Wiss. Berlin, *l. c.* p. 58), Costa Rica.

Astropecten. Lütken (*l. c.* p. 125) reunites the two latter groups proposed by Müller & Troschel for this genus (System der Asteriden, p. 72 *et seq.*).

Astropecten articulatus (Say) and *A. aster* (Filippi) are described in detail, and the original description of *A. armatus* is amended. Lütken, *l. c.* pp. 127–132.

Luidia bellonæ, sp. n., Lütken, *l. c.* p. 133, South-west America.

Archaster nicobaricus (Behn) is said not to differ from *A. typicus* (M. & T.). Lütken, *l. c.* p. 135.

Stellaster sulcatus (Möb.) is referred to *Archaster*. Lütken, *l. c.* p. 136.

Archaster. Two fragments of a new species living at great depths in the Greenland Seas were taken from the stomach of a Shark. Lütken, *l. c.* 138.

Asteriscus ciliatus (Lorenz) is only a young form of *A. verruculatus* (*Asterina gibbosa*, Pret.). Lütken, *l. c.* p. 138.

Goniaster. Lütken (*l. c.* p. 143) proposes to unite the genera *Goniodiscus*, *Astrogonium*, and *Stellaster*, as already suggested by Forbes, under the old genus *Goniaster*.

Goniaster articulatus (L.) is redescribed by Lütken from the original specimen in the Tessinian Museum. *L. c.* p. 147.

Astrogonium souleyeti (Duj. & Hupé) is the same species as *A. longimanum* (Möb.). Lütken, *l. c.* p. 144.

Goniodiscus acutus and *G. placentæformis* (Heller) appear to be doubtful species. Lütken, *l. c.* p. 145.

Oreaster. Lütken thinks that his *Goniodiscus armatus* is referable to this genus, and that it may probably be the same as Gray's *Pentaceros* (*Nidorellia*) *armatus*. *L. c.* p. 148.

O. nodosus (Gray) is redescribed by Lütken, *l. c.* p. 152; *O. forcipulosus*, sp. n., Lütken, *l. c.* p. 154; *O. reinhardti*, sp. n., Lütken, *l. c.* p. 159.

O. linckii (Blv.) = *O. muricatus* (Gray), from Madagascar, is described in full. Lütken, *l. c.* p. 156.

O. clavatus (M. & Tr.) is the *Asterias dorsata* (L.) from the Mus. Tessin. (Lütken, *l. c.* p. 161); *O. lapidarius* (Grube) and *O. tuberosus* (Behn) are probably but synonyms of *O. gigas* (L.), *l. c.* p. 161.

Oreaster armatus (Gray) described by Martens, Monatsb. Ak. Wiss. Berlin, 1865, p. 65.

Ophidiaster (Gray), *Scytaster* (M. & Tr.), and *Linckia* (Gray) might perhaps be united into one genus, but if kept separate may be distinguished by the following among other characters:—*Ophidiaster* has two series of ambulacral papillæ in the form of spines, of which the external are larger though fewer than the internal. *Scytaster* has two or more series of ambulacral papillæ, flat and uniform. *Linckia* has two series of granular ambulacral papillæ (Lütken, *l. c.* p. 163).

Ophidiaster unifascialis (Gray) is described by Lütken in full, *l. c.* p. 165.

Scytaster galatheæ, sp. n., Lütken, *l. c.* p. 167.

Oreaster desjardinsii must belong to *Scytaster*. Lütken, *l. c.* p. 168.

Asterias canariensis, D'Orbig., is probably *Chætaster longipes*, Retz. Lütken, *l. c.* p. 169.

Ophiura. Lyman (*l. c.* p. 16) takes as the type of this genus *O. lævis*. It is *Ophiura*, Lamk. (non Forbes).

Ophioglypha, g. n., Lyman, *l. c.* p. 40. Disk covered with unequal, crowded, naked, more or less distorted scales, some of which are swollen. Radial shields naked and swollen. Teeth. No tooth-papillæ. Mouth-papillæ long within, but small and short near the outer end of the mouth-slit and partly hidden by the scales of the mouth-tentacles. Arm-spines few (commonly three) arranged along the outer edge of the side arm-plates. Tentacle-scales numerous; the innermost pair of tentacle-pores shaped like slits, surrounded by numerous tentacle-scales and opening diagonally into the mouth-slits. Side arm-plates meeting nearly, or quite, below, but not above. In the back of the disk, where the arms join it, a notch, edged with papillæ. Two genital slits starting from the sides of the mouth-shields. Type *O. lacertosa*, Linck, sp.

Ophioplocus, g. n., Lyman, *l. c.* p. 68. Disk closely and finely scaled above and below. Genital scales hidden. Teeth. No tooth-papillæ. Mouth papillæ. Side mouth-shields wide and nearly or quite meeting within. Arm-spines arranged along the outer edge of the side arm-plates. Upper arm-plates divided on the middle line into halves, which at the base of the arm are placed at the outer lower corner of the joint, on each side being separated by a number of supplementary pieces. At the tip of the arm the plate is simple; then it divides in two, and the halves are gradually forced apart by the intrusion of supplementary pieces. Two short genital slits extending only halfway to the margin of the disk and beginning outside the mouth-shields. Type *O. imbricatus* (M. & T.).

Hemiopholis, g. n. (Agass. MS.), Lyman, *l. c.* p. 137. Disk above covered with rounded rather thick scales and with large radial shields; below naked; at the base of each arm, disk slightly indented. Teeth. No tooth-papillæ. Two mouth-papillæ to each angle of the mouth. Side mouth-shields touching each other, so as to form a continuous ring round the mouth. Three short tapering arm-spines. Two genital slits beginning outside the mouth-shields. *H. cordifera* (Bosc, sp.).

Ophiophragmus, g. n., Lyman, *l. c.* p. 131. Disk small and delicate, furnished with uncovered radial shields and covered with naked scales; the scales along the edge of the disk are turned up, so as to make a little fence. Teeth. No tooth-papillæ. Six mouth-papillæ to each angle of the mouth. Arms slender, even, more or less flattened; arm-spines short and regular, arranged along the sides of the side arm-plates. *O. wurdemani*, Lyman.

Ophiocnida, g. n., Lyman, *l. c.* p. 133. Disk small and delicate, furnished with uncovered radial shields; its coat of naked overlapping scales is beset with small thorns. Teeth. No tooth-papillæ. Six mouth-papillæ to each

angle of the mouth. Arms slender, more or less flattened; arm-spines short and regular, arranged along the sides of the side arm-plates. Two genital slits to each interbrachial space. Type *O. hispida* (Lütk.).

Ophiolepis garretii, sp. n., Lyman, *l. c.* p. 61, pl. 11. fig. 14, Kingsmill Islands.

Amphiura tenuispina, sp. n., Ljungman, *l. c.* p. 360, taf. xv. fig. 1, Norway and Bohuslän; *A. norvegica*, sp. n., Ljungman, p. 363, taf. xv. fig. 3 *a–d*, Christianiafjord, Norway.

Amphiura squamata. A very young specimen is figured by Ljungman, *l. c.*

Ophiactis clavigera, sp. n., Ljungman, *l. c.* p. 365, taf. xv. fig. 4, 2 to 300 fathoms deep on *Gorgonia* from south-west coast of Norway.

Ljungman, *l. c.* p. 367, enumerates twenty-two Scandinavian *Ophiuridæ* and gives their geographical distribution; one, *Amphiura squamata* (D. Chiaje), is found from the Cape of Good Hope up to the coast of Norway.

Jourdain (*l. c.* p. 103) states that in invertebrate animals two very distinct types of organs of vision will be found,—(1) those which may be said to furnish images, and which may be called *idoscopic*; and (2) those which only convey a general sensation of light and darkness, which may be called *photoscopic*. The first are more especially met with among the Mollusca, Insects, and Crustacea, and have been often described. The second have been, however, misunderstood or passed over by many anatomists, and are composed essentially of a black or reddish pigment of a well-defined structure, impressionable by luminous rays and in communication with the nervous system in those animals that possess one. Such eyes are to be met with in many Annelids. In studying, however, the pigmentary spots which occupy the apical portion of the arms in *Asteracanthion rubens*, a more perfect type of a photoscopic eye was met with than has been before described. This form of eye possesses a number of minute depressions which are lined with the pigment-cells, and these depressions are filled with a clear gelatinous substance which serves to collect and concentrate the luminous rays upon the pigment and to render it, in consequence thereof, more highly impressionable to the different degrees of light.

Echinoidea.

W. Bölsche has published a synopsis of the species of Diademidæ known at present (Wiegm. Arch. 1865, pp. 324–336). Adopting the arrangement of Peters, he enumerates 9 species of *Diadema*, 11 of *Echinothrix*, 5 of *Astropyga*, and 1 of *Trichodiadema*. He adds notes to *D. setosa* (=*D. turcarum*), to the genus *Echinothrix*, to *E. turcarum* (which is figured on pl. 13. figs. 1 & 2), and describes as a new species *Echinothrix petersii* from the Fejee Islands, p. 334, pl. 13. figs. 3 & 4.

Scutella japonica, sp. n., Martens, *l. c.* p. 140=*Chætodiscus scutella*, Lüt., remarkable for having the anal orifice situated in the margin, and *Nucleolites epigonus*, sp. n. (p. 143), this latter from the island of Adenare, at the eastern end of Flores. *C. scutella* is termed *Motsingai* by the Japanese; through inadvertence this is translated *Kitchen-* instead of *Cake*-shell, in Ann. & Mag. Nat. Hist. 1865, p. 497.

Lütken's Memoir on Echinoidea (*l. c.*) must be consulted by

every one working at the subject. The first portion is on West-Indian Echinidæ: a list of species known on the more southern coasts of the United States, of Brazil, and the Antilles is given (pp. 1–58). The distribution in space of the genera of recent Echinidæ is given at p. 135. We give a few of the more important matters referred to:—

Cidaris metularia and *C. tribuloides*, although often confounded and somewhat like each other, are sufficiently distinct; the former comes from the Antilles, the latter from the Red Sea (p. 11).

Heliocidaris castelnaudi (Hupé) is only a variety of *Echinometra lucunter*, p. 18.

Psilechinus, g. n., p. 25, is proposed for *Echinus excavatus* (Blainv.) and *E. variegatus* (Lmck.) which do not differ specifically (p. 25). It is characterized by the great depth of the scales on the peristome and by the partial nakedness of the ambulacral and interambulacral area on the upper surface of the corona.

Heliechinus gouldii (Girard)=*Tripneustes ventricosus* (p. 27). *Melebosis* (Gir.) must be erased from the list of genera; *M. mirabilis* is only a species of *Salmacis* (p. 127).

Echinocidaris. Two species only of this genus are known in the Mediterranean and Atlantic, viz. *E. æquituberculata* of the former, and *E. punctulata*, Florida (p. 31).

Polyaster (Mich.) (*Michelinia*, Duj. et Hupé) is identical with *Laganum*, and probably *P. elegans* is only *L. lesueurii* (p. 38).

Rumphia is not to be distinguished from *Laganum* by any external characters (p. 38).

Mellita. But two species are found on the coast of South America: *M. pentapora* (Gm.)=*M. testudinata*, *M. longifissa*, *M. nummularia*, and *M. ampla*; *M. hexapora* (Gm.)=*M. similis* and *M. lobata* (p. 39).

Encope. All the species described as occurring on the tropical shores of America are reduced to one, *E. emarginata*, Leske, the several species of Gray, Desor, and Agassiz being referred to as local varieties (p. 43). The difference between this genus and *Mellita* is well pointed out (p. 47).

Brissus ventricosus, Lmk. (*B. panis*, Grube), belongs to the genus *Meoma*, Gr. (p. 52).

Plagionotus desorii is not to be distinguished from *P. pectoralis*, nor *Moëra lachesis* from *M. atropos* (p. 54).

Cassidulus caribbearum has some of the characters of a *Cassidulus* and some of those of a *Rhynchopygus*; hence it must either be consigned to a new genus or these two genera must be united (p. 59).

The second part treats of species found on the western coast of Central America (p. 61).

Echinocidaris longispina, sp. n., p. 62, Panama; *Clypeaster riisei*, sp. n., p. 64, Panama; *Agassizia oculum*, sp. n., p. 66, Boccones.

Cidaris tubaria (Lmk.). This species, according to Lamarck's description, is evidently a *Goniocidaris* (Ag., Des.), probably *G. geranioides* of these authors; but it is not easy to reconcile this view with the description in the 'Catalogue Raisonné' (p. 69).

Echinus and *Psammechinus* will probably have to be united. *E. acutus*, *E. pulchellus*, and *E. decoratus* are doubtless the same species as *E. parvituberculatus* of the Mediterranean; *E. pustulatus* and *E. korenii* are identical with *E. miliaris* of the North Sea (p. 71).

Sphærechinus. It was a great mistake of Dujardin and Hupé to take *Echinus esculentus* (*E. sphæra*, Müll.) as a type of this genus; for it is a true *Echinus*; the type is *E. granularis* (p. 80).

Toxopneustes. *T. neglectus* (Forbes) = *T. dröbachiensis.* The following are probably all good species:—*T. dröbachiensis* (North Sea, Greenland, North America), *T. lividus* (Mediterranean), *T. granulatus* (distrib. same as first species), *T. gibbosus* (Galapagos), *T. tuberculatus* = ? *T. delalandi* (New Holland), *T. chlorocentrus*? (North America) (p. 81).

Heliocidaris. This genus is at present but an assemblage of species belonging to different genera. Perhaps it would be well to restrict it to the following:—*H. variolaris*, *chlorotica*, and *paucituberculata*, belonging to the "Oligopores;" *H. margaritacea* is only an *Echinus*: the rest are "Polypores;" of them *H. homalostoma* will be the type of a new genus, *Anthocidaris*, in which *H. erythrogramma* might be provisionally placed, forming the passage to *Toxopneustes*, of which some day it may form a subgenus. *H. mexicana* is to all appearance an *Echinometra*, perhaps *E. lucunter*.

Anthocidaris, g. n., p. 97. Echini circulares, dense et fortiter tuberculati, toxopneusti, poris in singula serie curvata c. 8, ambulacris in pagina inferiori testæ dilatatis, petaloideis, poris multiseriatis, orificio inferiori testæ mediocri, decies inciso, incisuris distinctissimis, haud vero profundis. Differt a *Toxopneuste* forma peristomatis et ambulacrorum partis inferioris. *A. homalostoma* (Valenc.).

Ellipsechinus, g. n., p. 97. Echini parum elliptici, haud plane circulares, dense et fortiter tuberculati, toxopneusti, poris in singula serie curvata c. 8, ambulacris in pagina inferiori testæ dilatatis, petaloideis, poris multiseriatis, orificio inferiori testæ magno, decies inciso, incisuris latissimis. Differt ab *Echinometris* (typicis) quibuscum ceterum convenit, forma partis inferioris ambulacrorum. *E. macrostomus*, mihi.

Echinothrix (Peters). *Savignya* (Desor), and *Garellia* (Grube) are probably synonyms of Peters's genus (p. 87).

Echinus (Psammechinus) verruculatus, sp. n., p. 98, from the Red Sea?, though figured by Savigny, has up to the present not been described.

Ravenellia, g. n., p. 104. Genus *Encopis* vicinum; testa crassa, oblonga, plana, postice gibbosa; lunula interambulacrali maxima, incisuris ambulacralibus rudimentariis; apice testæ et ore excentricis, ante medium, ambulacris angustis, haud plane petaloideis, apice omnino apertis, anteriore brevissimo, posterioribus duplæ longitudinis, valde divaricatis, fortiter arcuatis, in adultis fere genuflexis; ano in margine anteriori lunulæ interambulacralis; lineis ambulacralibus paginæ inferioris parum ramosis. *R. macrophora* (Rav.).

Chætodiscus, g. n. (p. 104). Disco orbiculari pentagono, depresso, plano, apice et ore centralibus, incisuris lunulisque nullis, ano marginali, petalis ambulacralibus latis, fere clausis, poris sparsis tamen ad marginem fere continuatis, lineis ambulacralibus paginæ inferioris *dichotomis undulatis*. Differt ab *Echinarachnis* præcipue ramificatione linearum ambulacralium, a *Scutellis* forma testæ, ano marginali, poris ambulacralibus externis sparsis. *C. scutella*, sp. n., Japan.

Brissus pulvinatus, Philippi, a species from the Mediterranean, omitted by most authors, is a *Brissopsis*, perhaps identical with *B. lyrifera* (p. 107).

Brissus fragilis, of the coast of Norway, is a true *Schizaster*, very near *S. canaliferus* and *S. gibberulus* of the Mediterranean (p. 107).

Hamaxitus, Trosch. = *Tripylus*, Gray = *Faorina*, Gray = *Abatus*, T. (p. 116).

Lütken (*l. c.* p. 118) gives the following arrangement of the *Spatangidæ*:—

A. Fasciola entopetala (et subanalis) present.
  α. F. peripetala wanting: *Echinocardium*, *Lovenia*, (*Gualtieria* *).
  β. F. peripetala present: *Breynia*.

B. Fasciola entopetala wanting.
  a. F. peripetala (et lateralis) wanting.
    α. F. subanalis wanting: *Hemipatagus*, (*Toxaster*, *Enallaster*, *Isaster*, *Epiaster*).
    β. A closed subanal band present: *Spatangus*, (*Micraster*).
  b. F. peripetala present.
    α. F. lateralis present, f. subanalis wanting: *Agassizia*, *Schizaster*, *Tripylus*, *Desoria*, *Mæra*, (*Periaster*, *Linthia*, *Prenaster*).
    β. F. lateralis wanting.
      † Marginal band also wanting.
        * Subanal band closed: *Brissus*, *Brissopsis*, *Kleinia*, (*Toxobrissus*), *Eupatagus*, (*Plagionotus*).
        ** Subanal band open: *Meoma*, *Atrapus*.
        *** Subanal band quite wanting: *Abatus*, *Leskia*, (*Macropneustes*, *Hemiaster*).
      †† Marginal band present (subanal wanting): *Pericosmus*.

Echinus lividus. Stuart (*l. c.* p. 104) while at Messina studied the development of this species, especially with regard to the appearance of the muscular fibres in the larval form. He refers to three well-distinguished tissues:—1. a simple epithelial tissue, the cells provided with circular nucleoli and beset with long thin glistening hairs; 2. a tolerably strong muscular layer, somewhat of the same structure as that found in some of the Opisthobranchiates; and 3. a well-developed connective tissue.

Holothurioidea.

Synapta sarniensis, sp. n., Herapath, p. 5, from Guernsey. Quart. Journ. Micr. Sc. 1865.

Cucumaria digitata. On its occurrence in the Firth of Forth, R. O. Cunningham, Ann. & Mag. Nat. Hist. 1865, April, p. 355.

---

* Extinct genera are placed in brackets.

CŒLENTERATA

BY

E. Perceval Wright, M.A., M.D., F.L.S.

Alder, J. Report on the Zoophytes of the Coasts of Northumberland and Durham. Nat. Hist. Trans. Northumb. and Durh. vol. i. part 1. pp. 45–50.

Allman, G. On the occurrence of Amœbiform Protoplasm and the Emission of Pseudopodia among the Hydroida. Ann. & Mag. Nat. Hist. 1864, March, xiii. p. 203, pl. xiv.

——. On the Construction and Limitation of Genera among the Hydroida. Ibid. May, pp. 346–380.

——. Notes on the Hydroida. Ibid. xiv. pp. 57–64, with a plate; and 1865, xv. pp. 465–474.

——. Report on the present State of our Knowledge of the Reproductive System in the Hydroida. Trans. Brit. Assoc. 1863 (published in 1864), pp. 351–426.

Bocage, J. V. Barboza du. Note sur la Découverte d'un Zoophyte de la famille Hyalochætides sur la côte du Portugal. Proc. Zool. Soc. London, 1864, p. 265, pl. xxii.

Claus, C. Bemerkungen über Ctenophora und Medusen. Zeitschr. f. wiss. Zool. xiv. 1864, pp. 384–393, pls. 37 & 38.

Duncan, P. M. A Description of some Fossil Corals from the South-Australian Tertiaries. Ann. & Mag. Nat. Hist. 1864, September, pp. 161–168, pls. v. & vi.

——. A Description of and Remarks upon some Fossil Corals from Scinde. Ibid. 1864, April, pp. 295–306, pls. 18 & 19.

——. On the Corals of the Maltese Miocene. Ibid. 1865, April, pp. 273–276, with a plate.

——. A Description of some Fossil Corals from the South-Australian Tertiaries. Ibid. September, pp. 182–187, pl. viii.

Duthiers, H. Lacaze. Mémoire sur les Antipathaires (genre *Gerardia*). Compt. Rend. lix. 1864, 11 Juillet, p. 86; Ann. Sc. Nat. 1864, ii. pp. 169–239, pls. 13–18; Ann. & Mag. Nat. Hist. 1864, October, pp. 241–243.

——. Mémoire sur les Antipathaires (genre *Antipathes*, Pol.).

Extrait Compt. Rend. lix. 1864, 25 Juillet, pp. 192–195; Ann. & Mag. Nat. Hist. 1864, September, p. 198.

Duthiers, H. Lacaze. La couleur des Alcyonaires et ses variations, expliquée par l'histologie. Compt. Rend. lix. 1864, 1 Août.

——. Histologie du Polypier des Gorgones. Ann. Sc. Nat. iii. 1865, pp. 353–366, pl. 14.

——. Des sexes chez les Alcyonaires. Compt. Rend. lx. 1865, 24 Avril, pp. 840–843; Ann. & Mag. Nat. Hist. 1865, June, p. 453.

——. Histoire naturelle du Corail; organisation, reproduction, pêche en Algérie, industrie et commerce. Avec 20 Planches dessinées d'après nature et coloriées. Paris, 1864, pp. 346.

Gosse, P. H. On a New British Sea-Anemone, *Ægeon alfordi*. Ann. & Mag. Nat. Hist. 1865, July, p. 41, pl. vii.

Haeckel, E. Beiträge zur Naturgeschichte der Hydromedusen. Erstes Heft. Die Familie der Rüsselquallen (*Geryonida*). Mit einem Atlas von sechs Kupfertafeln und Holzschnitten. Leipzig, 1865.

——. Ueber eine neue Form des Generationswechsels bei den Medusen und über die Verwandtschaft der Geryoniden und Æginiden. Monatsb. Ak. Wiss. Berlin, 1865, pp. 85–94; Ann. & Mag. Nat. Hist. 1865, June, pp. 437–444.

Johnson, J. Y. Description of a New Species of Flexible Coral belonging to the genus *Juncella*, obtained at Madeira. Proc. Zool. Soc. 1863, p. 505; or Ann. & Mag. Nat. Hist. 1864, August, p. 142.

Kirchenpauer —. Neue Sertulariden aus verschiedenen Hamburgischen Sammlungen nebst allgemeinen Bemerkungen über Lamouroux's Gattung *Dynamena*. Act. Acad. Cæs. Leop.-Carol. xxxi. pp. 1–16, with a plate.

Kölliker, A. On the Histology of the Acalephæ. Ann. & Mag. Nat. Hist. 1865, August, p. 42. [The original paper, in the 'Würzburg. naturw. Zeitschr.,' we have not seen.]

Krohn, A. Ueber *Tetraplatia volitans*. Arch. Naturgesch. xxxi. 1865, pp. 337–341, Taf. xiv.

This strange, anomalous form is described in detail by Dr. Krohn. In a previous paper in Müller's Archiv for 1863, he conjectured that it might be an undeveloped Cœlenterate animal, with certain hydroid affinities.

M'Intosh, W. C. On the Polyps of *Alcyonium digitatum*. Proc. Roy. Soc. Edinb. v. 1865, March 6, p. 393.

M'Intosh, W. C. Note on two New Species of the Genus *Edwardsia*. Ibid. p. 394.

Müller, F. Ueber die Randbläschen der Hydroidquallen. Arch. für mikr. Anat. 1865, pp. 143–147, pl. 7. fig. 4.

Norman, A. M. On *Cyanea imporcata*, an undescribed Medusa taken off the Northumberland Coast. Nat. Hist. Trans. Northumb. and Durham, vol. i. part i. p. 58, pl. xi.

——. On New Species of Actinozoa. Ann. & Mag. Nat. Hist. 1864, January, p. 84, pl. x.

——. On *Merona*, an undescribed Genus of British Hydrozoa. Ibid. 1865, April, p. 261.

——. On undescribed British Hydrozoa. Ibid. 1864, January, pp. 82–84, pls. ix. & x.

Verrill, A. E. Classification of Polyps. (Extract condensed from a Synopsis of the Polypi of the North Pacific Exploring Expedition under Captains Ringgold and Rodgers, U.S.N.). Proc. Essex Instit. vol. iv. p. 145; Ann. & Mag. Nat. Hist. 1865, September, p. 191.

Wright, E. Perceval. On a New Genus of Alcyonidæ. Quart. Journ. of Micr. Scien. 1865, July (*orig. com.*), p. 214, with a plate. [*Hartea.*]

Hydroida.

Prof. Allman has published a Report on the state of our present knowledge of the reproduction of this group (Trans. Brit. Assoc. for 1863 [1864], pp. 351–426) :—

He brings together all the known facts regarding their development. It is an able *résumé* of what has been already done in this group of animals, and contains, moreover, many new facts and various original views. The paper is also illustrated with numerous original figures.

The present state of our knowledge of the Hydroida rendering the old terminology inadequate for the requirements of science, the author has found it necessary to subject this department of the subject to a complete revision. He continues to employ most of the terms already introduced by Huxley and himself, but is also obliged to make use of several new ones.

For the whole assemblage of nutritive zooids which go to make up the entire complex hydroid colony, he uses the term "trophosome;" while for the whole assemblage of zooids whose proper function is more or less connected with true generation, the term "gonosome" is employed.

He describes, as elements of the trophosome, the peculiar zooids which occur in the Plumularidæ, and had been named *nematophores* by Busk; and he shows that these bodies consist of a true protoplasm, which has the power of emitting *pseudopodia* in the manner of a Rhizopod.

The "gonophore" is the ultimate generative zooid, and, though in every case reducible to the type of the so-called Gymnophthalmic Medusa, presents two distinct modifications of form—the "phanerocodonic," which presents the condition of a typically developed medusa, and is, in most cases, destined to enjoy a free locomotive existence, and the "adelocodonic," in which the medusa-form is more or less suppressed, and the gonophore scarcely ever destined to become liberated from the trophosome.

Among phanerocodonic forms the gonophore in *Clavatella* and *Eleutheria* is ambulatory instead of natatory; and among adelocodonic forms we have a remarkable instance of a free locomotive gonophore in *Dicoryne*, where this body, often liberating itself from the trophosome, swims about by the aid of vibratile cilia.

The medusiform zooid presents two types, which must be carefully distinguished—the "gonocheme," in which the generative elements are produced in the walls of the manubrium, and the "gonoblastocheme," in which they are produced in special sacs developed on some part of the course of the radiating canals. The former he regards as truly sexual, while the latter is, properly speaking, non-sexual and needs the development from it of sexual buds for the formation of the generative elements. Of the sexual form or gonocheme, examples are to be found in the medusa included by authors in the genus *Sarsia*, &c., while *Thaumantias*, *Obelia*, &c., afford examples of the non-sexual form or gonoblastocheme.

A comparison is instituted between the medusa and the sporosac or adelocodonic gonophore, and it is shown that a strict parallelism may be traced; while a similar parallelism is attempted to be demonstrated between the medusa and the polypite, in which it is maintained that the tentacles of the polypite have their homologues in the radiating canals of the medusa—a view which the author believes to be supported not only by a comparison of structure and relations, but by the phenomena of development.

Among special modifications of the gonosome, the author refers to the moniliform condition of the male gonophore in *Eudendrium*, which he compares to a similar condition presented by the manubrium of the male of a *Sarsia*-like medusa captured on the Irish coast, as well as by the same part of the medusa referable to the genus *Dipurena*, M'Crady.

To the capsular receptacle in which the gonophores are contained in such genera as *Sertularia*, *Campanularia*, &c., the term "gonangium" is applied, and those hydroids which possess a gonangium are named "angiogonial," while those in which the gonophores are not contained in an external capsule are named "gymnogonial."

In certain angiogonial genera the ova escape from the gonangium into an external receptacle which is situated on its summit. This is the "acrocyst." In most cases the acrocyst is destitute of any further covering; but in certain species of *Sertularia*, *S. rosacea* and *S. tamarisca*, an additional covering is provided for it, so as to form a curious and complicated receptacle, in which the ova pass through certain stages of their development previously to being discharged into the surrounding water.

In certain Plumularidæ the gonangia are contained in groups within peculiar receptacles, to which the author gives the name of "corbula," and which he shows to be formed by certain ramuli of the trophosome which have undergone a metamorphosis, consisting in the suppression of the hydrothecæ or so-called polype-cells, and the development on each side of numerous hollow alternately placed leaflets. These leaflets curve round, and ultimately

become united along their sides and at their summit so as to form a closed chamber, within which the gonangia with their contents are developed.

Under the head of "Development" the author treats of non-sexual reproduction and of true generation. Under the former head he describes the development of the bud in the various zooids of the trophosome and the gonosome, and draws attention to a phenomenon which he regards as indicative of a true *polarity* in the organic forces of the hydroida. This shows itself in the fact of a segment cut from the centre of a *Tubularia*-stem developing a new polypite only from that end which was originally situated distally, while it developes a simple continuation of the stem from the proximal end, and this no matter in what position the segment may lie after separation.

In the development of the medusa of *Corymorpha nutans* he shows that the four radiating canals extend themselves as tubular processes round the summit of the primordial bud in the mammary tentacles, but carry with them at the same time an extension of the ectoderm of the bud, which unites them by a web-like membrane, which ultimately becomes the umbrella. The distal extremities of the processes become enlarged, approach one another, unite, and allow their cavities to intercommunicate. They then retreat from one another, but continue in connexion by a tubular elongation of the original points of union; this becomes the circular canal.

The development of the embryo in *Laomedea flexuosa* is described as a typical example of the mode in which this phenomenon takes place in the great majority of the hydroids. The disappearance of the germinal vesicle and spot is the precursor of the segmentation by which the vitellus becomes at last broken up into a multitude of protoplasmic masses, each with its nucleus. The most superficial of these masses arrange themselves into a distinct structure, enveloping all the more internal parts, which are soon after seen to consist of an aggregation of cells, each with an endogenous brood. The embryo now becomes elongated by bending over on itself. A cavity is formed in its axis, apparently by the liquefaction of the most deeply seated cells, and it now escapes from the gonophore as a ciliated *planula*.

In *Tubularia* the process is different. Masses without any distinguishable nuclei are detached in succession from a voluminous plasma which envelopes the central spadix of the gonophore, and these, without undergoing any segmentation, become gradually transformed into a polypoid embryo, termed "actinula" by the author. Every hydroid, if we except such as may be proved to pass to the medusal condition directly from the egg, commences its free existence either as a *planula* or an *actinula*.

The view taken by Claparède of the development of *Tubularia*, in which he compares the actinula to a medusa, whose manubrium becomes the stem of the future *Tubularia*, and which developes the future mouth on the summit of its umbrella, is regarded by the author as based on an error of interpretation.

The various facts which have been from time to time recorded as evidence of the direct development of the medusa from the egg are carefully examined, and it is concluded that only in a single instance can these facts be regarded as affording solid proof of such direct development. This solitary instance we find in an observation of Claparède, who has seen the manubrium of a *Lizzia* loaded with eggs, within which young medusæ might be witnessed in various stages of development.

Tubularidæ and *Campanularidæ*. Allman (Ann. & Mag. Nat. Hist. 1864, xiii. pp. 345–380), gives a most valuable synopsis of the genera and species of the Tubularian and Campanularian Hydroids whose trophosomes are known:—

The author very justly observes that henceforth no classification of the Hydroida will be admitted which does not include in the conception of every Hydroid both those parts which are destined for the nutrition of the colony and those which are destined for the sexual perpetuation of the species, whether these latter be in the form of fixed sacs or of free locomotive medusæ. The following technical names are used in this paper:—"*trophosome*"=the assemblage of nutritive zooids: "*gonosome*"=the assemblage of generative zooids; the gonosome sometimes remains permanently attached to the trophosome, sometimes becomes free. "*Gonophore*"=the reproductive bodies; if the gonophores be in the condition of a fixed sac, they are called *adelocodonic*, if in that of a developed medusa, *phanerocodonic*. Sometimes similar gonosomes are associated with dissimilar trophosomes (isogonism), sometimes dissimilar gonosomes are associated with similar trophosomes (heterogonism). The "*cœnosarc*" is the common connecting basis of the colony, and is more or less completely invested by a chitinous "*periderm*" excreted from its surface. The "*hydrorhiza*" is the root-like proximal termination to the cœnosarc. The "*hydrocaulus*" is the free or more less adherent portion of the cœnosarc which intervenes between the hydrorhiza and the polypites. The "*metastome*" is that portion of the polypite which intervenes between the mouth and the most distal set of tentacles. The "*hydrotheca*" is the cup-like receptacle into which the polypites are retractile in the Campanularian Hydroids. When the gonophore is adelocodonic the umbrella is never developed so as to present a wide orifice or "*codonostome*," and hence is incapable of locomotion.

Until very recently the Gymnophthalmata have been described and arranged as independent forms, although there was little doubt that many of them were only the locomotive buds of fixed Hydroids; henceforward the aim of the zoologist will be to investigate the whole life-history of each form, and to trace it from the ovum to the full-grown trophosome and gonosome, and then to the phanerocodonic gonophore producing the ova in its turn. Out of the numerous species and genera the complete life-history of only two or three is known, and of very many of the species the gonophores are unknown; these are marked thus (*) in the following list of the families, genera, and species. The author gives the diagnosis of each genus, but enumerates the names of the species only:—

TUBULARIDÆ.

Fam. I. Clavidæ.

1. *Clava* (Sm.): *C. multicornis* (Forsk.), *C. repens* (Wright), *C. leptostyla* (Agass), *C. diffusa* (Allm.), *C. cornea* (Wright), *C. membranacea* (Wright), *C. nodosa* (Wright).
2. *Tubiclava* (Allm.): *T. lucerna* (Allm.).
3. *Merona* (Norman): *M. cornucopia*= *Tubiclava cornucopia* (Norman).
4. *Campaniclava*, g. n.: *C. cleodoræ*=*Syncoryne cleodoræ* (Gegenb.).
5. *Turris* (Lesson): *T. neglecta* (Forbes), Trophosome=*Clavula gossii* (Wright).

6. *Cordylophora* (Allm.): *C. lacustris* (Allm.), *C. albicola* (Kirchenpauer).
*7. *Corydendrium* (Van Ben.): *C. parasiticum* (Van Ben.) = *Syncoryne parasitica* (Ehrenb.) = *Sertularia parasitica* (Cavolini).

Fam. II. PODOCORYNIDÆ.

1. *Stylactis*, g. n.: *S. fucicola* (Sars, sp.) = *Podocoryne fucicola* (Sars), *S. sarsii* (Allm.) = *Podocoryne carnea* (Sars).
2. *Podocoryne* (Sars, in part), *P. carnea* (Sars), **P.*? *aculeata* (Wag., sp.) = *Coryne aculeata* (Wag.).
3. *Corynopsis*, g. n.: *C. alderi* (Hodge) = *Podocoryne alderi* (Hodge).
4. *Diplura* (Greene): *D. fritillaria*, *Coryne fritillaria* (Steenstrup).

Fam. III. HYDRACTINIDÆ.

1. *Hydractinia* (Van Beneden): *H. echinata* (Flem., sp., ♂) = *H. lactea* (Van Ben., ♀) = *H. rosea* (Van Ben.) = *Synhydra parasites* (Quatref.) = ? *Dysmorphosa conchicola* (Philippi), *H. polyclina* (Agass.).
2. *Rhizocline*, g. n.: *R. areolata* = *Hydractinia areolata* (Ald.).

Fam. IV. LARIDÆ.

*1. *Lar* (Gosse): *L. sabellarum* (Gosse).

Fam. V. CORYNIDÆ.

1. *Coryne* (Gärtner): *C. pusilla* (Gärt.) = *C. pusilla* (Johnst. nec Van Ben.), *C. ramosa* (Sars), *C. fruticosa* (Hincks), *C. vaginata* (Hincks) = *C. ramosa* (Johnst.). Doubtful species: *C. sessilis* (Gosse).
2. *Syncoryne* (Ehrenberg, in part): *S. sarsii* (Lovén) = *S. decipiens* (Dujardin), *S. ramosa* (Lovén), *S. turricula* (M'Crady, sp.) = *Sarsia turricula* M'Crady), *S. mirabilis* (Agass., sp.) = *Coryne mirabilis* (Agass.), *S. eximia* (Allm., sp.) = *Coryne eximia* (Allm.), *S. gravata* (Wright, sp.) = *Coryne gravata* (Wright). Doubtful species: *S. bryoides* (Ehr.) = *Tubularia muscoides* (Linn.), *S. listeri* (Van Ben.).
3. *Zanclea* (Gegenbaur): *Z. implexa* (Ald. sp.) = *Coryne implexa* (Ald.) = *Coryne briareus* (Allm.).
4. *Corynitis* (M'Crady): *C. agassizi* (M'Crady).

Fam. VI. PENNARIDÆ.

1. **Vorticlava* (Alder): *V. humilis* (Ald.), *V. proteus* (Wright).
2. **Acharadria* (Strethill Wright): *A. larynx* (Wright).
3. *Heterostephanus*, g. n.: *H. annulicornis* (Sars, sp.) = *Corymorpha? annulicornis* (Sars).
4. *Stauridium* (Dujardin): *S. productum* (Wright).
5. *Cladonema* (Dujardin): *C. radiatum* (Dujardin).
6. *Pennaria* (Goldfuss): *P. distycha* (Goldf.) = *P. cavolini* (Ehrenb.) = *Sertularia pennaria* (Cavolini), *P. gibbosa* (Agass.).
7. *Globiceps* (Ayres): *G. tiarella* (Ayres) = *Eucoryne elegans* (Leidy) = *Pennaria tiarella* (M'Crady).

Fam. VII. CLAVATELLIDÆ.

1. *Clavatella* (Hincks): *C. prolifera* (Hincks).

Fam. VIII. EUDENDRIDÆ.

1. *Eudendrium* (Ehrenberg, in part): *E. ramosum* (Linn., sp.) = *Tubularia trichoides* (Pallas) = ? *Sertularia racemosa* (Cavolini) = *Eudendrium ramosum* (Ehrenb.), *E. rameum* (Pallas, sp.) = *Tubularia ramea* (Pallas), *E. capillare* (Alder) = *Corymbogonium capillare* (Allm.), *E. arbuscula* (Wright), *E. insigne* (Hincks), *E. humile* (Allm.), *E. dispar* (Agass.), *E. annulatum* (Norman), *E. cingulatum* (Stimp.), *E. vaginatum* (Allm.), *E. pusillum* (Sars).

2. *Atractylis* (Strethill Wright, in part): *A. arenosa* (Ald.), and provisionally **A. coccinea* (Wright) and **A. miniata* (Wright), these may belong to *Perigonimus*; *A. margarica* (Hincks), this is undoubtedly the type of a new genus.
3. *Bimeria* (Strethill Wright): *B. vestita* (Wright).
4. *Garveia* (Strethill Wright): *G. nutans* (Wright) = *Eudendrium* (*Corythamnium*) *bacciferum* (Allm.).
5. *Heterocordyle*, g. n.: *H. conybearei* (Allm.).
6. *Perigonimus* (Sars): *P. muscoides* (Sars), *P. repens* (Wright, sp.) = *Atractylis repens* (Wright), *P. sessilis* (Wright, sp.) = *Atractylis sessilis*, (Wright), *P. palliatus* (Wright, sp.) = *Atractylis palliata* (Wright), *P.*? *linearis* (Ald., sp.) = *Atractylis linearis* (Ald.), *P. serpens* (Allm.), *P. minutus* (Allm.), *P. pusillus* (Wright, sp.) = *Eudendrium pusillum* (Wright), *P. vestitus* (Allm.).
7. *Bougainvillia* (Lesson): *B. ramosa* (Van Ben., sp.) = *Eudendrium ramosum*, Van Ben.) = *Tubularia ramosa* (Dalyell) = *Atractylis ramosa* (Wright) = *Margelis ramosa* (Agass.), *B. fruticosa* (Allm.), *B. muscus* (Allm.).
8. *Cionistes* (Strethill Wright): *C. reticulata* (Wright).

Fam. IX. DICORYNIDÆ.

1. *Dicoryne* (Allm.): *D. conferta* (Alder).

Fam. X. TUBULARIDÆ.

1. *Tubularia* (Linn., in part): *T. indivisa* (Linn.) = *T. calamaris* (Pallas), *T. couthoyi* (Agass.), *T. coronata* (Abild.) = ? *T. gracilis* (Harvey) = *Thamnocnidia coronata* (Agass.), *T. spectabilis* (Agass., sp.) = *Thamnocnidia spectabilis* (Agass.), *T. tenella* (Agass., sp.) = *Thamnocnidia tenella* (Agass.), *T. cristata* (M'Crady) = *Parypha cristata* (Agass.), *T. crocea* (Agass., sp.) = *Parypha crocea* (Agass.), *T. bellis* (Allm.), *T. attenuata* (Allm.), *T. larynx* (Ell. & Soland.), *T. simplex* (Alder), ? *T. calamaris* (Van Ben.), *T. humilis* (Allm.).
2. *Ectopleura* (Agassiz): *E. dumortieri* (Van Ben., sp.) = *Tubularia dumortieri* (Van Ben.).
3. *Hybocodon* (Agassiz): *H. prolifer* (Agass.).
4. *Corymorpha* (Sars, in part): *C. nutans* (Sars), *C. nana* (Allm.).
5. *Amalthea* (O. Schmidt), *A. uvifera* (Sars, sp.) = *Corymorpha uvifera* (Sars), *A. sarsii* (Steenst., sp.) = *Corymorpha sarsii* (Steenst.), *A. januarii* (Steenst., sp.) = *Corymorpha januarii* (Steenst.).
6. *Monocaulos*, g. n.: *M. glacialis* (Sars, sp.) = *Corymorpha glacialis* (Sars), *M. pendula* (Agass., sp.) = *Corymorpha pendula* (Agass.).
7. *Nemopsis* (Agassiz): *N. gibbesii* (M'Crady).
8. *Acaulis* (Stimpson): *A. primarius* (Stimps.).
9. *Myriothela* (Sars): *M. arctica*, Sars = *Candelabrum arcticum*.

CAMPANULARIDÆ.

Fam. I. Campanularidæ.

1. *Campanularia* (Lamarck, in part): *C. johnstoni* (Ald., sp.)= *C. volubilis* (Johnst.)= *Clytia johnstoni* (Agass.), *C. noliformis* (M'Crady, sp.)= *Clytia noliformis* (Agass.), *C. cylindrica* (Agass., sp.)= *Platypyxis cylindrica* (Agass.), *C. gegenbaurii* (Sars), *C. dichotoma* (Kölliker). The following are placed here provisionally:—**C. volubilis* (Linn.), **C. verticillata* (Linn.), **C. hincl* (Ald.), **C. integra* (Macgillivray), **C. raridentata* (Ald.), **C. breviscypha* (Sars), **C. bicophora* (Agass., sp.)= *Clytia bicophora* (Agass.).

2. *Obelia* (Péron & Lesueur): *O. dichotoma* (Linn., sp.)= *Laomedea dichotoma* (var. *a*, Johnst.)= *Campanularia gelatinosa* (Van Ben.), *O. geniculata* (Linn., sp.)= *Laomedea geniculata* (Johnst.), *O. commissuralis* (M'Crady), *O. diaphana* (Agass., sp.)= *Eucope diaphana* (Agass.), *O. gelatinosa* (Pallas, sp.), *O. longissima* (Pallas, sp.).

3. *Laomedea* (Lamouroux, in part): *L. flexuosa* (Hincks, sp.)= *Laomedea gelatinosa* (var. *a*, Johnst.), *L. neglecta* (Ald.), *L. angulata* (Hincks), *L. amphora* (Agass.), *L. exigua* (Sars), *L. decipiens* (Wright), *L. volubiliformis* (Sars, sp.)= *Campanularia volubiliformis* (Sars), *L. poterium* (Agass., sp.)= *Clytia poterium* (Agass.), *L. caliculata* (Hincks, sp.)= *Campanularia caliculata* (Hincks).*

4. **Hincksia* (Agassiz): *H. tincta* (Agass., gen.)= *Campanularia tincta* (Hincks).

5. *Gonothyræa*, g. n.: *G. lovéni* (Allm.)= *Campanularia geniculata* (Lister, Lovén, Schultze)= *Laomedea lovéni* (Allm.), *G. gracilis* (Sars, sp.)= *Laomedea gracilis* (Sars).

6. **Trichydra* (Strethill Wright): *T. pudica* (Wright).

7. *Calycella* (Hincks): *C. syringa* (Linn., sp.)= *Clytia syringa* (Lamx.)= *Campanularia syringa* (Van Ben.)= *Wrightia syringa* (Agass.), *C. lacerata* (Johnst., sp.)= *Campanularia lacerata* (Johnst.)= *Wrightia lacerata* (Agass.), *C.? humilis* (Hincks), *C. fastigata* (Ald.)= *Campanularia fastigata* (Ald.)= *Lafoëa plicatilis* (Sars).

8. *Campanulina* (Van Beneden): *C. acuminata* (Ald., sp.)= *C. tenuis* (Van Ben.)= *Laomedea acuminata* (Ald.)= *Wrightia acuminata* (Agass.), *C.? repens* (Allm.).

Fam. II. Æquoridæ.

1. *Zygodactyla* (Brandt): *Z. vitrina* (Gosse, sp.)= *Æquorea vitrina* (Gosse).

Fam. III. Thaumantidæ.

1. *Thaumantias* (Eschscholtz): *T. inconspicua* (Forbes).

Fam. IV. Leptoscyphidæ.

1. *Leptoscyphus*, g. n.: *L. tenuis* (Allm.).

2. *Lafoëa* (Lamouroux): *L. dumosa* (Linn., sp.)= *Campanularia dumosa* (Fleming, Johnst.)= *Calycella dumosa* (Hincks), *L. cornuta* (Lamx.), *L. fruticosa* (Sars)= *Campanularia gracillima* (Ald.).

Fam. V. Lineolaridæ.

1. **Lineolaria* (Hincks): *L. spinulosa* (Hincks).

New genera:—

Campaniclava (Allman, Ann. & Mag. Nat. Hist. 1864, xiii. p. 351). *Trophosome*: Cœnosarc a creeping, filiform, ramified hydrorhiza invested by a periderm; hydrocaulus undeveloped. Polypites sessile on the hydrorhiza, claviform, with scattered filiform tentacula. *Gonosome*: Gonophores phanerocodonic, sessile on the creeping hydrorhiza. Umbrella at the time of its liberation deep bell-shaped; manubrium simple-mouthed, shorter than the height of the bell-cavity; radiating canals four; marginal tentacles two, continuous with two opposite radiating canals, and having bulbous bases without distinct ocellus; two intervening smaller bulbs corresponding to the termination of the other two radiating canals in the circular canal. Type *C. cleodoræ* (Gegenb. sp.).

Corynopsis (Allman, *l. c.* p. 353). *Trophosome*: Hydrorhiza ramified and creeping; hydrocaulus rudimental or absent. Polypites claviform, with a single verticil of filiform tentacula surrounding the base of a conical metastome. *Gonosome*: Gonophores phanerocodonic, borne on the body of the polypite at the proximal side of the tentacular verticil. Medusa at the time of liberation deep bell-shaped; manubrium not reaching the orifice of the bell, and having its mouth surrounded by four short tentacles; radiating canals four, each terminating distally in a bulb, from which are developed two tentacles, each with a distinct ocellus at its base. Type *C. alderi* (Hodge, sp.).

Rhizocline (Allman, *l. c.* p. 355). *Trophosome*: Cœnosarc forming an adherent stratum supported by "a solid chitinous expansion." Polypites developed at intervals from the free surface of the cœnosarc; tentacles filiform, in a single verticil round the base of a conical metastome. *Gonosome*: Gonophores phanerocodonic, sessile on the free surface of the cœnosarc. Umbrella, at the time of liberation, deep bell-shaped; manubrium large, with a four-lipped mouth, but not extending beyond the margin of the umbrella; four radiating canals continued distally by four marginal tentacles with bulbous bases; three shorter tentacles developed in each interradial space. Type *R. areolata* (Alder, sp.).

Heteractis (Allman, *l. c.* p. 359). *Trophosome*: Polypite solitary, borne on the summit of a simple rooted hydrocaulus; two verticils of tentacles, a proximal and a distal,—the tentacles composing the proximal verticil long and "annulated" (Sars), those composing the distal verticil short and capitate. *Gonosome*: Gonophores phanerocodonic, borne upon peduncles, which arise from the body of the polypite at the distal side of the proximal verticil of tentacles. Umbrella in the form of a shallow bell, with four radiating canals, one large marginal tentacle, and three rudimental ones. Type *H. annulicornis* (Sars, sp.).

Heterocordyle (Allman, *l. c.* p. 365). *Trophosome*: Cœnosarc consisting of a simple or branched hydrocaulus, which arises from a creeping, filiform and anastomosing hydrorhiza, the whole invested by a chitinous periderm. Polypites fusiform, with a single verticil of filiform tentacula round the base of a conical metastome. *Gonosome*: Gonophores adelocodonic, borne by gonoblastidia, which are developed [solely?] from the hydrorhiza; sporosacs of

the ordinary kind, destitute of tentacles and cilia, and incapable of locomotion. *H. conybearei* (n. sp.).

Monocaulos (Allman, *l. c.* p. 370). *Trophosome*: Polypite solitary, borne on the summit of a simple rooted hydrocaulus; both hydrocaulus and hydrorhiza invested by a very delicate periderm; polypites flask-shaped, with two sets of filiform tentacles—a proximal set longer and thicker, and arranged in a single verticil near the base of the polypite, and a distal set shorter and thinner, and scattered over a zone close to the summit ef the polypite. *Gonosome*: Gonophores adelocodonic, on simple or branched peduncles, which spring from the body of the polypite at the distal side of the longer tentacles. Type *M. glacialis* (Sars, sp.).

Gonothyræa (Allman, *l. c.* p. 374). *Trophosome*: Hydrocaulus branching, rooted by a filiform hydrorhiza; hydrotheca bell-shaped, with entire or serrated margin, and destitute of operculum; tentacula surrounding the base of a large, very contractile metastome. *Gonosome*: Gonophores adelocodonic. Sporosacs in the form of imperfect medusæ (meconidia), carrying round the rudimental codonostome a circle of filiform tentacula, and, when mature, supported on the summit of the gonangium, where they lie entirely external to its cavity. Type *G. lovéni* (Allm.).

Leptoscyphus (Allman, *l. c.* p. 378). *Trophosome*: Hydrocaulus simple or branching, attached by a creeping filiform hydrorhiza; hydrothecæ with an operculum composed of converging lanceolate segments. Polypites cylindrical when extended; tentacula surrounding the base of a conical metastome. *Gonosome*: Gonophores phanerocodonic. Umbrella, at the time of liberation, deep bell-shaped or conical; manubrium pendent from a conical projection from the roof of the umbrella, of moderate size, with the mouth surrounded by four short capitate tentacula; radiating canals four, each terminating distally in a bulb, without evident ocellus, each bulb giving origin to a cluster of two or three tentacles; a single marginal tentacle with a bulbous base is also developed from the centre of each interradial space. Type *L. tenuis* (Allm.).

Glossocodon (Haeckel, *l. c.* p. 26). Body with four similar segments; four radial canals. No blind centripetal canal on the circular canal. Eight marginal bodies. Four or eight tentacles. Mouth-peduncle in the form of a long, solid, gelatinous tongue (Zungenkegels) hanging down from the oral orifice. There are two subgenera, *Glossoconus* and *Glossocodon*, distinguished by the number of tentacles.

Carmarina (Haeckel, *l. c.* p. 32). Body of six similar segments; six radial canals. From the circular canal to the radial canals proceed blind centripetal canals varying in number. Twelve marginal bodies. Six or twelve tentacles (in one larval form eighteen). Tongue-like process as in *Glossocodon*.

Merona (Norman, *l. c.* p. 261). *Trophosome*: Cœnosarc consisting of erect or semierect simple tubes, which arise at intervals from a creeping, filiform hydrorhiza, the whole invested by a chitinous periderm. Polypites issuing from the distal extremity of the tubes, claviform, with scattered filiform tentacula. *Gonosome*: Gonophores consisting of mulberry-like masses of sporosacs supported on short gonoblastidia, which arise from short tubular openings in the hydrorhiza. Sp. *M. cornucopiæ* (Norm.).

Haeckel (Beiträge zur Naturgeschichte der Hydromedusen, p. 22) proposes the following scheme for the division of the

Geryonidæ.

I. Four radial canals. (No centripetal canal). *Liriopida.*	No tongue-like process .... (*Liriope*) ..	8 tentacles	1. *Xanthea.*
		4 „	2. *Liriope.*
	A tongue-like process .... (*Glossocodon*)	8 „	3. *Glossoconus.*
		4 „	4. *Glossocodon.*
II. Six radial canals. *Carmarinida.*	No tongue-like process	No centripetal canal	5. *Leuckartia.*
		Many centripetal canals	6. *Geryonia.*
	A tongue-like process	Many centripetal canals	7. *Carmarina.*

Dr. Kirchenpauer (*l. c.* p. 1) indicates the chief distinctions between *Dynamena* (Lamouroux) and the Linnean genus *Sertularia*. He arranges the species as follows, and describes and figures those marked as new:—

I. Ore margine integro. 1. *Dynamena rosacea*, Lx.; 2. *D. pinaster*, Lx.; 3. *D. margareta*, Hass.; 4. *D. pinnata*, Flem.; 5. *D. filicula*, Flem.; 6. *D. tubiformis*, Lx.; 7. *D. distans*, Lx.; 8. *D. lucernaria*, sp. n., habitat Nukahiwa, South Sea; 9. *D. conferta*, sp. n., habitat Carpenteria, Australia; 10. *D. sertularioides*, Lx.; 11. *D. obliqua*, Lx.; 12. *D. turbinata*, Lx.

II. Ore mucronato. 13. *Dynamena serra*, Blainv.; 14. *D. pumila*, Lx.; 15. *D. tamarisca*, Flem.

III. Ore bicuspidato. 16. *Dynamena bicuspidata*, Lmck.; 17. *D. australis*, sp. n., habitat Port Philip, Australia; 18. *D. pinna*, sp. n., habitat Bass Strait, Tasmania.

IV. Ore bispinoso. 19. *Dynamena operculata*, Lx.; 20. *D. pulchella*, D'Orbigny; 21. *D. fasciculata*, sp. n., habitat Sydney, New South Wales.

V. Ore bidentato. 22. *Dynamena divergens*, Lx.; 23. *D. disticha*, Lx.; 24. *D. marginata*, sp. n., habitat Pacific Ocean.

VI. Ore pluridentata. 25. *Dynamena grosse-dentata*, sp. n., habitat Australia; 26. *Sertularia tricuspidata* (Murray nec Alder*); 27. *S. pluridentata*, sp. n., habitat Cape of Good Hope.

VII. Form of cells unknown to author. 28. *Dynamena evansii*, Lx.; 29. *D. indivisa*, Meyer; 30. *D. rigida*, Blainv.

Aglaophænia pluma and *Antennularia antennina*. In both of these Allman found (*l. c.* p. 203) that the soft granular mass in the Nematophores has the power of emitting very extensile and mutable "pseudopodia," which comported themselves in every respect as would the pseudopodia of an *Amœba*. They were noticed in both the lateral and mesial Nematophores.

Perigonimus vestitus, sp. n., Allman (Ann. & Mag. Nat. Hist. July, 1864, p. 57; *Bougainvillia fruticosa*, sp. n., Allm. *l. c.* p. 58; *Heterocordyle conybearei*, pandæ,

noa, laxis species, with three spines on the outer border of the cell and with act of *D. operculata*, very probably belongs to this section.

m

sp. n., Allm. *l. c.* p. 59; *Tubularia humilis*, sp. n., Allm., and *T. attenuata*, sp. n., Allm., *l. c.* p. 60; *Campanulina repens*, sp. n., Allm. *l. c.* p. 61; *Syncoryne pulchella*, sp. n., Allm. *l. c.* p. 465.

Tubiclava cornucopiæ, sp. n., Norman, *l. c.* p. 82, Unst, Shetland; *Eudendrium annulatum*, sp. n., Norman, *l. c.* p. 83, Burrafirth, Shetland.

Haeckel (*l. c.*) describes at great length the anatomical structures met with in the Geryonidæ. His work is well illustrated by an atlas of plates, in which will be found figured the strange form of reproduction met with in this group.

Haeckel (*l. c.* p. 85) describes the development of two species of Geryonidæ, *Liriope eurybia* and *Geryonia hastata*. The first is quadruplex, the second sextuplex. The sextuple larvæ of this latter are probably the result of sexual reproduction. But the same species also developes young Medusæ asexually, and indeed by gemmation, in the interior of the digestive stomachal cavity, and these have a totally different form and structure; they are, moreover, octuple, and are developed in a Medusa, very probably that described by the author as *Cunina rhododactyla*. This gemmation, which is exceedingly remarkable, both on account of its locality and its heterogeneous product, occurs only in the stomachs of sexually mature animals, and in both sexes. The singular buds from the tongue of the *Geryonia* could by no metamorphosis be converted into a *Geryonia*; if we therefore look for its further stages we find it in the free-swimming *Cunina rhododactyla*, which agrees in all particulars with the bud about to be detached from the *Geryonia*. Should this supposition be confirmed, it requires nothing further to show that here there is an exceedingly wonderful and a perfectly and fundamentally new form of the alternation of generations, or, perhaps better, what might be called heterogonism.

Allman (*l. c.* p. 468) doubts if *Geryonia* is a sexual Medusa at all, and even believes that the same may be asserted of *Cunina*. Some years ago he insisted on the non-sexuality of those gymnophthalmic Medusæ which, like *Obelia*, *Eucope*, &c., carry their generative sacs upon the radiating canals; and, pointing out that the structure of these sacs was identical with that of the gonosacs of *Clava*, he showed that they are definite zooids produced by a process of budding from the gastrovascular system of a properly non-sexual Medusa. These he called "gonoblastocheme," to distinguish them from such proper sexual Medusa as are met with in *Sarsia*, &c. (gonocheme). So in *Geryonia*, in consequence of the one and the same zooid (the Geryonidan) producing *two* sets of heteromorphic buds (the gonosac and the Æginidan), there is a series presenting two branches, which run off in different directions. While Haeckel (Allman concludes) has thus done good service to our knowledge of the Hydroida, by pointing out a genetic relation between the *Æginidæ* and the *Geryonidæ*, his labours have been at least as valuable in showing that the structure of the *Æginidæ* is in all essential points identical with that of *Geryonidæ*.

Joshua Alder (*l. c.*) records a list of fifty-seven species of Hydrozoa found on the coasts of Northumberland and Durham.

Tetraplatia volitans. Krohn's paper has been mentioned on p. 769. [illegible] a short

Actinozoa.

A. E. Verrill (Proc. Essex Instit. 1865, or Ann. & Mag. Nat. Hist. 1865, xvi. p. 191) has published a condensed abstract of his classification of Polpys, preliminary to a full report upon the collections of the North Pacific Exploring Expedition :—

Class CNIDARIA or POLYPI.

Order I. Madreporaria.

Suborder I. *Stauracea* (*Madreporaria rugosa*). Families: *Stauridæ, Cyathophyllidæ, Cyathaxonedæ, Cystiphyllidæ.*

Suborder II. *Fungacea.* Families: *Cyclolitidæ, Lophoseridæ, Fungidæ, Merulinidæ.*

Suborder III. *Astreacea.* Families: *Lithophyllidæ, Mæandrinidæ, Eusmiliidæ, Caryophyllidæ, Stylinidæ, Astreinæ, Oculinidæ,* and *Stylophoridæ.*

Suborder IV. *Madreporacea* (*Madreporaria perforata*). Families: *Eupsammidæ, Gemmiporidæ, Poritidæ, Madreporidæ.*

Order II. Actinaria.

Suborder I. *Zoanthacea.* Families: *Zoanthidæ, Bergidæ.*

Suborder II. *Antipathacea.* Families: *Antipathidæ, Gerardidæ.*

Suborder III. *Actinacea.* Families: *Actiniidæ, Thalassianthidæ, Minyidæ, Ilyanthidæ, Cerianthidæ.*

Order III. Alcyonaria.

Suborder I. *Alcyonacea.* Families: *Alcyonidæ, Xenidæ, Cornularidæ, Tubiporidæ.*

Suborder II. *Gorgonacea.* Families: *Gorgonidæ, Plexauridæ, Primnoidæ, Gorgonellidæ, Isidæ, Corallidæ, Briaridæ.*

Suborder III. *Pennatulacea.* Families: *Pennatulidæ, Pavonaridæ, Veretillidæ, Renillidæ.*

Zoantharia.

Verrill (*l. c.*) gives descriptions of the following new Actinozoa:—*Stephanoseris lamellosa* (p. 194), from the Loochoo Islands; *Heterocyathus alternata* (p. 194), from Gaspar Straits; *Balanophyllia capensis, Eupsammia stimpsonii,* from North China; *Metridium fimbriatum* (p. 195), from San Francisco; *Halocampa capensis, Cerianthus orientalis,* from Hongkong; *Nephthya thyrsoidea,* from the Cape of Good Hope; *Parisis laxa* (p. 196), *Veretillum stimpsonii,* and *V. baculatum* (p. 197), from Hongkong.

Ægeon, g.n., Gosse (*l. c.* p. 41). *Base* adherent to rocks with a moderate tenacity; broader than the medium diameter of the column. *Column* irregularly distensible, not mucous, somewhat versatile, but generally forming a tall, erect, thick pillar, the summit expanding; the margin tentaculate; the surface longitudinally fluted, each flute studded with a single vertical row of minute warts. No suckers or loopholes. Substance pulpy, membranous. *Disk* expanded, membranous, concave, revolute. *Tentacles* numerous, in several rows, [illegible] lax, irregularly flexuous, scarcely retractile. *Mouth* not ordinarily set [illegible]noa, [illegible]ne, but pouted after the reception of food; lip thin. Gonidial tuber[illegible]minent. *Acontia* wanting (?). *Ægeon alfordi*, sp. n., Gosse, *l. c.* p. 42,

pl. 7, Scilly Islands.—Mr. Alford describes a variety of this species. Ibid. p. 448.

Edwardsia allmanni and *E. goodsiri*, sp. n., M'Intosh (*l. c.* p. 394), were found on the beach of St. Andrews after a storm; the specific descriptions are not very detailed. Reichenbach has proposed the name *Milnea* for *Edwardsia* already in use by botanists.

Ammonactis, g. n., Verrill (*l. c.* p. 195). Column elongated, subcylindrical, with well-developed basal disk, covered, as in *Phellia*, with a persistent epidermis extending to near the summit, naked above; but differs in having a lobe-like tubercle below each tentacle, distinct from the margin; tentacles long and numerous. Type *A.* (*Edwardsia*) *rubricollum* (Stimp. sp.).

Rhizoxenia albicolor, sp. n. Norman, *l. c.* p. 84, mentions that *Rhizoxenia* was established by Ehrenberg in 1834, and hence has the precedence of *Sarcodictyon*, Forbes.

Cœnocyathus adamsi, sp. n., Duncan, Ann. & Mag. Nat. Hist. 1865, vol. xv. p. 274, and *Astræa* (*Heliastræa*) *forbesi*, sp. n., Duncan, *l. c.* p. 274, both from Malta tertiaries.

Duncan (*l. c.* vol. xiv.) describes the following new species:—*Caryophyllia viola*, *Flabellum victoriæ* (p. 162), *F. gambierense*, *Placotrochus elongatus* (p. 163), *P. deltoideus*, *Balanophyllia australiensis*, and *Trochoseris woodsi* (p. 164).

Conosmilia, g. n., Duncan (*l. c.* vol. xvi. p. 184). Coral simple, pedicellate, conical. Columella formed of one or more twisted laminæ, which extend from the base upwards. Endotheca scantily developed. Septa apparently with simple margins, and variable in regard to the number of the primary. *Conosmilia elegans*, sp. n., and *C. anomala*, sp. n., Duncan, *l. c.* p. 184.

Sphenotrochus australis, sp. n., Duncan, *l. c.* p. 183; *S. emarciatus*, sp. n., Dun. *l. c.* p. 183; *Antillia lens*, sp. n., Dun. *l. c.* p. 185.

Duncan (*l. c.* vol. xiii. p. 295) states that among the species of Coral common to the Scindian and European Eocene, and which have not been noticed by Haime, *Trochocyathus sinuosus* and *Astrocœnia caillaudi* are the most remarkable. The new species described and figured very probably belong to more than one tertiary age; but future collections must determine whether this is the case or not. The new Eocene species would appear to be *Phyllocœnia conferta*, *Montlivaltia brevis*, *Hydnophora rudis*, *H. danæ*, *H. plana*, *H. hemisphærica*, *Trochoseris aperta*, *Cyathoseris irregularis*, and *C. magnifica*. The Miocene are probably *Dasyphyllia gemmans*, *Antillia dentata*, *A. plana*, *A. ponderosa*, *Mycedium costatum*, *Agaricia agaricites*, and *Porites incrustans*. *Oculina halensis*, *Cladocora haimei*, *Pachyseris rugosa*, and *Corallium pallidum* are either of a late Miocene age or of a still later geological epoch.

The following are new species:—*Oculina halensis* (p. 298), *Phyllocœnia conferta* (p. 298), *Dasyphyllia gemmans* (p. 299), *Montlivaltia brevis* (p. 300), *Antillia plana* (p. 300), *Cladocera haimei* (p. 301), *Hydnophora rudis* and *H. danæ* (p. 301); *H. plana* and *H. hemisphærica* (p. 302); *Trochoseris aperta* (p. 303), *Cyathoseris irregularis* (p. 303), *C. magnifica* (p. 304), *Mycedium costatum* (p. 304).

Joshua Alder (*l. c.*) records ten species of Actinozoa as found on the coast of Northumberland and Durham.

Hyalonema lusitanica, sp. n., Bocage, *l. c.* p. 268, found in deep w -like n short

Setubal, a village on the coast of Portugal, near the mouth of the River Sado. All the other known species of this genus are found in Japan; so that the existence of a European one is most interesting. The result of a microscopical examination of the polyps reveals, in addition to an outer row of twenty tentacles, an inner row of the same number placed alternately with them. The author considers the *H. sieboldii* and *H. affine* of Brandt to be one species, and with Dr. Gray does not admit the second genus of Brandt, *Hyalochæta*.

Dr. Gray dissents from the views of Max Schultze, that the fibres of *Hyalonema* are the spicula of a sponge which are covered with a parasitic *Zoanthus*. Ann. & Mag. Nat. Hist. 1864, January, p. 111.

Antipathes. L.-Duthiers (*l. c.*) chiefly describes the anatomical peculiarities of this genus; the species examined were *Antipathes subpinnata* and *A. larix*. Between this genus and that of *Gerardia* very great differences exist. In the former the corallum (polypier) is smooth and covered with very small scarcely perceptible umbilicate elevations; in the latter it is covered with spines. The tentacles in the one are always twenty-four in number, corresponding to just as many outer mesenteric chambers; in the other the tentacles are never more than six in number, and there are but two outer mesenteric chambers. So in *Gerardia* the typical *Actinia*-form is very closely adhered to, whereas in *Antipathes*, by a sort of arrest in development, it is not even reached.

Gerardia lamarcki. Duthiers, in his elaborate memoir on this species (*l. c.*), arrives at the following conclusions among others:—The animals producing the *Gorgonia tuberculata*, Lamk., *Antipathes glaberrima*, Esper, for which Dr. Gray proposed the genus *Leiopathes*, are not known. Haime also gave the same species the name of *Leiopathes lamarcki*. The *Antipathes glaberrima*, Esp. & Lamk., is, however, not an *Antipathes*, and for it the genus of Gray may stand. On the other hand, the *Gorgonia tuberculata*, Lamk., represents a very distinct type; it is not an *Antipathes*, still less a *Gorgonia*, and for it the new genus *Gerardia* is proposed. At first the species referred to is parasitic, but it soon becomes independent, though it often encloses portions of foreign bodies in its growth. The anatomical details are of great interest. The polyps are like those of young *Actiniæ*. A rich vascular network fills all the sarcosome, and opens into the body-cavity of the polyp, when they both intercommunicate—a fact not hitherto observed among the Zoantharia, though known to exist among the Alcyonaria. The sexes are almost always borne on distinct Zoanthodemes. By the form of its polyps *Gerardia* resembles much more the *Actinidæ* than the *Alcyonidæ*—an agreement before observed by Dana in a coral *Antipathes*.

Alcyonaria.

L.-Duthiers (*l. c.* p. 840) states that among the Alcyonaria the separation of the sexes would appear to be the more usual condition. To determine the sexes a microscopical examination is, in the first instance, always necessary; but in many cases the ovaries and testes are sufficiently distinct to be appreciable by the unassisted vision. Of the numerous genera examined by the author, the following are specially alluded to:—Of the Alcyonidæ, *Alcyonium* and *Paralcyonium*; of the Gorgonidæ, *Gorgonia*, *Muricea*, *Primnoa*, *Juncella*; of the Pennatulidæ, *Pennatula*. No trace of an alteration

between a sexual and an agamic reproduction has been met with. The Zoanthodemata or Colonies are only increased by sexual reproduction, although their dimensions are enlarged by budding. The newly added zooid forms are soon, however, sexual; and though embryologically different, yet they present no other peculiarity to distinguish them from those produced by sexual reproduction. Fecundation takes place either in the ovary or in the general cavity of the body of the female. The embryo, when cast off, is in the form of a ciliated vermiform larva. It will be observed that the reproduction of the Tubiporidæ has not come under the author's observation, as his investigations were carried out in the Mediterranean; if it be as declared by Dana, then in this order alone of Alcyonaria shall we have hermaphroditism occurring as a rule, and this will serve as an additional reason for placing the organ-pipe Corals in a family by themselves.

L.-Duthiers's work on *Corallum rubrum* must be consulted by all interested in the subject. It would be impossible to present an epitome of it.

L.-Duthiers considers it perfectly possible that in some cases the polypidom of the Gorgonidæ can be used as a means of diagnosing the species, and that on this account much more attention ought to be paid to it.

Juncella flagellum, sp. n., Y. Johnson, *l. c.* p. 505. The longest example met with was seven feet in length and about three-eighths of an inch in thickness; the smallest was thirty-one inches long.

Hartea, g. n., P. Wright, *l. c.* p. 216. Polyp solitary, fixed by its base, not spreading, but giving rise to buds or to the development of a cœnosarc; tentacles eight, pinnate, knobbed at their base; the basal portion of the body thickly studded with small star-shaped spicula; base and body of tentacles with long dendritic spicula; mouth central, with two lips; somatic chambers eight. Sp. *H. elegans*, about three-quarters of an inch in height. This solitary Alcyonarian was found on the coast of Donegal, near Rathmullen, *not* Dublin, as printed by mistake at p. 214. It is closely allied to *Haimeia* of Milne-Edwards, and receives the name of *Hartea elegans*. It may be doubted whether these solitary forms of Alcyonaria do not all eventually give rise, by means of budding, to aggregated forms. The genus *Psuchastes*, Strethill Wright, would appear to be an aggregated form, but differs from *Hartea* in having a spreading base.

PROTOZOA

BY

E. Perceval Wright, M.A., M.D., F.L.S.

Bowerbank, J. S. A Monograph of the British Spongidæ. Vol. i. Ray Society, London, 1864, pp. lxiii & 290, pls. 37.

Brady, H. B. Contributions to the knowledge of the *Foraminifera*. Trans. Linn. Soc. 1864, xxiv. pp. 463–476, pl. 48.

An account of the Rhizopodal fauna of the Shetlands.

——. Report on the *Foraminifera* collected by the Deep-sea Dredging-Committee. Trans. Nat. Hist. Soc. Northumb. and Durham, i. 1865, pp. 51–54.

Of the 112 specific and varietal forms known to inhabit the British seas, 70 will be found here recorded as found off the the coasts of Northumberland and Durham.

——. A Catalogue of the recent *Foraminifera* of Northumberland and Durham. *L. c.* pp. 83–107, pl. xii.

Carter, H. J. On the fresh- and salt-water Rhizopoda of England and India. Ann. & Mag. Nat. Hist. 1864, xiii. pp. 18–39, pls. i. & ii., and 1865, xv. pp. 277–293, pl. xii.

Cienkowski, L. Beiträge zur Kenntniss der Monaden. Arch. f. mikr. Anat. 1865, pp. 203–232, pls. 12–14.

Clark, H. J. Proofs of the animal nature of the Cilio-flagellate Infusoria, based upon investigations of the Structure and Physiology of one of the *Peridinia* (*Peridinium cypripedium*, sp. n.). Ann. & Mag. Nat. Hist. 1865, October, pp. 270–279, pl. xii.

Coste, M. Développement des Infusoires ciliés. Réponse aux observations de M. Pouchet. Compt. Rend. lix. 1864, 22 Août, pp. 358–363.

Coste, M. Développement des Infusoires ciliés dans une macération de foin. Ibid. 1864, 25 Juillet, pp. 149–155; Ann. Sc. Natur. v. série, Zoologie, tome ii. pp. 240–250.

Desgouttes, M. Observations de la mode de fécondation dans l'*Amphileptus fasciola* (Ehr.). Compt. Rend. lix. 1864, 5 Septembre, p. 462.

Duchassaing, P., et Michelotti, G. Spongiaires de la mer Caraïbe. Harlem, 1864, 4to, pp. 115, pls. 25 (coloured).

In this work the authors describe seventeen new genera, and

a large number of new species, of Sponges from the Caribbean Sea. External characters are to a very great extent selected as those diagnostic of the genera and species—characters which, however important they may be, are surely in this group but subsidiary. In several cases we have been quite unable to discover what were the leading diagnostic marks; indeed many of the genera can scarcely be said to be described. This is partly owing to the fact that no fixed scientific nomenclature has been adopted in this branch of descriptive zoology. The plates are for the greater part coloured representations of living Sponges, and, for general effect, are the best we know of.

D'Udekem, M. J. Description des Infusoires de la Belgique. Mém. Acad. Roy. Sc. Belg. 1864, xxxiv. pp. 1–34, pls. 1–5.

Fresenius, G. Die Infusorien des Seewasseraquariums. Zoologisch. Gart. 1865, March, pp. 81–89 & 121–129.

Guppy, R. L. On the occurrence of *Foraminifera* in the Tertiary beds at San Fernando, Trinidad. Proc. Scientific Assoc. Trinidad, pp. 11–12.

The author mentions the occurrence in large quantities of species of *Orbitoides* and *Nummulites* in some of the gypseous marl and in a portion of an asphaltic rock in San Fernando.

Haeckel, E. Ueber den Sarcodekörper der Rhizopoden. Zeitschr. f. wiss. Zool. xv. 1865, pp. 342–370, taf. xxvi.

Harting, P. Bijdrage tot de kennis der mikroskopische fauna en flora van de Banda-Zee. Verhand. K. Akad. Wetensch. x. pp. 1–34, pls. 1–3.

This paper contains an examination of the sea-bottom at various depths, and gives a description, with figures, of some new species of Diatoms, Foraminifera, Polycystina, and Sponges.

Jones, T. R., and Parker, W. K. On the *Foraminifera* of the Suffolk Crag. Ann. & Mag. Nat. Hist. 1864, xiii. pp. 64–68.

Karrer, F. Ueber das Auftreten der Foraminiferen in den Mergeln der marinen Uferbildungen (Leythakalk) des Wiener Beckens. Sitzungsb. Akad. Wiss. Wien, 1865, l. pp. 692–722, pl. 1 & 2.

Kölliker, A. Icones Histiologicæ oder Atlas der vergleichenden Gewebelehre, Erste Abtheilung. Der feinere Bau der Protozoen. Mit 9 Tafeln. Leipzig, 1864, 4to, pp. 1–84.

After some general details, the author proceeds to examine the tegumentary system of the *Gregarinida, Infusoria, Rhizopoda, Radiolaria,* and *Spongiæ*. This important *résumé* of what is known up to the present does not admit of a brief analysis.

Lemaire, M. J. Recherches sur les microphytes et sur les microzoaires. Compt. Rend. lix. 1864, 17 Août, pp. 317–321. Supplément à sa Note sur les microphytes et les microzoaires. Ibid. 1864, 22 Août, p. 381.

——. Origine des microphytes et des microzoaires qui existent dans l'air. Ibid. 1864, 29 Août, pp. 425–429.

Lieberkühn, N. Beitrag zur Kenntniss der Gregarinen. Reichert's u. Du Bois-Reym. Archiv, 1865, pp. 508–511.

——. Beiträge zur Anatomie der Kalkspongien. *L. c.* pp. 732–748, pl. xix.

Lindemann, K. Zoologische Skizzen. No. 5. Entwickelungsgeschichten von *Chilodon cucullulus* und *Vorticella*. Bull. Soc. Nat. Mosc. xxxvii. 1864, pp. 548–557, taf. ix.

Mecznikow, E. Ueber die Gattung *Sphærophrya*. Reichert's u. Du Bois-Reymond's Archiv, 1864, pp. 258–261, pl. 7 A.

——. Nachträgliche Bemerkungen über den Stiel der *Vorticellinen*. *L. c.* pp. 291–302.

Parker, Jones, & Brady, Messrs. On the nomenclature of the Foraminifera. Ann. & Mag. Nat. Hist. 1865, March, pp. 225–232; July, pp. 15–41, pls. i., ii., iii.

Part XI. (March 1865) of this series treats of the species enumerated by Batsch in 1791; Part X. (continued) (July 1865), contains the species enumerated by D'Orbigny in 'Annales des Sciences Naturelles,' vol. vii. 1826, III. the Species illustrated by Models, and an Appendix referring to Reuss and Fritsch's Models of Foraminifera, 1861.

Parker, W. K., & Jones, R. On some Foraminifera from the North Atlantic and Arctic Oceans, including Davis Straits and Baffin's Bay. Phil. Trans. 1865, pt. 1. pp. 325–441, pls. xiii.–xix. and tables i.–xii.

This memoir contains an account of a series of dredgings from Baffin's Bay, Hunde Islands, Norway, North Atlantic; descriptions of genera, species, and varieties, with appendices on the distribution of Foraminifera, and on Professor Bailey and Mr. Pourtales, Researches on North Atlantic Foraminifera. Many new varieties are described, but none that are considered by the authors to belong to the rank of species.

Pouchet, F. A. Embryogénie des Infusoires ciliés. Réponse aux observations de M. Coste. Compt. Rend. lix. 1864, 8 Août, pp. 276–283.

——. Développement des Infusoires ciliés. Note en réponse à M. Coste. Ibid. 1864, 29 Août, pp. 422–424.

Reichert, K. B. Die sogenannte Körnchenbewegung an den Pseudopodien der Polythalamien. Arch. für Naturgesch. 1864, pp. 191–194.

——. Ueber die contractile Substanz (sarcode protoplasma) und deren Bewegungserscheinungen bei Polythalamien und einigen anderen Thieren. Reichert's u. Du Bois-Reymond's Archiv, 1865, pp. 749–761.

Reuss, A. E. Zur Fauna des deutschen Oberoligocäns. Sitzungsb. Akad. Wiss. Wien, 1865, l. pp. 435–482.

Samuelson, J. On the Development of certain Infusoria. Proc. Roy. Soc. 1865, vol. xiv. p. 546.

Schmidt, O. Supplement der Spongien des Adriatischen Meeres, enthaltend die Histologie und systematische Ergänzungen. Leipzig, 1864, fol. pp. 1–48, four plates.

Schmidt, in this appendix to his great work on the Sponges of the Adriatic, not only adds several species to the fauna, but also gives an introductory chapter on the histology of the Sponges, with some remarks on their position among the Protozoa.

Schultze, M. Ueber einen Schwamm mit Nadeln aus Hornsubstanz. Verh. nat. Ver. preuss. Rheinlande und Westph. 1865, p. 7.

Schwager, C. Beitrag zur Kenntniss der mikroskopischen Fauna jurassicher Schichten. Würt. naturw. Jahreshefte, 1865, pp. 81–149.

The author describes an enormous number of new species (? varieties), which we refrain from quoting, in the belief that this paper must be consulted to be understood.

Wallich, G. C. On the extent, and some of the principal causes, of structural variation among the Difflugian Rhizopods. Ann. & Mag. Nat. Hist. 1864, March, pp. 215–245, pls. xv. & xvi.

——. On the structure and affinities of the Polycystina. Quart. Journ. of Micr. Science, 1865, July, pp. 75–84.

Wyman, J., and Clark, H. J. Observations on the Structure of *Amœba* and *Actinophrys*. Ann. & Mag. Nat. Hist. 1864, November, pp. 394–397.

Prof. Clark does not agree with Kölliker that *Actinophrys* is a homomorphous mass with vacuoles, but thinks that the so-called vacuoles of the outer and inner layers are true cells, with a distinct wall about them. Appended to this paper are some interesting remarks by Prof. Clark on *cnidæ*.

I. Infusoria.

Spontaneous Generation.—We give a brief *résumé* of the discussion in the French Academy on this subject. The following are the conclusions of M. Coste (*l. c.*) :—

I. Ciliated Infusoria make their appearance in an infusion before the formation of the so-called *stroma* or *proliferous membrane*. II. They are introduced in the form of eggs or cysts with the hay or moss with which the infusion is made. III. Although the *stroma* is produced in infusions made with substances which have not been in contact with the air, such as the pulp of apples or other fruits, yet such an infusion, if covered by a piece of glass, will not produce ciliated Infusoria; but if into such an infusion a single individual of such genera as *Kolpoda*, *Chilodon*, &c., be introduced, it will increase to an amazing amount. IV. The rapid increase of such Infusoria is owing to their multiplication by division. V. Some of them, as *Paramecium*, *Chilodon*, divide without becoming encysted; others, as *Kolpoda*, become encysted before dividing. VI. After multiplying, by division, in the interior of the cyst, the *Kolpoda* become again encysted, and remain in this state even during complete desiccation of the infusion; but on being again moistened they return once more to active life. VII. Filters can, and do, let Infusoria of small size pass through them, as well as their ova and cysts. The author concludes by stating that he neither wishes or desires to discourage the partisans of spontaneous generation, believing, as he does, that those who affirm and those who deny its existence have both but one object in view, viz. to elicite truth. In the discussion which followed on the reading of this paper, Prof. Milne-Edwards referred to the results obtained by Doyère (results confirmed by a Committee of the Academy), that Tardigrades, as well as many Infusoria, on being properly dried, can support a temperature of more than 212° F. without losing the faculty of regaining active life on obtaining a certain quantity of fluid. M. Chevreul reminded the Academy of his investigation of a kindred subject, conducted so long ago as 1821, which led him to the following conclusions:—I. That if an animal whose fluids are coagulable by a temperature of 194° to 201° F. is exposed to such a temperature in a living condition it will undoubtedly perish. II. That if the same animal be slowly dried by a temperature insufficient to coagulate or disorganize its fluids, it will, after desiccation, return to life. III. That an animal so dried can be exposed to such high degrees of heat as would otherwise have killed it.

M. Pouchet sums up his answer to M. Coste as follows:—I. That if ciliated Infusoria are by accident introduced into the infusions, they do not play any part in the production of heterogenesis. II. That these very Infusoria are destroyed by the first phenomena of fermentation. III. That the pellicle formed on the surface of the maceration is a true "proliferous stroma" for ciliated Infusoria. IV. That whenever this stroma is destroyed or removed, ciliated Infusoria are never observed. V. That neither the ciliated Infusoria which formed the subject of these investigations, nor their eggs, nor their cysts, can pass through the filters. VI. That multiplication by division is very far from being able to account for the extremely rapid development of these Infusoria. In reference to the desiccation of the Tardigrades, he observes, in answer to Prof. Milne-Edwards, that, far from

being able to bear a temperature of 140°, they cannot, as he has proved, survive one of 90°, and that in the precise experiments of Broca, Robin, and Berthelot, these creatures never resisted a temperature of 100°.

M. Pouchet concludes the interesting but rather tedious discussion as to the spontaneous development of the ciliated Infusoria by categorically answering the latest objections of M. Coste. These replies are, very briefly, that the Infusoria make their appearance not alone in macerations of vegetable but also of animal substances—for example, in an infusion made from a piece of the tapeworm (*Tænia serrata*) of a dog, which had been more than a year in spirits, and yet which produced an immense quantity of *Kolpoda cucullus*; that it was hardly probable that he would mistake an encysted microzoan for its ovum (this objection had been argued years ago by M. Claparède, and answered by an account, extending over more than a hundred pages, of the embryogeny of these creatures); and that as to the Infusoria passing through the filters, he had demonstrated its utter impossibility by the infallible criterion of the micrometer.

Samuelson endeavours to account in some degree for the successive appearance, in organic infusions, of what seem to be distinct species of Protozoa, rising in the developmental scale. The author commences with some general remarks on the origin of these animalcules, and states, among other conclusions at which he has arrived, his disbelief in spontaneous generation as it is understood by Pouchet and his disciples. The author also believes that the Cercomonades, which make their appearance in pure distilled water when exposed to the atmosphere, are larvæ or earlier forms of the ciliated animalcules which succeed them. Proc. Roy. Soc. 1865, xiv. p. 546.

Cienkowski (*l. c.*) having come to the conclusion that the monads are animals, ventures to divide them as follows:—

I. Monadineæ Zoosporæ, Cnk.:—1. *Monas*: *M. amyli*. 2. *Pseudospira*: *P. parasitica* (*M. parasitica*), *P. nitellarum*, and *P. volvocis*, Cnk. (p. 214). 3. *Colpodella*: *C. pugnax*, Cnk. (p. 214). II. Monadineæ Tetraplastæ, Cnk.:—1. *Vampyrella*: *V. spyrogyræ*, Cnk. (p. 218), *V. pendula*, Cnk. (p. 221), *V. vorax*, Cnk. (p. 223). 2. *Neuclearea*: *N. delicatula*, Cnk. (p. 225), *N. simplex*, Cnk. (p. 226). All the species are described and figured.

Mecznikow refers to the two papers that have appeared on the subject of the stalk of the Vorticellidæ since his memoir on the subject published in 1860, and in this paper shows how far he agrees with, and in what respects he differs from, Kühne. The paper is too short to be usefully abridged; but we may observe that both Kühne and Mecznikow agree that there is no striation of the substance forming the *Vorticella*-stem, and that in some species, such as *Carchesium polypinum*, with the highest powers at the author's command, no organic structure was met with. It remains to be seen what the English objectives of $\frac{1}{50}$th and $\frac{1}{25}$th of an inch may discover. Reichert und Du Bois-Reym. Arch. 1864, p. 291 *et seq.*

D'Udekem has described the following new species from Belgium (Mém. Acad. Roy. Sc. Belg. 1864, xxxiv.):—

Vorticella brevistyla, sp. n., p. 9 (D'Udekem, *l. c.*); *V. sphærica*, sp. n., p. 10. *Zoothamnium macrostylum*, sp. n., p. 13; *Z. elegans*, sp. n., p. 14. *Epistylis pyriformis*, sp. n., p. 19; *E. tubificis*, sp. n., p. 20. *Cothurnia valvata*, sp. n., p. 27; *C. pyxidiformis*, sp. n., p. 27; *C. gigantea*, sp. n., p. 28; *C. globosa*, sp. n., p. 29.

Gerda fixa, sp. n., p. 30; *G. inclinans*, sp. n., p. 31.

The genera *Lagenophis*, *Spirochona*, and *Trichodinopsis* were not met with by D'Udekem; all the new species, and several of the old ones, are beautifully figured.

Peridinium cypripedium, sp. n., Clark, Ann. & Mag. Nat. Hist. 1865, October, pp. 270–279, pl. 12. The author gives a full account of this species, proving at the same time the animal nature of the Cilio-flagellate Infusoria. Mr. Carter adds some remarks on this form. Ibid. December, p. 399.

Amphileptus fasciola. On its way of fecundation, Desgouttes, Compt. Rend. 1864, lix. p. 462.

Sphærophrya. By some, as Claparède and Lachmann, species of this genus have been regarded as embryo forms of *Oxytricha*. Stein, again, thinks they represent some stage in the development of the higher Infusoria, while Balbiani considers them distinct and independent Infusoria. Without absolutely deciding this question, Mecznikow relates some curious instances where he found species of this genus parasitic on *Paramecium aurelia*. He also describes and figures a new species, *S. sol* (p. 261, fig. 6), found in a marsh in a wood, which is spherical in form. A variety of this species was also found in which the body is larger and finely tessellated. Reichert und Du Bois-Reym. Arch. 1864, p. 258.

II. Spongida.

Dr. Bowerbank, in his monograph of the British Sponges, treats first of the spicular and keratose framework of the various species (pp. 1–83), then of their sarcode element and of the vital phenomena met with (pp. 83–153). Having alluded to the classification proposed by Grant in 1861, he adopts it slightly modified, and divides the Sponges into—

1. Calcarea. Sponges the skeletons of which have as an earthy base carbonate of lime.
2. Silicea. Sponges in which the earthy base consists of siliceous matter.
3. Keratosa. Sponges in which the essential base of the skeleton consists of keratose fibrous matter.

In treating of the minor divisions, the author insists (p. 156) that, as a generic character, form is inadmissible; but asserts that in their anatomical peculiarities there is found a variety in structure and form, and a constant adherence to certain respective types, which enables the zoologist to form genera and species. The skeleton is selected as the primary source of generic distinction. The following is a tabular view of the systematic arrangement adopted by the author (p. 158):—

Class. PORIFERA.

Order 1. Calcarea.

Genera: *Grantia*, Fl.; *Leucosolenia*, Bk.; *Leuconia*, Gt.; *Leucogypsia*, Bk.

Order 2. Silicea.

Suborder I. *Spiculo-radiate skeleton*. Genera: *Geodia*, Lmk.; *Pachymastisma*, Bk.; *Eciomemia*, Bk.; *Alcyoncellum*, Q. & G.; *Polymastia*, Bk.; *Halytisma*, Bk.; *Cioealypta*, Bk.; *Tethea*, Lmk.; *Halicnemia*, Bk.; *Dictyocyphysema*, Bk.;

lindrus, Bk.; *Phakellia*, Bk.; *Microciona*, Bk.; *Hymeraphia*, Bk.; *Hymedesmia*, Bk.

Suborder II. *Spiculo-membranous skeleton.* Genus *Hymeniacidon*, Bk.

Suborder III. *Spiculo-reticulate skeleton.* Genera: *Halichondria*, Flm.; *Hyalonema*, Gray; *Isodictya*, Flm.; *Spongilla*, Linn.

Suborder IV. *Spiculo-fibrous skeleton.* Genera: *Desmacidon*, Bk.; *Raphyrus*, Bk.

Suborder V. *Compound reticulate skeleton.* Genus *Diplodemia*, Bk.

Suborder VI. *Solid siliceo-fibrous skeleton.* Genus *Dactylocalyx*, Stutchbury.

Suborder VII. *Canaliculated siliceo-fibrous skeleton.* Genus *Farrea*, Bk.

Order 3. KERATOSA.

Suborder I. *Solid non-spiculate kerato-fibrous skeleton.* Genera: *Spongia*, Linn.; *Spongionella*, Bk.

Suborder II. *Solid semispiculate kerato-fibrous skeleton.* Genus *Halispongia*, Blainv.

Suborder III. *Solid entirely spiculate kerato-fibrous skeleton.* Genus *Chalina*, Grt.

Suborder IV. *Simple fistulo-fibrous skeleton.* Genus *Verongia*, Bk.

Suborder V. *Compound fistulo-fibrous skeleton.* Genus *Aulisk*ia, Bk.

Suborder VI. *Regular semiareno-fibrous skeleton.* Genus *Stematumenia*, Bk.

Suborder VII. *Irregular and entirely areno-fibrous skeleton.* Genus *Dysidea*, Johns.

For the purposes of specific determination, the author selects, 1, the spicula; 2, the oscula; 3, the pores; 4, the dermal membrane; 5, the skeleton; 6, the interstitial membranes; 7, the intermarginal cavities; 8, the interstitial canals and cavities; 9, sarcode; 10, ovaria and gemmules.

The explanation of the various terms used to describe the spicula, of which upwards of 200 are given, will be found from pp. 229 to 270: some of these terms are very strange, such as clavato-attenuato-cylindrical, and subattenuato entirely spined cylindrical. The volume is illustrated by 37 plates and 381 figures. The species will be described in the second volume of this monograph, which is indispensable to the student of this branch of zoology.

DUCHASSAING & MICHELOTTI (*l. c.* p. 25), dissatisfied with all other classifications, propose the following:—

I. DICTIOSPONGIÆ.

Keratose network furnished with spicules; fibres forming a network.

Family I. EUSPONGIÆ.

Keratose network well-developed; siliceous spicules wanting or very rudimentary.

Subfamily 1. *Penicillatæ.* Horny fibres forming nerves, pencils, or columns, but are never distinctly separated as in other tribes.

Subfamily 2. *Heterogeneæ.* Fibres distinct and of two kinds.

Subfamily 3. *Homogeneæ.* Fibres horny, hollow, very rigid, equal, and anastomosing into meshes, but never uniting into bundles.

Family II. LITHOSPONGIÆ.

Keratose network formed by siliceous fibres; the texture decidedly stony.

Family III. HALYSPONGIÆ.

The spicules are siliceous and well-developed, predominating over the others.

Subfamily 1. *Armatæ.* Spicules needle-shaped, forming a mesh with others which are anchor-shaped.

Subfamily 2. *Subarmatæ.* Only one system of acuiform spicules.

Subfamily 3. *Tricuspidatæ.* With tricuspid spicules.

II. OXYSPONGIÆ.

Keratose framework does not exist or is almost completely atrophied.

Subfamily 1. *Imperforantes.* Numerous spicules support the soft portions of the sponge.

Subfamily 2. *Perforantes.* The spicules when developed only play a secondary part in giving a support to the soft parts.

In the course of some observations on the motory phenomena of Sponges, Lieberkühn (*l. c.*) demonstrated the fact that Sponges do sometimes propagate by spontaneous division. This appears to take place only in such individuals as are nearly perishing; but the fragments set free continue to live, and in the course of a few weeks develope in their interior siliceous spicules and vibratile cilia.

DUCHASSAING & MICHELOTTI describe the following new species from the Caribbean Sea:—

EVENOR (g. n.) *fuciformis* (p. 29, pl. 3. figs. 1 & 2); SPONGIA *barbara* (p. 31), *S. corlosia* (p. 31), *S. cerebriformis* (p. 32, pl. 3. figs. 5 & 6), *S. gossypina* (p. 32, pl. 3. fig. 3), *S. utilis* (p. 33), *S. meandriformis* (p. 33), *S. lapidescens* (p. 34), *S. vermiculata* (p. 35), *S. fenestrata* (p. 36, pl. 3. fig. 7), *S. discus* (p. 37), *S. fusca* (p. 38), *S. obliqua* (p. 38, pl. 4. fig. 5), *S. musicalis* (p. 39, pl. 6. fig. 2), *S. marquezii* (p. 40), *S. clavaherculis* (p. 40, pl. 5. fig. 3), *S. isidis* (p. 41, pl. 7. fig. 2), *S. bartholomei* (p. 42, pl. 6. figs. 3 & 4), *S. haagensii* (p. 42, pl. 7. fig. 6), *S. dumetosa* (p. 43, pl. 5. fig. 4), *S. guadalupensis* (p. 43, pl. 7. fig. 1), *S. krebsii* (p. 44, pl. 7. fig. 5); TUBA (g. n.) *sancta-crucis* (p. 46), *T. sororia* (p. 46, pl. 8. fig. 1), *T. conica* (p. 47), *T. lineata* (p. 47), *T. megastoma* (p. 48), *T. incerta* (p. 49), *T. pavonina* (p. 50, pl. 9. fig. 1), *T. crispa* (p. 50, pl. 11. fig. 3), *T. tortolensis* (p. 51, pl. 9. fig. 2), *T. longissima* (p. 51, pl. 9. fig. 3), *T. subenervia* (p. 52), *T. irregularis* (p. 53), *T. sagoti* (p. 54); CALLYSPONGIA (g. n.) *eschrichtii* (p. 56, pl. 7. fig. 3), *C. inflata* (p. 57), *C. tenerrima* (p. 57, pl. 10. figs. 3 & 4); LUFFARIA (g. n.) *rupicola* (p. 60), *L. nuciformis* (p. 60, pl. 10. fig. 2), *L. insularis* (p. 61), *L. picea* (p. 63), *L. applicata* (p. 63, pl. 11. fig. 1); LITHOSPONGIA (g. n.) *torva* (p. 65, pl. 12. figs. 3 & 4); POLYTHERSES (g. n.) *tintinnabulum* (p. 69), *P. linguiformis* (p. 69), *P. tristis*, *P. marginalis* (p. 70) *P. armata* (p. 70, pl. 13. fig. 1), *P. ignobilis* (p. 71, pl. 13. figs. 3 & 4), *P. longispina* (p. 71), *P. acuta* (p. 72, pl. 13. fig. 3), *P. felix* (p. 72, pl. 13. fig. 2), *P. capitata* (p. 72), *P. columnaris*, *P. cylindrica* (p. 73); HYRTIOS (g. n.) *proteus* (p. 74, pl. 14. fig. 4), *H. vilis* (p. 75), *H. musciformis* (p. 75, pl. 14. fig. 3); AGELAS (g. n.) *dispar* (p. 76, pl. 15. fig. 1), *A. rudis* (p. 77, pl. 15. fig. 2), *A. albo-lutea* (p. 77), *A. dilatata* (p. 77, pl. 14. fig. 1); AMPHIMEDON (g. n.) *compressa* (p. 78, pl. 17. fig. 2), *A. arborescens* (p. 79, pl. 14. fig. 2) *A. variabilis* (p. 80, pl. 21. fig. 4, pl. 22. fig. 2), *A. ferox* (p. 81, pl. 12. fig. 6),

A. dilatata (p. 81), *A. viridis* (p. 81, pl. 16. figs. 2 & 3), *A. nolitangere* (p. 82, pl. 15. fig. 3), *A. leprosa* (p. 82, pl. 15. fig. 4); Thalisias (g. n.) *ignis* (p. 83, pl. 18. figs. 1 & 2), *T. proxima* (p. 84, pl. 18. fig. 3), *T. rugosa* (p. 84, pl. 18. fig. 4), *T. coccinea* (p. 84, pl. 18. fig. 5), *T. hyano* (p. 86, pl. 16. fig. 1), *T. varians* (p. 86, pl. 13. fig. 6), *T. saxicava* (p. 87); Pandaros (g. n.) *arbusculum* (p. 88, pl. 18. fig. 6), *P. pennata* (p. 88, pl. 20. fig. 3), *P. lugubris* (p. 89), *P. angulosa* (p. 89, pl. 16. fig. 4), *P. acanthifolium* (p. 90, pl. 20. fig. 2), *P. walpersii* (p. 90, pl. 20. fig. 1); Phorbas (g. n.) *viccquensis* (p. 91), *P. amaranthus* (p. 92, pl. 21. fig. 1); Niphates (g. n.) *erecta* (p. 93, pl. 21. fig. 3), *N. venosa* (p. 94, pl. 21. fig. 2), *N. thomasiana* (p. 94, pl. 22. fig. 1); Acamas (g. n.) *laxissima* (p. 95, pl. 22. fig. 3), *A. violacea* (p. 95, pl. 22. fig. 4); Arcesios (g. n.) *prominula* (p. 96, pl. 22. fig. 6), *A. porosa* (p. 96, pl. 22. fig. 3), *A. hostilis* (p. 97); Terpios (g. n.) *corallina* (p. 98, pl. 23. fig. 1), *T. desbonii* (p. 98), *T. aurantiaca* (p. 99), *T. tenuis* (p. 100, pl. 24. figs. 2 & 3), *T. cladocera* (p. 100, pl. 23. fig. 4), *T. jania* (p. 101, pl. 22. figs. 8 & 9), *T. niger* (p. 102, pl. 23. fig. 2), *T. echinata* (p. 102, pl. 24. figs. 4 & 5), *T. fugax* (p. 102. pl. 24. fig. 6); Tethia *globum* (p. 104); Geodia *cariboa* (p. 105, pl. 24. fig. 8); Euryades (g. n.) *notabilis* (p. 106, pl. 25. fig. 3); Medon (g. n.) *imberbis* (p. 111, pl. 22. fig. 2), *M. barbata* (p. 111, pl. 24. figs. 9 & 10); Vioa *strombi* (p. 113); Euryphylle (g. n.) *latens*, *E. dubbia* (p. 114, pl. 25. figs. 5–8).

Schmidt (*l. c.*) describes the following new species from the Adriatic, chiefly from the shores of Lissa and Lessina, arranging the Sponges under six families:—*Calcispongiæ, Ceraospongiæ, Gummineæ, Corticatæ, Halichondriæ, Halisarcinæ*:—

Calcispongiæ: *Dunstervillia corcyrensis* (p. 22); *Ute glabra* (p. 23, pl. 3. fig. 1), *U. chrysalis* (p. 23, pl. 3. fig. 2); *Grantia clathrus* (p. 24, pl. 3. fig. 3). Ceraospongiæ: *Cacospongia carduelis* (p. 27); *Spongelia fistularis* (p. 28, pl. 3. fig. 4, pl. 2. figs. 28 & 29), *S. perforata* (p. 28); *Hircinia oros* (p. 29, pl. 3. fig. 5); *Sarcotragus muscarum* (p. 29). Corticatæ: *Stelletta dorsigera* (p. 31, pl. 3. figs. 6 & 7), *S. pelleri* (p. 32, pl. 3. fig. 8); *Ancorina aaptoo* (p. 33, pl. 4. fig. 11). Halichondriæ: *Esperia nodosa* (p. 33, pl. 3. fig. 10), *E. bacillaria* (p. 34, pl. 3. fig. 12); *Clathrea pelligera* (p. 34, pl. 3. fig. 13), *C. oroides* (p. 35, pl. 4. figs. 1 & 2); *Myxilla tridens* (p. 36, pl. 4. fig. 5), this species has been distributed under the name of *M. esperii*; *M. involvens* (p. 37, pl. 4. fig. 6); *Reniera grossa* (p. 37), *R. compacta* (p. 38), *R. aurantiaca* (p. 38), this species has been distributed to some museums as *R. pulvinar*; *R. ambigua* (p. 39, pl. 4. fig. 8), *R. labyrinthica* (p. 39, pl. 4. fig. 9), *R. amorpha* (p. 38, pl. 4. fig. 7), *R.* (?) *frondiculata* (p. 39, pl. 4. fig. 10). Halisarcinæ: *Halisarca guttula* (p. 41).

Sycon, Schmidt (*l. c.* p. 22) (charactere reformato). Sycon spiculis longioribus villosissimis, tanquam pelle marina obtectus. Spiculorum corona anterior decidua. Parietes corporis membranosæ et fere plicatiles. Parenchyma spiculis triradiatis impletum, radiis gracilibus, plerumque paulum undulatis, rarius intermixtis spiculis simplicibus. *S. capillosus*, Schmidt.

Ute, Schmidt (*l. c.* p. 23) (charactere reformato). Spongiæ solitariæ (ut genera *Sycon* et *Dunstervillia*), sacciformes vel fusiformes, plus minusve pedunculatæ, osculo anteriori, corona spiculorum non munito.

Schmidtia and *Lieberkühnia*. These genera, formed by Professor Balsamo-Crivelli (Atti Soc. Ital. Sc. Nat. v. 1863), are referred to in an appendix by Schmidt (*l. c.* p. 42), who points out that the latter name has long since been in use, and believes neither genus to be necessary. The type of the former is *Reniera dura*, and of the latter *Esperia calyx*, Nardo.

These three last referred to works are so indispensable to the student of this portion of natural history, and the descriptions of the new genera and species are so difficult to understand without constant reference to the plates, that the descriptions themselves must be consulted in order to be intelligible.

Tethea hispida, sp. n., Bowerbank (Canadian Naturalist, p. 304).

Spongilla dawsoni, sp. n., Bowerbank, sp. n. (*l. c.* p. 305).

Darwinia müllerí, sp. n., Schultze (*l. c.* p. 6). Schultze very briefly describes this new Sponge from Desterro (Brazil); it would appear to have affinities to the keratose, siliceous, and calcareous sponges. We presume we shall have further details in the Archiv für mikroscopische Anatomie.

Pollinula ovum, sp. n., Harting (*l. c.* p. 13, fig. 37), Banda Sea, 1200 fathoms; *P. reniformis*, sp. n., Harting (p. 18, fig. 55); *P. hispida*, sp. n. (p. 18, fig. 56); *P. minuta*, sp. n. (p. 18, fig. 57).

III. Rhizopoda.

New genus and species:—

Amœba monociliata, Carter, Ann. & Mag. Nat. Hist. xiii. p. 21, Bombay.

Difflugia compressa, Carter, p. 22, Devon; *D. urceolata*, Carter, p. 27, Devon; *D. bombayensis*, Carter, p. 27, Bombay; *D. elliptica*, Carter, p. 28, Bombay; *D. peltigeracea*, Carter, p. 28.

Euglypha compressa, Carter, p. 32, Devon.—*Euglypha spinosa*, Carter, *l. c.* 1865, xv. p. 290, Devon; *E. globosa*, Carter, p. 290.

Actinophrys paradoxa, Carter, p. 34, from Bombay.

Callodictyon, Carter, *l. c.* p. 289. Pyriform, straight, or slightly bent upon itself, bifid at the small extremity, presenting at the larger one an indentation from which spring three cilia. Structure transparent, cancellated, composed of globular cells, with a strongly marked greenish granule here and there in the triangular spaces between them. Locomotive, swimming by means of the cilia; subpolymorphic, flexible, yielding, capable of assuming a globular form or one more or less modified by the body it may incept; enclosing crude material for nourishment in stomachal spaces, and ejecting the refuse, like *Amœba*. Provided with a nucleus and contracting vesicles.

C. triciliatum, Carter, *l. c.* p. 289, hab. freshwater, Island of Bombay.

Dr. Wallich (*l. c.* p. 64), after giving an outline of the classifications proposed by Müller, Claparède, Lachmann, Schultze, and Carpenter, submits the following classification of Rhizopoda:—

I. No definite nucleus; no contractile vesicle: Herpnemata.
  A. Shell never siliceous: Foraminifera. *Lieberkühnia? Pamphagus?*
  B. Shell always siliceous: *Polycystina.*

II. Definite nucleus; no contractile vesicle: Protodermata.
  A. Skeleton solid: Plagiacanthidæ. Acanthometrina. Thalassicolina.
  B. Skeleton tubular: *Dictyochidæ.*

III. Definite nucleus; contractile vesicle: PROTEINA.

A. Monomorphous: ACTINOPHRYNA. *Actinophrys. Gromia. Lagynis. Euglypha. Cadium? Protocystis. Plagiophrys?*

B. Polymorphous: AMŒBINA. *Amœba. Difflugia. Arcella. Pseudochlamys.*

The author then proceeds to characterize in detail each of these subdivisions, but, unlike some of the writings of Dr. Wallich, these details are too condensed to allow of further abridgement; besides the paper is too valuable not to be consulted by those studying these forms. We therefore content ourselves by appending the divisions of the *Polycystina* into subfamilies. To understand this scheme it is necessary to bear in mind that in the embryonic stages of the skeleton of the *Polycystina* two distinct and very definite forms occur, which apparently never vary so far as to render their determination uncertain either in the earliest or any subsequent stage of growth of the organism. To the *embryonic* skeleton the name *omphalostype* is given; and to the earliest formed chamber, which is invariably formed around or upon the omphalostype, the name of the *omphalic* chamber is given.

Family POLYCYSTINA.

Animal presenting the distinctive characters of the HERPNEMATA generally. Skeleton siliceous, of crystalline transparency, colourless, never tubular, continuous, foraminated, forming one or more compartments.

Subfamilies.

I. Omphalostype symmetrical. Omphalic chamber spherical.

1. SPHÆRODINA. Successive chambers arranged concentrically around the omphalic chamber, and developed upon and around the Acanthostypes which originate in the Omphalostype. Typical genus *Haliomma* (Ehr.).

2. DICHODINA. Successive chambers more or less compressed or discoidal, but interrupted at opposite poles. Typical genus *Amphidiscus* (Wal.).

3. ACTINODINA. Successive chambers compressed or discoidal and interrupted, forming two or more radiating lobes. Typical genus *Astromma* (Ehr.).

II. Omphalostype asymmetrical. Omphalic chamber more or less pyramidal and asymmetrical.

1. MONODINA. Successive chambers arranged one in front of the other in linear series. Typical genus *Podocyrtis* (Ehr.).

WALLICH (Ann. & Mag. Nat. Hist. 1864, xiii. pp. 215–245) considers that among the *Difflugidæ* "the animal does not vary, but it modifies the architecture of its habitation, and the mineral material of which that habitation is in a great measure constructed, in obedience to local conditions and in the manner best fitted to meet its requirements." In accordance with the views advanced in this important paper, the whole of the Testaceous Proteina may be accordingly arranged as follows:—

Order PROTEINA.

Families.

ACTINOPHRYNA.

Subfamily. *Euglyphidæ.*

Genus 1. *Euglypha* (Duj.).
- Species 2.
- *E. alveolata* (Duj.).
- Subspecies, *E. enchelys*=*D. enchelys* (Ehr.=*Trinema acinus* (Duj.).
- *E. margaritacea*=*Cyphoderia margaritacea* (Schlumb.).
- var.? *E. baltica*=*Lagynis baltica* (Schultze).

Genus 2. *Cadium* (Bailey).
- Species 1.
- *Cadium caudatum* (Wall.).
- var. *C. marinum* (Bailey).

AMŒBINA.

Subfamily. *Difflugidæ.*

Genus 1. *Difflugia.*
- Species 1.
- *D. proteiformis* (Ehr.).
- Subspecies 1. *D. mitriformis* (Wall.).
  - var. *α. D. acuminata* (Ehr.).
  - „ *β. D. spiralis* (Leclerc).
  - „ *γ. D. pyriformis* (Perty).
  - „ *δ. D. lageniformis* (Wall.).
- Subspecies 2. *D. globularis* (Duj.).
  - var. *α. D. tuberculata* (Wall.).
  - „ *β. D. aculeata* (Ehr.).
  - „ *γ. D. corona* (Wall.).
- Subspecies 3. *D. arcella* (Ehr.).
- Subspecies 4. *D. marsupiformis* (Wall.).
  - var. *α. D. cassis* (Wall.).

HAECKEL (*l. c.* p. 357 *et seq.*), in his memoir on the sarcode substance of the Rhizopods, arrives at the following conclusions:

The sarcode appears as a tenacious jelly, like the white of an egg, of a homogeneous structure, not mixing with water, and which chemically, physically, physiologically, and morphologically is as perfect in itself as the protoplasm of the animal or vegetable cell. In both divisions of the *Rhizopoda*, the *Radiolaria* and the *Acytharia*, this sarcode is essentially the same and exhibits the same fundamental vitality; the apparent differences are of a very secondary nature. The consistency of the sarcode varies in the different families; but these differences, though in their extremes apparently great, are really unimportant. The extremest tenuity in the sarcode is met with among the Radiolaria in the *Collidæ*, *Heliosphæridæ*, *Sphærozoidæ*, and *Collosphæridæ*; the other extreme is met with among the *Acanthometridæ*.

When at rest the sarcode appears as a homogeneous albumen with a smooth surface; but when in motion it projects in all directions a number of fine thread-like, often knotty, and anastomosing pseudopodia; the number, form, size, the knotty appearance, and the anastomosing of these, the quickness, constancy, and regularity of their motion, are subject to continual, inexhaustible, and frequent changes. Each portion of the contractile sarcode-body can so alter its position that it can successively reach any other part of the body; hence the pseudopodia can separate or anastomose with each other as they will. In many Rhizopods round bodies are found which do not differ chemically from ordinary cell-nuclei, supporting the assertion that the sarcode-body is nothing but a peculiarly loosely compacted cell. Having no regard to the nuclear bodies, the sarcode appears to be perfectly homogeneous, without any trace of histological differentiation. The number of nuclei varies, according to Max Schultze, in one and the same individual at different times; among the *Polythalamia* the pseudopodia always have them. The shape of these nuclei varies: the *Acanthometridæ* and the *Miliolidæ* are cha-

racterized by having particularly small nuclei. Their colour sometimes peculiar: thus in *Acanthostaurus purpurascens*, *Acanthochiasma rubescens* and *Actinelius purpureus* the nuclei are constantly red or reddish. The ch mical constitution of these nuclei differs from that of the sarcode-body; t they resist caustic alkalies, which dissolve the latter; and in the decompositi of the Rhizopod they last longer than the sarcode element; they are mo certainly formed as the result of the food taken in by the animal, and th can become metamorphosed into ordinary sarcode. The motion of the nucl is passive; they can move from one pseudopod to another on its anastomosi for the time. Foreign bodies, as Diatoms and the like, with which t pseudopodia come into contact are grasped by them and carried to the centr portion of the body to be digested. The siliceous skeletons of the *Radiolar* and the chalky shells of the *Acytharia* are separations from the sarcode.

Gromia oviformis. Reichert (*l. c.* p. 749) distinguishes in the *Polythalam* two substances independently of the shell—the contractile body-substan and the central body-mass; the former forms the cortical layer of the so body of the *Polythalamia*. In *G. oviformis* it probably takes part in the shel formation; besides contractility, it also possesses the power of killing t creatures on which the *Gromia* lives: it exhibits sensation, and is probably respiratory organ; and it can scarcely be doubted that it has an importa part to play in the growth of the Foraminifer. Still in a state of rest th contractile cortical substance cannot be recognized, even with the microscop as a distinct portion of the body. The author then goes on to comparo contractile substance of the bodies of the *Polythalamia* with muscular fibr

Uvigerina irregularis, sp. n., Brady (*l. c.* p. 100) and *Textularia comple* sp. n., Brady (*l. c.* p. 101).

Rotalia intermedia, sp. n. (p. 9, fig. 5), and *Bulimina ovulum*, sp. n. (p. 9, fig. 10), are described by Harting (*l. c.*) as found in the Banda Sea at a depth of 1200 fathoms.

Polytrema ramiaceum. Schultze states that Dr. Gray has given this species a new name, *i. e. Pustularia rosea*. This is a mistake. *Pustularia* is quite distinct from *Polytrema*, and, if a Foraminifer, is nearly allied in externa form to the genus *Lepralia*, and very unlike the massive form of *Polytrema* Dr. Gray does not agree with Max Schultze in regarding the spicules *Carpenteria* or *Polytrema* as parasitic and part of a sponge (Ann. & Mag. N Hist. 1864, January, p. 111).

The following new species of *Polycystina* are described an figured by Harting (*l. c.*) as found in the Banda Sea:—

At a depth of 1200 fathoms, *Haliomma nitidum* (p. 10, figs. 13 & 14), *H. gracile* (p. 10, fig. 15), *H. lens* (p. 11, fig. 16), *H. pyriforme* (p. 11, fig. 17 *H. scutum* (p. 11, fig. 18); *Flustrella cyclica* (p. 11, fig. 19); *Lithocamp corbula* (p. 12, fig. 21), *L. sinuosum* (p. 12, fig. 22); *Podocyrtis brevifes* (p. 1 fig. 24); *Acanthodesmia arcuata* (p. 12, fig. 25); *A. inermis* (p. 12, fig. 26 At a depth of 2050 fathoms, *Haliomma polyacanthum* (p. 14, fig. 40); *H. iner mis* (p. 15, fig. 41); *H. oblongum* (p. 15, fig. 42); *H. amphiaspis* (p. 15, fig. 43 *Tetrapyle polyacantha* (p. 16, fig. 44); *Rhopalastrum bandaicum* (p. 16, fig. 45 *Flustrella micromma* (p. 16, fig. 47); *Cladospyris moluccanus* (p. 16, fig. 4 *Podocyrtis micracanthus* (p. 17, fig. 49); *Lithocircus annulus* (p. 17, fig. 50)

THE END.