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THE
ZOOLOGICAL RECORD

VOLUME THE THIRTY-FOURTH.

BEING

RECORDS OF ZOOLOGICAL LITERATURE

RELATING CHIEFLY TO THE YEAR

1897.

BY J. A. THOMSON, R. LYDEKKER, R. BOWDLER SHARPE, G. A. BOULENGER,
W. A. HERDMAN, E. R. SYKES, E. A. SMITH, G. C. CRICK, A. W. BROWN,
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Explorate solum : sic fit via certior ultra.

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PREFACE.



OWING to the punctuality of the various Recorders and the promptness of the printers, the thirty-fourth volume of the Zoological Record appears as early as any of its predecessors.

Mr R. T. Günther left England at a period of the year so early that only a very incomplete Record of Cœlenterata could then have been prepared; he therefore preferred that this subject should be altogether omitted; but he hopes to be able to furnish a Record of its progress in 1897 and 1898 in our next volume.

D. SHARP.

CAMBRIDGE,

August 29th, 1898.

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1897. [VOL. XXXIV.]

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ALPHABETICAL LIST
OF THE
ABBREVIATIONS
USED IN THE
ZOOLOGICAL RECORD, VOL. XXXIV, 1897,
FOR THE
TITLES OF THE JOURNALS, TRANSACTIONS, ETC.
THAT CONTAIN ZOOLOGICAL PAPERS;
WITH INDICATIONS OF SOME OF THE PRINCIPAL
LIBRARIES
IN WHICH THE BOOKS ARE CURRENT.

THE primary object of this list is to enable those using the Record to find with ease the full title of a Journal they see quoted in an abbreviated form. The arrangement is therefore a simple alphabetical list of the abbreviations, uncomplicated by syllabic or verbal limitations.

The list has also to serve the Recorders and others as a list of Journals, and for this purpose it is important that it should be fairly complete as regards current periodicals. In order to increase the utility of the list, the abbreviations have been made on a uniform system; but a few exceptions have, in practice, been found necessary. The chief points that have been kept in view in constructing the abbreviations may be briefly stated as follows:—

The words selected as distinctive in each title are reduced in most cases to three or four.

A distinct abbreviation is used for each different word, and the same abbreviation for the same word is used throughout the list.

Accents are omitted. As a rule the first word of the title is represented by an abbreviation, but this rule is departed from in the case of articles and prepositions, and occasionally in the case of adjectives that are useless for distinctive purposes. Thus "Annual Report" becomes "Rep.", and "Occasional Papers" becomes "Pap." Such adjectives as "New" and "Royal" are omitted, except when necessary for distinctive or other purposes.

The consecutive order of the words of the title is maintained in the abbreviation, except in a few cases where the arrangement of the words in the title is very unusual or faulty.

As an example of the form of abbreviation that is aimed at, we may take Bull. Soc. Moscou. The name of the locality is given at greater length than the more frequently used portions of the abbreviation.

After the titles, the place of publication is given, and this is followed by letters indicating some of the principal libraries in which the works may be consulted. The explanation of these letters is as follows:—

- N. = British Museum Natural History: general library.
 Nz. = " " " library, zoological department.
 Ng. = " " " geological "
 K. = Science library; South Kensington Museum.
 R. = Royal Society library.
 Z. = Zoological Society library.
 L. = Linnean
 C. = Cambridge University library.
 C, p or (C) p = Cambridge Philosophical Society library.
 b, or g, or y, after C, or (C) = Cambridge Balfour, or Woodwardian Museum, or Physiological libraries respectively.
 O. = Radcliffe library, Oxford.
 § is appended to titles added since the last list.

Abeille—L'Abeille: Journal d'entomologie publié par la Société entomologique de France. (Paris, 8vo.) Nz.

Abh. Ak. Berlin—Abhandlungen der königlichen Akademie der Wissenschaften zu Berlin. (Berlin, 4to.) N. K. R. Z. L. C, p. O.

Abh. Bayer. Ak.—Abhandlungen der mathematisch-physikalischen Classe der königlichen Bayerischen Akademie der Wissenschaften. (München, 4to.) N. K. R. Z. L. C, p. O.

Abh. Bohmisch. Ges.—Abhandlungen der mathematisch-naturwissenschaftlichen Classe der k. Böhmischen Gesellschaft. [Called also] Rozpravy trídý mathematicko-přirodvěcke královske Ceske společnosti Nauk. (Prag, 4to.) N. K. R. L. C, p.

Abh. geol. Karte Elsass—Abhandlungen zur geologischen Spezial-Karte von Elsass-Lothringen. (Strassburg, 8vo.) Ng.

Abh. geol. Landesanst. Darmstadt—Abhandlungen der grossherzoglich Hessischen geologischen Landesanstalt zu Darmstadt. (Darmstadt, 8vo.) Ng.

Abh. geol. Reichsanst.—Abhandlungen der Kaiserlich-Königlichen geologischen Reichsanstalt. (Vienna, 4to.) Ng. R. L. C, p.

Abh. Ges. Görlitz—Abhandlungen der naturforschenden Gesellschaft zu Görlitz. (Görlitz, 8vo.) N. K. R.

Abh. Ges. Gotting.—Abhandlungen der königlichen Gesellschaft der Wissenschaften zu Göttingen. (Göttingen, 4to.) N. R. Z. L. C, p. O.

Abh. Ges. Halle—Abhandlungen der naturforschenden Gesellschaft zu Halle. (Halle, 4to.) N. K. R. Z. L. C. O.

Abh. Ges. Isis—Sitzungsberichte und Abhandlungen der naturwissenschaftlichen Gesellschaft 'Isis' in Dresden. (Dresden, 8vo.) N. K. Z. C.

Abh. Ges. Königsb.—[Part of *Schr. Ges. Königsb.*, q.v.]

Abh. Ges. Nürnberg—Abhandlungen der naturhistorischen Gesellschaft zu Nürnberg. (Nürnberg, 8vo.) N. K. C.

- Abh. Ges. Wien*—[Part of *Verh. Ges. Wien*, q.v.]
- Abh. Hamburg. Anst.*—[Part of *Jahrb. Hamburg. Anst.*, q.v.]
- Abh. Mus. Dresden*—Abhandlungen und Berichte des königlichen zoologischen und Anthropologisch ethnographischen Museums zu Dresden. (Berlin, 4to.) N. Z. C.
- Abh. Preuss. geol. Landesanst.*—Abhandlungen der königlich Preussischen geologischen Landesanstalt (Neue Folge). [Formerly *Abh. geol. Specialkarte von Preussen und den Thüringischen Staaten.*] (Berlin, 8vo.) Ng. K. C.
- Abh. Sachs. Ges.*—Abhandlungen der k. Sächsischen Gesellschaft der Wissenschaften. (Leipzig, 4to.) N. K. R. C, p.
- Abh. Schweiz. pal. Ges.*—Abhandlungen der Schweizerischen paläontologischen Gesellschaft. Mémoires de la Société Paléontologique suisse. (Basel, &c., 4to.) Ng. R. Z. (C) g. O.
- Abh. Senckenb. Ges.*—Abhandlungen herausgegeben von der Senckenbergischen naturforschenden Gesellschaft. (Frankfort a.-M., 4to.) N. K. R. Z. L. C. O.
- Abh. Ver. Bremen*—Abhandlungen herausgegeben vom naturwissenschaftlichen Verein zu Bremen. (Bremen, 8vo.) N. K. R. Z. L. C.
- Abh. Ver. Hamburg*—Abhandlungen aus dem Gebiete der Naturwissenschaften herausgegeben vom naturwissenschaftlichen Verein in Hamburg. (Hamburg, 4to.) N. K. R. Z. L. C, b.
- Abh. Ver. Karlsruhe*—[Vide *Verh. Ver. Karlsruhe.*]
- Abh. Ver. Kassel*—[Issued with *Ber. Ver. Kassel*, q.v.]
- Acta Ac. German.*—N. Acta Academiæ Cæsareæ Leopoldino-Carolinæ Germanicæ naturæ curiosorum. [Called also] Verhandlungen der k. Leop.-Carol. deutschen Akademie der Naturforscher. (Halle, 4to.) N. K. R. Z. L. C, p. O.
- Act. Ac. Cordoba*—Actas de la Academia nacional de Ciencias en Córdoba. (Buenos Aires, 4to.) N. R. Z. L.
- Acta Soc. Faun. Fenn.*—Acta Societatis pro Fauna et Flora Fennica. (Helsingfors, 8vo.) N. R. L.
- Acta Soc. Lund.*—Acta regiæ Societatis physiographicæ Lundensis. [Published as part of *Acta Univ. Lund.*, q.v.]
- Acta Soc. Sci. Fenn.*—Acta Societatis Scientiarum Fennicæ. (Helsingfors, 4to.) N. K. R. Z. (C) p.
- Acta Soc. Upsal.*—Nova Acta regiæ Societatis Scientiarum Upsaliensis. (Upsala, 4to.) N. K. R. Z. L. C, p.
- Acta Univ. Lund.*—Acta Universitatis Lundensis. [Called also] Lunds Universitets Årsskrift, [and includes] Acta regiæ Societatis physiographicæ Lundensis, [also called] Kongl. fysiografiska Sällskapets i Lund Handlingar. (Lund, 4to.) N. K. R. L. C, p.
- Act. Soc. Bordeaux*—Actes de la Société Linnéenne de Bordeaux. [Includes Comptes rendus.] (Bordeaux, 8vo.) N. Z. C.
- Act. Soc. Chili*—Actes de la Société scientifique du Chili. (Santiago, 4to.) R. Z.
- Act. Soc. Espan.*—Actas de la Sociedad española de historia natural. (Madrid, 8vo.) § N. R. Z. C.
- Act. Soc. Helvet.*—Actes de la Société Helvétique des Sciences naturelles. [Called also] Verhandlungen der schweizerischen Naturforschenden Gesellschaft. (Basel, &c., 8vo.) N. K. R. L. C. O.

- Afh. Mus. Lund.*—E Museo Lundii. En Samling af Afhandlinger. (Kjobnhavn, 8vo.) N. R. Z. L.
- Agric. Gaz. N. S. W.*—The Agricultural Gazette of New South Wales. (Sydney, 8vo.) Nz. R.
- Amer. Geol.*—The American Geologist, a Monthly Journal of Geology and allied Sciences. (Minneapolis, 8vo.) Ng. K. O.
- Amer. J. Sci.*—The American Journal of Science. (New Haven, 8vo.) N. K. R. Z. C, p. O.
- Amer. Micr. J.*—The American Monthly Microscopical Journal. (Washington, 8vo.) N. O.
- Amer. Natural.*—The American Naturalist. (Philadelphia, 8vo.) N. K. Z. L. C, b. O.
- Anat. Anz.*—Anatomischer Anzeiger. Centralblatt für die gesamte wissenschaftliche Anatomie. Amtliches Organ der anatomischen Gesellschaft. (Jena, 8vo.) Nz. K. Z. (C) b. O.
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- Arch. Physiol.*—Archiv für Physiologie. Physiologische Abtheilung des Archives für Anatomie und Physiologie. (Leipzig, 8vo.) K. R. Z. (C) p, y. O.
- Arch. Physiol. norm. path.*—Archives de Physiologie normale et pathologique. [Brown-Séguard.] (Paris, 8vo.) K. R. C, y. O.
- Arch. Sci. Nat.*—Bibliothèque universelle. Archives des Sciences physiques et naturelles. Troisième période. [Vide also *C.R. Soc. Helvet.*] (Genève, 8vo.) N. R.
- Arch. Ver. Mecklenb.*—Archiv des Vereins der Freunde der Naturgeschichte in Mecklenburg. (Güstrow, 8vo.) N. L.
- Arch. Zeeuwsch Genoots.*—Archief. Vroegere en latere Mededeelingen voornamelijk in betrekking tot Zeeland, uitgeven door het Zeeuwsch Genootschap der Wetenschappen. (Middelburg, 8vo.) N.
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THE ZOOLOGICAL RECORD

FOR 1897.

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BY

J. ARTHUR THOMSON, M.A.

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- *ACKERMANN, K. Die Thierbastarde. Ber. Ver. Kassel, 1897, pp. 103–121.
- AIDA, T. On the growth of the ovarian ovum in Chætognaths. Annot. Zool. Japon. i, pp. 77–81, 1 pl.

* It will be understood that papers recorded here may also be found under the various classes, II—XVIII. They are included here because of their bearing on general questions, which, if not obvious, will in most cases be made apparent in the Subject-Index.

† An asterisk prefixed to a quotation indicates throughout the volume that the Recorder has not seen the Journal or Work referred to.

3. ALBRECHT, E. *Entwicklungsmechanik*. Biol. Centralbl. xvii, pp. 769-785.
4. ALLEN, GRANT. *Spencer and Darwin*. Fortn. Rev. lxi, pp. 251-262.
5. ALLEN, HARRISON. *On the effects of disease and senility in the bones and teeth of mammals*. Science, v, pp. 289-294.
6. ANDREWS, E. A. *Some activities of polar bodies*. Johns Hopkins Univ. Circ. Novr. 1897, pp. 14-16, 5 figg., and Ann. Nat. Hist. (vii) i, 1898, pp. 109-116, 5 figg.
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II. MAMMALIA.

BY

R. LYDEKKER, B.A., F.R.S., F.G.S.

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INTRODUCTION.

THE attention devoted to Mammals during the last few years shows no sign of waning, the number of papers here recorded being considerably in excess of the preceding year, and the number of forms described as new being proportionately large.

The two items most worthy of special mention appear to be the description of the placentation of *Perameles* by HILL, and the tracing of the ancestry of the modern *Edentata* to the extinct *Ganodontia* by WORTMAN. One of these discoveries promises to revolutionize our ideas of the relationship of the *Marsupialia* to the *Placentalia*, while the other serves to bring into line a group previously isolated.

A new feature in the year's work is the attention directed to the distribution of Marine Mammals by P. L. SCLATER, supplemented by important observations on the part of GILL and ORTMANN respectively. W. L. SCLATER continues his work on the terrestrial distribution of the class; while among faunistic work special reference may be made to the labours of GRAELLS on the Mammals of Spain, and to the completion of POUSARGUES'S work on those of the French Congo. FORSYTH MAJOR'S memoir on the relationships of the Malagasy Rodents is likewise worthy of note.

EARLE'S papers on the relation of *Tarsius* to the other Lemuroids and of the latter to the higher *Primates* are also of more than ordinary importance; and in connection with this the researches of MATTHEW on the presumed Lemuroids of the Puerco fauna may claim mention. DUVAL continues his investigations into the reproduction of the *Chiroptera*. In the elaborate monographs of SEMON'S travels we find much important information with regard to the anatomy of Marsupials and Monotremes, by EMERY, ZIEHEN, and others; while in the same series, as also in other papers, KÜKENTHAL contributes to our knowledge of the Sirenians. The number and succession of the teeth in the latter group has also received attention during the year; and, among other papers on the subject, reference may be made to LECHE'S investigations on the dentition of the *Insectivora* generally, which have been supplemented by those of FORSYTH MAJOR on the dental succession in the *Centetidae*. Of special importance are the researches of WILSON & HILL in regard to the succession and homology of the teeth in *Perameles* and Marsupials generally.

A considerable amount of work has been devoted to the brain in various groups, among which G. E. SMITH'S investigations into the origin of the corpus callosum are perhaps those of most general importance. Myology has likewise come in for a considerable share of attention, especially at the hands of PARSONS and WINDLE.

Systematic work has been by no means neglected, all the familiar names, on both sides of the Atlantic, being to the fore. None of the animals described are, however, of such a nature as to call for special mention, unless it be a new Papuan representative of the *Hydromyinae*. The *Cetacea* have received more attention than usual; among the most interesting discoveries being the origin of the peculiar markings observable on the skin of RISSO'S Grampus.

As regards classificatory works, the first place is occupied by the new and revised edition of TROUESSART'S Synopsis Mammalium, of which three parts have appeared during the year. Of minor import is PALMER'S list of the generic names and synonyms of the *Rodentia*, which forms a supplement to THOMAS'S list of the preceding year.

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List of species and distribution; MEERWARTH, Bol. Mus. Para. ii, p. 121.

Saimiri, Voight, 1831, antedates *Chrysothrix*, Kaup, 1835; PALMER, P. Soc. Washington, xi, p. 174.

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†*Nesopithecus*: its affinities; TROUSSERT, Nature (La), 1897, p. 66 [see also EARLE, Amer. Natural. xxxi, p. 683].

LEMURIDÆ and TARSIIDÆ.

Brain of †*Globilemur* and †*Megaladapis*; F. MAJOR, P. R. Soc. London, lxii, p. 46. Many of the Puerco forms assigned to this group referred by MATTHEW, Bull. Amer. Mus. ix, p. 259, to other groups, the *Chriacidæ* being placed among the *Creodontia*, and *Mixodectes* provisionally considered as a Rodent; Myology of *Lemur*, HUNTINGTON, Science (2) v, p. 314.

†*Globilemur*, n. g., for *G. flacourti*, n. sp., F. MAJOR, P. R. Soc. London, lxii, p. 46, Pleistocene, Madagascar.

Tarsius: a very generalised form connecting Lemuroids with Anthropoids; EARLE, Amer. Natural. xxxi, pp. 569 & 680. *T. fuscus*: its subspecies and anatomy; H. ALLEN, P. Ac. Philad. 1897, p. 34.

INCERTÆ SEDIS.

†*Notopithecus*, n. g., for *N. adapinus*, n. sp., pp. 16 & 17, *N. fossulatus*, *N. summus*, n. spp., AMEGHINO, Boll. Inst. Geogr. Argent. p. 18, fossil, Patagonia.

†*Eupithecops*, n. g., for *E. proximus*, n. sp., AMEGHINO, t. c. pp. 18 & 19, *ibid.*

†*Archæopithecus*, n. g., for *A. rogeri*, n. sp., AMEGHINO, t. c. p. 19, *ibid.*

†*Pachypithecus*, n. g., for *P. macrognathus*, AMEGHINO, t. c. p. 20, *ibid.*

II. *CHIROPTERA*.

Irish species, JAMESON, *Irish Natural*. 1897, p. 34; reproduction, ROLLINAT & TROUËSSART, *Mem. Soc. Zool. France*, x, p. 114; development of skeleton of wing, LÉBOUCQ, *Anat. Anz.* xiii, Suppl. p. 79; embryology, DUVAL, *J. Anat. Phys. norm. path.* xxxiii, p. 1.

PTEROPODIDÆ.

† *Cynonycteris*, sp., GAILLARD, C.R. Ac. Paris, cxxiv, p. 1248, Miocene, Isère. *Pteropus*, Timorese species, SCABRA, *J. Sci. Lisb.* (2) xviii, p. 117.

RHINOLOPHIDÆ and VESPERTILIONIDÆ.

- Rhinolophus micaceus*, n. sp., DE WINTON, *Ann. Nat. Hist.* (6) xx, p. 524, Gaboon.
- Vespertilio*, Keys & Blasius, 1839 (*nec* Linn.), replaced by *Myotis*, Kaup, 1829; *Vesperugo*, K. & B., by *Vespertilio*, and partly by *Pipistrellus* and *Pterygistes*, Kaup, 1829; and *Synotus*, K. & B., 1839, by *Barbastella*, Gray, 1825; MILLER, *Ann. Nat. Hist.* (6) xx, p. 379, and *N. Amer. Fauna*, No. 13, pp. 55 & 87.
- Myotis lucifugus alascensis*, p. 63, S. Alaska, *yumanensis saturatus*, p. 68, Oregon to British Columbia, *californicus caurinus*, p. 72, humid district of British Columbia and Oregon, *thysanodes*, p. 80, Sonoran Zone, n. sp. & subspp., MILLER, *N. Amer. Fauna*, No. 13.
- Vespertilio fuscus bahamensis*, Bahamas, MILLER, *t. c.* p. 101; *V. lucifugus austroriparius*, RHOADS, *P. Ac. Philad.* 1897, p. 227, Florida: n. subspp.
- Adelonycteris gaumeri*, n. sp., J. A. ALLEN, *Bull. Amer. Mus.* ix, p. 231, Yucatan.
- Rhogeëssa gracilis*, *N. Amer. Fauna*, No. 13, p. 126, S. Mexico, *minutilla*, *P. Soc. Washington*, xi, p. 139, Margarita I., Venezuela, n. spp., MILLER.
- Pipistrellus hesperus australis*, p. 90, Jalisco, Mexico, *subflavus obscurus*, p. 93, Warren Co., N. York, n. subspp., MILLER, *N. Amer. Fauna*, No. 13.
- Synotus barbastellus*, from Norway, COLLETT, *Arch. Naturv. Christian.* 1897, p. 3.
- Antrozous pallidus pacificus*, n. subsp., MERRIAM, *P. Soc. Washington*, xi, p. 180, California.
- Scotophilus wroughtoni*, n. sp., THOMAS, *J. Bombay Soc.* xi, p. 275, Surat, India.
- Atalapha noveboracensis*, *A. cinerea*, *Lasionycteris noctivagans*, their migrations; MILLER, *Science* (2) v, p. 541.
- Dasypterus ega xanthinus*, n. subsp., THOMAS, *Ann. Nat. Hist.* (6) xx, p. 544, Lower California.

EMBALLONURIDÆ and PHYLLOSTOMATIDÆ.

- Nyctinomus lorice*, THOMAS, *Ann. Mus. Genova* (2) xviii, p. 609, Papua; *N. martiensseni*, MATSCHIE, *Arch. Naturg.* lxiii, 1, p. 84, German E. Africa: n. spp.
- Saccopteryx infusca*, n. sp., THOMAS, *Ann. Nat. Hist.* (6) xx, p. 546, Ecuador.
- Artibeus (Dermanura ?) rosenbergi*, THOMAS, *t. c.* p. 545, Ecuador; *palmarum*, ALLEN & CHAPMAN, p. 16, Trinidad, *intermedius*, ALLEN, p. 33, Costa Rica, *Bull. Amer. Mus.* xi: n. spp.
- Glossophaga truei*, n. n., H. ALLEN, *Science* (2) v, p. 152, to replace *G. villosa*, Allen, 1894, *nec* Rengger, 1830.

III. INSECTIVORA.

Morphology of dentition; LECHE, Anat. Anz. xiii, p. 1.

TUPAIIDÆ and MACROSCELIDIDÆ.

- Tupaia muelleri*, n. sp., KOHLBRUGGE, Natuurk. Tijdschr. Nederl. Ind. (2) iv, p. 196 (1895), Borneo.
Petrodomus rovomæ, p. 434, *sultan*, p. 435, n. spp., THOMAS, P. Zool. Soc. London, 1897, Nyasaland.
Macroscelides brachyrhynchus malosæ, n. subsp.; THOMAS, t. c. p. 928, Nyasaland.

SORICIDÆ and TALPIDÆ.

- Blarina thomasi*, n. sp., MERRIAM, P. Soc. Washington, xi, p. 227, Colombia.
Notiosorex gigas, n. sp., MERRIAM, t. c. p. 227, Mexico.
Sorex sclateri, p. 228, Mexico, *salvini*, p. 229, *godmani*, p. 229, Guatemala, n. spp., MERRIAM, t. c.
Crocidura lixa, THOMAS, p. 930, Nyasaland, *whitakeri*, DE WINTON, p. 954, Morocco, P. Zool. Soc. London, 1897, n. spp.
Pachyura krooni, n. sp., KOHLBRUGGE, Natuurk. Tijdschr. Nederl. Ind. (2) iv, p. 197, Borneo.
Myosorex (?) *sorella*, n. sp., THOMAS, P. Zool. Soc. London, 1897, p. 930, Nyasaland.
Scapanus alpinus, Oregon, *truei*, California, n. spp., MERRIAM, P. Soc. Washington, xi, p. 102.
Neurotrichus gibbsi hyacinthinus, n. subsp., BANGS, Amer. Natural. xxxi, p. 240, California.
Talpa europæa, biliary ducts; SCAMPANI, Monit. Zool. ital. viii, p. 56: utility of; JOYEUX-LAFFUIE, Bull. Soc. Normand. (4) x, p. 52.

CENTETIDÆ.

Dentition; F. MAJOR, Ann. Nat. Hist. (6) xx, p. 525.

IV. CARNIVORA.

The Pleistocene Algerian forms described by POMEL, Carte Géol. Algérie, Pal. Mon., they include species of *Felis*, *Herpestes*, *Hyaena*, and *Ursus*.

FELIDÆ and VIVERRIDÆ.

- N. American fossil *Felidæ*; ADAMS, Amer. J. Sci. (4) iv, p. 145.
Felis hippelestes, p. 219, Wyoming, *hippelestes olympus*, p. 220, Olympic Mountains, Washington, n. sp. & subsp., MERRIAM, P. Soc. Washington, xi, p. 220. *F. serval*, melanistic variety; LÖNNBERG, Zool. Jahrb. Syst. x, p. 569. *F. catus*, in Scotland; HAMILTON, Ann. Scott. Nat. Hist. vi, p. 65. *F. caffra*, in South Europe; LORENZ, Verh. Ges. Wien, xlvi, p. 341. *F. tigris virgata*, from Caspian, and *F. t. longipilis*, from Manchuria; MATSCHIE, SB. Ges. naturf. Berlin, 1897, p. 13.
Lynx rufus eremicus, p. 457, *rufus californicus*, p. 458, MEARNS, P. U. S. Mus. xx, California; *subsolanus*, p. 49, Newfoundland, *gigas*, p. 50, Nova Scotia, BANGS, P. Soc. Washington, xi: n. spp. & subsp.
†*Hoplophoneus occidentalis*, osteology; RIGGS, Kansas quart. v, p. 37.
Arctogalidia, n. nom., MERRIAM, Science (2) v, p. 302, for *Arctogale*, Gray, 1864, nec Kaup, 1829.

Bdeogale nigripes, its validity; POUSARGUES, Bull. Mus. Paris, 1897, p. 202.

Helogale atkinsoni, n. sp.; THOMAS, Ann. Nat. Hist. (6) xx, p. 378, Somaliland.

CANIDÆ and URSIDÆ.

Canis familiaris tenggerana, KOHLBRUGGE, Natuurk. Tijdschr. Nederl. Ind. (2) v, p. 283 (1896), and JENTINK, Notes Leyden Mus. xviii, p. 217, pls. iv & v, Tengger Mountains, Java. *C. mengesi*, p. 518, *mesomelas schmidti*, p. 519, Somaliland, *wunderlichi*, p. 519, Africa, NOACK, Zool. Anz. xx: n. spp. & subspp. *C. latrans*, divided by MERRIAM, P. Soc. Washington, xi, into the following n. spp., viz.: *pallidus*, p. 24, *lestes*, p. 25, *peninsulæ*, p. 28, *microdon*, p. 29, *mearnsi*, p. 30, *estor*, p. 31, *vigilis*, p. 33; *frustor*, Woodhouse, 1851, *cagottis*, H. Smith, 1839, and *ochropus*, Eschscholtz, 1829, are also recognised as species; *vulpes* and *familiaris*, hybrid, TONI, Atti Ist. Veneto (7) viii, p. 912; *hadramanticus*, Noack, 1896 = *lupaster*, MATSCHIE, SB. Ges. naturf. Berlin, 1897, p. 73.

Canis (Pseudalopex) lycoides, n. sp., PHILIPPI, An. Univ. Chile, 1896, p. 1, Chili.

Urocyon cinereoargentatus texensis, Texas, *cinereoargentatus californicus*, California, n. subspp., MEARNNS, P. U. S. Mus. xx, p. 459.

Vulpes pennsylvanica vafra, n. subspp., BANGS, P. Soc. Washington, xi, p. 53, Nova Scotia; *lagopus*, in Turkestan, BÜCHNER, Annuaire Mus. St. Petersb. 1897, p. 393.

Ursus arctus and allied forms, synopsis of; LYDEKKER, P. Zool. Soc. London, 1897, p. 412; *U. pruinus* being figured, and *U. arctus yesoensis*, p. 422, Yezo, new; another skin of *pruinus* noticed on p. 814; *rexii*, n. sp., MATSCHIE, SB. Ges. naturf. Berlin, 1897, p. 72, Japan; *tetruscus*, osteology; RISTORI, Mem. Pal. Ital. iii, p. 15.

MUSTELIDÆ and PROCYONIDÆ.

Mustela melampus tsuensis, THOMAS, Ann. Nat. Hist. (6) xix, p. 161, Tsu-shima I.; *atrata*, BANGS, Amer. Natural. xxxi, p. 162, Newfoundland: n. sp. and subspp. *M. subpalmata*, noticed, ANDERSON, P. Zool. Soc. London, 1897, p. 600.

Putorius brasiliensis paraensis, n. subspp., GOELDI, Zool. Jahrb. Syst. x, p. 562, Para.

Spilogale pygmæa, THOMAS, P. Zool. Soc. London, 1897, p. 898, Sinaloa, W. Mexico, *ambigua*, MEARNNS, P. U. S. Mus. xx, p. 460, Mexico: n. spp.

Mephitis occidentalis holzneri, p. 461, Lower California, *milleri*, p. 467, Arizona, n. subspp. and sp., MEARNNS, t. c.

Taxidea taxus infusca, n. subspp., THOMAS, P. Zool. Soc. London, 1897, p. 899, Lower California.

Lutra annectans, n. sp., MAJOR, Zool. Anz. xx, p. 142, and Ann. Nat. Hist. (6) xix, p. 618, Central America.

Latax lutris, habits and distribution in Alaska; HOOPER (124).

Procyon lotor, myology of hind-limb; GOWELL, Kansas quart. vi, p. 121.

Bassariscus saxicola, n. sp., MERRIAM, P. Soc. Washington, xi, p. 185, Espiritu Santo I., Lower California.

Potos, Cuv. and Geof., 1795, antedates *Cercoleptes*, Illiger, 1811; PALMER, t. c. p. 174.

OTARIIDÆ, ODOBÆNIDÆ, and PHOCIDÆ.

- Eared Seals of Galapagos; BAUR, Science (2) v, p. 956.
Arctocephalus townsendi, n. sp., MERRIAM, P. Soc. Washington, xi, p. 175, Guadalupe I., Lower California.
Odobænus obesus, its characters; BARRETT-HAMILTON, P. Zool. Soc. London, 1897, p. 266. *O. rosmarus*, in Iceland; SÆMUNDSSON, Vid. Medd. 1897, p. 201.
 Habits of northern species of *Phocidæ*; ROBINSON (266). *Phoca fœtida*, from Norway; COLLETT, Arch. Naturv. Christian. 1897, p. 3. †*P. vindobonensis*, n. sp.; TOULA, Beitr. Pal. Oesterr.-Ung. xi, p. 47, Tertiary, Hungary.

†CREODONTIA.

- Puerco forms; MATTHEW, Bull. Amer. Mus. ix, p. 259.
 †*Oxyæna huerfanensis*, n. sp., OSBORN, t. c. p. 255, Tertiary, Colorado.

V. RODENTIA.

- PALMER, Science (2) vi, p. 103, criticises Thomas's arrangement of the order, and makes some emendations in nomenclature—notably that *Cricetus*, Cuvier, antedates *Hamster*, Lacépède. Other emendations in nomenclature; THOMAS, t. c. p. 485. Development of dentition; ADLOFF, Zool. Anz. xx, p. 324. Bohemian fossil Steppe Rodents; NEHRING, N. Jahrb. Min. 1897, ii, p. 220.

ANOMALURIDÆ and SCIURIDÆ.

- Anomalurus batesi*, n. sp., DE WINTON, Ann. Nat. Hist. (6) xx, p. 524, Gaboon district.
Sciurus indicus dealbatus, p. 301, W. of Kandesh, *i. bengalensis*, p. 303, Bengal, &c., BLANFORD, J. Bombay Soc. xi; *peruanus*, J. A. ALLEN, Bull. Amer. Mus. ix, p. 115, Peru; *fossor anthonyi*, MEARN, P. U. S. Mus. xx, p. 501, California; *hudsonius orarius*, N. California, BANGS, P. Soc. Washington, xi, p. 281; *hudsonius mearnsi*, N. California, TOWNSEND, t. c. p. 146; *jacksoni*, E. Africa, DE WINTON, Ann. Nat. Hist. (6) xix, p. 575: n. spp. & subspp.
Xerus (Paraxerus) lucifer, n. sp., THOMAS, P. Zool. Soc. London, 1897, p. 430, Masaku Mts., Nyasaland; renamed *Funisciurus lucifer*, t. c. p. 932, pl. liv, the genus *Sciurus* being split up into seven on p. 933.
Eutamias: notes on the group, p. 189, *townsendi ochrogenys*, p. 206, California, *oreocetes*, p. 207, Montana, *speciosus inyoensis*, p. 208, California, *palmeri*, p. 208, Nevada, *dorsalis utahensis*, p. 210, Utah, n. spp. & subspp., MERRIAM, P. Soc. Washington, xi.
Sciuropterus, W. American species; RHOADS, P. Ac. Philad. 1897, p. 314; *alpinus klamathensis*, n. subsp.; MERRIAM, P. Soc. Washington, xi, p. 225, Ft. Klamath, Oregon.

CASTORIDÆ and GLIRIDÆ.

- Castor canadensis frondator*, n. subsp.; MEARN, P. U. S. Mus. xx, p. 502, Sonora, Mexico. *C. fiber*, in Norway; COLLETT, Bergens Mus. Aarbog, 1897, No. 1.
Graphiurus platyops, THOMAS, xix, p. 338, Mashonaland, *angolensis*, DE WINTON, xx, p. 321, Angola, Ann. Nat. Hist. (6); *johnstoni*, THOMAS, P. Zool. Soc. London, 1897, p. 934, Nyasaland: n. spp.

MURIDÆ.

- Distribution of *Synaptomys*, *Microtus*, and *Evotomys*; BATCHELDER, P. Boston Soc. xxvii, p. 185.
- F. MAJOR, P. Zool. Soc. London, 1897, p. 695, discusses the affinities of *Brachyuromys*, and enters into the question of the mutual relation of some of the groups of the *Muridæ* (*Hesperomyinæ*, *Microtinæ*, *Murinae*) and *Spalacidae* with each other and with the *Nesomyinæ* of Madagascar. The *Nesomyinæ* are the lowest of the *Muridæ*, being forerunners of the American *Hesperomyinæ*, the Old-World *Murinae*, and the *Microtinæ*. *Brachyuromys* bears close affinities to the *Spalacidae*, which are regarded as lowly-organized *Muridæ*.
- Leptomys*, n. g., for *L. elegans*, n. sp.; THOMAS, Ann. Mus. Genova (2), p. 610, Papua.
- Mus musculus jalapæ*, p. 198, *musculus brunneus*, p. 203, Mexico, ALLEN & CHAPMAN, Bull. Amer. Mus. xi; *damarensis*, DE WINTON, xix, p. 349, Damaraland; *sebastianus*, p. 463, Cameroons, *ugandæ*, xx, p. 317, *jacksoni*, p. 318, Uganda, *thomasi*, p. 321, Angola, Ann. Nat. Hist. (6); *peregrinus*, P. Zool. Soc. London, 1897, p. 959, Morocco; *latouchei*, THOMAS, Ann. Nat. Hist. (6) xx, p. 114, Fokien, China; *nyikæ*, P. Zool. Soc. London, 1897, p. 431, Nyasaland; *gestroi*, Ann. Mus. Genova (2) xviii, p. 611, Papua: n. spp. *M. exulans*, note on, WAITE, Mem. Austral. Mus. iii, p. 165; *arboricola* [= *rattus*, THOMAS t. c. p. 860], habits, P. Zool. Soc. London, 1897, p. 857.
- Nesocia bacheri*, n. sp., NEHRING, Zool. Anz. xx, p. 503, Palestine.
- Malacomys centralis*, n. sp., DE WINTON, Ann. Nat. Hist. (6) xix, p. 465, Monbattu.
- Saccostomus elegans*, n. sp., THOMAS, P. Zool. Soc. London, 1897, p. 431, Nyasaland.
- Arvicanthis spekei*, n. sp., DE WINTON, Ann. Nat. Hist. (6) xx, p. 318, Uganda.
- Pogonomys*, Milne-Edwards, 1877 = *Chiruromys*, Thomas, 1888; THOMAS, Ann. Mus. Genova (2) xviii, p. 613. *P. lorice*, p. 613, *lepidus*, p. 614, *lamia*, p. 615, n. spp., THOMAS, t. c. Papua.
- Uromys levipes*, n. sp., THOMAS, t. c. p. 617, Papua.
- Peromyscus sitkensis*, Sitka I., Alaska, MERRIAM, P. Soc. Washington, xi, p. 223; *yucatanensis*, ALLEN & CHAPMAN, p. 8, Yucatan, *fulvus*, p. 201, Mexico, *melanotis*, p. 202, Vera Cruz, *spicilegus*, ALLEN, p. 50, *banderanus*, p. 51, Mexico, Bull. Amer. Mus. ix; *saturatus*, BANGS, Amer. Natural. xxxi, p. 75, British Columbia; *tiburoniensis*, MEARNs, p. 720, Tiburon I., Gulf of California, *stephensi*, p. 721, San Diego, California, P. U. S. Mus. xix: n. spp.
- Microtus bairdi*, p. 74, Oregon, *serpens*, p. 75, British Columbia, *sitkensis*, p. 221, Sitka, Alaska, *kadiacensis*, Kadiak I., Alaska, *unalascensis*, p. 222, Unalaska, MERRIAM, P. Soc. Washington, xi; *canicaudus*, p. 67, Oregon, *aitchisoni*, p. 141, Gulmarg, Kashmir, MILLER, t. c.; *pennsylvanicus acadicus*, BANGS, Amer. Natural. xxxi, p. 239, Nova Scotia: n. spp. & subspp.
- Fiber macrodon*, n. sp., MERRIAM, P. Soc. Washington, xi, p. 143, Virginia.
- Nectomys grandis*, xix, p. 498, Colombia, *magdaleneæ*, p. 499, Magdalena River, *fulvinus*, p. 499, Quito, *saturatus*, xx, p. 546, Ecuador, *russulus*, p. 557, Colombia, n. spp., THOMAS, Ann. Nat. Hist. (6).
- Holochilus nanus*, n. sp., THOMAS, op. cit. xix, p. 495, Marajo I., Amazon.
- Sigmodon borucae*, p. 40, Costa Rica, *peruanus*, p. 118, Peru, *bogotensis*, p. 121, Bogota, *mascotensis*, p. 54, *colimæ*, p. 55, Mexico, J. A. ALLEN, Bull. Amer. Mus. ix; *hispidus pallidus*, Texas, *h. eremicus*, Sonora, Mexico, MEARNs, P. U. S. Mus. xx, p. 505: n. spp. & subspp.

- Rhithrodontomys mexicanus gracilis*, p. 9, Mexico, *rufescens*, p. 199, Mexico, *saturatus*, p. 201, Vera Cruz, n. spp. & subspp., ALLEN & CHAPMAN, Bull. Amer. Mus. ix.
- Oryzomys delicatus*, ALLEN & CHAPMAN, p. 19, Trinidad, *chrysomelas*, *jalapæ*, p. 206, Mexico, ALLEN, p. 37, Costa Rica, *mexicanus*, p. 52, *bulleri*, p. 53, Mexico, *baroni*, p. 117, Peru, Bull. Amer. Mus. ix
goeldii, xix, p. 494, Lower Amazonia, *peninsulæ*, xx, p. 549, Lower California, THOMAS, Ann. Nat. Hist. (6).
- Zygodontomys*, n. g., for *Oryzomys cherriei*, Allen, 1895; ALLEN, Bull. Amer. Mus. ix, p. 38.
- Sigmodontomys*, p. 38, n. g., for *S. alfari*, n. sp.; ALLEN, *t. c.*, Costa Rica.
- Chilomys*, n. g., for *Oryzomys instans*, Thomas, 1895; THOMAS, Ann. Nat. Hist. (6) xix, p. 501.
- Ichthyomys trichotis*, n. sp., THOMAS, *op. cit.* xx, p. 220, West Cundinamarca.
- Acodon urichi*, p. 19, *frustrator*, p. 20, Trinidad, ALLEN & CHAPMAN, Bull. Amer. Mus. ix; *fuscinus*, xix, p. 496, Marajo I., Amazon, *spagazzinii*, xx, p. 216, *albiventer*, p. 217, Argentina, *pulcherrimus*, p. 599, Peru, THOMAS, Ann. Nat. Hist. (6): n. spp.
- Oxymycterus lanosus*, n. sp., THOMAS, *op. cit.* xx, p. 218, Straits of Magellan.
- Neotoma attwateri*, xix, p. 721, Kerr County, Texas, *cumulator*, xx, p. 503, California, n. spp., MEARNs, P. U. S. Mus.
- Nelsonia*, n. g., for *N. neotomodon*, n. sp., MERRIAM, P. Soc. Washington, xi, p. 277, Mexico.
- Phenacomys*, synopsis of species, MILLER, *t. c.* p. 77; *preblei*, n. sp., MERRIAM, *t. c.* p. 45, Colorado.
- Evotomys mazama*, p. 71, *obscurus*, p. 72, Oregon, MERRIAM, *wrangeli*, p. 120, Wrangel I., Alaska, *gapperi loringi*, p. 125, North Dakota, *ungava*, p. 130, Ungava, *nivarius*, p. 136, Olympic Mountains, Washington, BAILEY, *proteus*, p. 137 (its variations, p. 239, pl. iv), Hamilton I., Labrador, BANGS, *t. c.*: n. spp. & subspp.
- Ellobius lutescens*, n. sp., THOMAS, Ann. Nat. Hist. xix, p. 308, Van.

SPALACIDÆ and DIPODIDÆ.

- Intimate relationship of *Spalacidæ* to the *Muridæ*, structure of skull, and dentition; F. MAJOR, P. Zool. Soc. London, 1897, p. 695.
- Spalax giganteus*, p. 169, Caspian, †*priscus*, p. 174, Pliocene, Hungary, *kirgisorum*, p. 176, Volga Steppes, *ehrenbergi*, p. 178, Palestine, *egyptius*, p. 180, Egypt, *intermedius*, p. 181, Syria, n. spp., NEHRING, SB. Ges. naturf. Berlin, 1897.
- Zapus tenellus*, p. 103, British Columbia, *pacificus*, *trinotatus montanus*, p. 104, Oregon, *hudsonius alascensis*, p. 223, Alaska, MERRIAM, P. Soc. Washington, xi, n. spp. & subsp.
- Alactaga williamsi*, n. sp., THOMAS, Ann. Nat. Hist. (6) xx, p. 309, Van; *Alactagulus*, n. subg., for *Alactaga elater*, Licht., NEHRING, SB. Ges. naturf. Berlin, 1897, p. 154.

GEOMYIDÆ, HETEROMYIDÆ, and BATHYERGIDÆ.

- General account of Pocket-Gophers: WEBSTER, Amer. Natural. xxxi, p. 114.
- Thomomys fulvus intermedius*, MEARNs, P. U. S. Mus. xix, p. 719, Arizona, *nevadensis*, p. 213, Nevada, *angularis*, p. 214, California, *mazama*, p. 214, *quadratus*, p. 214, *leucodon*, p. 215, Oregon, *operarius*, p. 215, *alpinus*, p. 216, California, *nasicus*, p. 216, Oregon, n. spp. & subsp.

Dipodomys mitchelli, n. sp., MEARNs, *t. c.* p. 719, Tiburon I., Gulf of California.

Heteromys gaumeri, p. 9, Yucatan, J. A. ALLEN & CHAPMAN, *hispidus*, p. 56, Mexico, J. A. ALLEN, Bull. Amer. Mus. ix: n. spp.

Georychus bocagei, DE WINTON, Ann. Nat. Hist. (6) xx, p. 323, Hanha, Angola; *whytei*, THOMAS, P. Zool. Soc. London, 1897, p. 432, Nyasaland: n. spp.

DASYPROCTIDÆ, CAVIIDÆ, and CHINCHILLIDÆ.

Dasyprocta kalinowskii, n. sp., THOMAS, Ann. Nat. Hist. (6) xx, p. 219, Cuzco, Peru. Myology of *Dasyprocta* and *Dolichotis*; WINDLE, J. Anat. Physiol. norm. path. xxxi, p. 343.

Brain of *Cavia*; PONTI, Monit. Zool. ital. viii, p. 36.

Vizcacia, Schinz, 1824, supersedes *Lagostomus*, Brookes, 1829; PALMER, Science (2) vi, p. 21.

Lagidium moreni, n. sp., THOMAS, Ann. Nat. Hist. (6) xix, p. 469, Patagonia.

ERETHIZONTIDÆ and OCTODONTIDÆ.

Erethizon epixanthus couesi, n. subsp., MEARNs, P. U. S. Mus. xix, p. 723, Arizona.

Echimys gymnurus, n. sp., THOMAS, Ann. Nat. Hist. (6) xx, p. 550, Ecuador.

Mesomys thomasi, n. sp., IHERING, Revist. Mus. Paulista, ii, p. 171, I. of S. Sebastian; *M. ecaudatus*, note on, GOELDI, Bol. Mus. Para. ii, p. 253.

Aulacodus calamophagus, n. sp., POUSARGUES, Bull. Mus. Paris, 1897, p. 160, East Central Africa.

Thryonomys sclateri, n. sp., THOMAS, P. Zool. Soc. London, 1897, p. 432, Nyika, Nyasaland.

†DIMYLIDÆ, †INCERTÆ SEDIS, and LEPORIDÆ.

†*Plesiodymys*, n. g., for *R. chantrei*, n. sp.; GAILLARD, C.R. Ac. Paris, cxxiv, p. 1248, Miocene, Grive-St.-Alban.

†*Cephalomys*, n. g., for *C. arcidens* and *plexus*, n. spp.; AMEGHINO, Boll. Inst. Geogr. Argent. xviii, p. 90, fossil, Patagonia.

†*Asteromys*, n. g., for *A. punctus* and *prospicuus*, n. spp.; AMEGHINO, *t. c.* p. 91, *ibid.*

†*Orchiomys*, n. g., for *O. prestans*, n. sp.; AMEGHINO, *l. c. ibid.*

Lepus baileyi, MERRIAM, P. Soc. Washington, xi, p. 147, Wyoming; *andinus*, p. 551, Ecuador, *cumanicus*, p. 552, Venezuela, THOMAS, Ann. Nat. Hist. (6) xx; *atlanticus*, DE WINTON, P. Zool. Soc. London, 1897, p. 960, Morocco: n. spp.

Limnolagus, n. n., for *Hydrolagus*, Gray, MEARNs, p. 393, Science, v.

VI. UNGULATA.

BOVIDÆ.

E. African Antelopes, notes on; JACKSON, P. Zool. Soc. London, 1897, p. 450. "The Book of Antelopes"; SCLATER & THOMAS, continued.

Bos †*primigenius* and *bonasus*, old figures and descriptions; NEHRING, Globus, lxxi, No. 6; †*primigenius* in Mecklenburg; GEINITZ, Arch. Ver. Mecklenb. l, p. 334; its existence during historic period; SCHIEMENZ, Biol. Centralbl. xvii, p. 793; *sondaicus*, characters of Burmese race; WOOD, Zoologist (4), i, p. 489.

- † *Bison alaskensis*, p. 490, Pleistocene, Alaska, *B. bison attrabascæ*, p. 498, N.-W. Territories, † *B. californicus*, p. 501, Pleistocene, California, n. spp. & subsp., RHOADS, P. Ac. Philad. † *B. antiquus*, osteology, STEWART, Kansas quart. vi, p. 127. † *B. priscus*, in Switzerland, KELLER, Mt. Ges. Luzern, 1895-96, p. 684.
- Ovis stonei*, J. A. ALLEN, Bull. Amer. Mus. ix, p. 111, British North-West America; *nelsoni*, MERRIAM, P. Soc. Washington, xi, p. 217, South California: n. sp.
- Capra mengesi*, Noack = *sinaitica*, SCLATER, P. Zool. Soc. London, 1897, p. 900, fig.; *ibex*, exterminated in Martinswand in 1540; KLAR, Zeitschr. Ferd. Tirol (3) xli, p. 302; horn of *ibex* in prehistoric deposits; STUDER, Mt. Ges. Bern, 1897, p. 283.
- Rupicapra vulgaris*, the remains found in the French Pliocene belong to the Pyrenean Iazard; HARLÉ, Bull. Soc. geol. France (3) xxiv, p. 712.
- Bubalis neumanni*, n. sp., ROTHSCHILD, Ann. Nat. Hist. (6) xx, p. 376, Lake Rudolph.
- Cephalophus hecki*, n. sp., MATSCHIE, SB. Ges. naturf. Berlin, 1897, p. 158, Mozambique.
- Cobus senganus*, n. sp., SCLATER & THOMAS, Book of Antelopes, ii, p. 145, Senga.
- Cervicapra fulvorufula subalpina*, n. subsp., KIRBY, P. Zool. Soc. London, 1897, p. 897, Lydenburg, Transvaal.
- Gazella marica*, xix, p. 162, Central Arabia, *granti notata*, xx, p. 479, British East Africa, n. sp. & subsp., THOMAS, Ann. Nat. Hist. (6).
- Strepsiceros kudu* and *imberbis*, popular account; LANGKAVEL, Zool. Garten, xxxviii, p. 138.

GIRAFFIDÆ and CERVIDÆ.

- Giraffa camelopardalis* and *capensis*, their synonymy, distinctions, and distribution; DE WINTON, P. Zool. Soc. London, 1897, p. 273.
- Popular account of British Deer, MILLAIS (211); protective colouring in Deer, RÖRIG, Zool. Garten, xxxviii, p. 13.
- Rusa dejeani*, POUSARGUES, Bull. Mus. Paris, 1896, No. 1, p. 2, Szechuan.
- Cervus culionus*, ELIOT, Publ. Mus. Columbia, Zool. i, p. 157, Culion (Calamianes), Philippines; *C. roosevelti*, MERRIAM, P. Soc. Washington, xi, p. 271, Olympic Mountains: n. spp. *C. steerei*, note on, ELIOT, l. c.; *C. elaphus*, distribution in Russia, BÜCHNER, Annuaire Mus. St. Petersb. 1896, p. 387; *C. sica*, *hortulorum*, *mandarinus*, and *taëvanus*, characters and synonymy, LYDEKKER, P. Zool. Soc. London, 1897, p. 36; *bedfordianus*, Lyd. = *xanthopygus*, M.-Edws., t. c. p. 815; † *cazioti*, n. sp., DEPÉRET, C.R. Ac. Paris, cxxiv, p. 1474, Pleistocene, Corsica; *thoroldi*, Blanf., 1893 = *albirostris*, Prz., 1884, POUSARGUES, Bull. Mus. Paris, 1897, p. 284; *elaphus*, fossil remains, HUGHES, Geol. Mag. (4) v, p. 119; † *giganteus*, in Isle of Man, KERMODE, t. c. p. 116. Numerous nominal species of *Hippelaphus* and *Sika* named by HEUDE (119A); also a discussion on antlers (120).
- Dorcetaphus crooki*, p. 468, New Mexico, *hemionus eremicus*, p. 470, Sonora, Mexico, MEARNs, P. U. S. Mus. xx; *couesi*, ALLEN, Bull. Amer. Mus. vii, p. 200 (1895), for *Cervus mexicanus*, Baird, nec Gmelin; *hemionus peninsulæ*, LYDEKKER, P. Zool. Soc. London, 1897, p. 900: n. spp. & subsp.
- † *Palæomeryx pygmæus*, Myr., from Bohemia; HOFMANN, SB. Bohmisch. Ges. 1897, Art. 50, p. 1.
- Cervulus pleiharicus*, n. sp., KOHLBRUGGE, Natuurk. Tijdschr. Nederl. Ind. (2) iv, p. 192 (1895), Borneo.
- Capreolus vulgaris*, morphology; RÖRIG, Zool. Garten, xxxviii, p. 369.

CAMELIDÆ and TRAGULIDÆ.

- † *Camelus alutensis*, n. sp., STEFĂNESCU, An. Mus. Bucuresti, 1894, p. 116 (1895), Pleistocene, Aluta River, Romania; wild Camels, LANGKAVEL, Zool. Garten, xxxviii, p. 244.
Tragululus annæ, n. sp., MATSCHIE, SB. Ges. naturf. Berlin, 1897, p. 157, no locality.

†COTYLOPIDÆ, †PROTOCERATIDÆ, and †ANTHRACOTHERIIDÆ.

- Oreodon culbertsoni*, restoration; STEWART, Kansas quart. vi, p. 13.
 Characters of *Protoceratidæ*; MARSH, Amer. J. Sci. (4) iv, p. 165.
Anthracotherium, dentition; FLORES, Boll. Soc. geol. Ital. xvi, p. 92.

SUIDÆ, DICOTYLIDÆ, and HIPPOPOTAMIDÆ.

- Sus verrucosus mindanensis*, p. 524, Philippines, *v. amboinensis*, p. 528, Amboina, *v. borneensis*, p. 534, Borneo, *v. balabacensis*, p. 524, Balabac, n. subspp., MAJOR, Ann. Nat. Hist. (6) xix. The affinities of *S. verrucosus*, *vittatus*, and *cristatus* are also discussed, the two latter being regarded as probably identical, and the former as allied to the extinct *giganteus*. †*S. algeriensis*, p. 10, †*barbarus*, p. 12, n. spp., POMEL, Carte Géol. Algérie, Pal. Mon., Les Suilliens, Pleistocene, Algeria. Various Oriental species named by HEUDE (120).
Potamochoerus, the species described by MAJOR, P. Zool. Soc. London, 1897, p. 359; *P. johnstoni*, p. 367, from E. Africa, *P. chæropotamus nyasæ*, from Nyasaland, and *P. c. daemonis*, from Kilima-njaro, being new.
 †*Phacochoerus mauritanicus*, p. 33, †*barbarus*, p. 35, n. spp., POMEL, Carte Géol. Algérie, Pal. Mon., Les Suilliens, Pleistocene, Algeria.
Tayassu, Fischer, 1814, antedates *Dicotyles*, Cuvier, 1817; PALMER, P. Soc. Washington, xi, p. 174.
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EQUIDÆ, TAPIRIDÆ, and RHINOCEROTIDÆ.

- Equus*, POCOCK, Ann. Nat. Hist. (6) xx, p. 33, monographs the *Hippotigris* group, describing two new subspp., viz. p. 44, *G. burchelli wahlbergi*, Zululand, and, p. 45, *E. b. selousi*, Mashonaland. *E. caballus*, hereditary colour in, GALTON, Nature, lvi, p. 598; extensor digitorum of, LANZILLOTTI-BUONSANTI, Monit. Zool. ital. viii, p. 120; Asiatic wild asses, LANGKAVEL, Zool. Jahrb. Syst. x, p. 33.
 Dentition of living and extinct *Tapiridæ*; GAUDRY, Bull. Soc. geol. France (3) xxv, pp. 315 & 567.
 †*Rhinoceros etruscus*, note on, D'OSSAT, Atti Acc. Gioen. (4) ix, Art. 2; osteology and dentition of this and other Italian Tertiary species, SIMONELLI, Mem. Pal. Ital. iii, p. 89.
 †*Diceratherium proavium*, described, with fig. of skull; HATCHER, Amer. Geol. xx, p. 313.
 †*Prohyracodon*, n. g., for *P. orientalis*, n. sp., KOCH, Termes. Fuzetek, xx, p. 482, Tertiary, Hungary.

HYRACOIDEA, †TOXODONTIA, †LITOPTERNA, &c.

- Development of teeth in *Hyracoides*; FLEISCHMANN, Abh. Ges. Nürnberg, x, p. 49.
- Morphology and taxonomy of Toxodonts; COPE, Amer. Natural. xxxi, p. 366.
- † *Archæophylus*, n. g., for *A. patrius*, n. sp., AMEGHINO, Boll. Inst. Geogr. Argent. xviii, p. 20, fossil, Patagonia.
- † *Prohegetotherium*, n. g., for *P. sculptum*, n. sp., AMEGHINO, t. c. p. 21, *ibid.*
- † *Propachyrucos*, n. g., for *P. smith-woodwardi*, n. sp., p. 22, *P. crassus*, n. sp., p. 23, AMEGHINO, t. c. *ibid.*
- † *Prosotherium*, n. g., for *P. garzoni*, n. sp., p. 23, *P. triangulidens*, *P. robustum*, n. spp., p. 24, AMEGHINO, t. c. *ibid.*
- † *Eutrachytherus*, n. nom. for *Trachytherus*, Ameg., 1889, nec *Trachytherium*, Gervais, AMEGHINO, t. c. p. 24, *ibid.*
- † *Archæohyrax*, n. g., for *A. patagonicus*, n. sp., pp. 27 & 29, *A. propheticus*, n. sp., p. 31, AMEGHINO, t. c. *ibid.*
- † *Argyrohyrax*, n. g., for *A. proavus*, n. sp., pp. 31 & 32, *A. proavunculus*, n. sp., p. 32, AMEGHINO, t. c. *ibid.*
- † *Didolodus*, n. g., for *D. multicuspis*, n. sp., AMEGHINO, t. c. p. 33, *ibid.*
- † *Lambdaconus*, n. g., for *L. suinus*, n. sp., AMEGHINO, t. c. p. 35, *ibid.*
- † *Properitychus*, n. g., for *Peritychus argentinus*, Amegh., 1893, AMEGHINO, t. c. p. 35, *ibid.*
- † *Pyrotherium giganteum*, n. sp., AMEGHINO, t. c. p. 43, *ibid.*
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- † *Protheosodon*, n. g., for *P. coniferus*, n. sp., AMEGHINO, t. c. p. 49, *ibid.*
- † *Acælodus*, n. g., for *A. oppositus*, n. sp., AMEGHINO, t. c. p. 50, *ibid.*
- † *Tricælodus*, n. g., for *T. bicuspidatus*, n. sp., AMEGHINO, t. c. p. 50, *ibid.*
- † *Proadanthus*, n. g., for *P. excavatus*, n. sp., AMEGHINO, t. c. p. 51, *ibid.*
- † *Morphippus*, n. g., for *M. imbricatus*, n. sp., pp. 55 & 56, *M. complicatus*, *M. hypselodus*, p. 57, n. spp., AMEGHINO, t. c. *ibid.*
- † *Rhynchippus*, n. g., for *R. equinus*, n. sp., pp. 58 & 59, *R. pumilus*, n. sp., p. 60, AMEGHINO, t. c. *ibid.*
- † *Eurygeniops normalis*, n. sp., p. 62, AMEGHINO, t. c. *ibid.*
- † *Proadinothierium angustidens*, n. sp., AMEGHINO, t. c. p. 63, *ibid.*
- † *Leontinia oxyrhyncha*, p. 68, *stenognatha*, *fissicolis*, p. 70, n. spp., AMEGHINO, t. c. *ibid.*
- † *Isotemnus*, n. g., for *I. primitivus*, n. sp., AMEGHINO, t. c. pp. 76 & 77, *ibid.*
- † *Trimerostephanos scalaris*, p. 79, *angustus*, *biconus*, p. 80, n. spp., AMEGHINO, t. c. *ibid.*
- † *Pleurostylodon*, n. g., for *P. modicus*, n. sp., p. 81, *minimus*, n. sp., p. 82, AMEGHINO, t. c. *ibid.*
- † *Prostylops*, n. g., for *P. typus*, n. sp., AMEGHINO, t. c. p. 82, *ibid.*
- † *Notostylops*, n. g., for *N. murinus*, n. sp., p. 85, *bicinctus*, *parvus*, n. spp., p. 86, AMEGHINO, t. c. *ibid.*
- † *Anastylops*, n. g., for *A. vallatus*, n. sp., AMEGHINO, t. c. p. 86, *ibid.*
- † *Parastylops*, n. g., for *P. cælodus*, n. sp., AMEGHINO, t. c. p. 87, *ibid.*
- † *Trigonostylops*, n. g., for *T. wortmani*, n. sp., AMEGHINO, t. c. p. 88, *ibid.*

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- Puerco forms; MATTHEW, Bull. Amer. Mus. ix, p. 259.
- Protogonodon stenognathus*, n. sp., MATTHEW, t. c. p. 302, Puerco Beds.
- Euprotogonia minor*, n. sp., MATTHEW, t. c. p. 310, *ibid.*
- Miocænus lemuroides*, n. sp., MATTHEW, t. c. p. 314, *ibid.*
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- BLANC, Bull. Soc. zool. France, xxii, p. 47, discusses the origin of the Elephants tamed by the Carthaginians, suggesting that they may have belonged to an extinct species.
- Climate and home of Mammoth; KOKEN, Jahresh. Ver. Wurttemb. 1897, p. ix.
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- † *Mastodon angustidens*, in N. Africa; DEPÉRET, Bull. Soc. geol. France (3) xxv, p. 518.
- † *Dinotherium gigantissimum*, n. sp., STEFĂNESCU, An. Mus. Bucuresci, 1894, p. 198 (1895), Tertiary, Romania.

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- Anatomy of *Cetacea*; BEAUREGARD & BOULART, Arch. Mus. Paris (3) ix, p. 95. Italian species; PARONA, Atti Soc. Ital. xxxvi, p. 297. Species observed during cruise of "Princesse Alice"; NEUVILLE, Mem. Soc. zool. France, x, p. 100. Capture during 1896; SOUTHWELL, Zoologist (4) i, p. 56. Norwegian species; GRIEG, Bergens Mus. Aarbog, 1897, Art. 6.
- Balænoptera musculus*, structure of manus and pelvis; CAMERANO, Atti Acc. Torino, xxxii, p. 1.
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- † *Tursiops capellinii*, description; PRATO, Mem. Pal. Ital. iii, p. 1.

VIII. EDENTATA and EFFODIENTIA.

- Descent from Eocene *Ganodontia* (*Stylinodontia*); WORTMAN, Bull. Amer. Mus. ix, p. 59; MARSH, Amer. J. Sci. (4) iii, p. 137. Veins; HOCHSTETTER, Morphol. Jahrb. xxv, p. 362.
- Myrmecophaga jubata*, young figured; SCLATER, P. Zool. Soc. London, 1897, p. 2.
- † *Megalonyx jeffersoni*, discovery of skeleton in Kentucky; MERCER, P. Amer. Phil. Soc. xxxvi, p. 36.
- † *Octodontotherium crassidens*, n. sp., AMEGHINO, Boll. Inst. Geogr. Argent. xviii, p. 101, fossil, Patagonia.
- † *Hapalops antistis*, n. sp., AMEGHINO, l. c. *ibid.*
- Tatu*, Blumenbach, 1803, antedates *Tatusie*, Cuvier, 1822; PALMER, P. Soc. Washington, xi, pp. 173 & 174.
- † *Proeutatus lageniformis*, p. 103, *setiger*, *lævis*, p. 104, n. spp., AMEGHINO, Boll. Inst. Geogr. Argent. xviii, fossil, Patagonia.
- † *Prodasyypus ornatus*, n. sp., AMEGHINO, t. c. p. 104, *ibid.*
- † *Proædius impressus*, p. 104, *planus*, p. 105, n. spp., AMEGHINO, t. c. *ibid.*
- † *Glyptatelus*, n. g., for *G. tatusinus*, n. sp.; AMEGHINO, t. c. p. 103, *ibid.*
- † *Peltephilus protervus*, *undulatus*, p. 105, *depressus*, p. 106, n. spp., AMEGHINO, t. c. *ibid.*

- Dasypus*, nasal floor-bone; BROOM, J. Anat. Physiol. norm. path. xxxi, p. 280.
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IX. MARSUPIALIA.

- WILSON & HILL, Quart. J. Micr. Soc. (2) xxxix, p. 427, from the study of *Perameles*, conclude that the so-called prelacteal dentition is really the milk series, and consequently that the anterior permanent series corresponds to that of other Mammals. They further suggest that Marsupials were originally placental, and that the pouch is a secondary feature. Hence the group is in no way ancestral to the *Eutheria*. Popular accounts of Australian Marsupials and Monotremes, KENT (185). Distinct coracoid in foetal Marsupial; BROOM, J. Anat. Physiol. norm. path. xxxi, p. 513. Notes on various species; BROOM, Tr. Soc. Glasgow (2) iv, p. 351. N. Australian species; COLLETT, P. Zool. Soc. London, 1897, p. 317. Development of enamel; TOMES, P. R. Soc. London, lxii, p. 28. Organ of Jacobson; BROOM, P. Linn. Soc. N. S. Wales, 1896, p. 591. Foot skeleton; EMERY, Denk. Ges. Jena, vi, Semon's Reise, ii, pt. v, p. 371. Placentation of *Perameles*; HILL, Quart. J. Micr. Sci. (2) xl, p. 385. Digestive system; OPPEL, Denk. Ges. Jena, v, Semon's Reise, ii, pt. v, p. 403. Brain; SMITH, Tr. Linn. Soc. London (2) vii, p. 47. Nervous system; ZIEHEN, Denk. Ges. Jena, vi, Semon's Reise, iii, pt. i.
- Macropus rufus*, anatomy; WINDLE, J. Anat. Physiol. norm. path. xxxii, p. 119.
- †*Palorchestes*, tooth; HALL & PRITCHARD, P. R. Soc. Victoria (2) x, p. 57.
- Dorcopsis hageni*, n. sp., HELLER, Abh. Mus. Dresden, vi, No. 8, p. 7, New Guinea.
- Pseudochirus corinnae*, pp. 142 & 619, pl. ii, *albertisi coronatus*, p. 144, *cupreus*, p. 145 : n. spp. and subsp., THOMAS, Ann. Mus. Genova (2) xviii, British New Guinea. *P. dahli*, figured; COLLETT, P. Zool. Soc. London, 1897, pl. xxiii.
- Sminthopsis nitela*, n. sp., COLLETT, t. c. p. 334, N. Australia.
- Peragale minor*, n. sp., SPENCER, P. R. Soc. Victoria (2) ix, p. 6, Central Australia.
- Perameles eremiana*, n. sp., SPENCER, t. c. p. 9, *ibid.*
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- Notoryctes*, histology of teeth; TOMES, P. Zool. Soc. London, 1897, p. 409.
- Didelphys cancrivora*, ovary; DEVEZ, Bull. Mus. Paris, 1897, p. 205.
- Marmosa oaxaca*, p. 43, *murina mexicana*, p. 44, n. sp. and subsp., MERRIAM, P. Soc. Washington, xi, Mexico.
- Thylamys carri*, n. sp., ALLEN & CHAPMAN, Bull. Amer. Mus. ix, p. 27, Trinidad.
- Peramys adustus*, n. sp., THOMAS, Ann. Nat. Hist. (6) xx, p. 219, West Cundinamarca.

INCERTÆ SEDIS.

The following may belong to *Marsupialia*.

- †*Polydolops*, n. g., for *P. thomasi*, n. sp., AMEGHINO, Boll. Inst. Geogr. Argent. xviii, p. 93, fossil, Patagonia.
- †*Eudolops*, n. g., for *E. tetragonus*, n. sp., AMEGHINO, t. c. p. 94, *ibid.*
- †*Epanorthus*, n. g., for *E. chubutensis*, n. sp., AMEGHINO, t. c. p. 96, *ibid.*

†*Proborhyaena*, n. g., for *P. gigantea*, n. sp., AMEGHINO, *t. c.* p. 97, *ibid.*

†*Pharsophorus*, n. g., for *P. lacerans*, n. sp., pp. 98 & 99, *P. tenax*, *mitis*, *tenuis*, n. spp., p. 100, AMEGHINO, *t. c. ibid.*

X. MONOTREMATA.

Relation to reptiles; BAUR & CASE, *Anat. Anz.* xiii, p. 109. Digestive system; OPPEL, *Denk. Ges. Jena*, v, Semon's *Reise*, ii, pt. v, p. 403. Nervous system; ZIEHEN, *Denk. Ges. Jena*, vi, Semon's *Reise*, iii, pt. i. Auditory ossicles and hyoid; RUGE, *Morph. Jahrb.* xxv, p. 202. *Ornithorhynchus*, supposed nasal valve; BROOM, *Tr. Soc. Glasgow* (2) iv, p. 317. Range; WAITE, *Mem. Australian Mus.* iii, p. 165. Brain of foetus; SMITH, *Quart. J. Micr. Sci.* (2) xxxix, p. 181. *Echidna aculeata*, habits; BROOM, *Tr. Soc. Glasgow* (2) iv, p. 317.

III. AVES.

BY

R. BOWDLER SHARPE, LL.D., &C.

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INTRODUCTION.

SOME remarkable novelties have been discovered by Mr Everett and Mr Doherty in the Malay Archipelago, but otherwise there has been nothing of an extraordinary interest to mark the year 1897, which has rather been one of uniformly steady progress in every branch of ornithology. The discovery of the nesting-place of Ross's gull by Dr Nansen will also make the year 1897 noteworthy.

Special attention is now being given to the study of migration, both in Europe and America, and I must apologise to Mr Eagle Clarke for having overlooked his "Digest" in THE RECORD for last year. It is one of the most important papers ever published on the subject of migration.

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3. ——. Über *pomarinus* als Artname. J. Ornith. 1897, pp. 170 & 171. [*Accipitriiformes*.]
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5. ALMÁSY, G. v. Einige Schlussworte zu meinem Millenniumsberichte. Ornith. Jahrb. viii, pp. 103-108.
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7. ANCHIETA, J. D'. Obituary. J. Sci. Lisb. (2) No. xviii, pp. 126-132.
8. *ANDERSON, —. An annotated list of the birds of Winnebago and Hancock counties, Iowa. Forest City, Iowa: 1897, 16mo, ii & 19 pp.
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10. ——. On a complete skeleton of *Megalapteryx tenuipes*, Lydekker, in the Tring Museum. Nov. Zool. iv, pp. 188-194, pl. vi. [*Dinornithiformes*.]
11. ANTHONY, A. W. New birds from the islands and peninsula of Lower California. Auk, xiv, pp. 164-168. [*Fringillidæ*, *Troglodytidæ*, *Mimidæ*.]
12. ——. The nostrils of young Cormorants. T. c. p. 205. [*Pelecaniformes*.]

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15. ARMITT, M. L. [MISS]. Walls and wall-nesters. *Naturalist*, 1897, pp. 243–252.
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17. ———. Le recenti comparse del *Puffinus kuhli* (Boie) nel Veneziano. *T. c.* pp. 211–213. [*Procellariiformes*.]
18. ———. La nidificazione del *Milvus migrans*, Boddaert, nel territorio Veronese. *Atti Ist. Veneto*, lvi, pp. 93–106. [*Accipitriformes*.]
19. ———. Nota sopra un *Gennaia feldeggi* (Schlegel) colto in Calabria. *Avicula*, i, pp. 157–159. [*Accipitriformes*.]
20. ASTLEY, H. D. Notes on the nesting of the Storm Petrel. *Avicult. Mag.* iii, pp. 41–45. [*Procellariiformes*.]
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Order LARIFORMES.

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- T. bairdi*, in Indiana; BUTLER, t. c. p. 199.
- T. minutilla*, figured; LILFORD, Col. Fig. Brit. B., pt. xxxv.
- T. canutus*, in Indiana; BUTLER, Auk, xiv, p. 199: its food; FEILDEN, Zoologist, 1897, pp. 232 & 233.
- T. subarquata*, egg figured; NEWTON, P. Zool. Soc. London, 1897, pl. li, figg. 1-4: in East Renfrewshire; PATERSON & ROBERTSON, Ann. Scott. Nat. Hist. 1897, pp. 124 & 125.
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- Gallinago*, notes on species; DEICHLER, J. Ornith. 1897, pp. 142-154. *G. dubia*, n. sp., Japan; *id. t. c.* pp. 150-152.
- G. major*, near St Andrews; COOK, Ann. Scott. Nat. Hist. 1897, p. 45: in the Solway district; SERVICE, t. c. p. 124.
- Phalaropus fulicarius*, in the Solway district; SERVICE, t. c. p. 125.

Sub-order OTIDES.

Otis tarda, an unrecorded Norfolk specimen; SOUTHWELL, Zoologist, 1897, p. 572.

Order GRUIFORMES.

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A monograph of the Cranes by F. E. BLAAUW, Leiden and London: 1897, folio, viii & 67 pp., xviii pls. The following species are figured:—*Grus communis*, pl. i; egg, pl. xvii, fig. 1; *G. nigricollis*, pl. ii; *G. japonensis*, pl. iii; egg, pl. xvii, fig. 2; *G. monachus*, pl. iv; *G. americana*, pl. v; egg, pl. xvii, fig. 3; *G. canadensis*, pl. vi; egg, pl. xvii, fig. 4; *G. collaris*, pls. vii & vii a; *G. antigone*, pl. viii; egg, pl. xvii, fig. 5; *G. australasiana*, pl. ix; egg, pl. xviii, fig. 6. *Anthropoides virgo*, pls. x & x a; egg, pl. xviii, fig. 1; *A. paradisea*, pls. xi & xi a; egg, pl. xviii, fig. 2; *A. carunculata*, pl. xii; egg, pl. xviii, fig. 3; *A. leucauchen*, pl. xiii; egg, pl. xviii, fig. 4; *A. leucogeranus*, pl. xiv; egg, pl. xviii, fig. 5. *Balearica pavonina*, pls. xv & xv a; *B. regulorum*, pl. xvi; egg, pl. xviii, fig. 2.

Sub-order DICHOLOPHI.

Cariama cristata, breeding in the Zoological Gardens; SCLATER, P. Zool. Soc. London, 1897, pp. 813 & 814.

Order STEREORNITHIFORMES.

Staphylornis, n. g. [fossil], type *S. gallardoii*, n. sp. (? Miocene), Patagonia; MERCERAT, An. Soc. Argent. xliii, pp. 233–235. *S. erithacus*, n. sp. (? Miocene), Patagonia; *id. t. c.* p. 235.

Order ARDEIFORMES.

Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 469.

Corvus eremita, Linn. = *Comatibis comata* (Rüppell); ROTHSCHILD, HARTERT, & KLEINSCHMIDT, Nov. Zool. iv, pp. 371–375: figured; *id. t. c.* pls. viii–x.

Lampribis rara, nomen emend. pro *L. olivacea*, auct. (*nec* Du Bus); *id. t. c.* p. 377.

Plegadis falcinellus, near Eberswalde; ALTUM, Ornith. Monber. v, pp. 19 & 20.

Ardea purpurea, notes on the breeding habits; WHITLOCK, Zoologist, 1897, pp. 407–409.

Nycticorax nycticorax, in Barra; PEEL, Ann. Scott. Nat. Hist. 1897, p. 43.

Ardea virescens, figured; LILFORD, Col. Fig. Brit. B., pt. xxxv.

Ardetta neoxena, remarks on; ROTHSCHILD, Bull. Ornith. Club, vi, p. liii.

Ardea ralloides, in Orkney; BRIGGS, Ann. Scott. Nat. Hist. 1897, p. 158.

Order ANSERIFORMES.

Sub-order PHENICOPTERI.

Phenicopterus roseus and *P. minor*, notes on; STUART BAKER, J. Bombay Soc. xi, pp. 2–8.

Sub-order ANSERES.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, pp. 466 & 467, fig. 1.
- Experimental infection of Ducks; ROSSETER, J. Quекett Club (2) vi, No. 41, pp. 397-405, pl. xviii.
- A list of the species of *Anseres* occurring in the State of Louisiana; MCILHENNY, Auk, xiv, pp. 285-287.
- Notes on certain species of New Zealand Ducks; SMITH, Tr. N. Zealand Inst. xxix, pp. 252-256.
- Cygnus olor*, figured; LILFORD, Col. Fig. Brit. B., pt. xxxv. *C. musicus*, in Nepal (not *C. bewicki*); BLANFORD, J. Bombay Soc. xi, p. 306. *C. olor* and *C. minor*, heads figured; STUART BAKER, t. c. pl. i. *C. musicus*, *C. bewicki*, and *C. olor*, notes on; *id. t. c.* pp. 11-21. *C. atratus*, incubation by the male; MILNE-EDWARDS, Bull. Mus. Paris, 1897, pp. 165 & 166.
- Anser neglectus*, notes on; SUSHKIN, Ibis, 1897, pp. 5-8, pl. ii. *A. albifrons*, figured; STUART BAKER, J. Bombay Soc. xi, pl. ii. *A. segetum*, pictures on the tombs of Egypt; BARRETT-HAMILTON, Ibis, 1897, pp. 484-486.
- Chenalopex sirabensis*, n. sp. [fossil], Central Madagascar; ANDREWS, t. c. p. 355, pl. ix, figg. 1-3.
- Bernicla brenta*, in the Clyde area; PATERSON, Ann. Scott. Nat. Hist. 1897, pp. 252-254.
- Branta bernicla glaucogastra*, notes on; COUES, Auk, xiv, pp. 207 & 208. *B. canadensis occidentalis*, nesting in Okanogan Co., Washington; DAWSON, t. c. pp. 87 & 88.
- Centronis*, n. g. [fossil], type *C. majori*, n. sp., Central Madagascar; ANDREWS, Ibis, 1897, pp. 343-355, pl. viii.
- Nettapus coromandelianus*, notes on; STUART BAKER, J. Bombay Soc. xi, pp. 191-198.
- Thalassornis insularis*, n. sp., Madagascar; RICHMOND, P. U. S. Mus. xix, p. 678.
- Sarcidiornis melanonota*, notes on the nesting habits; STUART BAKER, J. Bombay Soc. xi, pp. 172-180.
- Rhodonessa caryophyllacea*, notes on; STUART BAKER, t. c. pp. 185-191.
- Anas boscas*, var.; ARRIGONI, Atti Soc. Ital. xxxvii, pp. 208-210. *A. chlorotis*, figured; BULLER, Tr. N. Zealand Inst. xxix, pl. xi. *A. sponsa*, near Vienna; LORENZ, Ornith. Jahrb. viii, pp. 149 & 150. *A. carolinensis*, *A. discors*, figured; LILFORD, Col. Fig. Brit. B., pt. xxxv.
- Dafilula*, n. subg., type *D. eatoni*; COUES, Auk, xiv, p. 207.
- Dendrocygna eytoni*, nest and eggs described; NORTH, P. Linn. Soc. N. S. Wales, xxii, pp. 60 & 61.
- Asarcornis scutulata*, notes on; STUART BAKER, J. Bombay Soc. xi, pp. 181-185.
- Salvadorina waiguiensis*, male, female, young, and eggs described; DE VIS, Ibis, 1897, pp. 391 & 392.
- Fuligula cristata*, in the upper reaches of the valley of the Ayr; FAIRBAIRN, Ann. Scott. Nat. Hist. 1897, p. 152: in Solway; SERVICE, t. c. pp. 222-224.
- Somateria dresseri*, notes on the plumage; NORTON, Auk, xiv, pp. 303 & 304.

Order PELECANIFORMES.

- Rectrices of Cormorants; COUES, Auk, xiv, p. 316.
- The nostrils in young Cormorants; LUCAS, t. c. p. 87; ANTHONY, t. c. p. 205.

- Plotus melanogaster*, notes on; head and feet figured; MADARASZ, Termes. Fuzetek, xx, pp. 391 & 392, Tab. ix, figg. a-d. *P. nanus* [fossil] humerus figured; ANDREWS, Ibis, 1897, pl. ix, fig. 8.
- Fregata*, skull figured; BEDDARD, P. Zool. Soc. London, 1897, p. 293, fig. 4.
- F. aquila*, in Indiana; BUTLER, Auk, xiv, p. 200.
- Dysporus serrator*, note on the nesting habits; BULLER, Tr. N. Zealand Inst. xxix, pp. 198-200.
- Phaethon*, notes upon the anatomy; BEDDARD, P. Zool. Soc. London, 1897, pp. 288-294, figg. 1-3. *P. flavo-aurantius*, from Christmas Island, *P. americanus*, n. sp., Bermudas, OGILVIE-GRANT, Bull. Ornith. Club, vii, p. xxiv.

Order ACCIPITRIFORMES.

- See SALVIN, O. & GODMAN, F. D. (459).
- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 470.
- Circus pygargus*, breeding in Ireland; TEESDALE, Irish Natural. vi, p. 284 [is *C. cyaneus*]: *C. cineraceus*, nesting in Kent; HAMMOND, Zoologist, 1897, p. 363. *C. pallidus*, breeding near Brunswick; BLASIUS, J. Ornith. 1897, p. 510. *C. macrurus*, in Upper Silesia, Kollibay, Ornith. Monber. v, p. 180. *C. sp. incog.*, British New Guinea; DE VIS, Ibis, 1897, pp. 373 & 374.
- Melierax poliopterus somaliensis*, n. subsp., West Somaliland; NEUMANN, Ornith. Monber. v, p. 192. [= *M. poliopterus*.]
- Micrastur ruficollis*, young male described; SALVADORI, Boll. Mus. Torino, xii, No. 292, p. 29.
- Astur maculosus*, n. sp., Victoria; COLES, Victorian Natural. xiv, pp. 43 & 44.
- Accipiter nisus punicus*, n. subsp., Tunis; ERLANGER, Ornith. Monber. v, p. 187. *A. erythrauchen*, young male described; DE VIS, Ibis, 1897, pp. 372 & 373. *A. atricapillus*, breeding in Pennsylvania; STONE, Auk, xiv, pp. 317 & 318.
- Buteo ferox*, in Lower Austria; REICHENOW, Ornith. Monber. v, p. 128.
- B. borealis harlani*, in Indiana; BUTLER, Auk, xiv, p. 200.
- Aquila pomarana*, nom. emend. pro *A. pomarina*, Brehm; ALBARDA, J. Ornith. 1897, p. 171.
- Spizaetus ceylonensis*, notes on; MADARASZ, Termes. Fuzetek, xx, pp. 323 & 324, fig. 1.
- Circiaetus gallicus*, life habits; CZYNK, Aquila, iv, pp. 254-259.
- Spilornis melanotis*, head figured; MADARASZ, Termes. Fuzetek, xx, Tab. vii, fig. 2.
- Pithecophaga jefferyi*, figured; OGILVIE-GRANT, Ibis, 1897, pl. v, and with figg. 1-4 in text.
- Haliaeetus leucocephalus alascanus*, n. subsp., Alaska; TOWNSEND, P. Soc. Washington, xi, pp. 145 & 146. *H. albicilla*, in Wiltshire; MORRIES, Natural. J. vi, No. 59, p. 73.
- Milvus korschun desertorum*, n. subsp., Tunis; ERLANGER, Ornith. Monber. v, p. 192. *M. migrans*, nesting; ARRIGONI, Atti Inst. Veneto, lvi, pp. 93-106.
- Elanus leucurus*, nesting; BARLOW, Auk, xiv, pp. 14-21.
- Microhierax meridionalis*, n. sp., Mindanao; OGILVIE-GRANT, Ibis, 1897, pp. 220-222.
- Falco gyrfalco* and its allies, notes on; KLEINSCHMIDT, J. Ornith. 1897, pp. 514-517. *F. saker*, in Italy; MARTORELLI, Avicula, i, pp. 33 & 34; Atti Soc. Ital. xxxvi, pp. 199-202. *F. communis*, male incubating; STEWART, Ann. Scott. Nat. Hist. 1897, p. 43. *F. aesalon*, nesting in a tree in Midlothian; GODFREY, t. c. pp. 251 & 252. *F. feldeggi*, in Italy; ARRIGONI, Avicula, i, pp. 157-159: figured; CSÖRGEY, Aquila, iv, taf. i.

- Cerchneis fieldi*, n. sp., Somaliland; ELLIOT, Field Columb. Mus., Ornith. i, No. 2, p. 58.
Tinnunculus tinnunculus, plumage of the female; APLIN, Natural. J. vi, No. 56, pp. 35 & 36, cum fig.
Pandion haliaëtus, in Inverness-shire; BUCKLEY, Ann. Scott. Nat. Hist. 1897, p. 43.
Polioaëtus ichthyaëtus, notes on; head figured; MADARASZ, Termes. Fuzetek, xx, pp. 327 & 328, Tab. vii, fig. 1.

Order STRIGIFORMES.

- Owls and their longevity; GRABHAM, Naturalist, 1897, pp. 129-132.
 See SALVIN, O. & GODMAN, F. D. (459).
Bubo ascalaphus barbarus, *B. ascalaphus desertorum*, n. subsp., Tunis; ERLANGER, Ornith. Monber. v, p. 192. *B. bubo*, in the Sudeten Mountains; RZEHAŁ, t. c. pp. 43 & 44. *B. virginianus pallescens*, n. subsp., Texas; STONE, Amer. Natural. xxxi, p. 236.
Scops ingens, n. sp., Ecuador; SALVIN, Bull. Ornith. Club, vi, p. xxxvii.
S. sanctæ-catarinæ, n. sp., Santa Catarina, Brazil; *id. t. c.* pp. xxxvii & xxxviii. *S. roraimæ*, n. sp., Roraima, British Guiana; *id. t. c.* p. xxxviii. *S. trichopsis*, figured; SALVIN & GODMAN, Biol. Centr. Amer. *Aves*, iii, pt. cxxxviii, pl. 62.
Pisorhina alfredi, n. sp., South Flores; HARTERT, Nov. Zool. iv, pp. 527 & 528.
Megascops asio; CHADBOURNE, Auk, xiv, pp. 33-39, pl. i.
M. marmoratus, n. sp., Mexico; NELSON, Auk, xiv, p. 49.
Ninox everetti, n. sp., Siassi I., Sulu Archipelago; SHARPE, Bull. Ornith. Club, vi, p. xlvii.
Athene noctua, in Yorkshire; BACKHOUSE, Naturalist, 1897, p. 76.
Glaucidium cuculoides and *G. brodiei*, nesting; STUART BAKER, J. Bombay Soc. xi, pp. 227-232.
Nyctea scandiaca, in Sutherland; BUCKLEY, Ann. Scott. Nat. Hist. 1897, p. 43. *N. nivea*, fossil, in Italy; REGALIA, Avicula, i, pp. 30 & 31.
Syrnium nigricantius, n. sp., Mpapwa, Central East Africa; SHARPE, Bull. Ornith. Club, vi, p. xlvii. *S. fulvescens*, figured; SALVIN & GODMAN, Biol. Centr. Amer. *Aves*, iii, pt. cxxxviii, pl. 61. *S. uralense*, notes on; CZYŃK, Aquila, iv, pp. 150-155.
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Order CORACIIFORMES.

Sub-order PODARGI.

- HARTERT, Das Tierreich, Liefer. i, pp. 1-13.
Podargus phalaenoides, eggs described; LE SOUËF, Ibis, 1897, p. 393.
Batrachostomus hodgsoni, nest and eggs; STUART BAKER, J. Bombay Soc. x, pp. 553-555.

Sub-order CORACIÆ.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 471.

Sub-order MEROPES.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 471.

- Merops apiaster*, in Caithness; DUNBAR, Ann. Scott. Nat. Hist. 1897, p. 250.
Melittophagus quincolor, notes; STUART BAKER, J. Bombay Soc. x, pp. 560-563.
Nyctiornis athertoni, nesting habits; STUART BAKER, *t. c.* pp. 558-560.

Sub-order HALCYONES.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 471.
Alcedo grandis, figured; STUART BAKER, J. Bombay Soc. x, pl. g.
Ceryle rudis, notes on; STUART BAKER, *t. c.* pp. 540-542.
Pelargopsis sasak, n. subsp., Lombok; VORDERMAN, Natuurk. Tijdschr. Nederl. Ind. liv, pp. 334 & 335.
Halcyon quadricolor, from German New Guinea; BERLEPSCH, J. Ornith. 1897, p. 90.
Cyanalcyon elizabeth, from German New Guinea; BERLEPSCH, *t. c.* p. 90.
Monachalcyon monachus intermedius, n. subsp., West Celebes, HARTERT, Nov. Zool. iv, pp. 163 & 164. *M. capucinus*, note on the female; *id.* *t. c.* p. 160.
Dacelo cervina, eggs described; LE SOUËF, Ibis, 1897, pp. 392 & 393.

Sub-order BUCEROTES.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 472, fig. 4.
Bucorax guineensis and *B. abyssinicus*, casques figured; REICHENOW, J. Ornith. 1897, p. 19.
Rhytidoceros everetti, n. sp., Sumba; ROTHSCHILD, J. Ornith. 1897, p. 513.
Ocyrceros gingalensis, head figured; MADARASZ, Termes. Fuzetek, xx, Tab. viii, fig. 1.
Dichoceros bicornis, in captivity; PHIPSON, J. Bombay Soc. xi, pp. 307 & 308, pls. A & B (photographic): in the wild state; BINGHAM, *t. c.* pp. 308-310.
Anorrhinus austeni, notes on; STUART BAKER, J. Bombay Soc. x, pp. 564 & 565.
Tockus melanoleucus, nesting habits; SCHÖNLAND, Tr. S. African Soc. x, pp. 1-7.

Sub-order UPUPÆ.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 471.
Upupa epops, notes on; SALVADORI, Ibis, 1897, p. 494.

Sub-order MOMOTI.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 471.
Momotus mexicanus saturatus, n. subsp., Mexico; NELSON, Auk, xiv, pp. 49 & 50.

Sub-order CAPRIMULGI.

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Antrostomus ridgwayi, n. sp., Mexico; NELSON, Auk, xiv, pp. 50 & 51.

Sub-order CYPSELI.

On the family name for the Swifts; REICHENOW, Ornith. Monber. v, pp. 9, 10, & 26-28; cf. Ibis, 1897, pp. 290 & 291.

"*Macropterygidae*" (vice "*Cypselidae*"); HARTERT, Das Tierreich, Liefer. i, pp. 62-81.

Apus (vice *Cypselus*); HARTERT, t. c. p. 83.

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Sub-order TROCHILI.

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Remarks on West Indian Humming-birds; SALVIN, Ibis, 1897, pp. 139 & 140.

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Glaucis hirsuta, notes on; HARTERT, Ibis, 1897, p. 423.

Panychlora = *Chlorostilbon*; HARTERT, Nov. Zool. iv, p. 150: notes on; id. t. c. pp. 150 & 151.

Thalurania chlorophana, n. sp., Bahia; SIMON, Cat. Trochilides, p. 20.

T. valenciana, Boucard = *T. columbica*; HARTERT, Nov. Zool. iv, p. 149.

T. boliviana, Boucard = *T. jelskii*, Tacz., id. t. c. p. 149.

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Polyerata reini, n. sp., W. Ecuador; BERLEPSCH, Ornith. Monber. v, pp. 58 & 59.

Phaëthornis mexicanus, n. sp., Chilpancingo, Mexico; HARTERT, Ibis, 1897, pp. 425 & 426. *P. baroni*, n. sp., W. Ecuador; id. t. c. pp. 426 & 427. *P. malaris*, remarks; HARTERT, Nov. Zool. iv, p. 529.

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pp. xxxix & xl.

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Eupetomena macrura prasina, n. subsp., Brazil; SIMON, t. c. p. 9.

- Delatiria pringlei*, n. sp., Mexico; NELSON, Auk, xiv, p. 51.
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S. underwoodi, n. sp., Costa Rica; SALVIN, Bull. Ornith. Club, vi, p. xxxviii.
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Sub-order COLII.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 471.

Order COCCYGES.

Sub-order MUSOPHAGA.

- Turacus donaldsoni*, figured; DONALDSON SMITH (503) pl. to p. 94.

Sub-order CUCULI.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 471.
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Cacomantis insperatus, parasitic on *Hermotimia corinna*; DAHL, Ornith. Monber. v, pp. 78 & 79.
Chrysococcyx cupreus, parasitic on *Motacilla capensis*; NICHOLSON, Zoologist, 1897, pp. 142 & 143.
Cercococcyx mechowi, figured; REICHENOW, J. Ornith. 1897, taf. i, fig. 1.
Centropus bengalensis, in Ceylon; BUTLER, J. Bombay Soc. xi, p. 162.
Rhopodytes viridirostris, head figured; MADARASZ, Termes. Fuzetek, xx, Tab. viii, fig. 2.

Order PSITTACIFORMES.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 470.
 Myology of the tongue of Parrots; MUDGE, t. c. p. 815.
Cacatua sulphurea djampeana, n. subsp., Djampea; HARTERT, Nov. Zool. iv, pp. 164 & 165.
Calyptorhynchus xanthonotus, nidification; MORTON, P. R. Soc. Tasmania, 1896, p. 100.

- Trichoglossus forsteni djampeanus*, n. subsp., Djampea; HARTERT, Nov. Zool. iv, p. 172. *T. ornatus*, figured; SIMPSON, Avicult. Mag. iii, pl. to p. 81.
- Eos fuscata*, variation; MARTORELLI, Ibis, 1897, pp. 60-63.
- Psittenteles weberi* and *P. euteles*, remarks on; ROTHSCHILD, Bull. Ornith. Club, iv, p. liv.
- Eclectus cornelia*, from Sumba I.; ROTHSCHILD, *t. c.* vi, p. liii.
- Pæcephalus rubricapillus*, n. sp., West Africa; FORBES & ROBINSON, Bull. Liverpool Mus. i, p. 15.
- Cyanorhampus magnirostris*, n. sp., Tahiti; *id. t. c.* p. 21.
- Neopsittacus viridiceps*, n. sp., British New Guinea; DE VIS, Ibis, 1897, pp. 371 & 372 [= *N. pullicauda*, Hartert; HARTERT, Nov. Zool. iv, p. 369].
- Cyclopsittacus macilwraithi*, n. sp., British New Guinea; ROTHSCHILD, Bull. Ornith. Club, vii, p. xxi.
- Pionopsitta pulchra*, n. sp., West Colombia; BERLEPSCH, Ornith. Monber. v, p. 175.
- Psittacella*, key to the species; HARTERT, Ibis, 1897, pp. 58-60. *P. picta*, figured; HARTERT, *t. c.* pl. iii.

Order SCANSORES.

Sub-order CAPITONES.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 471.
- Melanobucco abbotti*, n. sp., East Africa; RICHMOND, Auk, xiv, p. 164.
- Tricholæma blandi*, n. sp., Somaliland; LORT PHILLIPS, Bull. Ornith. Club, vi, p. xlvi.
- Stactolæma woodwardi* [and *S. olivacea*], figured; SHARPE, Ibis, 1897, pl. x.
- Barbatula jacksoni*, n. sp., Mau, British East Africa; SHARPE, Bull. Ornith. Club, vii, p. vii.
- Trachylæmus togoensis*, figured; REICHENOW, J. Ornith. 1897, taf. i, fig. 2.
- Capito hypoleucus*, n. sp., Antioquia; SALVIN, Bull. Ornith. Club, vii, p. xvi.

Sub-order PICI.

- Intercentra in the vertebral column; BEDDARD, P. Zool. Soc. London, 1897, p. 471.
- Gecinus levaillanti kænigi*, n. subsp., Tunis; ERLANGER, Ornith. Monber. v, p. 187.
- Gecinulus viridanus*, n. sp., N.W. Fohkien; SLATER, Ibis, 1897, p. 176.
- Melanerpes*, sp. inc. remarks on; DUBOIS, P. Zool. Soc. London, 1897, p. 783.
- Dendrocopus minor*, notes on the habits; DAVENPORT, Zoologist, 1897, pp. 470 & 471.
- Dryobates sanctorum*, n. sp., Mexico and Guatemala; NELSON, Auk, xiv, p. 50.
- D. pubescens*, notes on the nomenclature of the species; BREWSTER, *t. c.* pp. 80-82.
- Picus pipra*, in East Prussia; KLEINSCHMIDT, J. Ornith. 1897, p. 509.
- Lepocestes sinensis*, n. sp., Kuatun, N.W. Fohkien; RICKETT, Bull. Ornith. Club, vi, p. 1.
- Tiga borneonensis*, n. sp., Borneo; DUBOIS, P. Zool. Soc. London, 1897, pp. 782 & 783.

Order PASSERIFORMES.

Family CORVIDÆ.

- Corvus leptonyx*, in Sardinia; GIGLIOLI, *Avicula*, i, p. 4; SCHALOW, *Ornith. Monber.* v, p. 97. *C. tingitanus*, in Italy; *id. t. c.* pp. 4 & 5.
- Garrulus œnops*, n. sp., Marocco; WHITAKER, *Bull. Ornith. Club*, vii, p. xviii. *G. rufescens*, n. sp., E. Himalayas; REICHENOW, *Ornith. Monber.* v, p. 123.
- Nucifraga*, review of the genus; HARTERT, *Nov. Zool.* iv, pp. 137 & 138.
- N. caryocatactes japonicus*, n. subsp., Japan; HARTERT, *t. c.* p. 134.
- N. caryocatactes*, and allies; HARTERT, *Bull. Ornith. Club*, vi, pp. xxv, xxxi, & xxxii.
- Cyanocitta cristata*, food; BEAL, *Yearbook U. S. Dept. Agric.* 1896, pp. 197-206, fig. 40.
- Calocitta formosa azurea*, n. subsp., Mexico; NELSON, *Auk*, xiv, pp. 55 & 56.
- Cissolopha pulchra*, n. sp., Mexico; NELSON, *t. c.* pp. 56 & 57.
- Podoces pleskei*, n. sp., Eastern Persia; ZARUDNY, *Annuaire Mus. St. Petersb.* i, p. xii [transl. HÄRMS, *Ornith. Monber.* v, pp. 181-183].
- P. panderi*, egg; NEWTON, *P. Zool. Soc. London*, 1897, pl. li, fig. 10.

Family PARADISEIDÆ.

- Monograph of the *Paradiseidæ*, or Birds of Paradise, and *Ptilonorhynchidæ* [q.v.], or Bower-birds. Pt. VII: by R. B. SHARPE. London: 1897, folio. The following species are figured:—*Craspedophora alberti*, *Seleucides nigricans*, *Macgregoria pulchra*, *Paradisea minor*, *Parotia carolæ*, *Pteridophora alberti*, *Loboparadisea sericea*.
- Ptilornis paradisea*, nest and egg; CAMPBELL, *Victorian Natural.* xiii, p. 145, cum fig.
- Epimachus astrapioides*, n. sp., Dutch New Guinea; ROTHSCHILD, *Bull. Ornith. Club*, vii, p. xxii.
- Craspedophora alberti*, eggs described and nest figured; LE SOUËF, *Ibis*, 1897, pp. 394-397, fig. 1.
- Paradisea minor jobiensis*, n. subsp., I. of Jobi; ROTHSCHILD, *Bull. Ornith. Club*, vi, p. xlvi. Remarks on *P. minor* and *P. finschi*; *id. t. c.* pp. xlv & xlvi.
- P. intermedia*, from Collingwood Bay, British New Guinea; HARTERT, *Bull. Ornith. Club*, vii, p. iv: remarks on; ROTHSCHILD, *op. cit.* vi, p. xl. *P. maria*, figured; REICHENOW, *J. Ornith.* 1897, taf. v. *P. albescens*, Musschenbr., an artefact; ROTHSCHILD, *Bull. Ornith. Club*, vi, p. liv.
- Macgregoria*, n. g., type *M. pulchra*, n. sp., Mount Scratchley, British New Guinea; DE VIS, *Ibis*, 1897, p. 251, pl. vii.
- Maria*, GIGLIOLI, *Boll. Soc. geogr. Ital. Fasc. i*, 1897 (*nec* Bigot, 1859) = *Macgregoria*, DE VIS, *Ibis*, 1897, p. 251.
- Parotia helenæ*, n. sp., British New Guinea; DE VIS, *Ibis*, 1897, p. 390.
- P. berlepschi*, n. sp., Dutch New Guinea; KLEINSCHMIDT, *Ornith. Monber.* v, p. 46; *id.*, *J. Ornith.* 1897, pp. 174-178.
- Loria mariæ*, De Vis = *L. lorix*, Salvad.; ROTHSCHILD, *Bull. Ornith. Club*, vi, pp. xxiv & xxv.
- Loboparadisea sericea*, figured; ROTHSCHILD, *Nov. Zool.* iv, pl. ii, fig. 2.

Family PTILONORHYNCHIDÆ.

- Monograph of the *Paradiseidæ* [q.v.], or Birds of Paradise, and *Ptilonorhynchidæ*, or Bower-birds. Pt. VII. By R. B. SHARPE. London: 1897, folio. *Ælurædus melanocephalus* figured.

- Chlamydodera lauterbachii*, n. sp., German New Guinea; REICHENOW, Ornith. Monber. v, p. 24: figured; *id.* J. Ornith. 1897, taf. vi.
Ælurædus subcaudalis, n. sp., British New Guinea; DE VIS, Ibis, 1897, pp. 390 & 391.

Family STURNIDÆ.

- Sturnus sophiæ*; BIANCHI [Transl. Härms], Ornith. Monber. v, pp. 165-169.
S. unicolor, in Morocco, breeding plumage; WHITAKER, Bull. Ornith. Club, vii, p. xvii.
Sturnopastor floweri, n. sp., Siam; SHARPE, *t. c.* p. xvii.
Pholidauges femoralis, n. sp., East Africa; RICHMOND, Auk, xiv, pp. 160 & 161.
Lamprotornis brevicaudus, n. sp., Elgeyu, British East Africa; SHARPE, Bull. Ornith. Club, vi, p. xlvi.
Amydrus ? dubius, n. sp., East Africa; RICHMOND, Auk, xiv, pp. 158-160.

Family PARAMYTHIIDÆ.

- Paramythia montium*, remarks on the skeleton; SHARPE, Bull. Ornith. Club, vi, pp. xli & xlii.

Family ORIOLIDÆ.

- Oriolus lætior*, n. sp., Gaboon; SHARPE, Bull. Ornith. Club, vii, p. xvii.
O. galbula, song; SEIDEL, Ornith. Monber. v, p. 124: BÜNGER, J. Ornith. 1897, pp. 172 & 173.

Family ICTERIDÆ.

- Cassidix oryzivora*, ScL., notes on breeding; KUSCHEL, J. Ornith. 1897, pp. 168-170: parasitism; GOELDI, Ibis, 1897, pp. 290 & 361-364: nesting; LLOYD, Timehri (2) x, p. 37.
Cassicus persicus, notes on nesting; GOELDI, Ibis, 1897, pp. 361-365.
Sturnella magna hoopesi, n. subsp., Texas; STONE, P. Ac. Philad. 1897, pp. 149-152.
Dolychonyx orizivorus, remarks on the spring plumage and "colour-change"; CHADBOURNE, Auk, xiv, pp. 137-149, pl. 1a, figg. 1-7; CHAPMAN, *t. c.* pp. 149-154.
Agelaius phæniceus grandis, n. subsp., Mexico; NELSON, Auk, xiv, pp. 57 & 58. *A. p. richmondi*, n. subsp., Mexico; *id. t. c.* pp. 58 & 59. *A. gubernator californicus*, n. subsp., California; *id. t. c.* pp. 59 & 60.
Gymnomystax melanicterus, notes on nesting; GOELDI, Ibis, 1897, pp. 365-368, fig. 1.

Family PLOCEIDÆ.

- On changes of plumage in some of the typical Weaver-birds; BUTLER, Ibis, 1897, pp. 359-361.
Urobrachya nigrinotata, n. sp., Witu, British East Africa; SHARPE, Bull. Ornith. Club, vii, p. vii.
Pyromelana wertheri, n. sp., Wembere Steppes, East Africa; REICHENOW, Ornith. Monber. v, p. 160.
Emblema picta, its distribution in New South Wales; NORTH, Rec. Austral. Mus. iii, p. 15.
Zonogastris melba affinis, n. subsp., Somaliland; ELLIOT, Field Columb. Mus. Orn. i, No. 2, p. 34.

- Poephila mirabilis* and *P. gouldii*, figured; SAVILLE-KENT, Naturalist in Australia, p. 55, pl. ii.
Munia monticola, n. sp., British New Guinea; DE VIS, Ibis, 1897, pp. 387 & 388. *M. subcastanea*, n. sp., West Celebes; HARTERT, Nov. Zool. iv, pp. 161 & 162. *M. brunneiceps*, note on; *id. t. c.* p. 11.
Estrelida cyanocephala, n. sp., East Africa; RICHMOND, Auk, xiv, pp. 157 & 158. *E. ochrogaster*, n. sp., Abyssinia; SALVADORI, Boll. Mus. Torino, xii, No. 287, p. 4.
Symplectes croconotus, Sjöstedt, is the ♂ of *Sycobrotus insignis*, Sharpe; SHARPE, Bull. Ornith. Club, vi, p. xliii.
Malimbus rubricollis, from Uganda; SHARPE, *t. c.* p. xlvi.

Family TANAGRIDÆ.

- Rhamphocælus inexpectatus*, n. sp., Panama; ROTHSCHILD, Bull. Ornith. Club, vi, p. xxvii.
Phænicothraupis rubicoides affinis, n. subsp., Mexico; NELSON, Auk, xiv, p. 66.
Pyranga rubra, the moult and certain plumage phases; SHUFELDT, *t. c.* pp. 406 & 407.
Buthraupis rothschildi, n. sp., North-west Ecuador; BERLEPSCH, Bull. Ornith. Club, vii, p. iii.
Buarremon borelli, n. sp., San Lorenzo; SALVADORI, Boll. Mus. Torino, xii, No. 292, p. 6.
Chlorospingus atriceps, n. sp., Mexico; NELSON, Auk, xiv, p. 65.
Nemosia rosenbergi, n. sp., North Ecuador; ROTHSCHILD, Bull. Ornith. Club, vii, p. vi.
Saltator fulviventris, female described; SALVADORI, Boll. Mus. Torino, xii, No. 292, p. 7.

Family DREPANIDÆ.

- Himatione virens*, egg figured; NEWTON, P. Zool. Soc. London, 1897, pl. li, figs. 6 & 7.

Family FRINGILLIDÆ.

- On sexual distinctions in Finches which are similarly coloured in both sexes; BUTLER, Avicult. Mag. iii, pp. 104-106, figg. 1-6.
Lobospingus, n. g., type *L. sigillifer*, n. sp., British New Guinea; DE VIS, Ibis, 1897, pp. 389 & 390.
Oreospiza, n. g., type *O. fuliginosa*, n. sp., British New Guinea; DE VIS, *t. c.* pp. 388 & 389.
Coccothraustes vespertinus mexicanus, n. subsp., Mexico; CHAPMAN, Auk, xiv, p. 311.
C. humii, in Ferghana; STOLZMANN, Bull. Soc. Moscou, 1897, p. 55.
Zamelodia vice Habia; COUES, Auk, xiv, pp. 39-42.
Cardinalis cardinalis littoralis, n. subsp., Mexico; NELSON, *t. c.* pp. 64 & 65.
Pyrrhuloxia sinuata texana, n. subsp., Texas; RIDGWAY, *t. c.* p. 95.
Spinus tristis salicamans, n. subsp., California; GRINNELL, *t. c.* pp. 397-399.
S. pinus, spring moult; STONE, *t. c.* p. 320.
Montifringilla nivalis, breeding in Siebenbürgen; GRUNAK, Aquila, iv, pp. 264-267.
Fringilla nivalis, in Bohemia; KNĚZOUŘEK, Ornith. Jahrb. viii, pp. 108 & 109.

- Rhynchostruthus louisæ*, n. sp., Somaliland; LORT PHILLIPS, Bull. Ornith. Club, vi, p. xlvi.
- Rhodopechys aliena*, n. sp., Marocco; WHITAKER, *op. cit.* vii, p. xviii.
- Passer domesticus*, winter nest; BERGE, Ornith. Monber. v, pp. 109 & 110.
- P. griseigularis*, in Russia; BIANCHI [transl. M. Hürrms], *t. c.* pp. 162-165.
- Crithagra kilimensis*, n. sp., East Africa; RICHMOND, Auk, xiv, pp. 155 & 156.
- C. striolata affinis*, n. subsp., East Africa; RICHMOND, *t. c.* pp. 156 & 157.
- Serinus whytii*, n. sp., Nyasaland; SHELLEY, Ibis, 1897, p. 528, pl. xi.
- S. canarius*, domestic races; HERRERA, Naturaleza (2) ii, pp. 489-491, pl. xxxi.
- Carpodacus*, remarks on the species of the genus in the Palæarctic region; BIANCHI, Annuaire Mus. St. Petersb. 1897, pp. 218-240.
- C. macgregori*, n. sp., Lower California; ANTHONY, Auk, xiv, pp. 165 & 166.
- C. erythrinus*, in Holland; BLAAUW, Ibis, 1897, p. 289. *C. grandis*, in Ferghana; STOLZMANN, Bull. Soc. Moscou, 1897, p. 55.
- Pyrrhospiza punicea humii*, in Ferghana; STOLZMANN, *t. c.* p. 55.
- Pinicola enucleator californica*, n. subsp., California; PRICE, Auk, xiv, pp. 182-186.
- P. enucleator*, notes and figure; BUTLER, Avicult. Mag. iii, pp. 1-5, cum tab.
- Corythus enucleator*, breeding in confinement; HOMEYER, J. Ornith. 1897, pp. 520-524.
- Emberiza schæniclus*, curious nest; WYATT, Bull. Ornith. Club, vii, p. vii.
- E. aureola*, song; VON HOMEYER, Ornith. Monber. v, p. 3. *E. rustica*, egg figured; NEWTON, P. Zool. Soc. London, 1897, pl. li, figg. 8 & 9.
- Calcarius lapponicus*, song; VON HOMEYER, Ornith. Monber. v, p. 2: in Franz Josef Land; F. G. JACKSON, Bull. Ornith. Club, vii, p. xiv.
- Idiopsar brachyurus*, from Bolivia; VON BERLEPSCH, *t. c.* p. iii.
- Pipilo clementæ*, n. sp., California; GRINNELL, Auk, xiv, pp. 289-294.
- Ammodramus savannarum obscurus*, n. subsp., Mexico; NELSON, *t. c.* p. 61.
- A. (Passerculus) sandwichensis wilsonianus*, for the Eastern Savannah Sparrow; COUES, *t. c.* pp. 92 & 93. *A. henslowi*, breeding at Plymouth, Michigan; PURDY, *t. c.* pp. 220 & 221. *A. caudacutus* and allies, notes; NORTON, P. Portl. Soc. Maine, ii, pp. 97-102.
- Peucea ruficeps fusca*, n. subsp., Mexico; NELSON, Auk, xiv, pp. 62 & 63.
- P. r. australis*, n. subsp., Mexico; *id. t. c.* pp. 63 & 64.
- Junco*, synonymy. COUES, *t. c.* pp. 94 & 95. *J. mearnsi*, n. sp., Wyoming; RIDGWAY, *t. c.* p. 94. *J. fulvescens*, n. sp., Mexico; NELSON, *t. c.* pp. 61 & 62. *J. annectans* and *J. ridgwayi*, note on; RIDGWAY, *t. c.* p. 94.
- Spizella pusilla arenacea*, figured; RICHMOND, *t. c.* pp. 345-347, pl. iii.
- Sycalis flaveola*, note; BUTLER, Avicult. Mag. iii, pp. 127-129.
- Paroaria cucullata*, living for nearly thirty years in confinement; BERG, Ornith. Monber. v, p. 179.

Family ALAUDIDÆ.

- The Horned Larks of Maine; KNIGHT, Auk, xiv, pp. 371-374.
- Otocoris alpestris oaxacæ*, n. subsp.; NELSON, *t. c.* pp. 54 & 55.
- Spizocorys personata*, figured; DONALDSON SMITH, Through unknown African Countries, pl. to p. 126.
- Calendula fremantlii*, n. sp., Somaliland; LORT PHILLIPS, Bull. Ornith. Club, vi, p. xlvi.

- Mirafra horsfieldi*, figured; NORTH, Agric. Gaz. N.S.W. viii, pl. xiv, fig. 1.
M. collaris, figured; DONALDSON SMITH, Through unknown African Countries, pl. to p. 126.
Galerida cristata delta, n. subsp., delta of the Nile; HARTERT, Nov. Zool. iv, p. 144. *G. c. superflua*, nomen emend. pro *G. c. pallida*, Whitaker (nec Brehm), Tunis; *id. t. c.* p. 144. *G. ellioti*, nomen emend. pro *G. pallida*, Elliot (nec Brehm, nec Whitaker), Somaliland; *id. t. c.* p. 144. *G. c. carolinæ*, n. subsp., Tunisian Sahara; ERLANGER, Ornith. Monber. v, p. 186.
G. pallida, n. sp., Somaliland; ELLIOT, Field Columb. Mus. Ornith. i, No. 2, p. 38 (= *G. ellioti*, Hartert ut supra).
Ammomanes, review of the genus, key to the species; HARTERT, Nov. Zool. iv, pp. 140 & 141. *A. akeleyi*, n. sp., Somaliland; ELLIOT, Field Columb. Mus. Ornith. i, No. 2, p. 39.
Lullula cherneli, Prazak, not distinct from *L. arborea*; SHARPE, Bull. Ornith. Club, vi, pp. xlii & xliii.

Family MOTACILLIDÆ.

- Motacilla melanope*, nesting in Lincolnshire; CORDEAUX, Zoologist, 1897, p. 274.
Anthus spinoletta, in Carnarvonshire; CATON-HAIGH, *t. c.* p. 366. *A. australis*, figured; NORTH, Agric. Gaz. N.S.W. viii, pl. xiv, fig. 2 : curious nesting place; *id.*, Rec. Austral. Mus. iii, p. 15, pl. iv.

Family MNIOTILTIDÆ.

- Dendroica goldmani*, n. sp., Guatemala; NELSON, Auk, xiv, pp. 66 & 67.
D. cærulescens cairnsi, n. subsp., North Carolina; COUES, World's Congress on Ornithology, p. 138; Auk, xiv, pp. 96 & 97. *D. æstiva rubiginosa* (Pall.) subsp. restit., Alaska and British Columbia; OBERHOLSER, Auk, xiv, pp. 76-79.
Helminthophila bachmani, breeding place; WIDMANN, Auk, xiv, pp. 305-310 : nest and eggs; RIDGWAY, *t. c.* pp. 309 & 310.
Compsothlypis americana, nesting in Cape May county, New Jersey; WILDE, Auk, xiv, pp. 289-294.
Basileuterus flavigaster, n. sp., Mexico; NELSON, Auk, xiv, p. 67.

Family CERTHIIDÆ.

- Certhia*: a review of the genus; HARTERT, Nov. Zool. iv, pp. 136-139.
C. familiaris japonicus, n. subsp., Japan; *id. t. c.* p. 138. *C. familiaris*, and its allies; *id.* Bull. Ornith. Club, vi, pp. xxv & xxvi. *C. familiaris* and *C. brachydactyla*, notes on; FLOERCKE, Ornith. Monber. v, p. 23.
C. brachydactyla, in Germany; KLEINSCHMIDT, *t. c.* pp. 61 & 62.

Family SITTIDÆ.

- Daphænositta*, n. g., type *D. miranda*, n. sp., British New Guinea; DE VIS, Ibis, 1897, pp. 380 & 381.
Sitta przewalskii, described; DEDITIUS, J. Ornith. 1897, pp. 74 & 75.
S. magna, male described and figured; RIPPON, Ibis, 1897, p. 3, pl. i.
S. canadensis, breeding in Pennsylvania; STONE, Auk, xiv, p. 324.
Rhabdornis, key to the species; OGILVIE GRANT, Ibis, 1897, p. 235.
R. inornatus, figured; *id. t. c.* pl. vi, fig. 2.
Dendrophila lilacea, n. sp., Samar; WHITEHEAD, Bull. Ornith. Club, vi, p. xlix.

Family MELIPHAGIDÆ.

- Neneba*, n. g., type, *N. prasina*, n. sp., British New Guinea; DE VIS, *Ibis*, 1897, p. 384.
Ptilotis sibilisibina, *P. lacrimans*, *P. obscura*, n. spp., British New Guinea; DE VIS, *t. c.* pp. 381-383. *P. præcipua*, n. sp., New Guinea; HARTERT, *Nov. Zool.* iv, p. 370.
P. lacrimans, DE VIS = *P. salvadorii*, Hart.; HARTERT, *t. c.* p. 369.
Acanthochoæra fusca, n. sp., British New Guinea; DE VIS, *Ibis*, 1897, pp. 383 & 384 [Is a *Melirrhophetes*]; HARTERT, *Nov. Zool.* iv, p. 369.
Meliornis schistacea, n. sp., British New Guinea; DE VIS, *Ibis*, 1897, p. 381.
Myzomela lafargei, note on; HARTERT, *Bull. Ornith. Club*, vii, p. xxiii.

Family NECTARINIIDÆ.

- Rhaphidornis*, n. gen., type *R. flavifrons*, n. sp.; REICHENOW, *Ornith. Monber.* v, p. 123.
Cinnyris nectarinioides, n. sp., East Africa; RICHMOND, *Auk*, xiv, p. 158.
C. senegalensis lamperti, n. subsp., Kilimanjaro; REICHENOW, *J. Ornith.* 1897, p. 196. *C. frenata meyeri*, n. subsp., N. Celebes; HARTERT, *Nov. Zool.* iv, p. 156. *C. frenata saleyerensis*, n. subsp., I. of Saleyer, Celebes; *id. t. c.* p. 156. *C. excellens*, Grant = *C. flagrans* (Oust.); HARTERT, *t. c.* p. 11.

Family DICEIDÆ.

- Dicaeum hosei*, n. sp., N. Celebes; SHARPE, *Bull. Ornith. Club*, vi, p. xlvi.
D. neglectum, n. sp., I. of Savu; HARTERT, *Nov. Zool.* iv, pp. 264 & 265.

Family ZOSTEROPIDÆ.

- Zosterops cuicui* and *Z. læta*, n. spp., British New Guinea; DE VIS, *Ibis*, 1897, pp. 384 & 385. *Z. crassirostris*, *Z. superciliaris*, n. spp., South Flores; HARTERT, *Nov. Zool.* iv, p. 172. *Z. crassirostris*, figured; *id. t. c.* pl. iii, fig. 1. *Z. superciliaris*, figured; *id. t. c.* pl. iii, fig. 2. *Z. unica*, n. sp., Flores; *id. t. c.* p. 520.
Lophozosterops (? *Zosterops*) *subcristatus*, n. sp., South Flores; HARTERT, *Nov. Zool.* iv, p. 171. *L. dohertyi*, figured; ROTHSCHILD, *t. c.* pl. ii, fig. 1.
Tephras ruki, n. sp., Ruk I., Carolines; HARTERT, *Bull. Ornith. Club*, vii, p. v.

Family PARIDÆ.

- Die palæarktischen Sumpfschnecken. Beiträge zur Kenntnis derselben. KLEINSCHMIDT, *Ornith. Jahrb.* viii, pp. 45-103.
Parus dejeani, n. sp., Western China; OUSTALET, *Bull. Mus. Paris*, 1897, pp. 209 & 210. *P. owstoni*, redescribed; IJIMA, *Döb. Zasshi*, 1893, No. 62; REICHENOW, *Ornith. Monber.* v, p. 143. *P. meridionalis*, subsp. *P. salicarius*, Brehm, figured; *id. t. c.* taf. iii. *P. meridionalis* and *P. salicarius borealis*, figured; *id. t. c.* taf. iv. *P. sclateri*, nom. emend. pro *P. meridionalis*, ScL. [nec Liljeb.]; *id. t. c.* p. 133. *P. salicarius*, and its allies; KLEINSCHMIDT, *J. Ornith.* 1897, pp. 112-137: in England; HARTERT, *Bull. Ornith. Club*, vii, p. iv. *P. palustris*, in

- East Renfrewshire; PATERSON & ROBERTSON, Ann. Scott. Nat. Hist. 1897, pp. 124 & 125. *P. borealis* in Germany; KLEINSCHMIDT, Ornith. Monber. v, pp. 62 & 63: notes on; FLOERICKE, *t. c.* pp. 23 & 24. *P. cristatus* and its allied forms in Germany; KLEINSCHMIDT, *t. c.* pp. 1 & 2.
- Poecile hypermelaena*, *P. davidi*, described; DEDITIUS, J. Ornith. 1897, pp. 72-74.
- Auriparus flaviceps lamprocephalus*, n. subsp., Lower California; OBERHOLSER, Auk, xiv, pp. 391-394.
- Regulus calendula grinnelli*, n. subsp., Alaska; PALMER, Auk, xiv, pp. 399-401.

Family LANIIDÆ.

- Lanius robustus*, Baird, status in North America; RIDGWAY, Auk, xiv, p. 323. *L. ludovicianus*, from Andros I., Bahamas; SHARPE, Bull. Ornith. Club, vii, p. vii. *L. collurio*, notes on; PRAZAK, Ornith. Monber. v, pp. 37-43.
- Otomela varia*, n. sp., Transcaspia; ZARUDNOI, Annuaire Mus. St. Petersb. ii, p. 194. [Transl. Härms, Ornith. Monber. v, pp. 183 & 184.]
- Nicator chloris*, from Uganda; SHARPE, Bull. Ornith. Club, vi, p. xlviii.
- Laniarius abbotti*, n. sp., East Africa; RICHMOND, Auk, xiv, pp. 161 & 162.
- Cracticus rufescens*, nest and eggs; NORTH, P. Linn. Soc. N.S.W. xxii, pp. 56-58.
- Pachycephala melanura dahli*, n. subsp.; REICHENOW, Ornith. Monber. v, pp. 178 & 179. *P. gamblei*, n. sp., British New Guinea; ROTHSCHILD, Bull. Ornith. Club, vii, p. xxii. *P. sororcula*, n. sp., British New Guinea; DE VIS, Ibis, 1897, p. 380. *P. nudigula*, n. sp., South Flores; HARTERT, Nov. Zool. iv, p. 171: figured; *id. t. c.* pl. iii, fig. 3.
- Abbottornis*, n. g., type *A. chabert* (Mull.); RICHMOND, P. U. S. Mus. xix, p. 692.
- Prionops vinaceigularis*, n. sp., East Africa; RICHMOND, Auk, xiv, pp. 162 & 163.
- Collyriocinclla cerviniventris*, n. sp., Queensland; NORTH, Rec. Austral. Mus. iii, pp. 49 & 50.
- Grallina bruijnii*, notes on; DE VIS, Ibis, 1897, pp. 378 & 379.

Family AMPELIDÆ.

- Ampelis cedrorum*, photographed from life; SHUFELDT, Amer. Natural. xxxi, pp. 120-123, pl. i.

Family VIREONIDÆ.

- Vireo philadelphicus*, notes on; DWIGHT, Auk, xiv, pp. 259-272, pl. ii, fig. 2. *V. gilvus*, figured; *t. c.* pl. ii, fig. i.

Family SYLVIIDÆ.

- Sylvia nisoria*, in Norfolk; SLATER, Bull. Ornith. Club, vii, p. viii: in Argyleshire; HARVIE-BROWN & CLARKE, Ann. Scott. Nat. Hist. 1897, p. 42. *S. heinekeni*, remarks on the female; HARTWIG, Ornith. Monber. v, pp. 73 & 74. *S. blanfordii*, near Suakin; CHOLMLEY, Ibis, 1897, pp. 203 & 204. *S. margelanica*, n. sp., Marguelane, Ferghana; STOLZMANN, Bull. Soc. Moscou, 1897, p. 72.

- Phylloscopus superciliosus*, in Italy; VALLON, *Avicula*, i, pp. 31-33.
P. rufus, distribution in the Clyde area; PATERSON, *Tr. Soc. Glasgow* (2) v, pt. i, pp. 48-52. *P. proregulus*, in Norfolk; DRESSER, *Zoologist*, 1897, pp. 5-7; SOUTHWELL, *t. c.* pp. 8-12: figured; DRESSER, *Tr. Norfolk Soc.* vi, pl. to p. 280. *P. proregulus*, *P. viridanus*, figured; LILFORD, *Col. Fig. Brit. B.*, pt. xxxv.
- Geobasileus chrysorrhoea*, figured; NORTH, *Agric. Gaz. N.S.W.*, vii, pl. xii, fig. 2.
- Acanthiza nana*, figured; NORTH, *op. cit.* viii, pl. xii, fig. 1.
- Hypolais polyglotta*, in Sussex; SAUNDERS, *Ibis*, 1897, pp. 627 & 628.
- H. icterina*, from Burwash, Sussex; TICEHURST, *Bull. Ornith. Club*, vi, p. li: notes on; BENSON, *Irish Natural.* vi, pp. 117-119.
- Sylviella isabellina*, n. sp., Somaliland; ELLIOT, *Field Columb. Mus., Ornith.* i, No. 2, p. 44. *S. baraka*, n. sp., Uganda; SHARPE, *Bull. Ornith. Club*, vii, p. vi. *S. jacksoni*, n. sp., Uganda, *id. t. c.* p. vii.
- Acrocephalus cervinus*, n. sp., British New Guinea; DE VIS, *Ibis*, 1897, p. 386. *A. palustris*, *A. horticolus*, and *A. streperus*, notes on; FLOERICKE, *J. Ornith.* 1897, pp. 178-183.
- Cettia russula*, n. sp., N.W. Fohkien; SLATER, *Ibis*, 1897, p. 171.
- Locustella luscinioides*, song; HERMAN, *Ornith. Monber.* v, pp. 20-23; VON HOMEYER, *t. c.* p. 63; VON MADARASZ, *t. c.* pp. 69-73; CHERNEL VON CHERNELHAZA, *t. c.* pp. 105 & 106.
- Megalurus punctatus*, n. sp., British New Guinea; DE VIS, *Ibis*, 1897, pp. 385 & 386.
- Cisticola nigriloris*, n. sp., Nyasaland; SHELLEY, *t. c.* p. 536, pl. xii, fig. 2.
- Malurus melanocephalus*, figured; NORTH, *Agric. Gaz. N.S.W.* viii, pl. xi, fig. 1. *M. cyaneus*, figured; *id. t. c.* pl. xi, fig. 2.
- Melocichla mentalis*, from Uganda; SHARPE, *Bull. Ornith. Club*, vi, p. xlviii.
- Prinia valida*, notes on breeding; nest figured; MADARASZ, *Termes. Fuzetek*, xx, pp. 347-350, fig. 6.
- Dryodromas rufidorsalis*, n. sp., Teita, East Africa; SHARPE, *Bull. Ornith. Club*, vi, p. xlviii.
- Burnesia leucopogon*, from Uganda; SHARPE, *t. c.* p. xlviii. = *B. ugandæ*, n. sp., *id. op. cit.* vii, p. vi; [= *B. reichenowi*, Hartl.]. *B. somalica*, n. sp., Somaliland; ELLIOT, *Field Columb. Mus., Ornith.* i, No. 2, p. 45.
- Orthotomus*: key to the Philippine species; OGILVIE GRANT, *ibis*, 1897, pp. 229 & 230.
- Phyllergates everetti*, n. sp., South Flores; HARTERT, *Nov. Zool.* iv, pp. 517 & 518. *P. cucullatus philippinus*, n. subsp., North Luzon; *id. t. c.* p. 517.

Family TURDIDÆ.

- Turdus viscivorus deichleri*, n. subsp., S. Tunis; ERLANGER, *Ornith. Monber.* v, p. 192. *T. daguæ*, n. sp., W. Colombia; BERLEPSCH, *t. c.* p. 176.
- T. sibiricus*, nesting on the Yenesei; POPHAM, *Ibis*, 1897, p. 92.
- T. varius*, egg figured; NEWTON, *P. Zool. Soc. London*, 1897, pl. li, 5 figg. *T. pallasi*, notes on in captivity; OWEN, *Auk*, xiv, pp. 1-8.
- T. torquatus*, notes on; GODFREY, *Sci. Gossip*, 1897, pp. 217 & 218.
- Merula tamaulipensis*, n. sp., Mexico; NELSON, *Auk*, xiv, pp. 75 & 76.
- M. torquata* and *M. alpestris*, notes on; GIGLIOLI & SALVADORI, *Avicula*, i, pp. 40-42.
- Catharus occidentalis fulvescens*, n. subsp., Mexico; NELSON, *Auk*, xiv, p. 75.

- Myiadestes coracinus*, n. sp., W. Colombia; BERLEPSCH, Ornith. Monber. v, p. 175.
Larvivora obscura, described; DEDITIUS, J. Ornith. 1897, pp. 70-72.
Erithacus titis [= *Ruticilla titis*, Auct.], notes on the plumages; KLEIN-SCHMIDT, t. c. pp. 105-111.
Ruticilla erythrogastra (Güld.), distinct from *R. grandis*, Gould; ROTHSCHILD, Nov. Zool. iv, pp. 167 & 168.
Copsychus inexpectatus, n. sp., Madagascar; RICHMOND, P. U. S. Mus. xix, pp. 688 & 689.
Bessonornis modesta, n. sp., Nyasaland; SHELLEY, Ibis, 1897, p. 539, pl. xii, fig. 1.
Brachypteryx sinensis, n. sp., Kuatun, N.-W. Fohkien; RICKETT, Bull. Ornith. Club, vi, p. 1. *B. floris*, n. sp., South Flores; HARTERT, Nov. Zool. iv, p. 170.

Family TROGLODYTIDÆ.

- Hylorchilus*, n. g., type *H. sumichrasti* (Lawr.); NELSON, Auk, xiv, pp. 71 & 72.
Cistothorus palustris plesius, n. subsp., New Mexico; OBERHOLSER, Auk, xiv, pp. 188-193.
Thryothorus cerroensis, n. sp., Lower California; ANTHONY, t. c. pp. 166 & 167.
Henicorhina mexicana, n. sp., Mexico; NELSON, t. c. pp. 73 & 74. *H. leucophrys capitalis*, n. subsp., Mexico; id. t. c. p. 74.
Heleodytes alticolus, n. sp., Mexico; NELSON, t. c. p. 68. *H. occidentalis*, n. sp., Mexico; id. t. c. p. 69. *H. humilis rufus*, n. subsp., Mexico; id. t. c. p. 69. *H. capistratus nigricaudatus*, n. subsp., Mexico; id. t. c. p. 70.
Hemiura pacifica, n. sp., Mexico; NELSON, t. c. pp. 72 & 73.
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Orthnocichla everetti, n. sp., South Flores; HARTERT, Nov. Zool. iv, p. 170.
Pnoepyga everetti, n. sp., Flores; ROTHSCHILD, t. c. p. 168.

Family MIMIDÆ.

- Note on the genus *Lucar* of Bartram; COUES, Auk, xiv, p. 97.
Harporhynchus lecontei arenicola, n. subsp., Lower California; ANTHONY, t. c. pp. 167 & 168.

Family TIMELIIDÆ.

- Ianthocincla bieti*, n. sp., Yun-nan; OUSTALET, Bull. Mus. Paris, 1897, pp. 163 & 164.
Psophodes crepitans lateralis, n. subsp., North-East Queensland; NORTH, Rec. Austral. Mus. iii, p. 13.
Crateropus reinwardti, figured; REICHENOW, J. Ornith. 1897, taf. ii, fig. 2.
Actinodura souliei, n. sp., Yun-nan; OUSTALET, Bull. Mus. Paris, 1897, pp. 164 & 165.
Trochalopteron sukatschewi, described; DEDITIUS, J. Ornith. 1897, pp. 67-69.
Garrulax schmackeri, n. sp., Hainan; HARTLAUB, Abh. Ver. Bremen, xiv, pp. 349, 350, & 380-382, taf. iv.

- Sphenura broadbenti*, nest and eggs; NORTH, P. Linn. Soc. N.S.W. xxii, pp. 58-60.
- Napothera pyrrhoptera*, note on; MARTORELLI, Atti Soc. Ital. xxxvi, p. 203.
- Myiothera epilepidota*, note on; MARTORELLI, *t. c.* p. 203.
- Crateroscelis montana*, n. sp., British New Guinea; DE VIS, Ibis, 1897, p. 387.
- Drymaedus brevirostris*, n. sp., British New Guinea; DE VIS, *t. c.* pp. 386 & 387.
- Calamanthus fuliginosus*, distribution in New South Wales; NORTH, Rec. Austral. Mus. iii, pp. 14 & 15.
- Rhabdochlamys*, n. g., type *R. dejeani*, n. sp., Western China; OUSTALET, Bull. Mus. Paris, 1897, pp. 208 & 209.
- Macronus*: key to the species found in the Philippines; OGILVIE GRANT, Ibis, 1897, p. 231.
- Alcippe genestieri*, n. sp., Western China; OUSTALET, Bull. Mus. Paris, 1897, pp. 210 & 211.
- Zosterornis*: key to the species; OGILVIE GRANT, Ibis, 1897, pp. 233 & 234.
- Z. pygmaeus*, figured; *id. t. c.* pl. vi, fig. 1.
- Yuhina pallida*, n. sp., Kuantun, N.-W. Fohkien; DE LA TOUCHE, Bull. Ornith. Club, vi, p. 1.
- Proparus guttaticollis*, n. sp., Kuantun, N.-W. Fohkien; *id. t. c.* p. 1.
- Suthora davidiana*, n. sp., N.-W. Fohkien; SLATER, Ibis, 1897, p. 172, pl. iv, fig. 1.
- S. przewalskii*, described; DEDITIUS, J. Ornith. 1897, pp. 69 & 70.
- Ephthianura aurifrons* and *E. albifrons*, figured; NORTH, Agric. Gaz. N.S.W. viii, pl. xiii.

Family PYCNONOTIDÆ.

- Ægithina nigrilutea*, in Cutch; LISTER, J. Bombay Soc. x, pp. 695 & 696.
- Ixulus rouxi*, n. sp., Yun-nan; OUSTALET, in Prince Henri D'Orleans' "From Tonkin to India," App. B, p. 424.
- Phyllostrephus baumanni*, figured; REICHENOW, J. Ornith. 1897, taf. ii, fig. 1.
- Andropadus congener*, n. sp., Togo; REICHENOW, *t. c.* p. 45. *A. masukuensis*, n. sp., Nyasaland, SHELLEY, Ibis, 1897, p. 534.
- Xenocichla pallidigula*, n. sp., Uganda; SHARPE, Bull. Ornith. Club, vii, p. vii.

Family CAMPOPHAGIDÆ.

- Campophaga phænicea*, from Uganda; SHARPE, Bull. Ornith. Club, vi, p. xlviii.
- Artamides mindanensis*, Steere, = *Graucalus kochii*, Kutter; HARTERT, Nov. Zool. iv, p. 11.
- Edoliisoma tenuirostre*, notes on the nidification; SHEPHERD, Victorian Natural. xiii, pp. 135 & 136; CAMPBELL, *t. c.* pp. 4 & 5.

Family MUSCICAPIDÆ.

- Muscicapa grisola*, curious nesting-place; HOMEYER, Ornith. Monber. v, p. 5.
- Alseonax subadusta*, n. sp., Nyasaland; SHELLEY, Ibis, 1897, p. 542.
- Pachyprora bella*, n. sp., Somaliland; ELLIOT, Field Columb. Mus., Ornith. i, No. 2, p. 47.

- Diaphorophytia chalybea*, n. sp., Cameroons; REICHENOW, Ornith. Monber. v, p. 46.
- Microeca oscillans*, n. sp., South Flores; HARTERT, Nov. Zool. iv, pp. 170 & 171.
- Petræca bivittata*, n. sp., British New Guinea; DE VIS, Ibis, 1897, p. 376.
- Muscicapula nigrorum*, n. sp., Negros; WHITEHEAD, Bull. Ornith. Club, vi, p. xliii.
- Gerygone everetti*, n. sp., I. of Savu; HARTERT, Nov. Zool. iv, p. 267. *G. ramuensis*, n. sp., German New Guinea; REICHENOW, Ornith. Monber. v, p. 26. *G. murina* and *G. brunnea*, n. spp., British New Guinea; DE VIS, Ibis, 1897, pp. 377 & 378.
- Pacilodryas nitida*, *P. caniceps*, *P. loralis*, *P. subcyanea*, n. spp., British New Guinea; DE VIS, Ibis, 1897, pp. 376 & 377.
- Chasiempsis sandvicensis*, nest described, measurements of eggs; NEWTON, P. Zool. Soc. London, 1897, p. 892.
- Rhipidura nigrifrons*, *R. albicauda*, *R. oreas*, n. spp., British New Guinea; DE VIS, Ibis, 1897, pp. 374-376.
- R. dahli*, n. sp., New Pomerania; REICHENOW, Ornith. Monber. v, p. 7.
- Chloropeta similis*, n. sp., East Africa; RICHMOND, Auk, xiv, pp. 163 & 164.
- Culicicapa ceylonensis sejuncta*, n. subsp., South Flores; HARTERT, Nov. Zool. iv, p. 526.
- Cryptolopha ricketti*, n. sp., N.-W. Fohkien; SLATER, Ibis, 1897, pp. 174 & 175, pl. iv, fig. 2.
- C. montis floris*, n. subsp., South Flores; HARTERT, Nov. Zool. iv, p. 171.
- Musciparus*, n. g., type *M. tappenbecki*, n. sp., German New Guinea; REICHENOW, Ornith. Monber. v, p. 25.
- Bathmisyрма*, n. g., type *B. rufum*, German New Guinea; REICHENOW, t. c. p. 161.
- Machærirhynchus flaviventer*, eggs described, nest figured; LE SOUËF, Ibis, 1897, pp. 398 & 399, fig. 3.
- Myiagra rufigula colonus*, n. subsp., I. of Savu; HARTERT, Nov. Zool. iv, pp. 266 & 267.
- Arses lauterbachii*, n. sp., German New Guinea; REICHENOW, Ornith. Monber. v, p. 161. *A. candidior*, eggs described, nest figured; LE SOUËF, Ibis, 1897, pp. 397 & 398, fig. 2.
- Monanchoa divaga*, n. sp., British New Guinea; DE VIS, Ibis, 1897, p. 374.
- Siphia brunneata*, n. sp., N.-W. Fohkien; SLATER, t. c. pp. 175 & 176.

Family HIRUNDINIDÆ.

- Hirundo rustica*, wintering in Germany; BIEDERMANN, Ornith. Monber. v, pp. 76-78: wintering in Europe; RAMDOHR, t. c. pp. 155-160.
- H. rustica*, notes of the observations; VERY, Tr. Hertfordsh. Soc. ix, pp. 126-128.
- Progne subis*, breeding in electric arc-light caps; W. FAXON, Auk, xiv, pp. 407 & 408.

Family TYRANNIDÆ.

- Elainia albiventris*, n. sp., Venezuela; CHAPMAN, Auk, xiv, pp. 368 & 369.
- Contopus pertinax pallidiventris*, n. subsp., Arizona; CHAPMAN, t. c. pp. 310 & 311.
- Platypsaris aglaie sumichrasti*, n. subsp., Mexico; NELSON, t. c. pp. 52 & 53.

- Leptotriccus flaviventris*, n. sp., Venezuela; HARTERT, Bull. Ornith. Club, vii, p. v.
- Serphophaga inornata*, n. sp., San Lorenzo, Argentina; SALVADORI, Boll. Mus. Torino, xii, No. 292, pp. 13 & 14. *S. munda*, male described; *id. t. c.* p. 14.
- Sublegatus frontalis*, n. sp., Caiza; SALVADORI, *t. c.* pp. 14 & 15.
- Todirostrum maculatum*, notes on nesting; GOELDI, Ibis, 1897, pp. 368-370.
- Euscarthmus viridiceps*, n. sp., San Lorenzo, Argentina; SALVADORI, Boll. Mus. Torino, No. 292, p. 12.
- Phyllomyias berlepschi*, n. sp., San Lorenzo, Argentina; SALVADORI, *t. c.* p. 13.
- Hapalocercus striaticeps*, n. sp., British Guiana; SALVIN, Bull. Ornith. Club, vii, p. xvi.
- Todirostrum pictum*, n. sp., British Guiana; SALVIN, *t. c.* p. xv.
- Platyrrhynchus griseiceps*, n. sp., British Guiana; SALVIN, *t. c.* p. xv.
- Empidonax insulicola*, n. sp., California; OBERHOLSER, Auk, xiv, pp. 300-303: nesting habits; BLACK, *t. c.* pp. 405 & 406. *E. bairdi occidentalis*, n. subsp., Mexico; NELSON, *t. c.* p. 53. *E. flaviventris*, probable first description of; COUES, *t. c.* p. 218.
- Myiarchus mexicanus*, nomenclature; COUES, *t. c.* p. 92.

Family COTINGIDÆ.

- Rupicola crocea*, nest and eggs; SCLATER, Bull. Ornith. Club, vi, pp. xxvi & xxvii.
- Capsiempsis caudata*, n. sp., British Guiana; SALVIN, *t. c.* p. xvi.
- Curpodectes hopkei*, n. sp., West Colombia; VON BERLEPSCH, Ornith. Monber. v, p. 174.
- Pipra opalizans*, rediscovered near Parà; VON BERLEPSCH, *op. cit.* vii, p. iii.

Family DENDROCOLAPTIDÆ.

- Sittasomus phelpsi*, n. sp., Venezuela; CHAPMAN, Auk, xv, p. 369.
- Automolus pectoralis*, n. sp., Mexico; NELSON, *op. cit.* xiv, p. 54.
- Picolaptes compressus insignis*, n. subsp., Mexico; NELSON, *t. c.* p. 54.

Family FORMICARIIDÆ.

- Formicivora speciosa*, Salv., figured; ROTHSCHILD, Nov. Zool. iv, pl. i, fig. 3.

Family PTEROPTOCHIDÆ.

- Hylaetes megapodius*, egg; SCLATER, Bull. Ornith. Club, vii, p. xxiii.

IV. REPTILIA AND BATRACHIA.

BY

G. A. BOULENGER, F.R.S.

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- Gonatodes gaudichaudii*, D. & B., described and figured by WERNER, Zool. Jahrb., Suppl. iv, p. 247, pl. xiii, fig. 8; *G. penangensis*, sp. n., S. S. FLOWER, P. Z. S. 1896, p. 863, pl. xliv, fig. 1, Penang.
- Homonota darwini*, Blgr., figured by WERNER, t. c. pl. xiii, fig. 7.
- Diplodactylus conspicillatus*, sp. n., LUCAS & FROST, P. Soc. Victoria (2) ix, p. 55, Charlotte Waters, Central Australia.
- Hemidactylus echinus*, O'Sh., described by SJÖSTEDT, Bih. Svenska Ak. Handl. xxiii, Pt. iv, No. 2, p. 10; *H. brookii*, Gray, var. n. *togoensis*, WERNER, Verh. Ges. Wien, xlvi, p. 397, Togoland, W. Africa; *H. newtoni*, sp. n., BETHENCOURT FERREIRA, J. Sci. Lisb. (2) iv, p. 249, Anno Bom Is., Guinea; *H. intestinalis*, sp. n., WERNER, Zool. Anz. xx, p. 263, Togoland, W. Africa.
- Mimetozone floweri*, Blgr., = *Hemidactylus craspedotus*, Mocq. MOCQUARD, Bull. Soc. Philom. (8) ix, p. 20.
- Phyllopezus goyazensis*, Ptrs. Note by PERACCA, Boll. Mus. Torino, xii, No. 274, p. 3.
- Lepidodactylus brevipes*, sp. n., BOETTGER, Zool. Anz. xx, p. 161, Samar, Philippines; *L. gardineri*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xx, p. 306, Rotuma Is., Polynesia.

EUBLEPHARIDÆ.

- Eublepharis macularius*, Blyth, recorded from Chitral by ALCOCK & FINN, J. Asiat. Soc. Beng. lxxv, ii, p. 566; *E. fasciatus*, Blgr., figured by VAN DENBURGH, Pap. Calif. Ac. v, p. 40, fig.; *E. lichtenfelderi*, sp. n., MOCQUARD, Bull. Mus. Paris, 1897, p. 213, Norway Islands, Gulf of Tonquin.
- Psilodactylus caudicinctus*, A. Dum., figured by WERNER, Verh. Ges. Wien, xlvi, pl. ii, fig. 4.
- Lepidoblepharis*, g. n., with round pupil and rudimentary lower eyelid. PERACCA, Boll. Mus. Torino, xii, No. 300, p. 1; *L. festæ*, sp. n., *id. ibid.* p. 2, fig., E. Ecuador.

PYGOPODIDÆ.

- Delma (Cryptodelma) baileyi*, sp. n., GÜNTHER, Ann. Nat. Hist. (6) xix, p. 170, fig., Western Australia.
Ophidiocephalus, g. n., allied to *Delma*, Gray, but with the ear hidden and no enlarged ventral scales; *O. tenuatus*, sp. n., LUCAS & FROST, P. Soc. Victoria, (2) ix, p. 54, Charlotte Waters, Central Australia.

AGAMIDÆ.

- W. SAVILLE KENT, Nature, lvi, p. 271, has observed bipedal locomotion in two further members of this family, viz. *Physignathus lesueurii*, Gray, and *Amphibolurus muricatus*, White.
Draco volans, L. Notes on the life-coloration by S. S. FLOWER, P. Z. S. 1896, p. 868; *D. spilonotus*, Gthr., and *beccarii*, Ptrs. & Dor., figured by BOULENGER, P. Z. S. 1897, pls. viii & ix.
Calotes cristatellus, Kuhl. Notes on the changes of colour: S. S. FLOWER, P. Z. S. 1896, p. 871.
Agama inermis, Reuss. Notes on the habits, and figures from life: THILENIUS, Zool. Jahrb. Syst. x, p. 233, pl. xvi, figg. 5-7; *A. aspera*, Wern., = *A. inermis*, Reuss, var., WERNER, Verh. Ges. Wien, xlvii, p. 405; *A. phillipsii*, Blgr., recorded from Erythrea by PERACCA, Boll. Mus. Torino, xii, No. 304; *A. flavicauda*, sp. n., WERNER, Zool. Anz. xx, p. 264, Hab. — ?
Stellio erythrogaster, Nik., described and figured by NIKOLSKY, Annuaire Mus. St. Petersb. 1897, p. 318, pl. xix, fig. 1; *S. erythrogaster*, var. n. *pallida*, id. *ibid.* p. 319, Meshed, E. Persia; *S. bochariensis*, sp. n., NIKOLSKY, Annuaire Mus. St. Petersb. 1897, p. 159, Bokhara.
Phrynocephalus spiniventris, Nik., described and figured by NIKOLSKY, *t. c.* p. 322, pl. xviii, fig. 3; *P. euptilopus*, sp. n., ALCOCK & FINN, J. Asiat. Soc. Beng. lxxv, ii, p. 556, pl. xii, N. Baluchistan.
Amphibolurus muricatus, White. Note on the habits: D. G. STEAD, Zoologist (4) i, p. 233.
Uromastix acanthinurus, Bell. Notes on the habits, and figures from life: THILENIUS, Zool. Jahrb. Syst. x, p. 230, pl. xvi, figg. 1-4.

IGUANIDÆ.

- Enyalioides festæ*, sp. n., PERACCA, Boll. Mus. Torino, xii, No. 300, p. 3, Ecuador.
Liosaurus leopardinus, sp. n., WERNER, Zool. Jahrb., Suppl. iv, p. 248, pl. xiii, fig. 1, Santiago, Chili. [= *Diplollemus darwini*, Bell.—REC.]
Aperopristis, g. n., allied to *Liosaurus*, D. & B.; *A. paronæ*, sp. n., PERACCA, Boll. Mus. Torino, xii, No. 299, pl. —, Brazil.
Stenocercus roseiventris, D. & B. Note by PERACCA, Boll. Mus. Torino, xii, No. 274, p. 4.
Tropidurus torquatus, Wied. Notes on the life-history: GOELDI, Zool. Jahrb. Syst. x, p. 640, pl. xxvi, fig. 1.
Liocephalus bolivianus, Blgr. [*caducus*, Cope]. Note by PERACCA, Boll. Mus. Torino, xii, No. 274, p. 5; *L. festæ*, sp. n., PERACCA, *l. c.* p. 6, fig. Ecuador.
Liolaemus elongatus, p. 450, Neuquen, and *anomatus*, p. 452, Rioja, spp. nn., KOSLOWSKY, Rev. Mus. La Plata, xxii; *L. erythrogaster*, and *platei*, spp. nn., WERNER, Zool. Jahrb., Suppl. iv, pp. 250, 255, pl. xiii, figg. 2 & 3, Coquimbo, Chili.

- Saccodira pectinata*, D. & B. Præanal pores are sometimes present, and the lizard is therefore referred to *Liolaemus*. WERNER, Zool. Jahrb., Suppl. iv, p. 256.
- Hoplocercus annularis*, O'Sh. Note by PERACCA, *l. c.* p. 7.
- Iguana tuberculata*, Laur. Notes on the life-history: GOELDI, Zool. Jahrb. Syst. x, p. 643, pl. xxvi, fig. 2.
- Ctenosaura quinquecarinata*, Gray, described and figured by DUGÈS, *Naturaleza* (2) ii, p. 523, pl. xxxiv.
- Dipsosaurus dorsalis*, B. & G., figured by VAN DENBURGH, Pap. Calif. Ac. v, p. 44, fig.
- Crotaphytus baileyi*, Stejn., and *wislezenii*, B. & G., figured by VAN DENBURGH, *l. c.* pp. 54 & 57, figg.
- Uta mearnsi*, Stejn., figured by VAN DENBURGH, *l. c.* p. 65, fig.
- Callisaurus ventralis*, Hallow., figured by VAN DENBURGH, *l. c.* p. 48, fig.
- Sceloporus*, Wgm. A revision of the species by BOULENGER, P. Z. S. 1897, pp. 474-522, figg.; *S. biseriatus*, Hallow., figured by VAN DENBURGH, *l. c.* p. 81, fig.; *S. asper*, sp. n., BOULENGER, *t. c.* p. 497, pl. xxxiii, La Cumbre de los Arrastrados, Jalisco, Mexico.

ANGUIDÆ.

- Gerrhonotus scincicauda*, Skilt., and *burnetti*, Gray, figured by VAN DENBURGH, Pap. Calif. Ac. v, pp. 105 & 107, figg.
- Anguis fragilis*, L. On the habits and reproduction: ROLLINAT, Mem. Soc. zool. France, x, p. 88. Further notes on the habits in confinement: V. HORNUNG, Zool. Garten, xxxviii, pp. 306-312.

ANNIELLIDÆ.

- Anniella pulchra*, Gray, figured by VAN DENBURGH, Pap. Calif. Ac. v, p. 117, fig.

HELODERMATIDÆ.

- A. DUGÈS, Act. Soc. Chili, vii, pp. 113-117, writes on the effects of the bite of *Heloderma horridum*.
- J. F. HOLM, Anat. Anz. xiii, pp. 80-85, figg. has notes on the histology of the poison glands of *Heloderma suspectum*.

VARANIDÆ.

- Varanus griseus*, Daud. Notes on the habits: THILENIUS, Zool. Jahrb. Syst. x, p. 227.

XANTUSIIDÆ.

- Xantusia riversiana*, Cope, figured by VAN DENBURGH, Pap. Calif. Ac. v, p. 131, fig.

TEIIDÆ.

- Tupinambis nigropunctatus*, Spix. Note on the eggs: GOELDI, Zool. Jahrb. Syst. x, p. 648, pl. xxvi, fig. 3.
- Dracæna guianensis*, Daud. On the habits and eggs: GOELDI, *t. c.* p. 649.

- Centropyx pelviceps*, Cope. Note by PERACCA, Boll. Mus. Torino, xii, No. 300, p. 8.
- Cnemidophorus tigris*, B. & G., and *beldingi*, Stejn. figured by VAN DENBURGH, Pap. Calif. Ac. v, pp. 135 & 142, figg.; *C. leachei*, sp. n., PERACCA, Boll. Mus. Torino, xii, No. 274, p. 6, S. Lorenzo, Argentina.
- Alopoglossus buckleyi*, O'Sh., redescribed by PERACCA, l. c. p. 8.
- Ecpleopus affinis*, Ptrs. Note by PERACCA, l. c. p. 10.
- Euspondylus festæ*, sp. n., PERACCA, l. c. p. 10, fig. Ecuador.
- Ophiognomon trisanale*, Cope. Note by PERACCA, Boll. Mus. Torino, xii, No. 284, p. 1.

AMPHISBÆNIDÆ.

- Amphisbæna camura*, Cope, and *darwinii*, D. & B. Note by PERACCA, Boll. Mus. Torino, xii, No. 274, p. 8; *A. borellii*, sp. n., *id. ibid.* fig. Bolivian Chaco.
- Lepidosternum microcephalum*, Wagl. Notes on the life history: GOELDI, Zool. Jahrb. Syst. x, p. 651, pl. xxvi, fig. 5; *L. boettgeri*, Blgr., = *L. affine*, Bttgr. GÜNTHER, Ann. Nat. Hist. (6) xx, p. 365.

LACERTIDÆ.

- Poromera haugi*, sp. n., MOCQUARD, Bull. Mus. Paris, 1897, p. 54, and Bull. Soc. Philom. (8) ix, p. 6, Lambarene, Gaboon. [= ? *P. fordii*, Hallow.—REC.]
- Lacerta muralis*, Laur. Notes on the habits and reproduction: R. ROLLINAT, Bull. Soc. Acclim. xlv, p. 281.
- Eremias*, Wgm. The following species, forming the section *Boulengeria*, Lat., are described, with detail-figures, by BOULENGER, P. Z. S. 1896, pp. 920-930: *E. mucronata*, Blanf., *erythrostickta*, Blgr., *smithi*, Blgr., *striata*, Ptrs., and *brenneri*, Ptrs.; *E. nigrocellata*, Nik., described and figured by NIKOLSKY, Annuaire Mus. St. Petersb. 1897, p. 326, pl. xviii, fig. 2; *E. martini*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xix, p. 468, Obok.
- Scapteira lineolata*, Nik., described and figured by NIKOLSKY, l. c. p. 330, pl. xviii, fig. 4; *S. aporosceles*, sp. n., ALCOCK & FINN, J. Asiat. Soc. Beng. lxxv, ii, p. 559, pl. xiii, N. Baluchistan.

SCINCIDÆ.

- Egernia frerei*, sp. n., GÜNTHER, Nov. Zool. iv, p. 405, N. E. Queensland.
- Trachysaurus rugosus*, Gray. Note on the habits: J. BERG, Zool. Garten, xxxviii, p. 277.
- Mabuia madaraszi*, sp. n., MÉHELY, Termes. Fuzetek, xx, p. 59, Ceylon [= *M. macularia*, Blyth.—REC.]
- Lygosoma callistum*, Ptrs., and *emigrans*, L. de Jeude, noticed and figured by v. LIDTH DE JEUDE, Notes Leyden Mus. xviii, pp. 252 & 253, pl. vi, figg. 2 & 3; *L. Muelleri*, Schleg. Note by v. LIDTH DE JEUDE, l. c. p. 253; *L. celebense*, F. Müll., *inconspicuum*, F. Müll., and *textum*, F. Müll., figured by BOULENGER, P. Z. S. 1897, pl. xi. *Liolepisma micans*, Werner, = *Lygosoma æneum*, Gir., LUCAS & FROST, Tr. N. Zealand Inst. xxix, p. 278; *L. tropidonotus*, p. 209, pl. x, fig. 1, *sarasianorum*, p. 210, pl. x, fig. 2, and *parvum*, p. 215, pl. xi, fig. 4, spp. nn., BOULENGER, P. Z. S. 1897, Celebes; *L. nigrolineatum*, p. 6, pl. i, fig. 1, *stanleyanum*, p. 7, pl. i, fig. 2, *elegans*, p. 8, pl. i, fig. 3, *curtum*, p. 9, and *iridescens*, p. 9, pl. i, fig. 4, spp. nn., BOULENGER, Ann. Nat. Hist.

- (6) xix, Mt Victoria, New Guinea; *L. everetti*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xix, p. 504, Sumba; *L. gemmiventris* and *vigintiserierum*, spp. nn., SJÖSTEDT, Zool. Anz. xx, p. 56, and Bih. Svenska Ak. Handl. xxiii, Pt. iv, No. 2, pp. 16 & 18, pls. i & ii, Cameroon; *L. tigrinum*, sp. n., v. LIDTH DE JEUDE, Notes Leyden Mus. xviii, p. 250, pl. vi, fig. 1, N. E. New Guinea [name preoccupied, De Vis, 1888.—REC.]; *L. johnstoni*, sp. n., BOULENGER, P. Z. S. 1897, p. 801, pl. xlvi, fig. 1, N. Nyassaland; *L. akeleyi*, sp. n., MEEK, Publ. Field Mus. Zool. i, p. 182, fig. Somaliland [= *Chalcides ocellatus*, Forsk.—REC.]; *L. (Hinulia) compressicaudum*, sp. n., WERNER, SB. Ak. Munchen, 1897, p. 210, Australia; *L. (Homolepida) moellendorffi*, sp. n., BOETTGER, Zool. Anz. xx, p. 162, Tablas, Philippines.
- Eumeces skiltonianus*, B. & G., figured by VAN DENBURGH, Pap. Cal. Ac. v, p. 145, fig.
- Chalcides boulengeri*, Anders. Note by WERNER, Verh. Ges. Wien, xlvii, p. 405.
- Sepsina ardouini*, sp. n., MOCQUARD, Bull. Mus. Paris, 1897, p. 211, Madagascar.

RHIPTOGLOSSA.

- Chamaeleon vulgaris*, Daud. Notes on the habits: THILENIUS, Zool. Jahrb. Syst. x, p. 225; *C. parvilobus*, Blgr. Note by WERNER, Verh. Ges. Wien, xlvii, p. 402.
- Rhampholeon manderia*, sp. n., MEEK, Publ. Field Mus. Zool. i, p. 183, Somaliland [= ? *R. kerstenii*, Ptrs.—REC.].

PYTHONOMORPHA.

- S. W. WILLISTON, Kansas Quart. vi, p. 107, pl. xiii, gives restorations of three Kansas Mosasaurs: *Clidastes velox*, Marsh, *Platecarpus coryphaeus*, Cope, and *Tylosaurus proriger*, Cope. The same author also has remarks on the limbs and scales of the latter species, *t. c.* p. 99, pls. ix-xii.
- Mosaurus gaudryi*, sp. n., THÉVENIN, Bull. Soc. geol. France (3) xxiv, p. 902, pl. xxix, Chalk of Vaux-Eclusier, near Péronne, France.
- Platecarpus somenensis*, sp. n., THÉVENIN, *t. c.* p. 907, pl. xxx, Chalk of Vaux-Eclusier, near Péronne.
- Brachysaurus*, g. n. (*Tylosauridae*?) for *B. overtoni*, sp. n., WILLISTON, *t. c.* p. 96, pl. viii, Cretaceous of South Dakota.

OPHIDIA.

- L. KATHARINER, Zool. Jahrb. Anat. x, pp. 45-92, figg., pls. vi-viii, investigates the structure and replacement of the poison-fangs of Snakes.
- C. BISOGNI, Anat. Anz. xiii, pp. 490-494, figg., has a further communication on a special gland in the lingual sheath of Vipers, and, pp. 495-498, figg., on the anatomical correspondence of the sub-lingual gland with the chin-shields in the non-poisonous Snakes.
- J. BETHENCOURT FERREIRA, J. Sci. Lisb. (2) iv, pp. 235-248, writes on Snake poison and antidotes.
- A. G. CARDEW, J. Bombay Soc. x, pp. 585-596, gives a rough key to the identification of the Indian *Ophidia*.

TYPHLOPIDÆ.

- Typhlops bicolor*, Ptrs. = *T. australis*, Gray; WAITE, Tr. R. Soc. S. Austral. xxi, p. 26. *T. pinguis*, sp. n., *id. ibid.* p. 25, pl. iii, S. Australia.
T. florensis, sp. n., BOULENGER, Ann. Nat. Hist. (6) xix, p. 505, Flores.
T. ruber, sp. n., BOETTGER, Zool. Anz. xx, p. 164, Samar, Philippines.

GLAUCONIIDÆ.

- Glauconia blanfordii*, Blgr., recorded from N. Baluchistan by ALCOCK & FINN, J. Asiat. Soc. Beng. lxxv, ii, p. 561. *G. humilis*, B. & G., figured by VAN DENBURGH, Pap. Calif. Ac. v, p. 151, fig.

BOIDÆ.

- H. C. E. ZACHARIAS, Zool. Jahrb. Syst. x, pp. 56-90, figg., pls. vii-x, has made a study of the cephalic lepidosis in the *Boidæ*, from the phylogenetic point of view.
 J. J. QUELCH, Timehri (2) xi, pp. 294-313, has a popular article on the *Boidæ* of Tropical America.
Liasis tornieri, sp. n., WERNER, Zool. Anz. xx, p. 261, New Guinea.
Lichanura roseofusca, Cope, figured by VAN DENBURGH, Pap. Calif. Ac. v, p. 153.

ILYSIIDÆ.

- Cylindrophis opisthorhodus*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xix, p. 506, Lombok.

COLUBRIDÆ.

Aglypha.

- Tropidonotus natrix*, L. On specimens occurring out at sea: BÖSE, Zool. Anz. xx, p. 255; *T. viperinus*, Latr. On variations in the head-shields in Tunisian specimens: WERNER, Verh. Ges. Wien, xlvii, p. 406; *T. tessellatus*, Laur., varr. nn. *hagenbecki*, *lineaticollis*, and *nigerrima*: WERNER, Zool. Anz. xx, pp. 262 & 263, Transcaspia; *T. grahami*, B. & G. Note on its parturition: F. C. BAKER & F. M. WOODRUFF, Science (2) v, p. 447; *T. sarasinorum*, Blgr., and *celebicus*, Ptrs. and Dor., figured by BOULENGER, P. Z. S. 1897, pl. xii, figg. 1 & 2; *T. depressiceps*, sp. n., WERNER, Verh. Ges. Wien, xlvii, p. 402, Cameroon, W. Africa.
Helicops pictiventris, sp. n., WERNER, SB. Ak. Munchen, 1897, p. 205, Porto Alegre, Brazil.
Diaphorolepis wagneri, Jan (nom. nud.), described and head figured by WERNER, SB. Ak. Munchen, 1897, p. 203.
Pseudoboodon, g. n., allied to *Boodon*, D. & B.; *P. gascae*, sp. n., PERACCA, Boll. Mus. Torino, xii, No. 273, fig., Maldi, Erythrea.
Glypholycus whytii, sp. n., BOULENGER, P. Z. S. 1897, p. 802, pl. xlvi, fig. 2, N. Nyassaland.
Gonionotophis vossii, Bttgr. = *G. brussauxi*, Mocq.; MOCQUARD, *t. c.* p. 13.
Simocephalus capensis, Smith. Note by BOULENGER, Ann. Nat. Hist. (6) xx, p. 374; *S. guirali*, Mocq. Note by MOCQUARD, Bull. Soc. Philom. (8) ix, p. 13.

- Lycophidium irroratum*, Leach. Note by WERNER, Verh. Ges. Wien, xlvii, p. 398.
- Lycodon stormi*, Bttgr., figured by BOULENGER, P. Z. S. 1897, pl. xii, fig. 3.
- Stegonotus reticulatus*, Blgr. = *S. modestus*, Schleg.; v. LIDTH DE JEUDE, Notes Leyden Mus. xviii, p. 254.
- Zamensis algirus*, Jan, and *hippocrepis*, L. On variations in the head-shields in Tunisian specimens: WERNER, Verh. Ges. Wien, xlvii, p. 406, pl. ii, fig. 7.
- Lytorhynchus maynardi*, sp. n., ALCOCK & FINN, J. Asiat. Soc. Beng. LXV, ii, p. 562, pl. xiv, N. Baluchistan.
- Phrynonax pæcilonotus*, Gthr. Note by PERACCA, Boll. Mus. Torino, xii, No. 300, p. 14.
- Natrix cinnamomea*, Wagl. = *Phrynonax fasciatus*, Ptrs.: WERNER, SB. Ak. Munchen, 1897, p. 207.
- Coluber longissimus*, Laur. On its occurrence in the Department Orne, France: LETACQ, Bull. Soc. Rouen, xxxii, p. 132.
- Herpetodryas carinatus*, L. On the eggs: GOELDI, Zool. Jahrb. Syst. x, p. 669, pl. xxvii, fig. 11.
- Rhynchopis*, g. n., allied to *Dendrophis*, but with non-oblique scales and the snout ending in a conical scaly appendage. MOCQUARD, Bull. Mus. Paris, 1897, p. 214; *R. boulengeri*, sp. n., *id. ibid.* p. 215, Norway Is., Gulf of Tonquin.
- Dendrelaphis inornatus*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xix, p. 507, Sumba and Savu.
- Leptophis ortonii*, Cope, p. 829, pl. lxiv, fig. 1, *mexicanus*, D. & B. p. 831, pl. lxiv, fig. 4, *modestus*, Gthr., p. 833, pl. lxv, fig. 1, *bilineatus*, Gthr. p. 834, pl. lxiv, fig. 2, and *diplostropis*, Gthr., p. 835, pl. lxiv, fig. 3, described and figured by BOCOURT, Miss. Sc. Mex. Rept.; *L. diplostropis*, Gthr., var. n. *æneus*, *id. ibid.* p. 837, Mexico.
- Philothamnus semivariatus*, Smith. Note by BOULENGER, Ann. Nat. Hist. (6) xx, p. 375; *P. nitidus*, Gthr. Note by WERNER, Verh. Ges. Wien, xlvii, p. 403.
- Uromacer ricardinii*, sp. n., PERACCA, Boll. Mus. Torino, xii, No. 282, S. Paulo, Brazil.
- Liophis sagittifer*, Jan. Note by PERACCA, Boll. Mus. Torino, xii, No. 274, p. 10; *L. guentheri*, sp. n., *id. ibid.* p. 11, Bolivian Chaco.
- Rhadinaea occipitalis*, Jan. Note by PERACCA, t. c. No. 284, p. 3; *R. festa*, sp. n., PERACCA, t. c. No. 300, p. 16, Ecuador; *R. modesta*, sp. n., KOSŁOWSKY, Revist. Mus. La Plata, xxii, p. 453, Salta, Buenos Ayres.
- Oreophis*, g. n., allied to *Coronella*, Laur., for *O. boulengeri*, sp. n., DUGÈS, P. Z. S. 1897, p. 284, fig. 1, Guanajuato, Mexico.
- Spaniopholis*, g. n., with the anterior maxillary teeth longest, keeled scales, and the eye large with vertical pupil; *S. souliei*, sp. n., MOCQUARD, Bull. Mus. Paris, 1897, p. 216, Yunnan.
- Oligodon subgriseus*, var. n. *alternans* (BOCAGE), BETHENCOURT FERREIRA, J. Sci. Lisb. (2) iv, p. 224, Goa.
- Prosymna bocagii*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xix, p. 278, fig. Ubangi, Congo Free State.
- Contia nasus*, Gthr. On its variations in lepidosis and coloration, DUGÈS, Mem. Soc. Ant. Alzate, xi, p. 409, pl. v.
- Ablabes philippinus*, sp. n., BOETTGER, Zool. Anz. xx, p. 164, Culion & Samar, Philippines.
- Grayia furcata*, Mocq., = *G. ornata*, Bocage, MOCQUARD, Bull. Soc. Philom. (8) ix, p. 8; *G. tholloni*, sp. n., *id. ibid.* p. 11, French Congo.
- Atractus elaps*, Gthr. Note by PERACCA, Boll. Mus. Torino, xii, No. 284, p. 4; *A. collaris*, sp. n., *id. ibid.* fig. E. Peru; *A. guentheri*, Wuch. A variety from Ecuador, described by WERNER, SB. Ak. Munchen, 1897, p. 209.

- Agrophis sarasinorum*, F. Müll., figured by BOULENGER, P. Z. S. 1897, pl. xiii, fig. 1.
Calamaria acutirostris, Blgr., pl. xiii, fig. 2, *nuchalis*, Blgr., pl. xiii, fig. 3, *muelleri*, Blgr., pl. xiv, fig. 1, *curta*, Blgr., pl. xiv, fig. 2, and *gracilis*, Blgr., pl. xiv, fig. 3, figured by BOULENGER, *t. c.*; *C. collaris*, sp. n., *id. ibid.* p. 225, pl. xiv, fig. 4, Celebes.

Opisthoglypha.

- Hypsirhina matannensis*, sp. n., BOULENGER, P. Z. S. 1897, p. 225, pl. xv, fig. 1, Celebes.
Dipsadoboa unicolor, Gthr. Note by WERNER, Verh. Ges. Wien, xlvii, p. 399.
Himantodes lentiferus, Cope, redescribed by PERACCA, Boll. Mus. Torino, xii, No. 300, p. 15, fig.
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- Boulengerina*, Dollo. *Naiia annulata*, Ptrs. belongs to this genus: MOCQUARD, Bull. Soc. Philom. (8) ix, p. 14; *B. dybowskii*, sp. n., *id. ibid.* p. 15, Bangui, French Congo.

- Elapechis sundevallii*, Smith. Note by BOULENGER, Ann. Nat. Hist. (6) xx, p. 375; *E. mæbiusi*, sp. n., WERNER, Verh. Ges. Wien, xlvii, p. 400, Togoland, W. Africa.
- Bungarus sindanus*, sp. n., BOULENGER, J. Bombay Soc. xi, p. 73, pl. —, Sind.
- Naia haie*, L. Notes on the habits in Tunisia: THILENIUS, Zool. Jahrb. Syst. x, p. 221; *N. nigricollis*, Rhdt. Note by BOULENGER, Ann. Nat. Hist. (6) xx, p. 375; *N. guentheri*, Blgr., recorded from Sierra Leone by BOULENGER, Ann. Nat. Hist. (6) xix, p. 154.
- Elaps hertwigii*, sp. n., WERNER, SB. Ak. Munchen, 1897, p. 208, Central America.
- Dendraspis angusticeps*, Smith. Note by BOULENGER, Ann. Nat. Hist. (6) xx, p. 376.

AMBLYCEPHALIDÆ.

- Leptognathus pratti*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xx, p. 523, Andes of Colombia.

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- Vipera berus*, L. Note on its distribution in Transylvania: KIMAKOVICZ, Verh. Siebenb. Ver. xlvi, p. 102. Criticism of the latter note by H. v. MÉHELY, Zool. Anz. xx, p. 434. On a bicephalous specimen: H. BORGERT, Verh. Ver. Hamb. (3) iv, p. 50, figg.
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- Atractaspis reticulata*, Sjöst., described and figured by SJÖSTEDT, Bih. Svenska Ak. Handl. xxiii, Pt. iv, No. 2, p. 28, pl. i, fig. 1, & pl. iii; *A. boulengeri*, sp. n., MOCQUARD, Bull. Mus. Paris, 1897, p. 54, and Bull. Soc. Philom. (8) ix, p. 16, Lambarene, Gaboon; *A. matschiensis*, sp. n., WERNER, Verh. Ges. Wien, xlvii, p. 404, pl. ii, fig. 1, Cameroon, W. Africa.
- Sistrurus catenatus*, Raf. On its habits in confinement; P. SELOUS, Bull. Soc. zool. France, xxii, pp. 157 & 187.
- Ancistrodon hypnale*, Merr. Note by MÉHELY, Termes. Fuzetek, xx, p. 64.
- Lachesis microphthalmus*, Cope. Note by PERACCA, Boll. Mus. Torino, xii, No. 300, p. 20; *L. wagleri*, Boie. A variety from Celebes figured by BOULENGER, P. Z. S. 1897, pl. xv, fig. 2.

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- Ornithostoma ingens*, Marsh. Restoration by WILLISTON, Kansas Quart. vi, p. 35, pl. ii.

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- O. C. MARSH, Amer. J. Sci. (4) iv, pp. 413-416, remarks on Dinosaur-remains recently inspected by him in various European Museums.

- Remarks on the supposed relationship of Birds and Dinosaurs: GADOW, P. Cambridge Soc. ix, pp. 204-208.
- C. W. ANDREWS, Ann. Nat. Hist. (6) xix, pp. 585-591, fig. pl. xvi, describes and figures a cast of the brain-cavity of *Iguanodon*.
- Iguanodon bernissartensis*, Blgr. On the casts in the Cambridge Museum: HARMER, P. Cambridge Soc. ix, p. 202.
- On a Dinosaurian footprint from Molina de Aragon, Spain: CALDERON, Act. Soc. Espan. 1897, p. 27.

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- Caiman sclerops*, Schn. Notes on the life-history: GOELDI, Zool. Jahrb. Syst. x, p. 653, fig. pl. xxvii, fig. 19.
- Tomistoma lyceensis*, Costa (foss.). Description and figures of remains from the miocene of Lecce, Italy: P. ALDINIO, Atti Acc. Gioen. (4) ix, No. 15, 2 pls. Remarks by CAPELLINI, Riv. ital. Pal. iii, p. 18.
- A. BIGOT continues his studies of *Steneosaurus* and *Metriorhynchus* remains from the Jurassic Beds of Normandy. Bull. Soc. Normand. (4) x, p. 123.

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- E. C. CASE, J. Morphol. xiv, pp. 21-56, discusses the relationships of the various types of marine Turtles.
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- K. MITSUKURI, J. Coll. Sci. Japan, x, 1896, pp. 1-118, pls. i-xi, writes on the early development of Chelonia.
- Podocnemis expansa*, Schw. and *dumeriliana*, Schw. Notes on the life-histories: GOELDI, Zool. Jahrb. Syst. x, pp. 660 & 664, pl. xxvi, figg. 8 & 9.
- Testudo polyphemus*, Daud. On its burrows: SCHNEE, Zool. Garten, xxxviii, p. 275.
- Testudo gigantea*, Schw. = *elephantina*, D. & B. Further notes by ROTHSCHILD, Nov. Zool. iv, p. 407; *T. daudinii*, D. & B., noticed and figured from life, *id. ibid.* pl. xiii; *T. græca*, L. On the habits in confinement, E. BUCK, Zool. Garten, xxxviii, p. 293. M. JACQUET remarks on an accidentally injured specimen, Bull. Soc. Bucarest, p. 364, figg.; *T. zarudnyi*, Nik. described and figured by NIKOLSKY, Annuaire Mus. St. Petersb. 1897, p. 307, pl. xvii.
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- Liemys*, g. n., combining characters of *Ocadia*, Gray, and *Bellia*, Gray, BOULENGER, Ann. Nat. Hist. (6) xix, p. 468; *L. inornata*, sp. n., *id. ibid.* p. 469, Sarawak [= *Brookeia baileyi*, Bartl.—REC.]
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- F. BAUER, Palæontogr. xlv, pp. 283-328, pls. xxv-xxvii, monographs the Ichthyosaurs of the Upper White Jura of Germany, specially *Ichthyosaurus posthumus*, Wagner.

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- Pliosaurus ferox*, Sauv. On the structure of the skull: C. W. ANDREWS, Quart. J. Geol. Soc. liii, p. 177, pl. xii.
- Cimoliosaurus leucoscopus*, sp. n., ETHERIDGE, JUNR, Rec. Austral. Mus. iii, p. 24, pls. v-vii, Upper Cretaceous, South Australia.
- Nothosaurus blezingeri*, *ichthyospondylus*, and *chelydrops*, spp. nn., FRAAS, Schwab. Trias-Saur. pp. 11 & 12, figg. pl. iv, Trias of Souabia.
- Simosaurus gaillardoti*, H. v. Mey. Skull figured by FRAAS, *op. cit.* pl. iii.
- Neusticosaurus pygmaeus*, sp. n., FRAAS, *op. cit.* p. 13, fig., Trias of Souabia.
- Psephosaurus*, g. n., near *Psephoderma*, for dermal scutes referred to the *Nothosauria*; *P. suevicus*, sp. n., FRAAS, *l. c.* p. 13, fig., Trias of Sonabia.
- Stereosternum tumidum*, Cope. On a new specimen from S. Paulo, Brazil: A. S. WOODWARD, Geol. Mag. (2) Dec. iv, iv, p. 145, pl. v.

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- Placodus duplicatus*, sp. n., FRAAS, Schwab. Trias-Saur. p. 14, fig., Trias of Souabia.

THECODONTIA.

- Mystriosuchus*, g. n., for *Belodon planirostris*, H. v. Mey. FRAAS, Schwab. Trias-Saur. p. 16; *M. planirostris*, H. v. Mey. Skull figured, *id. ibid.* pl. v.
- Belodon kapffi*, H. v. Mey. Skull figured by FRAAS, *op. cit.* pl. v.
- Aetosaurus ferratus*, FRAAS, figured, *id. ibid.* pl. vi.

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- Sphenodon punctatus*, Gray. Notes on the anatomy: DUGÈS, Mem. Soc. Ant. Alzate, x, pp. 393-396, pl. xxiv.
- Dimetrodon incisivus*, Cope (foss.). Notes on the skull and a cast of the brain-cavity: E. C. CASE, Amer. J. Sci. (4) iii, p. 321, figg.
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- Otocaelidæ*. A new family of Cotylosauria, established by Cope, P. Amer. Phil. Soc. xxxv, p. 123, for *Otocælus*, Cope, and *Conodectes*. Remarks are made by the same author on the *Diadectidæ*, and a synopsis of the genera given, p. 131.
- Otocælus testitudineus*, Cope, figured by COPE, *l. c.* pls. vii & viii; *O. mimeticus*, sp. n., *id. ibid.* p. 128, pl. ix, Permian, Texas.
- Conodectes*, g. n., allied to *Otocælus*, for *C. favosus*, sp. n., *id. ibid.* p. 129, pl. ix.
- Diadectes biculminatus* and *sideropelicus*, spp. nn., COPE, *t. c.* pp. 132 & 133, Permian, Texas.
- Bolbodon*, g. n., allied to *Diadectes*, for *B. tenuitectus*, sp. n., COPE, *t. c.* p. 134, Permian, Texas.
- Pariotichus aduncus*, sp. n., COPE, *t. c.* p. 135, Permian, Texas.
- Trimerorhachis conangulus*, sp. n., COPE, *t. c.* p. 137, Permian, Texas.

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- H. E. OSBORN remarks on the dentition of certain Upper Triassic Reptiles of South Africa which are regarded as upon the border line between Reptiles and Mammals. *Science* (2) v, p. 576.
- R. BROOM, *J. Anat. Physiol. norm. path.* (2) xi, pp. 277-279, remarks on the interpretation to be given to the anterior elements of the palate in *Gomphognathus*.
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BATRACHIA.

- On the proper name to use for this Class: G. BAUR, *Science* (2) vi, pp. 170, 372; B. G. WILDER, *t. c.* p. 295; J. GILL, *t. c.* p. 446; O. P. HAY, *t. c.* p. 773.
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PHANEROGLOSSA.

RANIDÆ.

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- Engystoma borneense*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xix, p. 108, Sarawak.
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- Hylorhina silvatica*, Bell, figured by WERNER, t. c. pl. iv, fig. 15.
- Borborocoetes bolitoglossus*, sp. n., WERNER, Zool. Anz. xx, p. 265, fig., Blumenau, Brazil.

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- Fanchonia elegans*, Werner, = *Hyla aurea*, Less. WERNER, Zool. Anz. xx, p. 266.
- Hylella boulengeri*, sp. n., MÉHELY, Termes. Fuzetek, xx, p. 414, pl. x, fig. 8, Friedrich-Wilhelmschafen, German New Guinea.
- Nyctimantis papua*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xix, p. 12, pl. i, fig. 5, Mt. Victoria, New Guinea.
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AGLOSSA.

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- J. A. MURRAY, Anat. Anz. xiii, pp. 661-664, figg. remarks on the vertebral column of *Spelerpes*, *Plethodon*, and *Desmognathus*.
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- JULIA B. PLATT, Morphol. Jahrb. xxv, pp. 377-464, pls. xvi-xviii, has investigated the development of the cartilaginous skull and of the branchial and hypoglossal musculature in *Necturus*.
- F. MEVES, Arch. mikr. Anat. xlvi, pp. 1-83, pls. i-v, describes the development of the male genital glands of *Salamandra maculosa*.
- J. DAUEN, Morphol. Arbeit. vii, pp. 366-392, figg. writes on the rudimentary cloacal gland of female newts (*Molge*).
- A. VAN GEHUCHTEN, Verh. Anat. Ges. xi, pp. 119-123, has a preliminary note on some points in the structure of the central nervous system of *Salamandra maculosa*.
- U. ROSSI, Arch. Entwicklmech. v, pp. 587-590, 595-614, figg. pl. ix, writes on blastopore and oolisis in the egg of *Salamandrina perspicillata*.
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A. BRAUER, Zool. Jahrb. Anat. x, pp. 389-472, figg. pls. xxxiv-xxxvii, has a memoir on the early development of *Hypogeophis*.

STEGOCEPHALA.

Ctenerpeton, g. n., allied to *Osteocephalus*, *Ptyonius*, and *Urocordylus*, for *C. alveolatum*, sp. n., COPE, P. Amer. Phil. Soc. xxxvi, p. 83, pl. iii, fig. 1, Coal-measures of Cannelton, Pennsylvania.

Ceraterpeton galvani, Huxley. On a new specimen from the coal-measures of Castlecomer, Kilkenny, Ireland: A. S. WOODWARD, Geol. Mag. (2) Dec. iv, iv, p. 293, pl. xii; *C. tenuicorne*, Cope, noticed and figured by COPE, t. c. p. 85, pl. iii, fig. 2.

Sauropleura latithorax, sp. n., COPE, t. c. p. 86, pl. iii, fig. 4, Carboniferous, Linton, Ohio.

Metopias diagnosticus, H. v. Mey. figured by FRAAS, Schwab. Trias-Saur. pls. i & ii.

On some Stegocephalian remains from the Kansas Permian: WILLISTON, Kansas Quart. vi, p. 53, figg.

V. PISCES.

BY

G. A. BOULENGER, F.R.S.

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II. GENERAL SUBJECT.

LAVOCAT, Mem. Ac. Toulouse (9) ix, pp. 138-154, has a general paper on the structure and organisation of Fishes, recent and fossil.

J. T. CUNNINGHAM, Sci. progress (2) i, pp. 491-505, in an article on "recapitulation," makes remarks on the phylogeny of various groups of Fishes.

S. H. REYNOLDS, in his Manual "The Vertebrate Skeleton" (Cambridge, 8vo), deals with the Fishes, pp. 50-132.

G. M. WINSLOW, Bull. Essex Inst. xxviii, pp. 122-138, 1 pl., studies the chondrocranium in *Polypterus*, *Salmo*, and *Protopterus*.

O. P. HAY, Zool. Bull. i, pp. 131-141, criticises Gadow and Abbott's memoir on the vertebral column of Fishes.

V. v. EBNER, SB. Ak. Wien, cv, iii, 1896, pp. 123-161, figg., 4 pls., writes on the notochord of Fishes and on the vertebræ of Teleosteans.

E. GAUPP, Zool. Centralbl. iv, pp. 533-550, reviews recent investigations on the development and structure of the vertebral column of Fishes.

H. KLAATSCH, Morphol. Jahrb. xxv, pp. 156-169, pl. x, discusses the morphological signification of the hypochorda.

E. GÖPPERT, Morphol. Jahrb. xxv, pp. 244-249, remarks on Rabl's conception of the morphology of the ribs.

C. EMERY, Anat. Anz. xiii, pp. 137-149, remarks on the crossopterygium and its relations to other types of limbs in higher vertebrates.

D. A. WIKSTRÖM, Anat. Anz. xiii, pp. 401-408, writes on the innervation and structure of the myomeres of the trunk in Cyclostomes and Selachians.

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IV. REFERENCES ARRANGED SYSTEMATICALLY.

TELEOSTOMI.

TELEOSTEI.

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- L. HÄMMERLE, Ber. Ges. Freiburg, x, pp. 20-32, investigates the anatomical structure of the pectoral fins of *Periophthalmus koelreuteri*.
- A. ANDRES, Rend. Ist. Lombardo (2) xxx, pp. 1123-1139, 2 pls., writes on the intermuscular bones (myospines) on *Tinca vulgaris*.
- K. FRANZ, Morphol. Jahrb. xxv, pp. 143-155, figg., pl. ix, writes on the development of the hypochorda of Teleosteans.
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- J. T. CUNNINGHAM, Quart. J. Micr. Sci. xl, pp. 101-163, pls. ii-iv, writes on the histology of the ovary and of the ovarian ova in certain marine Teleostians.
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- O. AICHEL, SB. Ges. Munchen, xi, pp. 73-78, fig., has a communication on the histological structure of the olfactory mucous membrane of embryonic Teleosteans.
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- H. STAHR, Biol. Centralbl. xvii, pp. 273-282, writes on the function of the lateral line, his observations being based on *Polyacanthus viridicinctus*.
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- E. BALLOWITZ, Anat. Anz. xiii, pp. 643-648, figg., has notes on the histology of the electric organ of *Gymnotus*.
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- A. T. MASTERMAN, Nat. Sci. x, pp. 382-392, figg., writes on some effects of pelagic spawning-habit on the life-histories of Teleosteans.
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ACANTHOPTERYGII.

PERCIDÆ.

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- Percina caprodes*, Raf. Further notes on variations: MOENKHAUS, P. Indiana Ac. 1895, p. 278 [1896]; *P. aspro*, Cope & Jord. Notes on variations: MOENKHAUS, t. c. p. 161 [1896].
- Boleosoma nigrum*, Raf. Notes on variations: MOENKHAUS, l. c. p. 161.
- Acerina cernua*, L., figured, with notes on its occurrence in the lower Loire. E. MARCHAND, Bull. Soc. Ouest France, vii, p. 151, pl. iv. Notes on Croatian specimens: MOJO, t. c. p. 84, fig. On variations in the fin-rays: DUNKER, Biol. Centralbl. xvii, pp. 785 & 815.

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- Mycteroperca hopkinsi*, sp. n., JORDAN & RUTTER, P. Ac. Philad. 1897, p. 105, Jamaica.
- Dules dispilurus*, Gthr. Note by JORDAN & RUTTER, t. c. p. 106.
- Anthias townsendi*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xx, p. 420, Mekran Coast, Persia.
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SQUAMIPINNES.

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Sebastes semicinctus, p. 449, pl. liii, fig. 1, Sta. Barbara Channel, California, *ayresii*, p. 450, Cortez Banks, California, and *crameri* (JORDAN), p. 451, off Tillamook, Oregon, spp. nn., GILBERT, *t. c.*
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BERYCIDÆ.

- Myripristis clarionensis*, sp. n., GILBERT, P. U. S. Mus. xix, p. 441, pl. lxix, Clarion Is., Mexico.
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SCIÆNIDÆ.

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- Scomber scombrus*, L. A review of the present state of our knowledge of the habits and migration: E. J. ALLEN, J. Mar. Biol. Ass. (2) v, p. 1; *S. colias*, Gm., and *microlepidotus*, Rüpp., figured by KITAHARA, Journ. Fish. Bur. Tokyo, vi, pl. iv, fig. 8 and pl. iii, fig. 5.
Thynnus thynnus, L., *sibi*, Temm. & Schleg., *germo*, Lacép., *macropterus*, Temm. & Schleg., *thunnina*, C. & V., and *pelamys*, L., figured by KITAHARA, *t. c.* pls. i-iii.
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Cybium nipponium, C. & V., figured by KITAHARA, *t. c.* pl. iv, fig. 11.
Acanthocybium solandri, C. & V. Note by BOULENGER, P. Z. S. 1897, p. 272.
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Auxis rochei, Risso, figured by KITAHARA, *t. c.* pl. iv, fig. 9.
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TRACHINIDÆ.

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Pseudochromis nigrovittatus, sp. n., BOULENGER, Ann. Nat. Hist. (6) xx, p. 421, Mekran Coast, Persia.

BATRACHIDÆ.

- Batrachus argentinus*, sp. n., BERG, An. Mus. Buenos Ayres, v, p. 300, Mouth of the Plate River.

PEDICULATI.

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COTTIDÆ.

- Prionotus loxias*, sp. n. (JORDAN) GILBERT, P. U. S. Mus. xix, p. 452, Bay of Panama.
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CATAPHRACTI.

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DISCOBOLI.

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GOBIIDÆ.

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- Gillichthys detrusus*, sp. n., GILBERT & SCOFIELD, P. U. S. Mus. xx, p. 498, pl. xxxviii, Mouth of Colorado River, Mexico.
- Eleotris*, Gron. List of the Australian species: DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxi, p. 752.
- Carassiops*, g. n., for *Eleotris compressus*, Krefft, DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxi, p. 732; *C. longi*, sp. n., *id. ibid.* p. 733, New South Wales.
- Krefftius*, g. n., for *Eleotris australis*, Krefft, which is described; DOUGLAS-OGILBY, *t. c.* p. 736.
- Mulgoa*, g. n., for *Eleotris coxii*, Krefft, which is described; DOUGLAS-OGILBY, *t. c.* p. 740.
- Ophiorrhinus*, g. n., for *Eleotris grandiceps*, Krefft, and *E. nudiceps*, Casteln., which are described; DOUGLAS-OGILBY, *t. c.* p. 745.
- Callionymus maculatus*, Bp., recorded from Falmouth Bay by HOLT, J. Mar. Biol. Ass. (2) v, p. 90.

BLENNIIDÆ.

- Emmnion*, g. n., remotely allied to *Labrosomus* and *Pseudoblennius*, for *E. bristolæ*, sp. n. (JORDAN) GILBERT, P. U. S. Mus. xix, p. 454, Galapagos Archipelago.
- Emblemaria oculocirris*, sp. n. (JORDAN) GILBERT, *t. c.* p. 456, La Paz, California.
- Salarias curtus* and *phantasticus*, spp. nn., BOULENGER, Ann. Nat. Hist. (6) xx, p. 422, Mekran Coast, Persia.
- Tripterygium melanurum*, Guich.: note by COLLETT, Arch. Naturv. Christian. xix, No. 7, p. 11.
- Ulvicola*, g. n., allied to *Xererpes*, for *U. sanctæ-rosæ*, sp. n., GILBERT (& STARKS), *t. c.* p. 455, Sta Rosa Is., California.
- Opisthocentrus tenuis*, sp. n., T. H. & B. A. BEAN, P. U. S. Mus. xx, p. 463, pl. xxxv, Vulcano Bay, Japan.

ATHERINIDÆ.

Telmatherina, g. n., allied to *Atherina*, but distinguished by the more strongly compressed body, the absence of a silvery lateral band, and the smaller number of vertebræ; *T. celebensis*, sp. n., BOULLINGER, P. Z. S. 1897, p. 428, pl. xxviii, fig. 3, Celebes.

MUGILIDÆ.

Mugil hypselosoma and *georgii*, spp. nn., DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxii, pp. 74 & 77, Coast of New South Wales.

Cestræus norfolcensis, sp. n., DOUGLAS-OGILBY, *t. c.* p. 80, Norfolk Is.

Pseudomugil signifer, Kner: note by DOUGLAS-OGILBY, *t. c.* p. 82.

GASTROSTEIDÆ.

Gastrosteus pungitius, L.: observed to do well in salt water: H. O. FORBES, Bull. Liverp. Mus. i, p. 24.

TEUTHIDIDÆ.

Xesurus clarionis, sp. n., GILBERT (& STARKS), P. U. S. Mus. xix, p. 445, pl. li, Clarion Is., Mexico.

GOBIESOCIDÆ.

Lepadogaster bimaculatus, Penn. Note by COLLETT, Arch. Naturv. Christian. xix, No. 7, p. 13. On the eggs and young: MCINTOSH, Ann. Nat. Hist. (6) xix, p. 252.

LOPHOTIDÆ.

Lophotes, sp. -? On a specimen found on the coast of Taranaki, New Zealand; F. E. CLARKE, Tr. N. Zealand Inst. xxix, p. 251, pl. xvi.

NOTACANTHIDÆ.

Macdonaldia alta and *longa*, spp. nn., GILL & TOWNSEND, P. Soc. Washington, xi, p. 232, Bering Sea, 900-1401 faths.

ACANTHOPTERYGII PHARYNGOGNATHI.

POMACENTRIDÆ.

Eupomacentrus diencæus, sp. n., JORDAN & RUTTER, P. Ac. Philad. 1897, p. 116, Jamaica.

Chromis multilineatus, Guich., described by JORDAN & RUTTER, *t. c.* p. 117.

Pomacanthus paru, Bl., described by JORDAN & RUTTER, *t. c.* p. 124.

Pomacentrus jordani, sp. n., RUTTER, P. Ac. Philad. 1897, p. 77, Swatow, China.

Angelichthys ciliaris, L., described by JORDAN & RUTTER, *t. c.* p. 125.

LABRIDÆ.

Crenilabrus cæruleus, Risso. Note by PERUGIA, Ann. Mus. Genova (2) xviii, p. 139.

- Odax attenuatus*, sp. n., DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxii, p. 83, Tasmania.
Scarus emblematicus, sp. n., JORDAN & RUTTER, P. Ac. Philad. 1897, p. 122, Jamaica.

CHROMIDES.

- Chromis natalensis*, sp. n., M. WEBER, Zool. Jahrb. Syst. x, p. 147, Natal.—
C. (Ctenochromis) philander, sp. n., *id. ibid.* p. 148, Natal; *C. auratus*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xx, p. 155, L. Nyassa; *C. rendalli*, sp. n., BOULENGER, P. Z. S., 1896, p. 915, fig., Upper Shiré R.
Oreochromis shiranus, sp. n., BOULENGER, *l. c.* p. 916, fig. Upper Shiré R.
Corematodus, g. n., allied to *Chromis*, but both jaws with extremely broad bands of innumerable minute club-shaped teeth with compressed oblique entire crowns. BOULENGER, *l. c.* p. 918; *C. shiranus*, sp. n., *id. ibid.* p. 919, fig., Upper Shiré R.
Docimodus, g. n., allied to *Chromis*, but both jaws with a very broad band of teeth, the outer large and entire, the others small and tricuspid; *D. johnstoni*, sp. n., BOULENGER, *l. c.* p. 917, fig., Upper Shiré R.
Pelmatochromis congeticus, sp. n., BOULENGER, Ann. Nat. Hist. (6) xx, p. 422, Upper Congo.
Heros fasciatus, Stdr. Figured, with an account of its habits in the aquarium: E. BADE, Der Chanchito, Berlin: 1897, 8vo.; *H. gouldii*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xx, p. 298, Cunani R., French Guiana.
Boggiana, g. n., allied to *Crenicichla*, for *B. ocellata*, sp. n., PERUGIA, Ann. Mus. Genova (2) xviii, p. 148, Upper Paraguay.

ANACANTHINI.

LYCODIDÆ.

- Lycodes digitatus* and *concolor*, spp. nn., GILL & TOWNSEND, P. Soc. Washington, xi, pp. 232, 233, Bering Sea, 49 & 276 faths.

GADIDÆ.

- Gadus morrhua*, L., *eglefinus*, L., and *merlangus*, L. Notes on the life-histories: MCINTOSH, Rep. Fish. Board Scotland, xv, pt. iii, pp. 194, 196, 201, pls. v & vi; *G. pollachius*, L. On the eggs and young: MCINTOSH, Ann. Nat. Hist. (6) xix, p. 243; *G. esmarkii*, Nilss. Recorded from the Plymouth district by M. DUNN & E. W. L. HOLT, J. Mar. Biol. Ass. (2) v, p. 79.
Lepidion verécundum, sp. n. (JORDAN & CRAMER) GILBERT, P. U. S. Mus. xix, p. 456, Clarion Island, Mexico.
Lota vulgaris, Cuv. Note by MOJO, Rad Jugoslav. Ak. cxxvi, 1896, p. 89.
Molva vulgaris, Cuv. Note on the reproductive organs of a hermaphrodite specimen: H. M. KYLE, Rep. Fish. Board Scotland, xv, pt. iii, p. 396, pl. vii, figg. 3-5; *M. abyssorum*, Nilss., recorded from off Rona by G. SIM, Ann. Scott. Nat. Hist. 1897, p. 255.
Onos mustela, L. On the post-larval and young stages: MCINTOSH, Rep. Fish. Board Scotland, xv, pt. iii, p. 206.
Raniceps raninus, L. On the very young stages: MCINTOSH, Rep. Fish. Board Scotland, xv, pt. iii, p. 209.

OPHIDIIDÆ.

- Diplacanthopoma rivers-andersoni*, Alcock, and *brachysoma*, Gthr., figured by ALCOCK, Ill. Zool. Investigator, pl. xvii, figg. 1 & 2.
Dermatorus melampeplus, Alcock, figured by ALCOCK, *t. c.* fig. 3.
Neobythites conjugator, Alcock, figured by ALCOCK, *t. c.* fig. 4.
Dermatopsis macrodon, D. Ogilb. Note by DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxii, p. 86.
Monothrix, g. n., allied to *Dinematichthys*, for *M. polylepis*, sp. n., DOUGLAS-OGILBY, *t. c.* p. 87, coast of New South Wales.
Austrophycis, g. n., allied to *Physiculus*. DOUGLAS-OGILBY, *t. c.* p. 90; *A. megalops*, sp. n., *id. ibid.* p. 91, coast of New South Wales and Maroubra Bay.
Otophidium genyopus, sp. n., DOUGLAS-OGILBY, *t. c.* p. 93, Maroubra Bay.
Cælorhynchus mortoni, sp. n., DOUGLAS-OGILBY, P. Soc. Tasmania, 1896 (1897), p. 83, Tasmania.
Ammodytes tobianus, L. On the spawning: McINTOSH, Ann. Nat. Hist. (6) xix, p. 241.

MACRURIDÆ.

- Macrurus lepturus*, p. 233, *dorsalis*, p. 233, and *firmisquamis*, p. 234, spp. nn., GILL & TOWNSEND, P. Soc. Washington, xi, Bering Sea; *M. (Nematonurus) magnus* and *suborbitalis*, spp. nn., *id. ibid.* p. 234, Bering Sea.
Steindachnerella, n. n. for *Steindachneria*, Goode & Bean *nec* Eigenm. EIGENMANN, Amer. Natural. xxxi, p. 159.

PLEURONECTIDÆ.

- T. NISHIKAWA, Annot. Zool. Japon. i, p. 73, figg., describes the migration of the eye from the blind side in a Flat-fish embryo (*Plagusia* ?), observing that in every case the passage of the eye from one side to the other in Pleuronectoids is morphologically along the dorsal surface of the head.
H. DANNEVIG, Rep. Fish. Board Scotland, xv, Pt. III, 175-193, pl. iv, writes on the rearing of larval and post-larval Pleuronectoids.
Hippoglossoides robustus, sp. n., GILL & TOWNSEND, P. Soc. Washington, xi, p. 234, Bering Sea.
Hippoglossoides, sp. ?, from Japan, figured by OTAKI, Journ. Fisheries Bur. Tokyo, vi, pl. v, fig. 1.
Phrynorhombus unimaculatus, Risso. Note on the ova and larvæ, HOLT, J. Mar. Biol. Ass. (2) v, p. 45.
Arnoglossus laterna, Walb. and *Grohmanni*, Gthr. Notes by HOLT, J. Mar. Biol. Ass. (2) v, pp. 48 & 89.
Pseudorhombus olivaceus, Schleg., and *cinnamomeus*, Schleg., figured by OTAKI, *t. c.*, pls. v, figg. 2 & 3.
Paralichthys æstuarius, GILBERT & SCOFIELD, P. U. S. Mus. xx, p. 499, pl. xxxix, Mouth of Colorado River, Mexico; *P. woolmani*, sp. n. (JORDAN & WILLIAMS) GILBERT, P. U. S. Mus. xix, p. 457, Galapagos Archipelago.
Pleuronectes platessa, L. On the variations in specimens from different fishing grounds: J. T. CUNNINGHAM, J. Mar. Biol. Ass. (2) iv, p. 315. On the yearly immigration of young plaice into the Limfjord from the German Sea: PETERSEN, Rep. Dan. Biol. Stat. vi; *P. yokohamæ*, Gthr., *scutifer*, Stdr., *stellatus*, Pall., *cynoglossus*, L., *asperrimus*, Schleg., and *variegatus*, Schleg., figured by OTAKI, *t. c.* pls. vi & vii.
Parophrys cornuta, Blkr., figured by OTAKI, *t. c.* pl. viii, fig. 10.

- Boopsetta umbrarum*, Alcock, figured by ALCOCK, Ill. Zool. Investigator, pl. xvii, fig. 5.
Synaptura zebra, C. & V., figured by OTAKI, *t. c.* pl. viii, fig. 11.
Cynoglossus joyneri, Gthr., figured by OTAKI, *t. c.* pl. viii, fig. 12.

PHYSOSTOMI.

SILURIDÆ.

- L. VAILLANT, Rev. Sci. (4) vii, pp. 685-689, publishes a lecture on the distribution of the *Siluridæ* in space and time.
Clarias mossambicus, Ptrs. Note by VINCIGUERRA, Ann. Mus. Genova (2) xvii, p. 25; *C. theodoræ*, sp. n., M. WEBER, Zool. Jahrb. Syst. x, p. 150, Natal.
Ailia somalensis, sp. n., VINCIGUERRA, Ann. Mus. Genova (2) xvii, p. 346, Somaliland.
Pimelodus gracilis, Val. Note by VAILLANT, Bull. Mus. Paris, 1897, p. 222.
Tachysurus liropus, sp. n. (BRISTOL) GILBERT, P. U. S. Mus. xix, p. 438, S. Juan Lagoon, Sonora, Mexico.
Chimarrhoglanis, g. n., allied to *Pimelodus*, VAILLANT, Bull. Mus. Paris, 1897, p. 81 [= *Anoplopterus*, Pfeff.—REC.]; *C. leroyi*, sp. n., *id. ibid.* p. 82, Mrogoro, Zanguebar, 2000 ft. [= *A. platychir*, Gthr.—REC.]
Arius pleurops, sp. n., BOULENGER, Ann. Nat. Hist. (6), xx, p. 296, Marajo Is., Brazil.
Netuma insularum, sp. n. (GREENE) GILBERT, P. U. S. Mus. xix, p. 439, Galapagos Archipelago.
Doumea typica, Sauvage. Note by VAILLANT, Bull. Mus. Paris, 1897, p. 82.
Synodontis zanzibaricus, Ptrs., *leopardus*, Pfeff., and *serratus*, Rüpp. Notes by VINCIGUERRA, *t. c.* pp. 350 & 351. Synopsis of the Congo species: BOULENGER, Ann. Nat. Hist. (6) xx, p. 424; *S. pleurops*, sp. n., *id. ibid.* p. 423, Upper Congo; *S. vaillanti*, n. n. for *S. labeo*, Vaill. nec Gthr., *id. ibid.* p. 424.
Malapterurus electricus, Gm. On its habits in an aquarium: H. O. FORBES, Bull. Liverp. Mus. i, p. 25.
Plecostomus borellii, sp. n., BOULENGER, Boll. Mus. Torino, xii, No. 279, p. 2, Mission de S. Francisco, R. Pilcomayo, Bolivia.
Trichomycterus cordovensis, Weyenb., redescribed by BOULENGER, Boll. Mus. Torino, xii, No. 279, p. 2; *T. borellii*, sp. n., *id. ibid.* p. 3, Bolivian Chaco and Prov. Salta, Argentina.
Pygidium schmidti, p. 266, Catamarca, Argentina, *spgazzinii*, p. 267, Salta, Argentina, and *riojanum*, p. 269, Cordillera de La Rioja, Argentina, spp. nn., BERG, An. Mus. Buenos Ayres, v.

SCOPELIDÆ.

- Bathypterois atricolor*, Alcock, figured by ALCOCK, Ill. Zool. Investigator, pl. xvii, fig. 6.
Argyropelecus olfersii, Cuv. Note by COLLETT, Arch. Naturv. Christian. xix, No. 7, p. 14.
Scopelarchus guentheri, Alcock, figured by ALCOCK, Ill. Zool. Investigator, pl. xvii, fig. 7.

CYPRINIDÆ.

- FACK, —, Schr. Ver. Schleswig-Holst. xi, pp. 84 & 85, remarks on the disposition of the pharyngeal teeth in the Cyprinoids of Schleswig-Holstein.

- Catostomus arizonæ*, sp. n., GILBERT & SCOFIELD, P. U. S. Mus. xx, pl. xxxvi, Arizona.
- Cyprinus carpio*, L. On a malformed specimen with completely closed mouth, being probably fed through the gill openings: P. SCHIEMENZ, SB. Ges. naturf. Berlin, 1897, p. 156.
- Labeo bottegi*, sp. n., VINCIGUERRA, Ann. Mus. Genova (2) xvii, p. 358, Somaliland.
- Apiostoma*, g. n., allied to *Aspiorrhynchus*, Kessl., but with 4 barbels. NIKOLSKY, t. c. p. 345; *A. zarudnyi*, sp. n., *id. ibid.* p. 346, Eastern Persia.
- Capoeta fusca, nudiventris*, and *gibbosa*, spp. nn., NIKOLSKY, Annuaire Mus. St. Petersb. 1897, pp. 340, 342, 344, Eastern Persia.
- Barbus*, Cuv. *Cyprinus aphyra*, Bloch, is founded on a species of this genus: HILGENDORF, SB. Ges. naturf. Berlin, 1897, p. 35; *B. albanicus*, Stdr., described and figured by STEINDACHNER, Denk. Ak. Wien, lxiii, p. 182, pl. i, fig. 1; *B. gananensis*, Vincig. Note by VINCIGUERRA, Ann. Mus. Genova (2) xvii, p. 362; *B. græcus*, sp. n., STEINDACHNER, Denk. Ak. Wien, lxiii, p. 187, pl. ii, fig. 4, Greece; *B. ruspolii*, sp. n., VINCIGUERRA, Ann. Mus. Genova (2) xvii, p. 29, Lake Abbaia, Gallaland; *B. anoplus*, p. 151, Cape Colony, *viviparus*, p. 152, Natal, and *breijeri*, p. 154, Transvaal, spp. nn., M. WEBER, Zool. Jahrb. Syst. x.
- Gobio fluviatilis*, Cuv. Note by MOJO, Rad Jugoslav. Ak. cxxvi, 1896, p. 90.
- Leuciscus*, Cuv. On the forms of *Alburnus* occurring in Italy: M. A. GATTI, Boll. Soc. Rom. Zool. vi, p. 161.
- Squalius cephalus*, L., var. *albus*, Bp., described and figured by STEINDACHNER, Denk. Ak. Wien, lxiii, p. 184, pl. i, fig. 2; *S. suworzewi*, Warp., described and figured by WARPACHOWSKI, Annuaire Mus. St. Petersb. 1897, p. 253, pl. xii, fig. 2; *S. mehdem*, sp. n., *id. ibid.* p. 255, pl. xii, fig. 1, Ob River.
- Tiaroga cobitis*, Girard, figured by GILBERT & SCOFIELD, P. U. S. Mus. xx, pl. xxxvii.
- Phoxinus strauchi*, Warp., and *altus*, Warp., described and figured by WARPACHOWSKI, l. c. pp. 259 & 261, pl. xi, figg. 4 & 5.
- Paraphoxinus epiroticus*, Stdr., described and figured by STEINDACHNER, Denk. Ak. Wien, lxiii, p. 185, pl. i, fig. 3.
- Oreoleuciscus potanini*, Kessl., and *humilis*, Warp., described by WARPACHOWSKI, l. c. pp. 265 & 267.
- Acanthorhodeus diceus*, sp. n., RUTTER, P. Ac. Philad. 1897, p. 58, Swatow, China.
- Barilius guentheri*, sp. n., BOULENGER, P. Z. S. 1896, p. 920, pl. xlvi, Upper Shiré R.
- Nemachilus compressirostris*, sp. n., WARPACHOWSKI, Annuaire Mus. St. Petersb. 1897, p. 270, pl. xi, figg. 1-3, Ob River.
- Acanthopsis lachnostoma*, sp. n., RUTTER, P. Ac. Philad. 1897, p. 60, Swatow, China.

CHARACINIDÆ.

- Citharinus congicus*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xx, p. 424, Upper Congo.
- Alestes affinis*, Gthr. Note by VINCIGUERRA, Ann. Mus. Genova (2) xvii, pp. 28 & 355.
- Chirodon interruptus*, Jen. Note by BOULENGER, Boll. Mus. Torino, xii, No. 279, p. 4.
- Brycon microlepis*, sp. n., PERUGIA, Ann. Mus. Genova (2) xviii, p. 149, Upper Paraguay.

Distichodus sexfasciatus and *leptorhynchus*, spp. nn., BOULENGER, *l. c.* p. 425, Upper Congo.

CYPRINODONTIDÆ.

Cynolebias gibberosus and *holmbergi*, spp. nn., BERG, An. Mus. Buenos Ayres, v, pp. 294 & 296, Buenos Ayres.

Jenynsia lineata, Jen. Note by BOULENGER, Boll. Mus. Torino, xii, No. 279, p. 4.

Fundulus microlepis, sp. n., VINCIGUERRA, Ann. Mus. Genova (2) xvii, p. 356, Somaliland.

UMBRIDÆ.

Umbra canina, Mars. Notes by MOJO, Rad Jugoslav. Ak. cxxvi, 1896, p. 92, fig.

SCOMBRESOCIDÆ.

Hemirhamphus weberi, sp. n., BOULENGER, P. Z. S. 1897, p. 429, pl. xxviii, fig. 4, Celebes.

MORMYRIDÆ.

Mormyrus gliroides, sp. n., VINCIGUERRA, Ann. Mus. Genova (2) xvii, p. 353, Somaliland; *M. bentleyi*, p. 426, *stanleyanus*, p. 426, and *psittacus*, p. 427, spp. nn., BOULENGER, Ann. Nat. Hist. (6) xx, Upper Congo.

SALMONIDÆ.

F. F. KAWRAISKY monographs the Salmonoids of the Caucasus and the adjacent seas. Lachse der Kaukasusländer, &c. (Tiflis: 1896-97, 8vo, 2 Pts.).

Salmo, L. On the influence of salt water on the spawn of Salmon and Trout: NORDGAARD, Bergens Mus. Aarbog, 1896, No. iv; *S. ischchan*, Kessl., pls. i-vii, *caspius*, Kessl., pls. x & xi, *lacustris*, L., pls. xii & xiii, and *fario*, L., pl. xiv, figured by KAWRAISKY, *l. c.*; *S. lacustris*, L., var. n. *romanovi*, *id. ibid.* Pt. I, p. 79, pls. viii & ix, L. Tabiszchuri, Caucasus; *S. irideus*, Gibb. On the feeding of newly-hatched young: H. O. FORBES, Bull. Liverp. Mus. i, p. 24. On hybrids between *S. fario*, L., and *S. fontinalis*, Mitch., BEAN, Bull. Amer. Mus. ix, p. 346; *S. namaycush*, Walb. Notes, *id. ibid.* p. 348.

Oncorhynchus nerka, Walb. Notes on the habits: EVERMANN & SCOVELL, P. Indiana Ac. 1895, p. 131 [1896].

Coregonus oxyrhynchus, L. On its occurrence in the R. Sauer: FERRANT, Fauna, 1896, p. 43, fig.; *C. wartmanni*, Bl. On specimens from Lakes Sarnen and Lungern, Switzerland: FATIO, Arch. Sci. Nat. (4) iv, pp. 84 & 496; *C. quadrilateralis*, Rich., and *labradoricus*, Rich. Notes by BEAN, Bull. Amer. Mus. ix, pp. 337 & 339.

Argyrosomus artedi, Lesueur, *hoyi*, Gill, and *tullibee*, Rich. Notes by BEAN, *t. c.* pp. 341-343.

CLUPEIDÆ.

- Trichosoma*, Swains. (= *Thrissa*, Gray, *nec* Raf.). Genus defined by RUTTER, P. Ac. Philad. 1897, p. 64; *T. adelæ*, sp. n., *id. ibid.* p. 65, Swatow, China.
- Spratelloides robustus*, sp. n., DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxii, p. 64, Coast of New South Wales.
- Kowala castelnaui*, sp. n., DOUGLAS-OGILBY, *t. c.*, p. 66, Coast of New South Wales.
- Hyperlophinae*, n. subfam., for Clupeids with dorsal and abdominal serrature, viz. *Potamalosa*, D. Ogilby, and *Hyperlophus*, D. Ogilby, which genera are defined. DOUGLAS-OGILBY, *t. c.* p. 69. *Hyperlophus copii*, sp. n., *id. ibid.* p. 72, Coast of New South Wales.
- Stolephorus productus*, Poey, described by JORDAN & RUTTER, P. Ac. Philad. 1897, p. 96; *S. robertsi* and *astilbe*, spp. nn., *id. ibid.* p. 95, Jamaica.

ALEPOCEPHALIDÆ.

- Ericara*, g. n., with small, perfectly smooth scales, wide cranium, projecting snout, deeply cleft mouth, uniserial and acrodont teeth on vomer and anterior portion of palatines, and dorsal and anal of moderate extent and opposite each other; *E. salmonea*, sp. n., GILL & TOWNSEND, P. Soc. Washington, xi, p. 232, Bering Sea, 1771 faths.

HALOSAURIDÆ.

- Echidnocephalus troschelii*, v. d. Marck (foss.), described and figured by A. S. WOODWARD, P. Z. S. 1897, p. 268, pl. xviii.

GYMNOTIDÆ.

- Gymnotus electricus*, L. On a very large specimen from British Guiana: QUELCH, *Nature*, lv, p. 508.
- Sternopygus macrops*, sp. n., BOULENGER, *Ann. Nat. Hist.* (6) xx, p. 305, British Guiana.

MURÆNIDÆ.

- B, GRASSI & S. CALANDRUCCIO, *Rend. Acc. Lincei* (5) vi, p. 43, remark on the larval forms of Mediterranean Murænoids.
- Anguilla vulgaris*, Turt. Further notes on the reproduction: SOUTHWELL, *Tr. Norfolk Soc.* vi, p. 262. GRASSI & CALANDRUCCIO, *Giorn. ital. Pesca e Acquic.* 1897, Nos. 7 & 8, and *Mon. Zool. ital.* viii, pp. 233 & 234, summarise the results of their observations on the reproduction and metamorphosis of the Eel. New observations on the larva: GRASSI & CALANDRUCCIO, *Atti Acc. Lincei* (5) vi, p. 239 and *Nature*, lvi, p. 85, figg. On the larval stages: FACCIOLÀ, *Riv. ital. Sci. Nat.* xvii, p. 116. F. W. SEELIG reviews recent observations on the Eel: *Abh. Ver. Kassel*, lxi, p. 47.
- Conger vulgaris*, Cuv. On the eggs: FACCIOLÀ, *Riv. ital. Sci. Nat.* xvii, p. 92.
- Scolenchelys*, g. n., for *Murænichthys australis*, Macleay. DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxii, p. 246.

- Myropterura*, g. n., allied to *Myrus*, Kaup, for *M. laticaudata*, sp. n., DOUGLAS-OGILBY, *t. c.* p. 247, Fiji.
- Bascanichthys hemizona*, sp. n., DOUGLAS-OGILBY, *t. c.*, p. 248, Port Jackson.
- Goodella*, g. n., allied to *Synodus*, DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxii, p. 249; *G. hypozona*, sp. n., *id. ibid.* p. 250, Coast of New South Wales.
- Ophichthys colubrinus*, Bodd. On a colour-variation: WAITE, Mem. Austral. Mus. iii, p. 195, pl. viii, fig. 3.
- Murcena helena*, L. Note on a British specimen by HOLT, J. Mar. Biol. Ass. (2) v, p. 91.

LOPHOBRANCHII.

- Siphostoma robertsi*, sp. n., JORDAN & RUTTER, P. Ac. Philad. 1897, p. 97, Jamaica.

PLECTOGNATHI.

- Alutera punctata*, Ag., described by JORDAN & RUTTER, P. Ac. Philad. 1897, p. 127.
- Tetrodon nigropunctatus*, Bl. Note by WAITE, Mem. Austral. Mus. iii, p. 197; *T. gillbanksii*, p. 245, pl. xiv, and *cheesemani*, p. 248, pl. xv, spp. nn., F. E. CLARKE, Tr. N. Zealand Inst. xxix, New Zealand; *T. lawleyi*, sp. n. (foss.), CARRAROLI, Riv. ital. Pal. iii, p. 26, pl. —, figg. 6 & 7, Pliocene, Piacenza, Italy.
- Lagocephalus pachycephalus*, Ranz., described by JORDAN & RUTTER, *t. c.* p. 128.
- Spheroides marmoratus*, Ranz., described by JORDAN & RUTTER, *t. c.* p. 129.
- Chilomycterus antillarum*, sp. n., JORDAN & RUTTER, *t. c.*, p. 131, Jamaica.
- Orthagoriscus nasus*, Ranz. On a specimen from the Dutch Coast: REUVENS, Notes Leyden Mus. xviii, p. 209, pl. iii.
- Ranzania truncata*, Nardo. Note by PERUGIA, Ann. Mus. Genova (2) xviii, p. 140.

GANOIDEI.

- E. P. ALLIS, Zool. Bull. i, pp. 1-26, writes on the morphology of the petrosal bone and of the sphenoidal region of the skull of *Amia calva*. The same author, J. Morphol. xii, pp. 487-808, pls. xx-xxxviii, describes the cranial muscles and cranial and first spinal nerves in *Amia calva*.
- B. M. DAVIS, P. Indiana Ac. 1896, p. 259, gives an abstract of his investigations on the origin of the Epiphysis cerebri in *Amia calva*.
- C. O. WHITMAN & A. C. EYCLESYMER, J. Morphol. xii, pp. 309-354, figg., pls. xviii-xix, describe the cleavage of the egg in *Amia*.
- T. W. BRIDGE, P. Z. S. 1897, pp. 722-724, fig., writes on the presence of ribs in *Polyodon folium*.
- H. GARMAN, Bull. Illinois Lab. iv, 1896, pp. 299-310, pls. i-vi, writes on the brain and pineal structures of *Polyodon folium*.
- N. BORODINE contributes materials for the Biology of Russian Sturgeons. Moscow: 1897, folio.
- Amia calva*, L. Notes on the breeding habits: WHITMAN & EYCLESYMER, J. Morphol. xii, p. 309.
- Caturus*, Ag. (foss.). Description of parts of the skeleton: A. S. WOODWARD, Ann. Nat. Hist. (6) xix, p. 292, pls. viii & ix.
- Osteorhachis leedsi*, sp. n. (foss.): A. S. WOODWARD, *t. c.* p. 379, pls. x & xi, Oxford Clay, Peterborough.

- Clastes lusitanicus* and *pustulosus*, spp. nn. (foss.): SAUVAGE, Bull. Soc. geol. France (3) xxv, pp. 93 & 94, pl. ii, Garumnian of Vizo, Portugal.
Acipenser ruthenus, L., and *stellatus*, Pall. Notes by MOJO, Rad Jugoslav. Ak. cxxvi, 1896, pp. 94 & 95.

CROSSOPTERYGII.

- Holoptychius*, Ag. (foss.). Synopsis of the spines: COPE, P. Amer. Phil. Soc. xxxvi, p. 72; *H. serrulatus*, p. 71, pl. ii, fig. 1, Carboniferous, Mansfield, Pennsylvania, *latus*, p. 74, pl. ii, fig. 2, Carboniferous, Factoryville, Pennsylvania, and *flabellatus*, p. 75, pl. ii, fig. 3, Carboniferous, Coxtton, Pennsylvania, spp. nn., *id. ibid.*

DIPNOI.

- T. W. BRIDGE, P. Z. S. 1897, pp. 602 & 603, gives an abstract of a memoir of the morphology of the skull in *Lepidosiren* and other Dipnoi.
Ceratodus forsteri, Krefft. On its introduction in various Australian rivers: D. O'CONNOR, P. Soc. Queensl. xii, p. 101.
Ceratodus kannemeyeri, sp. n. (foss.), SEELEY, Geol. Mag. (2) Dec. iv, iv, p. 543, fig., Trias, Kraai Fontein, Cape Colony.
 L. LÉGER, C.R. Soc. Biol. (10) iv, p. 543, remarks on some living specimens of *Protopterus annectens*.
Lepidosiren paradoxa, Fitz. General remarks by GOELDI, Bol. Mus. Para. ii, p. 247.
Sagenodus foliatus, p. 77, fig. 1, *conchiolepis*, p. 79, fig. 4, *lacovianus*, p. 79, fig. 5, *quincunciatus*, p. 80, fig. 6, *browniæ*, p. 81, fig. 7, *magister*, p. 81, fig. 8, and *gurleianus*, p. 82, fig. 9, spp. nn. (foss.), COPE, P. Amer. Phil. Soc. xxxvi, pl. i, Carboniferous, Mazon Creek, Illinois.

ARTHRODIRA.

- B. DEAN, Tr. N. York Ac. xvi, p. 57, pls. i-iii, has a note on the ventral armour of *Dinichthys*.
Dinichthys kepleri, sp. n., CLAYPOLE, Amer. Geol. xix, p. 322, pl. xx, Cleveland Shale, Rocky River Valley, Ohio.
Macropetalichthys sullivanti, Newberry (foss.). Notes by EASTMAN, Amer. Natural. xxxi, p. 493, figg., pl. xii.

OSTRACODERMI.

- J. V. ROHON, SB. Bohmisch. Ges. 1896, No. xxxvii, discusses the morphology and classification of the Ostracoderms, and proposes a new Sub-class *Protocephali* to embrace the Orders *Aspidorhini*, Rohon (*Pteraspidae*) and *Aspidocephali*, Brandt (*Thyestidae*, *Cephalaspidae*, *Tremataspidae*).

HOLOCEPHALA.

- Ischyodus suevicus*, sp. n. (foss.), E. PHILIPPI, Palæontogr. xlv, p. 1, pls. i & ii., Chalk, Nusplingen, Würtemberg.
Edaphodon pliocenicus, sp. n. (foss.), CARRAROLI, Riv. ital. Pal. iii, p. 26, pl., figg. 3-5, Pliocene, Piacenza, Italy.

ELASMOBRANCHII.

- C. EMERY, Riv. ital. Pal. iii, pp. 30-33, figg., remarks on the morphology of the *Acanthodidæ*.
- O. M. REIS, Abh. Senckenb. Ges. xx, pp. 57-156, 1 pl., deals with the structure and systematic position of the *Pleuracanthidæ*.
- E. FOOTE, Anat. Anz. xiii, pp. 305-308, figg., writes on the extrabranchial cartilages of Elasmobranchs. Remarks by RIDWOOD, *t. c.* pp. 499-501.
- E. W. CLAYPOLE, Tr. Amer. Micr. Soc. xviii, pp. 146-150, 1 pl., writes on the structure of the fossil Selachian teeth known as *Mazodus*.
- J. E. PEABODY, Zool. Bull. i, pp. 163-178, figg., writes on the ampullæ of Lorenzini of the Selachians.
- G. SCHNEIDER, Anat. Anz. xiii, pp. 393-401, figg., writes on the kidney and the abdominal pores of *Squatina angelus*.
- L. NEUMAYER, Arch. mikr. Anat. xlvi, pp. 83-111, figg., investigates the histology of the Selachian retina.
- R. BURCKHARDT, Arch. Sci. Nat. (4) iv, pp. 480-483, remarks on the brain of Selachians.
- A. ROMANO, Monit. Zool. ital. viii, pp. 206-212, fig., writes on the fibres in the proencephalon of Selachians.
- A. D. MORRILL, J. Morphol. xiv, pp. 61-82, pls. vii & viii, has a paper on the innervation of the auditory epithelium of *Mustelus canis*.
- H. NEUVILLE, Bull. Mus. Paris, 1897, pp. 55 & 56, remarks on a few points in the visceral anatomy of *Centrophorus*.
- W. A. HASWELL, P. Linn. Soc. N. S. Wales, xxii, pp. 96-103, pls. iv & v, writes on the development of *Cestracion philippi*.
- A. SEWERZOFF, Anat. Anz. xiii, pp. 409-425, figg., has a preliminary communication on the development of the skull in *Acanthias*.
- C. K. HOFFMANN, Morphol. Jahrb. xxv, pp. 250-304, figg., pls. xiii & xiv, continues his embryological investigations on Selachians.
- W. HIS, Arch. Anat. 1897, pp. 1-64, writes on the development of the periblast in Selachians.
- EMILY R. GREGORY, Zool. Bull. i, pp. 123-129, writes on the origin of the Pronephric duct in Selachians.
- H. VIRCHOW, SB. Ges. naturf. Berlin, 1897, pp. 49-59, 91-110, deals with various points in the gastrulation of Selachians.
- J. OGNEFF, Arch. Physiol. 1897, pp. 270-306, pls. iv & v, writes on the development of the electric organ in *Torpedo*.
- H. NEUVILLE, Bull. Mus. Paris, 1897, p. 87, remarks on the habits and bathymetrical distribution of the deep-sea Selachians at Setubal, Portugal.
- Isurus oxyrinchus*, Raf. (*Lamna spallanzanii*, Bp.): on a specimen from Bergensfjord, Norway; COLLETT, Arch. Naturv. Christian. xix, No. 7, p. 6.
- Lamna cornubica*, L.: recorded from the Isle of Man by KERMODE, Zoologist (4) i, p. 579; *L. borealis*, sp. n. (foss.), PRIEM, Bull. Soc. geol. France (3) xxv, p. 41, pl. i, fig. 9, Chalk of S. Sweden; *L. bassanii*, sp. n. (foss.), DE ALESSANDRI, Mem. Mus. Milano, vi, No. 1, p. 38, pl. i, fig. 16, Miocene, Pietra da Cantoni, Italy.
- Oxyrhina hastalis*, Ag. (foss.): on remains from the Miocene of Alba, Italy; DE ALESSANDRI, Atti Soc. Ital. xxxvi, p. 263, pl. —.
- Scyllium canicula*, L.: on oviposition and development; KOPSCH, Biol. Centralbl. xvii, p. 885, figg.
- Gyropleurodus*? On jaws from New South Wales indicating a new species; DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxii, p. 245.
- Heptanichias haswelli*, sp. n., DOUGLAS-OGILBY, P. Linn. Soc. N. S. Wales, xxii, p. 62, Loc. — ?

- Chlamydoselachus anguineus*, Garm.: on a specimen from the Varanger Fjord, Norway: COLLETT, Univ. Festschr. Kong Oscar II Jubil. 1897, 17 pp., 2 pls.
- Rhinobatus stellio*, sp. n., JORDAN & RUTTER, P. Ac. Philad. 1897, p. 91, Jamaica.
- Raia rosispinis*, p. 231, *obtusa*, p. 231, and *interrupta*, p. 232, spp. nn., GILL & TOWNSEND, P. Soc. Washington, xi, Bering Sea.
- Myliobates placentinus*, sp. n. (foss.), CARRAROLI, Riv. ital. Pal. iii, p. 25, pl. —, figg. 1 & 2, Pliocene, Piacenza, Italy.
- Ceratobatis*, g. n., like *Dicerobatis*, Blainv., but teeth restricted to the upper jaw; *C. robertsii*, sp. n., BOULENGER, Ann. Nat. Hist. (6) xx, p. 227, Jamaica.
- Tamniobatis vetustus*, g. & sp. nn., for the cranium of a fossil Skate from the Middle or Upper Devonian (?) of Kentucky: EASTMAN, Amer. J. Sci. (4) iv, p. 85, pl. 1.
- Edestus lecontei*, sp. n., B. DEAN, Tr. N. York Ac. xvi, p. 62, pls. iv & v, Carboniferous (?), Nevada.
- E. W. CLAYPOLE, Tr. Amer. Micr. Soc. xviii, pp. 151–154, 1 pl., investigates the structure of the fossil spine *Ctenacanthus angustus*, Newberry.

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- F. K. STUDNIČKA, Arch. mikr. Anat. xlvi, pp. 606–643, pls. xxx–xxxii, writes on the histology and histogeny of the cartilages of Cyclostomes.
- W. KAPELKIN, Bull. Soc. Moscou, 1896 (1897), pp. 481–514, 2 pls., investigates the histological structure of the skin of *Petromyzon*.
- F. MAYER, Anat. Anz. xiii, pp. 649–657, pl. i, has a paper on the central nervous system of *Ammocetes*.
- E. GIGLIO-TOS, Atti Acc. Torino, xxxii, pp. 362–376, pl. —, writes on the hematopoietic organ and the cellular elements of the blood in the larval Lamprey (*Ammocetes branchialis*).
- BASHFORD DEAN, Quart. J. Micr. Sci. xl, pp. 269–279, pl. xvii, writes on the development of *Bdellostoma stouti*, Lock.
- O. MAAS, SB. Ges. Munchen, xii, pp. 46–58, figg., writes on a pancreas-like organ in *Myxine*.
- A. BRACHET, Anat. Anz. xiii, pp. 621–636, figg., writes on the development of the liver and pancreas in *Ammocetes*.
- G. C. PRICE, Zool. Jahrb. Anat. x, pp. 205–226, pls. xvi & xvii, has a paper on the excretory organs of *Bdellostoma stouti*, Lock.
- J. W. SPENGLER, Anat. Anz. xiii, pp. 49–60, figg. & 211–216, writes on the excretory organs of *Myxine*. R. SEMON, t. c. pp. 127–137, 260–264, deals with the same subject.
- O. MAAS, Zool. Jahrb. Anat. x, pp. 473–510, pls. xxxviii–xli, writes on the development of the excretory organs in *Myxine*.
- R. SEMON, Gegenbaur Festschrift, iii, pp. 167–192, 2 pls., contributes a paper on the excretory system of the Myxinoids, and discusses its bearing on the morphological conception of the urogenital system in Vertebrates.
- W. FELIX, Anat. Anz. xiii, pp. 570–599, remarks on Price's paper on the development of the excretory organs of *Bdellostoma stouti* and discusses its bearing on embryology.
- S. HATTA, Annot. Zool. Japon. i, pp. 137–140, has a preliminary note on the development of the pronephros in *Petromyzon*.
- Petromyzon wilderi*, Gage. Note on the spawning habits: B. DEAN & F. B. SUMNER, Tr. N. York Ac. xvi, p. 321, pl. xxvii.
- Macrophthalmia*, g. n., distinguished from all other *Petromyzontidae* by large, well-developed eyes; *M. chilensis*, sp. n., PLATE, SB. Ges. naturf. Berlin, 1897, p. 137, Mouth of Maullin R., S. Chili.

- R. H. TRAQUAIR, P. Z. S. 1897, pp. 314-317, refutes B. Dean's interpretation of the remains of *Palæospondylus gunni*, Traq.

LEPTOCARDII.

- E. W. MACBRIDE, P. Cambridge Soc. ix, pp. 309-313, discusses the relationship of Leptocardians and *Balanoglossus*.
C. S. MINOT, Amer. Natural. xxxi, pp. 928-943, discusses the affinities of *Amphioxus* and the ancestry of Vertebrates.
F. KOPSCH, SB. Ges. naturf. Berlin, 1897, pp. 5-13, figg., writes on the formation and signification of the canalis neurentericus in *Amphioxus* and Tunicates.
J. SOBOTTA, Verh. Ges. Wurzburg (2) xxxi, pp. 101-121, fig., pl. —, writes on Gastrulation in *Amphioxus*.
H. KLAATSCH, Morphol. Jahrb. xxv, pp. 224-243, figg., pl. xii, remarks on the Gastrula of *Amphioxus*.
W. KRAUSE, Zool. Anz. xx, p. 513, writes on the sensitiveness of *Branchiostoma lanceolatum* to differently coloured lights.
H. NAKAGAWA, Annot. Zool. Japon. i, p. 125, describes a *Branchiostoma* (spec. ?) from Nyushya, Japan.

VI. TUNICATA.

BY

PROFESSOR W. A. HERDMAN, D.Sc., F.R.S.

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INTRODUCTION.

AMONGST the more important publications of the year we must reckon SEELIGER'S numbers 6 to 10 of *Tunicata* in Bronn's "Thier-Reich." They contain the conclusion of the account of the *Appendiculariidae*, and the commencement of the detailed account of the structure of the *Ascidacea*. We may also specially note RITTER'S preliminary account of a remarkable new type of Compound Ascidian from California which unites the structure of a Polyclinid with the general appearance of a Clavelinid. It will require the formation of a new family. The other papers of this year seem of minor importance, and there is a curious absence of any dealing with systematics.

I. TITLES.

BANCROFT, F. W. Notes on *Chelyosoma productum*, Stimp. Science, new series, v, No. 115, p. 435.

- CAULLERY, M. Sur la morphologie de la larve composée d'une Synascidie (*Diplosomoides Lacazii*, Giard). C.R. Ac. Sci. cxxv, 5 Juillet 1897, pp. 54-57.
- HERDMAN, W. A. Plankton collected...North Atlantic...&c. Tr. Liverp. Biol. Soc. xii, p. 33.
- , in 10th Ann. Rep. Liverpool Marine Biology Committee. Tr. Liverp. Biol. Soc. vol. xi.
- LEFEVRE, G. Budding in Ecteinascidia. Anat. Anz. xiii, No. 18, pp. 473-483; also Johns Hopkins Univ. Circ., Nov. 1897, p. 5.
- . Budding in Clavelinidæ. Science, new series, v, No. 115, pp. 433-4.
- METCALF, M. M. The follicle cells of Salpa. Zool. Anz. No. 534, pp. 210-217.
(Also Johns Hopkins Univ. Circ., Nov. 1897, p. 3.)
- . The neural gland in *Ascidia atra*. Zoological Bulletin, i, 3, pp. 143-146.
- MATZDORFF, C. Jahresber. u. d. Tunicaten, f. 1892-1893, Arch. Naturges., lix, 2 Bd. 2 Hft., pp. 1-40.
- RITTER, W. E. Notes on the structure and development of the type of a new family of so-called Social Ascidiæ from the coast of California. Science, new series, v, No. 115, p. 434.
- SEELIGER, OSW. Tunicata (Mantelthiere) in Bronn's Klassen und Ordnungen des Thier-Reichs Bd. III. Supp., Lief. 6-10, pp. 145-208.
- . Reviews of Tunicata papers in Zool. Centralbl. v.
- TODARO, F. Sopra lo sviluppo della parte anteriore del corpo delle Salpe. Rend. Acc. Lincei, vi, pp. 54-61, 1 fig.
- VALLE, A. DELLA. Tunicata, Zool. Jahresber. 1896, 12 pp.

II. BIOLOGY.

A. ANATOMY.

METCALF describes an *Ascidia* (*A. atra*) from the West Indies having numerous lateral branches of the hypophysial (neural) duct each opening by one or more ciliated funnels into the peribranchial chamber. He compares this with the condition described by Julin and Herdman for *Phallusia mammillata* and by Roule for *Ascidia Marioni* and suggests that *A. atra* and the two last named species should all be placed together in the same genus.

RITTER has found on the Californian coast a new compound Ascidian which with the essential structure of a Polyclinid such as *Amaroucium* has the external appearance, habit and separation of the ascidiozooids seen in *Clavelina*. The structure of the gonads and oviducts, the relations of the epicardiac tubes and the arrangement of the branchial tentacles however make it impossible to place this form in the Polyclinidæ or any existing family. Part of the oviduct is expanded to form a uterus. The development is abbreviated, and it is doubtful if there is any free-swimming larval stage. The embryos are nourished by amœboid cells in the uterus. The peribranchial sacs arise as two well-defined ectodermal invaginations on the dorsal side of the embryo.

SEELIGER commences in his 6-10 Lieferung a very full and detailed account of the anatomy and histology of the simple and compound

Ascidians. After discussing the general structure, the orientation, the body-form, formation of colonies, size and colour, he passes to the composition and chemistry of the test. All important points are, as in the preceding parts of this work, very fully and satisfactorily illustrated.

BANCROFT shows that the Pacific species *Chelyosoma productum* is quite distinct from its Atlantic representative *C. macleanianum*. He describes the arrangement of the muscles and the structure of the test, and considers the genus closely related to *Corella*.

B. EMBRYOLOGY.

METCALF supports Brooks' statement that the blastomeres really build up the body eventually, and that the kalymmocytes are merely temporary, pass into the bodies of the blastomeres and there undergo degeneration.

LEFEVRE points out the conflicting statements as to the origins of organs in the buds of compound Ascidians and rightly observes that it is desirable that the process should be studied in many other species where the bud development has not yet been traced. He has studied the process in *Ecteinascidia turbinata*, Herdman, and finds that bud development cannot be harmonised with the germ layer theory. He considers that *Ecteinascidia* differs from *Clavelina* and agrees with *Perophora* in the total absence of the epicardium; but does not show the rotation of the inner vesicle seen in *Perophora*. The bud begins as two concentric vesicles, derived from the stolon, and the development as a whole is very like that of *Perophora*. The inner vesicle is derived directly from the stolonian septum which is not flattened. The pericardium and heart and the dorsal tube or hypophysis arise from the wall of the inner vesicle and possibly to some extent from free blood cells which have wandered out from the wall of the inner vesicle. The primitive inner vesicle is therefore the most important part of the bud, and the ectodermic vesicle plays no part in the development except the production of the future ectoderm and of the test. Even the gonads are derived from the wall of the inner vesicle. He finds that free amoeboid blood cells derived from the wall of the inner vesicle play a considerable part in forming some organs, such as the commencement of the pericardium, and of the dorsal (neural) tube. The ganglion is differentiated from the dorsal wall of the neural tube. He does not consider the bud development to be at all comparable with the embryonic processes.

CAULLERY describes the details of the precocious budding of *Diplosomoides*. He shows that after hatching the larva is composed of (1) a typical oozoid except that the rectum is atrophied, (2) a typical abdominal bud, and (3) two complementary thoracic half buds. This larva is really two individuals, the oozoid and the different parts of a blastozoid. He explains the separation of the two halves of the thoracic bud by the mechanical influence of the abundant yolk. He is unable to confirm Lahille's account of dimorphism in the larva.

TODARO has worked at the development of *Salpa africana-maxima*, and he now gives an account of the formation of the various organs in the anterior part of the body. In the mesenchyme between the endodermal and ectodermal vesicles are formed the peribranchial sac, the cerebral vesicle, the pericardium, and it may be reproductive organs. A primitive mouth or palæostome forms which becomes a closed sac. This then opens into the anterior brain vesicle (palæoneural canal) for a time. The subneural gland is paired and is derived partly from the cerebral infundibulum and partly from the ectodermal palæostome. The "neostome" forms later as a stomodæum. The development and differentiation of the ganglia and of the eyes are traced in both the solitary and aggregated forms.

C. GEOGRAPHICAL DISTRIBUTION.

SEELIGER commences his "Lieferung" 6 with an account of the distribution of the Appendiculariidæ (Larvacea) both vertically and horizontally in the Ocean.

HERDMAN gives a preliminary list of Tunicata (and other animals) dredged in Puget Sound—including some new species—which will be more fully reported upon in next year's record. He draws attention to the similarity between the Puget Sound fauna and that of North Europe.

BANCROFT discusses the Pacific species of *Chelyosoma*.

HERDMAN notes some of the species of Ascidians found at Port Erin in the Isle of Man.

III. SYSTEMATIC.

No new species have been described in 1897; and there have been no papers dealing with classification, or establishing larger groups—with the exception of the preliminary notice of Ritter's new family of "Social" Ascidians in "Science" for March 12th. As however no generic, specific, or family names have yet been given to this new form, it cannot be formally recorded, and will no doubt figure in next year's record.

VII. MOLLUSCA.

BY

E. R. SYKES, B.A., F.Z.S.

Assisted by E. A. SMITH, F.Z.S., and G. C. CRICK, F.G.S.

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INTRODUCTION.

THE RECORDERS deem it advisable to remark that they have followed, almost in its entirety, the classification previously so successfully utilized by Mr B. B. Woodward. Their only deviation has been that in the *Helicidæ*, the groups have been suppressed, as they are of opinion that by the adoption of this course, simplification of, and easier reference to, the Record will result. Further they have felt that a more liberal course in giving the full titles of Palæontological papers would be of much assistance to students, who frequently desire to ascertain what work has been done by a particular author; this mainly accounts for the apparent increase in the number of papers written during the past year. New Fossil genera

and subgenera have been invariably noticed in their place in the systematic portion, but not new species, as this course would involve an enormous increase in the size of the Record; the fact of new species having been described is, however, stated in the portion relating to Palæontology.

The main portion of the work of the past year has been of a systematic nature. TRYON'S Manual (475) has dealt with the *Bulimuli* on the one hand and the *Scaphopoda* on the other; PILSBRY, in the terrestrial series having given special attention to the sculpture of the protoconch. SIMROTH (61) has in Bronn's Klassen und Ordnungen des Thier-Reichs made better progress than in the previous year and dealt in part with the *Gastropoda*. The 'Conchylien-Cabinet' of MARTINI and CHEMNITZ (288) has steadily appeared, the published parts relating to *Auriculacea*, *Scala-riidae*, *Turritella*, *Helix*, and *Columbella*. GODWIN-AUSTEN (167) has, after some years' interval, recommenced his study of the Indian land and freshwater Mollusca. HOYLE (212) has published a supplement to his Catalogue of recent *Cephalopoda*, in which he has carried his list to the year 1896. To DAUTZENBERG (112) we owe a well-illustrated work of a popular nature on the marine shells of France, while ADAMS (3) has issued a second edition of his work on the land and freshwater molluscs of Great Britain. The former author has also in conjunction with DE BOURY (114, 115) and FISCHER (116-8) described many new forms from the careful dredgings carried out under the auspices of Prince Albert of Monaco. LOCARD (259) has issued the first volume of the Mollusca from the 'Travailleur' and 'Talisman' expeditions, relating to the *Gastropoda*; his new species are dated, in general, 1896—incorrectly; some being even referred to earlier years. To the pen of KOBELT (245) is due an interesting work on the Zoo-geography of the Palæarctic Region, based on the land and freshwater shells; with MOELLENDORFF (248) he has also commenced a list of the non-marine operculata. We may also call attention to the paper on the principles of nomenclature by MELVILL (296), who has, further, with STANDEN (301), continued his studies on the marine Mollusca of the Loyalty Islands. MARTENS (281, 282) has written valuable works on the freshwater and brackish water fauna of the East Indies and the land and freshwater shells of German East Africa, this latter term being used by him in a wide sense; also, after an interval, a continuation of the molluscan portion of the 'Biologia Centrali-Americana' has appeared. SOWERBY (433) has issued a supplement to his work on the 'Marine Mollusca of South Africa,' and WATSON (503) has written a valuable account of the marine fauna of Madeira. A new synopsis of the non-marine Mollusca of the Palæarctic Region has been commenced by WESTERLUND (510), of which only one part—relating to the *Bulimi* and *Pupæ*—has as yet been issued. Among faunal works relating to land and freshwater shells we may note BIOLLEY'S (40) catalogue of Costa Rica, the very valuable work of AILLY (4) on the Cameroons, and SMITH'S (431) paper on Rotuma Island; whilst PILSBRY (366) has issued a catalogue of the land shells of North America. Several papers by SUTER (450-5) on the fauna of New Zealand will also repay attention. MOORE (317, 318) has written a note or two on the fauna of Lake Tanganyika, of which subject more will be heard in future years.

BERNARD (33-8) has continued his valuable studies on the development and morphology of the hinge in the *Pelecypoda*. Several critical remarks will be found in the list of *Cochlostyla* given by HIDALGO (200); though his references to plates as yet unpublished in his 'Obras' will probably cause inconvenience. *Nautilus* has received further attention from WILLEY (517, 518) and also from GRIFFIN (173); the *Muricidæ* have been studied by BAKER (23), *Cyclostrema* and its allies by BUSH (66), and the *Pleurobranchidæ* by BERGH (31); while the *Ledidæ* and *Nuculidæ* have formed

the subject of a paper by VERRILL and BUSH (486), the former author having also written a study of the *Pectinidæ*, a subject which has attracted DOUVILLÉ (126).

A living *Pleurotomaria beyrichii* has been observed by MITSUKURI (306); we hope to hear further on its anatomy. PLATE (373) has issued a memoir on the anatomy and phylogeny of the *Chitonidæ*: and RICE (390) has studied the gills in the *Pelecypoda* with a view to arriving at their phylogeny and relations; we give his results on p. 31.

Amongst palæontological papers of special interest to students of the recent Mollusca we may name those of KENNARD and WOODWARD (236) on the English cave-deposits; of BLANCKENHORN (44) on the quaternary of Syria; of COSSMANN (94, 95) on the tertiary of France and Belgium; the catalogue of the Australasian tertiary molluscs by HARRIS (184); and also the papers by SACCO (403), though these last are somewhat overburdened by his system of nomenclature.

Amongst the more remarkable efforts in nomenclature during the past year we may recall the fact that the author who recently named a shell *Extra extra*, has now perpetrated *Diabolica diabolica* for a recent species of unknown habitat!

The Recorders desire to call attention to the serious inconvenience occasioned by the neglect of authors, especially on the Continent, to affix any distinguishing mark to genera and species, whereby it may be ascertained whether they are proposed as new or not; several such cases have occurred in the preparation of the present Record.

In conclusion the Recorders have to express their special thanks to Mr B. B. Woodward, as also to those authors who have favoured them with reprints of their papers; further, they have to apologise for any errors and omissions that may result from their inexperience. For any notes of such errors they will feel obliged, as also for criticisms that may occur to students.

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II. BIOLOGY.

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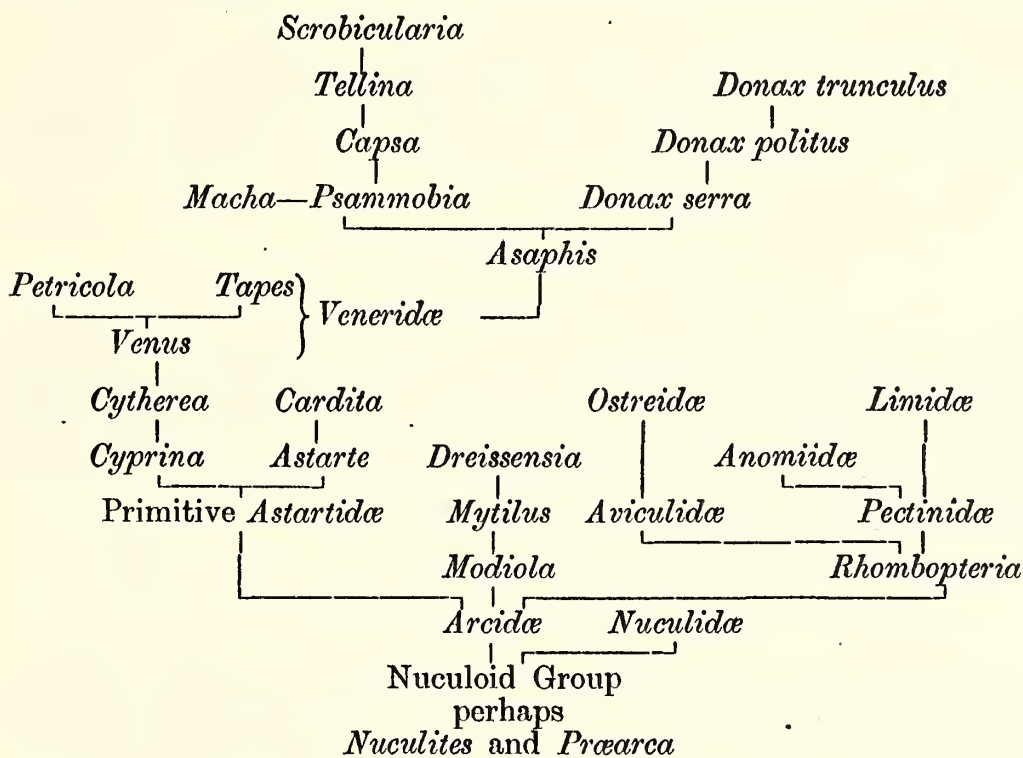
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15. COLLECTING AND PRESERVATION.

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B.—DISTRIBUTION.

GEOGRAPHICAL.

N.B.—The numbers in brackets refer to the "Titles." A reference is thus given to each memoir containing any notice affecting the Molluscan fauna of the several geographical divisions here adopted. Synonymic notes and changes of systematic position are, however, not included here. References to minor notes, which are not included in the List of Titles, but which contain faunistic facts of any value, are given to the work direct.

NON-MARINE MOLLUSCA. [For *Marine* see p. 38.]

a. PALÆARCTIC ZONE.

Palæarctic Region:—*Bulimi* and *Pupæ* of, with new species; WESTERLUND (510).—Distribution of palæarctic land and freshwater mollusca; KOBELT (245).—Europe: notes on several slugs; SIMROTH (421).

1. Septentrional Region.

British Islands:—*Arion caruleus*, n. sp.; COLLINGE (86): Land and freshwater shells; ADAMS (3): Popular notes on some freshwater species; ANON. *Int. J. Micr.* vii, pp. 241–246: Bibliography for 1890 & 1891; ROEBUCK (393): colouration of non-marine; BOYCOTT (55, 57): Foreign varieties of British shells; COCKERELL (85): List of British slugs; ANON. *Natural. J.* vi, pp. 93–95, also land-shells; *t. c.* pp. 124–129: Notes on some land and freshwater shells; EDWARDS (132): Origin of British fauna; SCHARFF, *P. Irish Ac.* iv, p. 427: *Testacellæ* of; WEBB (504).

England:—Northamptonshire: *Cacilioides acicula*; WRIGHT (525).—Derbyshire: *Limax cinereoniger*; OLDHAM, *J. Conch.* viii, p. 433.—Bromley: Land-shells of district; KENNARD (235).—Essex: Non-marine molluscs of; WEBB (507).—Chelmsford: Land-shells from brick-earth;

WEBB (505).—Sutton Coldfield: Land and fresh-water shells of; WOOD (520).—S. Wales: Land-shells; GAIN (160).—Yorkshire: *Vertigo minutissima* and others; LONG, Natural. J. vi, p. 19.—Essex: Hand-list of non-marine; WEBB (506).—*Testacella scutulum* at Adel, near Leeds; CROWTHER, Naturalist, 1897, p. 80.—*Testacella* found in gardens near the sea at Porchester, Hants; HEADLEY (187).

Scotland:—List of Mollusca from the freshwater lochs of Scotland; SCOTT & DUTHIE (411).—Stirlingshire: Land and freshwater shells of; M'LELLAN (307).—Midlothian: *Vertigo substriata* in; EVANS, Ann. Scott. Nat. Hist. 1897, p. 126.

Ireland: *Paludestrina jenkinsi* first recorded; ADAMS (2).—Westmeath: Land and freshwater shells; FARRAN, Irish Natural. vi, p. 200.—Ballycastle and district: land-shells from, with notes; STANDEN (436): see also ADAMS (1).—Fermanagh: *Hyalinia excavata*; SCHARFF, Irish Natural. vi, p. 281.—Killary and Westport: Land and fresh-water; WELCH, Irish Natural. vi, pp. 304 & 305.

France:—Aude: Freshwater and land-shells; FAGOT (136).—*Bulimus [Cæcilioides] acicula* extinct in Loire-inférieure; CHAILLOU (72).

West Prussia:—Land and freshwater; PROTZ (382).

Saxony:—Mollusca of; EHRMANN (133).

Denmark:—*Unio*, two n. spp.; DROUET (129).

Sweden:—*Pseudanodonta acutalis*, n. sp.; DROUET (129).

Russia:—New species of *Bythinia*, *Helix* and *Planorbis*; WESTERLUND (511).

Siberia:—New species of *Baicalia*, *Carychium*, *Helix*, *Limnæa*, *Pisidium*, *Planorbis*, *Unio* and *Valvata*; WESTERLUND (511).

2. Circum-Mediterranean Region.

France:—*Gastropoda* and *Pelecypoda* of the lakes of the French Alps; BLANCHARD & RICHARD (43).—A list of Mollusca collected at Pratteln, N. Jura; DOLLFUS (123).—Savoy: *Unio valens*, n. sp.; DROUET (129).

Sicily:—Land shells of adjacent islands, with critical remarks; MONTE-ROSATO (316).

Oran:—New species of *Helix*; PALLARY (338).

Italy:—Forty-seven land and freshwater, with *Agriolimax maggi*, n. sp.; PARAVICINI (341).

Bohemia:—A few land and freshwater mentioned; FRIČ & VÁVRA (152).—*Arionidæ*; BABOR (21).

Balaton Lake:—Freshwater fauna; DADAY (102).

Croatia:—New *Pomatias*; WAGNER (499).

Bulgaria:—Land-shells, with new species of *Helix* and *Clausilia*; STURANY (449).

Livonia:—*Unio nitidovirens*, n. sp.; DROUET (129).

Asia Minor and Syria:—Land and freshwater Mollusca, with new species of *Pomatia*, *Xerophila*, *Buliminus* and *Isidora*; ROLLE & KOBELT (249).—Syria: New species of *Ancylus* and *Buliminus*; NAEGELE (324).

Persia:—A new species of *Bythinia*; WESTERLUND (511).

Caucasus:—New species of *Clathropodium* (n. gen.), *Clausilia*, *Helix*, *Hyalinia*, *Planorbis*, and *Valvata*; WESTERLUND (511).

Transcaucasia:—New species of *Helix* and *Valvata*; WESTERLUND (511).

3. Central Asiatic Region.

Turkestan:—*Helix retteri* and *Buliminus retteri*, n. spp.; ROSEN (398).

Lake Baikal:—The fauna is of marine origin; HOERNES (205).

Central Asia:—New species of *Cathaica* and *Pseudiberus*; ANCEY (14).

Buchara:—*Anodonta bactriana*, n. sp.; ROLLE (395).

4. *Chinese Region.*

China:—*Gonostoma omphalospirum*, n. sp.; MOELLENDORFF (310): *Pterocyclus schmackeri*, *Platyrrhaphe schmackeri*, n. spp.; MOELLENDORFF (311).

5. *Japanese Region.*

Japan:—*Melania yokohamensis*, n. sp.; HARTMAN (185): Species of *Vivipara* figured; IWAKAWA (222).

6. *Atlantidean Region.*

Madeira:—*Helix watsoni*, n. sp.; JOHNSON (226).

b. PALÆOTROPICAL AFRICAN ZONE.

7. *Central African Region.*

Africa:—Species of *Urocyclus*; SIMROTH (420).

British Central Africa:—Land and freshwater shells; SMITH in JOHNSTON (225).

East Africa (including Lake Tanganyika, &c., and Zanzibar):—Land and freshwater with new species of *Ancylus*, *Buliminus*, *Bythinia*, *Cyclophorus*, *Geostilbia*, *Hapalus*, *Isidora*, *Lanistes*, *Limnea*, *Melania*, *Opeas*, *Physopsis*, *Planorbis*, *Spatha*, *Sphaerium*, *Streptaxis*, *Subulina*, *Tayloria*, *Thapsia*, *Unio*, *Vitrina*, and *Vivipara*; MARTENS (282): Land and freshwater; MARTENS (280): A list of the known species of land and freshwater Mollusca; MARTENS (284): New species of slugs; SIMROTH (421).

8. *West African Region.*

W. Africa:—*Perideris kobelti*, n. sp.; PILSBRY (361).

Old Calabar:—*Achatina studleyi*, n. sp.; MELVILL & PONSONBY (299).

Cameroons:—New species of *Achatina*, *Cyrenella*, *Dreissensia*, *Ennea*, *Hapalus* (?), *Helicarion*, *Helix*, *Limicolaria*, *Opeas*, *Pedipes*, *Pseudachatina*, *Pseudoglossula*, *Streptaxis*, *Streptostele*, *Thapsia*, and *Trochozonites*; AILLY (4): *Moulinsia goldfussi*, n. sp.; MOELLENDORFF (311).

9. *South African Region.*

S. Africa:—New species of *Achatina*, *Assimineia*, *Buliminus*, *Ennea*, *Hapalus*, *Planorbis*, *Pupa*, *Subulina*, and *Trachycystis*; MELVILL & PONSONBY (300): *Cyclophorus wahlbergi* made type of n. subgen. *Natalia* [nom. præocc.]; GODWIN-AUSTEN (167): Land and fresh-water shells of German South Africa; MARTENS (285): List of fresh-water species; WEBER (508).

10. *Malagasy Region.*

Mauritius:—*Omphalotropis albolabris*, n. sp.; MOELLENDORFF (314).

11. *Afro-Arabian Region.*

Somaliland:—New species of *Achatina*, *Helicella*, and *Limicolaria*; PILSBRY (358).

Socotra:—New species of *Auricula*, *Buliminus*, *Ennea*, *Lithidion*, and *Stenogyra*; SMITH (426).

c. PALÆOTROPIC ORIENTAL ZONE.

12. Indian Region.

- Bombay:—Land and fresh-water, with notes; PEILE (347).
 Travancore:—*Pterocylus pseudocumingi*, n. sp.; MOELLENDORFF (311).
 Ceylon:—New species of *Euplecta*, *Kaliella*, and *Lamprocystis*; GODWIN-AUSTEN (168): New species of *Corilla*, *Euplecta*, *Polita*, *Macrochlamys* (?), *Cyathopoma*, and *Diplommatina*; SYKES (458).

13. Indo-Chinese Region.

- Arakan Hills:—*Pupina tongupensis*, n. sp.; GODWIN-AUSTEN (167).
 Pegu:—*Plectopylis linteræ*, n. sp.; MOELLENDORFF (310).
 Burmah:—*Pupina limitaneus*, n. sp.; GODWIN-AUSTEN (167).
 Upper Burmah:—New species of *Helix* and *Cyclophorus*; MARTENS (279).
 Annam:—*Amphidromus eudeli*, n. sp.; ANCEY (16).
 Laos:—New species of *Scabrina* and *Dioryx*; MOELLENDORFF (311).
 Cochinchina:—*Amphidromus fultoni*, n. sp.; ANCEY (16).
 Malay Peninsula:—Land-shells from, with *Nanina* (*Macrochlamys* ?) *diadema*, n. sp.; DALL (105).
 Andamans:—New species of *Trochomorpha*; FULTON (158).

14. Indo-Malay Region.

- Sumatra:—Fresh-water shells of, with new species of *Corbicula*, *Isidora*, *Limnæa*, *Melania*, *Pachydrobia*, *Pisidium*, *Planorbis*, *Unio*, and *Vivipara*; MARTENS (281): New species of *Microcondylæa*, *Unio*, and *Melania*; STRUBELL (448).
 Java:—Fresh-water shells of, with new species of *Ancylus*, *Cyrena*, and *Stenothyra*; MARTENS (281): *Melania strigata*, n. sp.; STRUBELL (448): New species of *Helicarion*, *Sitala*, *Kaliella*, *Lamprocystis*, *Ariophanta*, *Inozonites*, *Patula*, *Acanthinula*, *Plectotropis*, *Chloritis*, *Buliminus*, *Boysidia*, *Hypselostoma*, *Clausilia*, *Opeas*, *Tornatellina*, *Carychium*, *Leptopoma*, *Lagocheilus*, *Ditropis*, *Pupina*, *Alycæus*, *Palaina*, *Diplommatina*, and *Georissa*; MOELLENDORFF (312): *Vaginula strubelli*, anatomy of; SIMROTH (422).
 Bali and neighbourhood:—Fresh-water shells; MARTENS (281).
 Lombok:—*Parmarion everetti* and *P. intermedium*, n. spp.; COLLINGE (87).
 Flores:—Fresh-water shells of, with a new species of *Neritina*; MARTENS (281): Two new species of *Amphidromus*; FULTON (157): New species of *Arinia*, *Diplommatina*, *Pupina*, *Registoma*, and *Xesta*; SMITH (429).
 Adonara I.:—*Melania adonara*, *Neritina confluens*, n. spp.; MARTENS (281).
 Timor:—Fresh-water shells of, with new species of *Isidora* and *Melania*; MARTENS (281).
 Sumba I.:—*Amphidromus consobrinus*, n. sp.; FULTON (157).
 Borneo:—Fresh-water shells of; MARTENS (281): *Vaginula borneensis*, n. sp.; SIMROTH (312): Land and freshwater, with *Xesta baramensis*, n. sp.; KOBELT (246): *Rhaphaulus kikenthali*, n. sp.; KOBELT (247).

15. Philippine Region.

- Philippines:—New species of *Leptopoma*, *Takeitia*, *Platyrrhaphæ*, *Hargravesia*, *Moulinsia*, and *Diplommatina*; MOELLENDORFF (311): Distribution and catalogue of *Cochlostyla*; HIDALGO (200).

d. AUSTRALIAN ZONE.

16. *Austro-Malayan Region.*

Celebes:—The fauna of the lakes of Celebes, with descriptions of new species of *Miratesta*, *Protancyllus*, *Vivipara*, *Melania*, and *Tylomelania*; SARASIN (405): Freshwater shells of, with new species of *Assimineca*, *Corbicula*, *Isidora*, *Melania*, *Modiola*, and *Stenothyra*; MARTENS (281): Land and freshwater, with new species of *Arinia*, *Helicarion*, *Leptopoma*; KOBELT (246): *Clausilia* from, with two new species; SYKES (457): New species of *Everettia*, *Vitrinoconus*, and *Dendrotrochus*; KOBELT (247): *Lagocheilus reticulatum*, n. sp.; MOELLENDORFF (311).

Halmahera:—New species of *Helicarion*, *Cyclotus*, and *Pupina*; KOBELT (247): *Helix* (*Nanina*) *halmaherica*, n. sp.; KOBELT (288): Land and freshwater, with new species of *Cyclotus*, *Helicarion*, *Helicina*, *Leptopoma*, *Pterocylus*; KOBELT (246): *Vaginula djiloloensis*, n. sp.; SIMROTH (422).

Batchian:—Land mollusca, with *Papuina ohlendorffi*, n. sp.; KOBELT (246).

Moluccas: Freshwater shells of; MARTENS (281).

Tuom I.:—*Helix* (*Geotrochus*) *wiegmanni*, n. sp., MARTENS (285).

Bismarck Archipelago:—*Taheitia tessellata*, n. sp.; MOELLENDORFF (311).

New Pommern:—*Ancitella berghi*, n. sp.; PLATE (376).

Talaut I.:—Land and freshwater mollusca with *Obbina meyeri*, n. sp.; MOELLENDORFF (308).

Misool:—*Unio misoolensis*, n. sp.; SCHEPMAN (406).

New Guinea:—Land-shells from, with n. spp. of *Adelomorpha*, *Chloritis*, *Ditropopsis* (n. gen.), *Lagochilus*, *Palaina*, *Papuina*, *Perrieria*, *Pupinella*, *Rhytida*, and *Trochonanina*; SMITH (430): *Papuina lintera*, n. sp.; MOELLENDORFF (310): *Mychopoma exul*, n. sp.; MOELLENDORFF (311): *Helix naso*, *Calycia crystallina*, notes on; MARTENS (285): New species of *Flammulina* and *Sitala* (?); HEDLEY (190).—New Guinea and neighbouring islands: Shells from, with new species of *Rhytida*, *Macrochlamys*, *Ariophanta*, *Chloritis*, *Papuina*, and *Truncatella*; SMITH (427).

17. *Australian Region.*

Queensland:—*Pupisoma circumlitum*, n. sp.; HEDLEY (190): *Helix* (*Hadra*) *yeppoonensis*, n. sp.; BEDDOME (27): *Pupina bidentata*, n. sp.; BEDDOME (26).

18. *Austro-Polynesian Region.*

New Hebrides:—*Omphalotropis varians*, n. sp.; MOELLENDORFF (314).

Vitilevu:—New species of *Diancta*; MOELLENDORFF (311).

19. *Polynesian Region.*

Rotuma I.:—Land and freshwater, with new species of *Charopa*, *Omphalotropis*, *Partula*, *Rhytida*, and *Succinea*; SMITH (431).

Moorea:—*Omphalotropis geometrica*, n. sp.; MOELLENDORFF (314).

Duke of York I.:—*Omphalotropis ducalis*, n. sp.; MOELLENDORFF (314).

Pelew Is.:—*Helicina rabei*, n. sp.; PILSBRY (365) [= *H. rufocallosa*; ANCEY (17)]: New species of *Omphalotropis*; MOELLENDORFF (314).

Koror:—*Omphalotropis catenata*, n. sp.; MOELLENDORFF (314).

Carolines:—New species of *Palaina*; MOELLENDORFF (311): New species of *Omphalotropis* and *Diadema*; MOELLENDORFF (314).

Hawaiian Islands:—*Agriolimax bevenoti*, *Amalia babori*, n. spp.; COLLINGE (89): New species of *Vitrea* (?), *Kaliella*, and *Succinea*; SYKES (459): *Leptachatina approximans*, n. sp.; ANCEY (19): *Amastra durandi*, n. sp.; ANCEY (18): Bibliography; SYKES (460).

20. Neozelanian Region.

New Zealand:—Revision of Athoracophoridae, with *A. dendyi*, n. sp.; SUTER (452): *Flammulina (Phenacohelix) ponsonbyi*, n. sp.; SUTER (455): *Janella schauinslandi*, n. sp.; PLATE (376): New species of *Endodonta* and *Flammulina* from; MURDOCH (323).

Lord Howe Island: *Endodonta waterhousiae*, n. sp.; HEDLEY (190).

Stewart Island:—Land-shells from; SUTER (453).

e. NEANTARCTIC ZONE.

21. Patagonian Region.

Uruguay:—New species of *Ancylus* and *Pisidium*: PILSBRY (356): New species of *Bulimulus*; PILSBRY (355).

Argentine Republic:—New species of *Bulimulus* and *Ancylus*; ANCEY (12).

22. Chilian Region.

[None.]

f. NEOTROPICAL ZONE.

23. Peruvian Region.

Peru:—*Bulimulus (Drymæus) baroni*, n. sp.; FULTON (158): *Helix hettneriana*, n. sp.; MARTENS (285): New species of *Bulimulus* and *Drymæus*; PILSBRY (355): *Bulimulus coraformis*, n. sp.; PILSBRY in TRYON (476): *Bulimulus moniezi*, n. sp.; DAUTZENBERG (113).

24. Columbian Region.

Colombia: *Labyrinthus assimilans*, n. sp.; SMITH (425): *Bulimulus krebsianus*, n. sp.; PILSBRY in TRYON (476).

Ecuador: Land and freshwater of, with *Helix (Isomeria) wolft*, n. sp.; REIBISCH (389): *Cyclophorus vesconesi*, *Dryptus flori*, n. spp.; JOUSSEAUME (231, 232).

25. Brazilian Region.

Brazil:—New species of *Streptaxis*; PILSBRY (360): *Bulimulus eudiopius* (Ihering), n. sp.; PILSBRY in TRYON (476): *Bulimulus bouvieri*, Pernambuco, n. sp.; DAUTZENBERG (113).

26. Mexican Region.

Central America:—The genera *Bulimulus*, *Simpulopsis*, the family *Cylindrellidæ*, and new species of *Cælocentrum* and *Holospira*; MARTENS (283).

Costa Rica : Land and freshwater of ; BIOLLEY (40) : *Oleacina underwoodi*, n. sp. ; FULTON (158).

Mexico :—New species of *Cœlocentrum*, *Eucalodium*, and *Schazicheila* ; DALL (107) : New species of *Helix* (*Lysinœ*) and *Polygyra* ; DALL (108).

Lower California : New species of *Bulimulus* ; PILSBRY (362).

27. Caribbean Region.

Martinique : *Bulimulus chrysaloides*, n. sp. ; PILSBRY (355).

Bahamas : Two new species of *Cerion* ; PILSBRY & VANATTA (371).

Guadelupe : *Bulimulus semicinctus*, n. sp. ; PILSBRY in TRYON (476).

g. NEARCTIC ZONE.

28. American Region.

United States :—New *Unionidæ* from Alabama, Florida, North Carolina, and Virginia ; WRIGHT (526) : Check-list of land-shells commenced ; PILSBRY (366).—North America : Notes on species of *Agriolimax* and *Prophysaon* ; COCKERELL (84).—Kentucky : *Carychium stygium*, n. sp., in Mammoth Cave ; CALL (67).—Great Smoky Mts., U. S. A. : *Polygyra ferrissi*, n. sp. ; PILSBRY (369).—Texas : *Holospira hamiltoni*, n. sp. ; DALL (106).—Idaho : *Hemphillia camelus*, n. sp. ; PILSBRY & VANATTA (372) : New variety of *Helix devia* ; HEMPHILL (191).—Illinois : Land and freshwater shells from ; BAKER (22).—Maine : *Planorbis nautilus* discovered in ; WALKER, *Nautilus*, x, p. 117 ; also in Ontario, HANHAM, *t. c.* p. 131.—Maine : Freshwater shells of ; NYLANDER, *Nautilus*, xi, p. 9.—Charleston, S. C. : *Cochlicella ventricosa* and other species ; MAZYCK (292).—Louisiana : Freshwater shells from ; FRIERSON (154).—Florida : *Unio walkeri*, n. sp. ; WRIGHT (524) : Three new species of *Unio* ; WRIGHT (523).

29. Californian Region.

New Mexico :—*Polygyra rhyssa*, n. sp. ; DALL (103 A) : *Holospira cockerelli*, n. sp. ; DALL (107) : *Pupa gabbii*, var., in ; COCKERELL, *Nautilus*, x, p. 143.

30. Canadian Region.

Canada :—*Planorbis nautilus* in ; TAYLOR (463).—Lake Superior, Canada : *Unio superiorenensis*, n. sp. ; MARSH (276).—Quebec : Land-shells from neighbourhood ; HANHAM (182).

Greenland :—Land-shells from ; DRYGALSKI (130), vol. ii, p. 155 : Freshwater, *t. c.* p. 175.

MARINE MOLLUSCA.

1. Arctic Province.

Arctic :—The Pelagic Mollusca of the arctic and antarctic regions ; CHUN (77).

Spitzbergen :—Marine shells with *Neptunea sachsenheimi*, n. sp. ; KIMAKOWICZ (244).

Greenland :—Gasteropods, pelecypods, pteropods and cephalopods ; DRYGALSKI (130), vol. ii, pp. 185–193 : Pteropods of Karajak Fiord, *t. c.* pp. 277 & 278.

2. *Boreal Province.*

Newfoundland:—*Chlamys costellata*, n. sp.; VERRILL (483).

Norway:—GRIEG (172).—Tromsö: Seventeen species of *Nudibranchiata*; KRAUSE (253): SCHNEIDER (409).

3. *Celtic Province.*

British Islands:—Distribution of many species, with notes; MARSHALL (277): Notes on some marine shells; EDWARDS (132).—Devonshire: *Spirula peronii* found on beach at Barricane; BULLEN, Sci. Gossip, iv, p. 150.—S. Wales: Marine shells; GAIN (160).—Scilly Isles: Shells from; MARSHALL (278).—Essex: *Crepidula fornicata* from; CROUCH (100).—Liverpool and Isle of Man: Occurrence of several species; HERDMAN (193).—Berwick: Marine shells from near Alnmouth; THEW (465).—List of Mollusca of Loch Fyne; SCOTT (410).—Leith: Mollusca from excavation at; GOODCHILD (169).—Ballycastle: Shells dredged off, including some rare species; CHASTER (74).—Irish Sea: Mollusca from; Rep. Brit. Assoc. 1896, p. 442.—Irish Coast: *Adeorbis unisulcatus*, n. sp.; CHASTER (73).—Ireland: *Tellina radiata* on beach; BULLEN, Sci. Gossip, iv, p. 150.—Rathlin Island: Marine shells from; CHASTER (75).—Rockall Island: Mollusca of neighbourhood; NICHOLLS (329).

Baltic:—Fauna of the Baltic with some reference to the Mollusca; BRANDT (59).

4. *Lusitanian Province.*

Sargasso Sea:—*Litiopa* of; LOCARD (263).

Azores:—New species of *Acmaea*, *Aliceia*, *Amphirissoa*, *Amussium*, *Arca*, *Axinus*, *Basilissopsis*, *Cardium*, *Cerithiella*, *Chlamys*, *Cocculina*, *Cuspidaria*, *Cyclostrema*, *Diplodonta*, *Eulima*, *Leda*, *Malletia*, *Monia*, *Myrina*, *Niso*, *Pleurotoma*, *Poromya*, *Puncturella*, *Thracia*, *Turbonilla*, *Turcricula*, *Verticordia*; DAUTZENBERG & FISCHER (116–118): New species of *Actæon*, *Bela*, *Belomitra*, *Clionella*, *Columbella*, *Meyeria*, *Natica*, *Oocorys*, *Pedicularia*, *Pleurotoma*, *Stylifer*, *Surcula*, *Thesbia*, *Trophon*, *Xenophora*; LOCARD (259): *Scalaria polygyrella*, n. sp.; LOCARD (260): *Berthella edwardsii*, n. sp.; VAYSSIÈRE (480): New species of *Scalaria* and *Mathildia*; DAUTZENBERG & BOURY (114, 115).

Canaries:—New species of *Belomitra*, *Clathurella*, *Marginella*; LOCARD (259).

Madeira:—Catalogue with descriptions of new species of *Actis*, *Amphiphryra*, *Bittium*, *Cæcum*, *Cylichna*, *Coralliophaga*, *Doridium*, *Eulima*, *Montacuta*, *Murex*, *Nassa*, *Natica*, *Odostomia*, *Philine*, *Pleurobranchus*, *Scalaria*, *Schismope*, *Teredo*, *Trophon*; WATSON (503).

Senegal: New species of *Aceras*; LOCARD (259): *Cadulus senegalensis*, n. sp.; LOCARD (260).

W. Africa:—New species of *Dentalium*; LOCARD (261).

N. W. Africa:—New species of *Bittium* (?), *Bulla*, *Euthria*, *Fusus*, *Lacuna*, *Marginella*, *Mesalia*, *Mitra*, *Murex*, *Natica*, *Persicula*, *Pleurotoma*, *Trophon*, *Turbonilla*; LOCARD (259).

Morocco:—New species of *Bela*, *Clionella*, *Columbella*, *Eulimella*, *Gibberula*, *Latiromitra*, *Marginella*, *Natica*, *Neptunia*, *Oocorys*, *Parthenina*, *Pleurotoma*, *Pleurotomella*, *Ringicula*, *Thesbia*, *Volutella*; LOCARD (259): *Scalaria mirifica*, n. sp.; LOCARD (260).

Alboran I.:—A list of the Mollusca; RICHARD & NEUVILLE (391).

France:—List of Mollusca collected on the N. coast; DOLLFUS (124): *Cuspidaria striolata*, n. sp.; LOCARD (265): Marine shells; DAUTZENBERG

(112).—Normandy: Thirty marine species; FAUVEL (137).—Gulf of Gascony: New species of *Cadulus*; LOCARD (260): New species of *Bela*, *Onchiopsis*; LOCARD (259).—Marseilles: New species of *Cerithiopsis*, *Pleurotoma*, *Stylopsis*; LOCARD (259).—Marseilles and neighbourhood: Several notes on marine molluscs by various authors, in *Ann. Mus. Marseilles*, v, pt. i.

Spain:—New species of *Aceras*, *Bela*, *Belomitra*, *Gibberula*, *Neptunia*, *Neverita*, *Parthenina*, *Pleurotoma*, *Pleurotomella*, *Pseudomurex*, *Raphitoma*, *Taranis*, *Tornatina*, *Turbonilla*, *Volutella*; LOCARD (259).—Cape Finistère: *Cadulus monterosatoi*, n. sp.; LOCARD (260).

Portugal:—New species of *Assiminopsis*, *Bela*, *Mangilia*, *Natica*, *Pleurotoma*, *Pleurotomella*, *Pyramidella*, *Tornatina*; LOCARD (259): *Scalaria dissoluta*, n. sp.; LOCARD (260): Marine mollusca; NOBRE (331).

Gulf of Naples:—*Phyllobranchus borgnini*, n. sp.; TRINCHESE (473): *Tyloidinella trinchesei*, n. sp.; MAZZARELLI (293).

Adriatic:—Molluscan fauna, with list of species; BRUSINA (63).

5. Aralo-Caspian Province.

[None.]

6. West African Province.

Cape Verde Is.:—New species of *Bulla*, *Clathurella*, *Marginella*, *Oliva*, *Philina*, *Scalaria*, *Tectarium*; LOCARD (259): *Scalaria dissoluta*, n. sp.; LOCARD (260).

7. South African Province.

S. Africa:—Addenda to fauna with new species of *Ancilla*, *Apicalia*, *Basterotia*, *Bullia*, *Bullina*, *Calliostoma*, *Cardium*, *Cerithiopsis*, *Cioniscus*, *Clathurella*, *Columbella*, *Cytherea*, *Donax*, *Eulima*, *Fulgur*, *Haminea*, *Marginella*, *Nassa*, *Natica*, *Pandora*, *Pectunculus*, *Pleurotoma*, *Rissoa*, *Scintilla*, *Solariella*, *Tellina*, *Turbo*, and *Venus*; SOWERBY (433).

Mozambique:—*Oscanius petersi*, n. sp.; BERGH (31).

Saint Paul Island:—Two new species of *Condylocardia*: BERNARD (33).

8. Indo-Pacific Province.

Mauritius (?):—*Scalaria sowerbyi*, n. sp.; CLESSIN (288).

E. Africa (including Zanzibar):—Brackish water molluscs, with *Melampus hypoleuca*, n. sp.; MARTENS (282).

Querimba Islands:—*Pleurobranchus möbii*, n. sp.; VAYSSIÈRE (480).

Red Sea:—*Scalaria klunzingeri* and *S. jickeli*, n. spp.; CLESSIN (288): *Murex tribulus*, a Red Sea species, occurring in Lake Ismailia; BAVAY (25).

Arabian Sea:—New species of *Dosinia* and *Pectunculus*; MELVILL (298).

Persian Gulf:—New species of *Columbella*, *Coralliophila*, *Ethalia*, *Eulima*, *Leucotina*, *Mitra*, *Monilea*, *Nassa*, *Natica*, *Sistrum*, and *Turritella*; MELVILL (298).

Mekran coast:—New species of *Calliostoma*, *Chione*, *Dentalium*, *Donax*, *Elusa*, *Ethalia*, *Fissurella*, *Gibbula*, *Marginella*, *Monilea*, *Nassa*, *Scalaria*, *Syrnola*, *Tapes*, *Tellina*, *Terebra*, *Thalotia*, and *Yoldia*; MELVILL (298).

Karachi:—*Plecotrema sykesii*, n. sp.; MELVILL (297).

Bay of Bengal and the Arabian Sea:—Numerous Gastropods and Pelecypods figured; ALCOCK & ANDERSON (5).

Indian Ocean:—*Pleurobranchæa brockii*, n. sp.; BERGH (31).—Bintang, near Singapore: *Psammotellina pallens*, n. sp.; MARTENS (281).—Anda-

man Islands: Ninety-seven species from, with new species of *Drillia*, *Imbricaria*, *Nassa*, *Turritella*, and *Ancilla*; MELVILL & SYKES (302).

Philippines:—*Oscanius semperi*, *Pleurobranchus perrieri*, n. spp.; VAYSSIÈRE (480): *Bulla subaustralis*, n. sp.; MABILLE (273): *Pleurobranchus giardi*, n. sp.; VAYSSIÈRE (481): *Cassis Crossei*, n. sp.; HIDALGO (199): *Dentalium letsonæ*, Sharp & Pilsbry, n. sp.; PILSBRY in TRYON (475): New species of *Oscaniella* and *Oscaniopsis*; BERGH (31).

Borneo:—Brackish-water shells of, with *Psammotellina semmelinki*, n. sp.; MARTENS (281).

Sumatra:—Brackish-water shells of, with new species of *Corbicula*, *Littorina*, *Melania*, and *Pachydrobia*; MARTENS (281).

Java:—Brackish-water shells of, with new species of *Cyrena* and *Psammotellina*; MARTENS (281).

Bali and neighbourhood:—Brackish-water shells of; MARTENS (281).

Flores:—Brackish-water shells of, with new species of *Cassidula*, *Neritina*, and *Psammobia*; MARTENS (281).

Timor:—Brackish-water shells of, with a new species of *Melania*; MARTENS (281).

Celebes:—Parasitic mollusca, with *Stylifer celebensis*, n. sp.; KÜKENTHAL (256): Brackish-water shells of, with new species of *Assimineca*, *Corbicula*, *Melania*, and *Modiola*; MARTENS (281): Brackish-water mollusca; KOBELT (246).—Macassar: *Psammobia denickei*, n. sp.; MARTENS (281).

Batchian:—Brackish-water mollusca; KOBELT (246): *Cassidula triparietalis*, n. sp.; MARTENS (281).

Ternate: On *Scutus* and a collection of *Nudibranchiata*, with *Doridium alboventrale*, n. sp.; BERGH (30): Parasitic mollusca, with *Thyca pellucida*, n. sp.; KÜKENTHAL (256).

Halmahera:—Brackish-water mollusca: KOBELT (246).

Ceram:—*Cassidula triparietalis*, n. sp.; MARTENS (281).

Amboyna:—*Berthella brocki*, n. sp.; VAYSSIÈRE (480).

Moluccas:—New species of *Oscanius* and *Oscaniella*; BERGH (31): Brackish-water shells of; MARTENS (281).

New Britain:—*Nassa camelus*, n. sp.; MARTENS (285).

Marquesas Islands:—New species of *Lotorium* and *Cardium*; SOWERBY (434).

Tahiti:—*Bulla subaustralis*, n. sp.; MABILLE (273).

Lifu:—New species of *Cithara*, *Clathurella*, *Daphnella*, *Mangilia*, and *Mitra*; HERVIER (196).

Loyalty Islands:—Shells from, with new species of *Drillia*, *Odostomia*, *Elusa*, and *Olivella*; MELVILL & STANDEN (301).

9. Australo-Zealandic Province.

Australia:—Critical remarks on many marine species, with new species of *Cuspidaria*; TATE (462): New species of *Cypræa*; KENYON (239).

West Australia:—*Doris imperialis*, n. sp.; KENT (238).

Queensland:—*Adeorbis sigaretinus*, n. sp.; PILSBRY (359).

East Australia:—*Voluta (Ternivoluta) studeri*, n. sp.; MARTENS (285).

South Australia:—Polyplacophora from, with new species; BEDNALL (29).

New South Wales:—New species of *Corbula* and *Tatea*; PILSBRY (359).

Tasmania:—*Arcoperna recens*, n. sp.; TATE (461): Notes on some marine mollusca; KENYON (240).

New Zealand:—Polyplacophora from, with a new species of *Ischnochiton*; SUTER (450): *Trochidæ* of, with *Gibbula micans*, n. sp.; SUTER (454): Three n. spp. of *Scalaria*; CLESSIN (288).

Stewart Island:—*Philobrya filholi*, *Hochstetteria trapezina*, n. spp.; BERNARD (34): Two new species of *Condylocardia*; BERNARD (33).

10. *Japonic Province.*

Japan:—New species of *Ancillaria*, *Columbella*, *Lippistes*, and *Voluta*; MARTENS (285): *Oscaniopsis compta*, n. sp.; BERGH (31): *Crenella japonica*, n. sp.; DALL (110): New species of *Bulla*; MABILLE (273).

11. *Aleutian Province.*

Alaska: New species of *Crenella*, *Malletia*, and *Modiolaria*; DALL (110): *Pecten davidsoni*, n. sp.; DALL (109).

British Columbia and islands off coast:—New species of *Cadulus*, *Crenella*, *Cythara*, *Eucosmia*, *Leda*, *Macoma*, *Malletia*, *Modiolaria*, *Mölleria*, *Mumiola* (?), *Nucula*, *Odontostomia*, *Rissoina*, and *Yoldia*; DALL (110).

12. *Californian Province.*

West coast of U. S. A.:—New species of *Pecten* and *Sigaretus*; DALL (109): *Dentalium dalli*, Pilsbry and Sharp, n. sp.; PILSBRY in TRYON (475).

California:—*Uvanilla regina*, off coast of; STEARNS (440): Four new species of *Dentalium*; PILSBRY in TRYON (475): New species of *Malletia*, *Odontostomia*, and *Yoldia*; DALL (110).—Bolinas, California: Marine shells from; WOOD (521).—Monterey Bay: Marine shells of: KING, *Nautilus*, xi, p. 23.

Oregon:—*Dentalium simplex*, Pilsbry and Sharp, n. sp.; PILSBRY in TRYON (475).

Washington, State of:—New species of *Macoma*, *Malletia*, and *Yoldia*; DALL (110).

13. *Panamic Province.*

Ecuador:—*Dentalium æquatorium*, Pilsbry and Sharp, n. sp.; PILSBRY in TRYON (475).

Panama:—*Dentalium innumerabile*, Pilsbry and Sharp, n. sp.; PILSBRY in TRYON (475).

Mexico:—*Scalaria mexicana*, n. sp.; CLESSIN (288).

Gallapagos Islands: *Dentalium brevicornu*, Sharp and Pilsbry, n. sp.; PILSBRY in TRYON (475).

14. *Peruvian Province.*

Chili:—*Chitonidæ*, with *Tonicia calbucensis*, n. sp.; PLATE (373): A new species of parasitic Gastropod within the body-cavity of an Echinoderm (*Chirodota*); LUDWIG (272).

West Coast of S. America:—*Mitra semigranosa*, n. sp.; MARTENS (285).

S. America: Descriptions of species collected by a Spanish Expedition reprinted by HIDALGO (201).

15. *Antarctic Province.*

Antarctic:—The pelagic Mollusca of the Arctic and Antarctic regions; CHUN (77).

16. *Patagonian Province.*

Uruguay:—New species of *Corbula*, *Crassatella*, *Mesodesma*, *Ocenebra*, *Semele*, *Thracia*, *Turbonilla*, and *Urosalpinx*; PILSBRY (356): Marine shells from, with new species of *Bullia* and *Halistylus*, and several *nomina nuda*; PILSBRY (364).

17. *Caribbean Province.*

Brazil:—Marine shells from Bahia, with *Mactrella iheringi*, n. sp.; DALL (103): List of Mollusca of the Island of St. Sebastian; IHERING (219): *Arcidæ* and *Mytilidæ* of, with *Modiola martensi*, n. sp.; IHERING (218): Species of *Mactra*, *Venus*, *Ostrea*, *Mytilus*, *Cardium* (?), and *Tagellus*, found in a Cemetery at Lomas de Zamora; VALENTIN (479): *Pleurobranchæa inconspicua*, n. sp.; BERGH (31).

Brazil and Uruguay:—*Columbella brasiliæna*, n. sp.; MARTENS (285).

West Indies:—Two new species of *Dentalium*; PILSBRY in TRYON (475): New species of *Chlamys* and *Cyclopecten*; VERRILL (483).

Bahamas:—*Pleurobranchæa agassizi*, n. sp.; BERGH (31).

Antilles:—*Pleurobranchus crossei*, n. sp.; VAYSSIÈRE (481).

18. *Transatlantic Province.*

Atlantic coast of N. America:—*Cyclostrematidæ* and allied forms, with n. sp. of *Granigyra*, *Choristella* (n. gen.), *Circulus*, *Cyclostremella* (n. gen.), *Leptogyra* (n. gen.), *Lissospira* (n. gen.), *Möllerriopsis* (n. gen.), *Pseudotorella*, *Tharsiella* (n. gen.), and *Vitrinella*; BUSH (66).

Atlantic coast of United States:—*Ledidæ* and *Nuculidæ*, with new genera, and n. spp. of *Ledella*, *Neilonella*, *Tindaria*, and *Yoldiella*; VERRILL and BUSH (486): New species of *Cyclopecten* and *Hyalopecten*; VERRILL (483).

Florida:—Marine shells from; WHITE, *Nautilus*, xi, p. 31: Supposed gigantic Cephalopod; VERRILL (484): Contradicted by VERRILL (485).—Key West: *Ianthina*; SIMPSON (416).

GEOLOGICAL.

N.B.—The same remarks apply here that are given at the beginning of the preceding section.

Lower-Languedoc:—Paleontology of, with new species; ROMAN (396): Paleontology of Rosignano and Vignale, with new species; ALESSANDRI (8).

1. POST-TERTIARY.

British Isles:—*Hygromia umbrosa* (new to Britain) and other mollusca of cave deposits; KENNARD & WOODWARD (236).—Marine shells from Raised Beach, Portrush; STEWART, *Irish Natural*. vi, p. 287.—List of Mollusca from raised beach and glacial beds in Ayrshire; SMITH, J. (432).—Arctic shells from Elie; GEIKIE, *P. Geol. Ass.* xv, p. 151.—Mollusca from Boulder-clay in Ayrshire; READE (386).—Mollusca from the Kennet Valley Deposits; KENNARD & WOODWARD (237).—Marine shells found in Drift series at High Levels in Ayrshire; SMITH, *Rep. Brit. Ass.* 1896, p. 799.—Mollusca from shell-bearing deposits in Kintyre; *Rep. Brit. Ass.* 1896, pp. 378–399.—Mollusca from Boulder Clay, Vale of Clwyd; READE, *Quart. J. Geol. Soc.* liii, pp. 342 & 344.

Germany:—Diluvial freshwater-deposit at Frankfurt; ROEDEL (394).—Fauna of the interglacial Travertine of Burgtonna and Gräfontonna in Thuringia; WEISS, *Zeitsch. Deutsch. geol. Ges.* xlix, pp. 683–689.—Mollusca from Interglacial beds at Marienburg and Dirschau, Prussia; JENTZSCH, *Jahrb. geol. Landesanst. Berlin*, xvi, pp. 165–208.

Denmark:—Kitchen-midden on Island of Föhr; SPLIETH (435).

Belgium:—Quaternary of Hoogstræten; MOURLON (322).

Norway:—List of species from raised beach, Varanger Fiord; STRAHAN, Quart. J. Geol. Soc. liii, p. 150.

Syria:—Pleistocene fauna of the fresh-water deposits, with some new species; BLANCKENHORN (44).

Ottawa:—Post-pliocene of Ottawa valley; AMI (11).

California:—New species of *Actæon*; STEARNS (441). Loess fossils, Des Moines; KEYES, Rep. Iowa Geol. Survey, vii, p. 344.

Franz Josef Land:—Mollusca from raised beaches; NEWTON & TEALL (326).

2. TERTIARY.

Occurrence and distribution of *Gryphaea eszterházyi*, Pávay; KOCH (250).—Tertiary Mollusca with new species; SIMONELLI (415).—Pelecypods and Gastropods from Bulgaria, with new species of *Pecten*, *Mytilus*, *Velates* and *Cerithium*; BONTSCHIEFF (49).—Tertiary *Gastropoda* from Hungary with *Hydrobia* (*Liobaikalia* ?) *sopronensis*, n. sp.; HOERNES (206).—Mollusca of Monte Postale; REGNY (493).—*Pecten* and *Lucina* from Barcelona and Tarragon, with new species; POCH & ALMERA (378).—Tertiary of Avignon, with new species; NICOLAS (330).—Tertiary fossils from Baden, with new species; HUG (214).—Marine and Land Mollusca from Venetian Alps, with new species; VINASSA DE REGNY (491).—Tertiary Mollusca of Piedmont and Liguria; SACCO (402).—Eocene and Neogene Faunas of Roumania, with new species; STEFANESCU (442).—New *Pteropoda* from Sivizzano; SIMONELLI (414).—Tertiary Mollusca from Denmark; RAVN (384).—Fauna of tertiary deposits in Buzeu, Roumania, with new, but undescribed, species; TEISSEYRE, Verh. geol. Reichsanst. 1897, pp. 159–166.—*Gastropoda* and *Pelecypoda* from the Tertiary of West Borneo, with n. g. and n. spp.; KRAUSE (255).—Tertiary Mollusca from the Philippines; MARTIN (287).—Lists of Tertiary Mollusca from Java; MARTIN (286).—Tertiary Mollusca of Patagonia with descriptions of 48 new species; IHERING, Revist. Mus. Paulista, ii, pp. 217–382, pls. iii–ix: for Summary of this paper see IHERING (217).—Tertiary of Patagonia with new species; PILSBRY (357).—Tertiary of Patagonia, *Ostreida*, with new species; ORTMANN (337).—*Scaphopoda* from tertiary of San Domingo, with new species; PILSBRY & SHARP (370).—New species from Vancouver; MERRIAM (304).—Tertiary of Lower Moorabool, Victoria; HALL & PRITCHARD (181).—Tertiary Opisthobranchs of Australia, with new species; COSSMANN (93).—Australasian Mollusca, with new genera and species; HARRIS (184).—Fossils from Tertiaries near Melbourne; HALL & PRITCHARD (180).

Neogene:—Dalmatia, Croatia, Bosnia, Hertzgovina and Servia: Pontic and Levantine fauna, with new genera and species; BRUSINA (62).—New species from upper tertiary of France; MAYER-EYMAR (291).

Paleogene:—New species from lower tertiary of Egypt; MAYER-EYMAR (290).

Pliocene:—Pliocene of Barcelona; ALMERA, Bol. Ac. Barcelona, i, No. 14 & 15.—Land and freshwater Pliocene of Roussillon; DEPÉRET, Mem. Soc. geol. France, Pal. No. 3, p. 176.—Pliocene of Iwowski; ŁOMNICKI (267).—Fauna of the Diestian sands, with *Isocardia cor*; BERNAYS, Bull. Soc. Belge Geol. Mém. pp. 117–132, 1 pl.—*Chenopus uttingerianus* and *C. pespelecani* of the Italian Pliocene; VINASSA DE REGNY (490).—Levantine molluscan fauna of Rhodes, with new species; BUKOWSKI (64).—Pliocene fauna of the fresh-water deposits in Syria, with some new species; BLANCKENHORN (44).

Miocene:—Mollusca from Bellunesi; VINASSA DE REGNY (492).—Miocene of Lemberg; ŁOMNICKI (266).—Middle-miocene of Kostej, with new species; BOETTGER (47).—Miocene of Waldorf, &c., with new species; HILBER (202).—Tongrian of Liguria: Pelecypods with new species; ROVERETO

(400).—Land shells in miocene of Florida; PILSBRY (354).—Fossils from probable miocene in Victoria; DENNANT & MULDER (120).

Oligocene:—*Pelecypoda* and *Gastropoda* from Bavaria, with many new species; WOLFF (519).—Bernburg: Lower oligocene fossils; MERKEL & FRITSCH (303).—Itzehoe, Germany: Seventy-two marine species, with notes; REINHARD (388).—List of fossils from Moravia; RZEHA, Verh. geol. Reichsanst. 1897, pp. 199–201.—*Hemistenotrema*, n. subgen. of *Helix*, with new species, from Upper Oligocene of Mainz; BOETTGER (46).—Note on *Cerithium ocirrhoe*, from Dax; VIGNAL (488).

Eocene:—Note on *Actæon simulatus*; VINCENT (497).—Eocene of Loire-inférieure, with many new species; COSSMANN (95).—Note on new species of *Pecchiolia*; VINCENT (496).—Note on Belgian *Nuculina*, with new species; VINCENT (495).—Note on species of *Amussium*; VINCENT (494).—Fauna of Vértès, with some new species of Pelecypods and Gastropods; PAPP (339).—The *Cerithiidae* of the Paris Basin; VIGNAL (487).—Paleocene mollusca from Copenhagen; GRÖNWALL (174).—New *Pelecypoda* from N. America; HARRIS (183).—New mollusca from America; ALDRICH (7).—Mollusca from the Middle Atlantic slope in Delaware, Maryland, and Virginia; CLARK (78).—Lists of Fossils from the Martinez group of California; MERRIAM (305).—Alabama: A new *Cancellaria*; ALDRICH (6).—Fauna of the Eocene of the Pacific coast, with some new species; STANTON (437).

3. SECONDARY.

Rhætic and Liassic fauna of Mount Albenza; MARIANI, Rend. Ist. Lombardo, xxx, pp. 1001–1006.—*Alectryonia amor*, d'Orbigny, and a list of Mesozoic *Cephalopoda*, *Gastropoda*, and *Pelecypoda* from Borneo; NEWTON (328).—Mesozoic mollusca from Alaska; HYATT, Rep. U.S. Geol. Surv. xvii, Pt. i, pp. 907 & 908.

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Bohemia, with species figured; FRIČ (151).—List of fossils from the Pläner in the neighbourhood of Neu-Straschitz, near Prag; ŽELÍZKO, Verh. geol. Reichsanst. 1897, pp. 173–176.—Cretaceous of Kiev; RADKEWITSCH (383).—Mollusca from the Upper Cretaceous beds of Baluchistan, with a new gen. (*Indoceras*) and many new species; NOETLING (334).—*Pelecypoda* and *Cephalopoda* from the Neocomian of Baluchistan, with *Gryphaea oldhami*, n. sp.; NOETLING (333).—Fauna of Cretaceous of Pondicherry, S. India, with some new species; KOSSMAT, Rec. Geol. Surv. India, xxx, pp. 51–110, 5 pls.—Upper Cretaceous *Ammonites* from Southern India, with many new species; KOSSMAT (252).—Mollusca from West Borneo; KRAUSE (255).—*Olcstephanus superstes* in Upper Cretaceous of Algeria; PERON, Bull. Soc. geol. France, xxv, pp. 301 & 302.—*Ammonites* from Upper Cretaceous of Algeria with n. gen. and spp.; PERON (349).—Note on the neocomian of Djebel-Ouach, with *Macrocephalites fischeuri*, *Desmoceras? gouxi*, n. spp.; SAYN, Bull. Soc. geol. France, xxiv, pp. 1162–1167.—Fossils from Lower Chalk of Cameroons with many new species; KOENEN (251).—Lists of fossils from the Laramie and related formations in Wyoming; STANTON & KNOWLTON (438).—Mollusca from Venezuela and Peru, with *Lenticeras* n. g. and many new species; GERHARDT (443).—Mollusca from Columbia, with n. gen. and many new species; GERHARDT (443).—Lists of fossils from the Upper Cretaceous formations of New Jersey, Delaware and Maryland; CLARK, BAGG, & SHATTUCK (79).—Comanche series of Kansas: New species of *Turritella*, with notes on fossils; CRAGIN, Science, vi, p. 134.—Cretaceous of California, new species; COOPER (92).—Fauna of upper cretaceous of Pacific coast, with new species; STANTON (437).—*Scaphites raemeri*, d'Orb. from West Greenland; MADSEN (275).

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(471).—Carboniferous in Mississippi valley; KEYES (242).—Fossils of Poek County; KEYES, Rep. Iowa Geol. Survey, vii, pp. 331 & 332.

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 † *Falloticerias*, n. g., type *Ammonites proteus*, d'Orb., from the Albian of the S. of France; PARONA & BONARELLI, Palæontogr. ital. ii, p. 89.
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Limax, notes on two species of; COCKERELL (82).
Macrochlamys dohertyi, New Guinea; SMITH, P. Malac. Soc. London, ii, p. 287, fig.: *M. (?) circumsculpta*, p. 235, Ceylon; SYKES, P. Malac. Soc. London, ii, fig.: n. spp.
Nanina (Macrochlamys?) diadema, Malay Peninsula; DALL, Nautilus, xi, p. 37: n. sp.
Parmarion everetti, p. 778, *intermedium*, p. 779, Lombock; COLLINGE, P. Zool. Soc. London, 1897, figg.: n. spp.

- Polita notabilis*, p. 235, Ceylon; SYKES, P. Malac. Soc. London, ii, fig.: n. sp.
- Rhytida trobriandensis*, Trobriand Island; SMITH, P. Malac. Soc. London, ii, p. 287, fig.: *R. gardineri*, Rotuma; SMITH, Ann. Nat. Hist. xx, p. 519: *R. kapauensis*, New Guinea; SMITH, Ann. Nat. Hist. xx, p. 409, fig.: n. spp.
- Sitala javana*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 58: *S. (?) sublimis*, British New Guinea; HEDLEY, Rec. Austral. Mus. iii, p. 47, fig.: n. spp.
- Spirotoxon elegans*, E. Africa; SIMROTH, SB. Ges. Leipzig, 1895-6, p. 152: n. sp.
- Thapsia curvatula*, Uluguru; MARTENS (282), p. 41, fig.: *T. sjostedti*, Cameroons; AILLY (4), p. 39, fig.: n. spp.
- Trichotoxon (Polytoxon) aurantiacum*, Pangani, E. Africa; SIMROTH, SB. Ges. Leipzig, 1895-6, p. 149: n. sp.
- Trochomorpha (Videna) andamanica*, Nevill MS, p. 212, *pseudosanis*, Nevill MS, p. 213, Andamans; FULTON, Ann. Nat. Hist. xx, figg.: n. spp.
- Trochonanina albolabiata*, New Guinea; SMITH, Ann. Nat. Hist. xx, p. 410, fig.: n. sp.
- Trochozonites reticulatus*, p. 43, *lindströmi*, p. 44, *suturalis*, p. 45, *hystrix*, p. 49, *pilosus*, p. 50, *turbinatus*, p. 51, *theeli*, p. 55, Cameroons; AILLY (4), figg.: n. spp.
- Urocyclus*, notes on the African species, SIMROTH, SB. Ges. Leipzig, 1895-6, p. 29.
- Vitrea (Anomphala) viridis*, Caucasus; WESTERLUND, Ann. Mus. St. Petersb. 1897, p. 118: *V. (?) molokaiensis*, *lanaiensis*, Hawaiian Islands; SYKES, P. Malac. Soc. London, ii, p. 298: n. spp.
- Vitrina nigrocincta*, Kilima-Njaro; MARTENS (282), p. 39, fig.: n. sp.
- Vitrinoconus celebesianus*, Celebes; KOBELT, Nachrbl. Deutsch. malak. Ges. 1897, p. 26: also in Abh. Senckenb. Ges. xxiv, p. 45, fig.: n. sp.
- Xesta everetti*, p. 623, *polymorpha*, *subpolita*, p. 624, *melanoraphe*, p. 625, Flores; SMITH, Ann. Nat. Hist. xix.: *X. baramensis*, North Borneo; KOBELT, Abh. Senckenb. Ges. xxiv, p. 52, fig.: n. spp.

ARIONIDÆ.

- Arion*: the genus and some European forms discussed; COLLINGE, P. Zool. Soc. London, 1897, pp. 439-450.
- Arion cæruleus*, England and Ireland; COLLINGE, t. c. p. 444: n. sp.
- Hemphillia camelus*, Idaho; PILSBRY & VANATTA, Nautilus, xi, p. 44: n. sp.
- Prophysaon*: notes on some North American species; COCKERELL, Nautilus, xi, p. 77.

ENDODONTIDÆ.

- Charopa perryi*, *rotumana*, Rotuma; SMITH, Ann. Nat. Hist. xx, p. 520: n. spp.
- Endodonta waterhousiae*, Lord Howe Island; HEDLEY, Rec. Austral. Mus. iii, p. 45, fig.: *E. (Charopa) vortex*, p. 160, *E. coma*, Gray, var. *multicostata*, p. 161, n. var., New Zealand; MURDOCH, P. Malac. Soc. London, ii, figg.: n. spp.
- Flammulina (Phenacohelix) perplexa*, p. 161, *F. (Allodiscus) mossi*, p. 162, New Zealand; MURDOCH, P. Malac. Soc. London, ii, figg.: *F. (Phenacohelix) ponsonbyi*, New Zealand; SUTER, P. Malac. Soc. London, ii, p. 285, fig.: *F. abdita*, British New Guinea; HEDLEY, Rec. Austral. Mus. iii, p. 47, fig.: n. spp.
- Patula (Pyramidula) javana*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 65: n. sp.

HELICIDÆ.

- Acanthinula perpusilla, tiluana*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 66: n. sp.
- Austenia* [nom. præocc.], n. sect. of *Plectopylis*, for *P. clathratula*; GUDE, Sci. Gossip, iii, p. 300 [changed to *Sykesia*, p. 332].
- Cathaica funki*, Central Asia; ANCEY, Nautilus, xi, p. 16: n. sp.
- Chilanodon*, n. subgen. of *Helix* for *H. sibirica*, n. sp.; WESTERLUND, Ann. Mus. St. Petersb. 1897, p. 119.
- Chloritis pervicina*, New Guinea; SMITH, Ann. Nat. Hist. xx, p. 411, fig.: *C. fusco-purpurea*, Woodlark Island; SMITH, P. Malac. Soc. London, ii, p. 288, fig.: *C. tetragyra, fruhstorferi*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 68: n. spp.
- Cochlostyla*, notes on some species of; HIDALGO, J. Conchyl. xlv, p. 213: Critical notes on many species of; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, pp. 121-126, 153-164.
- Cochlostyla*, catalogue of, with *C. pilsbryi*, n. n., for *C. cunctator*, Pilsbry non Reeve, p. 307, *quadrifasciata*, n. sp., p. 311, *solai*, n. sp., p. 315, *sowerbyi*, n. sp., p. 316; HIDALGO, J. Conchyl. xlv, pp. 237-353.
- Corilla colletti*, p. 233, *gudei*, p. 234, Ceylon; SYKES, P. Malac. Soc. London, ii, figg.: n. spp.
- Dendrotrochus*, note on value of; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 5.
- Dendrotrochus celebesianus*, Celebes; KOBELT, Nachrbl. Deutsch. malak. Ges. 1897, p. 26: also in Abh. Senckenb. Ges. xxiv, p. 50: n. sp.
- Epiphragmophora arnheimi*, note on; PILSBRY, Nautilus, xi, p. 54.
- Epiphragmophora saltaria*, p. 9, *cryptomphala*, Argentine Republic, *trigrammophora*, Bolivia and Argentine Republic, p. 10; ANCEY, Boll. Mus. Torino, xii: n. spp.
- Gonostoma (Drepanostoma) omphalospirum*, Hubei, China; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 29: n. sp.
- Helicella (Lejeania) chionobasis*, Somaliland; PILSBRY, P. Ac. Philad. 1897, p. 359: n. sp.
- Helix*, monograph completed by KOBELT in MARTINI & CHEMNITZ (288).
- Helix hottneriana*, Peru; MARTENS, Archiv Naturg. lxiii, p. 40, figg.: *H. haberhaueri*, Bulgaria; STURANY, Ann. Hofmus. Wien, xii, p. 112, fig.: *H. retteri*, Turkestan; ROSEN, Feuille Natural. An. xxvii, p. 170: *H. camerunensis, jugneri*, Cameroons; AILLY (4), p. 57, figg.: *H. watsoni*, Madeira; JOHNSON, J. Conch. viii, p. 429: n. spp.
- Helix nemoralis* and *H. hortensis*, notes on banding of; HORSLEY, J. Malac. vi, pp. 17-22: *Helix ericetorum*, Mueller, specific name of; KENNARD (234): reply by SMITH (424): *Helix devia*, new variety of; HEMPHILL, Nautilus, xi, p. 74.
- Helix (Geotrochus) wiegmanni*, Tuom I.; MARTENS, Archiv Naturg. lxiii, p. 41, fig.: *H. (Macularia) kebiriana*, p. 478, (*Xerophila*) *mortilleti*, p. 480, (*X.*) *arabophila*, p. 481, (*X.*) *doumerguei*, p. 482, (*X.*) *berberica*, p. 483, Oran; PALLARY, C.R. Ass. France, 1896, partie 2, figg.: *H. (Chilanodon) sibirica*, (*Trichia*) *verna*, p. 119, Siberia, (*Trichia*) *podolica*, Russia, (*T.*) *annexa*, p. 120, (*T.*) *czekanowskii*, (*T.*) *eutheta*, p. 121, Siberia, (*T.*) *nothra*, Caucasus, (*Campylæa*) *ussuriensis*, p. 122, Siberia, (*Pomatia*) *intermissa*, Caucasus, p. 123, (*Levantina*) *placida*, Transcaucasia, p. 141; WESTERLUND, Ann. Mus. St. Petersb. 1897: *H. (Hadra) yeppoonensis*, Queensland; BEDDOME, P. Linn. Soc. N. S. Wales, xxii, p. 123, fig.: *H. (Camena) nettingi*, Upper Burmah; MARTENS, Nachrbl. Deutsch. malak. Ges. 1897, p. 178: *H. (Lysinoc) queretaroana, sebastiana*, Mexico; DALL, Nautilus, xi, p. 73: *H. (Isomeria) wolfi*, Ecuador; REIBISCH, Abh. Ges. Isis, 1896, p. 56: *H. (Pomatia) bituminis*, Asia Minor, p. 49, *issica*, Turkey in Asia,

- p. 50, *antiochiensis*, p. 51, *epidaphne*, Syria, *adanensis*, p. 52, *infidelium*, Turkey in Asia, p. 54, (*Xerophila*) *larnacensis*, p. 55; ROLLE & KOBELT, Rossmässler's Icon. Suppl. Bnd. i, figg.: n. spp.
- † *Hemistenotrema quadrisinuosa*, n. subgen. of *Helix* and n. sp., from Upper Oligocene of Mainz; BOETTGER, Nachrbl. Deutsch. malak. Ges. 1897, p. 16.
- Labyrinthus assimilians*, Colombia; SMITH, J. Malac. vi, p. 26, fig.: n. sp.
- Obbina meyeri*, Talaut I.; MÖLLENDORFF, Abh. Mus. Dresden, vol. vi, No. 4, p. 1: n. sp.
- Oxychona* should be transferred from *Helices* to *Bulimuli*; PILSBRY, Nautilus, xi, p. 87.
- Papuina ohlendorffi*, Batchian; KOBELT, Abh. Senckenb. Ges. xxiv, p. 78, fig.: *P. kapauensis*, New Guinea; SMITH, Ann. Nat. Hist. xx, p. 412, fig.: *P. linteræ*, New Guinea; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 30: *P. rufo-purpurea*, p. 288, *molesta*, p. 289, New Guinea; SMITH, P. Malac. Soc. London, ii, fig.: n. spp.
- Plectopylis smithiana*, India, p. 274, *affinis*, Assam, p. 276, *clathratuloides*, p. 332, Anamullay Hills; GUDE, Sci. Gossip, iii, figg.: *P. muspratti*, Assam, p. 10, *magna*, *lissochlamys*, Burma, p. 70; GUDE, loc. cit. iv, figg.: *P. linteræ*, Pegu; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 28: n. spp.
- Plectotropis leucomphala*, p. 66, *epiplatia*, *trichotrochium*, *ciliocincta*, p. 67, *schepmani*, p. 68, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897: n. spp.
- Polygyra nelsoni*, Mexico; DALL, Nautilus, xi, p. 74: *P. ferrissi*, Great Smoky Mts., U.S.A.; PILSBRY, t. c. p. 92: *P. rhyssa*, New Mexico; DALL, t. c. p. 2: n. spp.
- Pseudiberus uniformis*, *anisopleurus*, Central Asia; ANCEY, Nautilus, xi, p. 17: n. spp.
- Sykesia*, n. sect. of *Plectopylis*, for *P. clathratula*; GUDE, Sci. Gossip, iii, p. 332.
- Tachea*, banding of shell in; BOYCOTT, Sci. Gossip, iv, p. 132.
- Trachycystis teretiusscula*, Pietermaritzburg; MELVILL & PONSONBY, Ann. Nat. Hist. xx, p. 635, fig.: n. sp.
- Xerophila* divided into the following apparently new sections, *Xerofalsa*, *Xerosecta*, *Xeroplana*, *Xeroamanda*, *Xeromæsta*, *Xeroclusa*, *Xerolena*, *Xerotringa*, *Xeroampulla*, *Xerofusca*, *Xerovaga*, *Xeroalbina*, *Xeromicroa*, *Xerotricha*, *Xerocodia*, *Xeroplexa*, *Xerotropis*, *Xerocrassa*, *Xerolautata*, *Xerolincta*, *Xerolæta*, *Xerovaria*, *Xerambigua*, *Xerolutea*, *Xeromagna*, *Xerolenta*, *Xerolaxa*, *Xerofriga*, *Xerogyra*, *Xerocincta*, *Xeropicta*, *Xerobulla*, *Xeromunda*, *Xerocauta*, *Xerovera*, *Xerolissa*, *Xeroclivia*, *Xeronexa*, *Xerocochlea*, *Xeroptycha*, *Xeroacuta*; MONTEROSATO, Atti Acc. Palermo, ii, 33 pp.

BULIMIDÆ, BULIMULIDÆ, and ORTHALICIDÆ.

- Amphidromus floresianus*, Flores, *consobrinus*, Flores and Sumba; FULTON, Ann. Nat. Hist. xx, p. 211, figg.: *A. fultoni*, Cochinchina, p. 62, *eudeli*, Annam, p. 63; ANCEY, Nautilus, xi: n. spp.
- Bulimulidæ*, monograph on, continued; PILSBRY in TRYON (476), xi.
- Bulimulus rushii*, *gorritiensis*, Uruguay, p. 18, *pachys*, Peru, *chrysaloides*, Martinique, p. 20, *glyptocephalus*, *sarcochrous*, Peru, p. 21; PILSBRY, P. Ac. Philad. 1897: *B. borellii*, Bolivia, p. 13, *pollonera*, Argentina, p. 17; ANCEY, Boll. Mus. Torino, xii: *B. coraformis*, Peru, p. 15, *semicinctus*, Guadelupe, p. 45, *krebsianus*, Colombia, p. 63, *eudioptus* (Ihering), Brazil, p. 89; PILSBRY in TRYON (476) xi, figg.: *B. hypodon*, p. 102, *lamellifer*, p. 103, Lower California; PILSBRY, Nautilus, x: n. spp.

- Bulimulus corumbaensis*, n. n. for *Bulimus amœnus*, Bonnet, non Pfr.: *B. angrandianus*, n. n. for *Bulimus radiatus*, Morelet, non Brug.; PILSBRY, P. Ac. Philad. 1897, p. 19: *B. subjussieui*, n. n. for *B. jussieui*, Hupé, non Pfr., p. 26: *B. buenavistensis*, n. n. for *B. corneus*, Lea, non Sby., p. 59; PILSBRY in TRYON (476), xi.
- Bulimulus (Drymæus) baroni*, Peru; FULTON, Ann. Nat. Hist. xx, p. 213, fig.: *B. (Goniostomus) bouvieri*, Pernambuco, p. 222, *B. (Bostryx) moniezi*, Peru (!), p. 224; DAUTZENBERG, J. Conchyl. xlv, figg.: n. spp.
- Bulimus ruga* and *B. bernieri* belong to *Diplomorpha*; ANCEY, Nautilus, xi, p. 26.
- Drymæus (Neopetræus) filiola*, Peru; PILSBRY, P. Ac. Philad. 1897, p. 22: n. sp.
- Dryptus flori*, Ecuador; JOUSSEAUME, Naturaliste, 1897, p. 265, n. sp.
- Hapalus catarractæ*, Natal; MELVILL & PONSONBY, Ann. Nat. Hist. xx, p. 635, fig.: n. sp.
- Hyperaulax*, n. subgen. of *Bulimulus*, type *Bulimus ridleyi*; PILSBRY, P. Ac. Philad. 1897, p. 10.
- Oxychona* should be transferred to *Bulimuli* from *Helices*; PILSBRY, Nautilus, xi, p. 87.
- Partula leefei*, Rotuma; SMITH, Ann. Nat. Hist. xx, p. 520, n. sp.: *P. eximia* = *P. macgillivrayi*; HARTMAN, Nautilus, xi, p. 44.
- Protoglyptus*, n. subgen. of *Bulimulus* for *B. pilosus*, and others; PILSBRY in TRYON (476) xi, p. 84.
- Pseudopartula*, note on, with list of species; PILSBRY, Nautilus, x, p. 109.

BULIMINIDÆ, CYLINDRELLIDÆ, and PUPIDÆ.

- Buliminus castaneus*, p. 10, Samarkand, (*Zebrinus*) *malleolatus*, p. 34, Syria, (*Chondrulus*) *anomalus*, Samarkand, p. 61; WESTERLUND (510): *B. (Pachnodus) carinifer*, S. Africa; MELVILL & PONSONBY, Ann. Nat. Hist. xx, p. 637, fig.: *B. sordidulus*, Ukamba; MARTENS (282), p. 65, fig.: *B. retteri*, Turkestan; ROSEN, Feuille Natural. An. xxvii, p. 170: *B. (Passamaella) mirabilis*, p. 34, (*P.*) *bentii*, (*P.*) *rotundus*, p. 35, (*Ovella*) *acutus*, (*O.*) *innocens*, p. 36, Socotra; SMITH, J. Malac. vi, figg.: *B. (Chondrulus) sexdentatus*, p. 13, *libanicus*, p. 14; NÆGELE, Nachrbl. Deutsch. malak. Ges. 1897: *B. (Petræus) rollei*, Lycia, Turkey in Asia; KOBELT in Rossmässler's Icon. Neue Folge, Supp. Bd. I, p. 57, fig.: *B. (Ena) tenuiliratus*, *tenggericus*, *prillwitzi*, p. 69, *thraustus*, p. 70, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897: n. spp.
- Boysidia boettgeri*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 70: n. sp.
- Cerion fordii*, p. 365, *pillsburyi*, p. 366, Bahamas; PILSBRY & VANATTA, P. Ac. Philad. 1897, figg.: n. spp.
- Clausilia (Euxina) baleopsis*, p. 123, (*Serrulina*) *signifera*, p. 124, Caucasus; WESTERLUND, Ann. Mus. St. Petersb. 1897: *C. (Acrophædusa) schepmani*, *nubigena*, p. 71, *fruhstorferi*, p. 72, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897: *C. (Idyla) rebeli*, Bulgaria; STURANY, Ann. Hofmus. Wien, xii, p. 117, fig.: *C. makassarensis*, *pyrrha*, Celebes; SYKES, J. Malac. vi, p. 23, figg.: n. spp.
- C. balantensis*, n. n. for *C. celebensis*, Boettger non Smith; SYKES, t. c. p. 24.
- Cælocentrum astrophorea*, Mexico; DALL, Nautilus, xi, p. 61: *C. gigas*, p. 267, *championi*, p. 269, Guatemala; MARTENS, Biol. Centr.-Amer. figg.: n. spp.
- Eucalodeum hippocastaneum*, Mexico; DALL, Nautilus, xi, p. 61: n. sp.
- Holospira claviformis*, p. 277, *fusca*, p. 281, Mexico; MARTENS, Biol. Centr.-Amer., figg.: *H. (Haplostemma) hamiltoni*, Texas; DALL, Nautilus,

- xi, p. 32: *H. (Haplostemma) cockerelli*, New Mexico; DALL, *t. c.*
p. 61 : n. spp.
Hypselostoma fruhstorferi, Java; MOELLENDORFF, Nachrbl. Deutsch. malak.
Ges. 1897, p. 70 : n. sp.
Lauria fagoti, Spain; WESTERLUND (510), p. 66 : n. sp.
Perrieria minor, New Guinea; SMITH, Ann. Nat. Hist. xx, p. 414, fig. :
n. sp.
Pupidae, radula of; GWATKIN (179).
Pupa (Faula) pereximia, S. Africa; MELVILL & PONSONBY, Ann. Nat. Hist.
xx, p. 638, fig. : n. sp.

STENOGYRIDÆ and ACHATINELLIDÆ.

- Achatina livingstonei*, Bechuanaland, *drakensbergensis*, Natal; MELVILL &
PONSONBY, Ann. Nat. Hist. xx, p. 636, figg. : *A. camerunensis*, Cameroons;
AILLY (4), p. 64, fig. : *A. studleyi*, Old Calabar; MELVILL & PONSONBY,
P. Malac. Soc. London, ii, p. 291, fig. : *A. chrysoleuca*, Somaliland;
PILSBRY, P. Ac. Philad. 1897, p. 357 : n. spp.
Amastra durandi, Oahu; ANCEY, Naturaliste, 1897, p. 178 : n. sp.
Azeca elongata, Taylor, note on; WEBB, J. Malac. vi, p. 14, fig.
Ganomidos, nov. gen., for *Achatina shuttleworthi*; AILLY (4), p. 66.
Geostilbia stuhlmanni, Runsoro; MARTENS (282), p. 131, fig. : n. sp.
Hapalus kretschschmeri, Kilima-Njaro, *suturalis*, Mgao; MARTENS (282),
p. 129, figg. : *H. (?) sulcatus*, Cameroons; AILLY (4), p. 60, fig. :
n. spp.
Leptachatina approximans, Oahu; ANCEY, Naturaliste, 1897, p. 222 : n. sp.
Limicolaria donaldsoni, *vanattai*, Somaliland; PILSBRY, P. Ac. Philad.
1897, p. 358 : *L. kobelti*, Cameroons; AILLY (4), p. 79 : n. spp.
Nothapalus, n. sect. of *Subulina* for *S. paucispira*; MARTENS (282), p. 124.
Opeas egens, Cameroons; AILLY (4), p. 112 : *O. curvicosta*, Java;
MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 89 : *O. sub-*
varicosum, Runsoro, p. 126, *limpidum*, Bukende, *streptosteloides*, Uganda,
p. 128; MARTENS (282), figg. : n. spp.
Perideris kobelti, W. Africa; PILSBRY, P. Ac. Philad. 1897, p. 503.
Pseudachatina martensi, p. 95, *liljevalli*, p. 98, Cameroons; AILLY (4),
figg. : n. spp.
Pseudoglessula sjostedti, p. 104, *duseni*, p. 107, Cameroons; AILLY (4),
figg. : n. spp.
Stenogyra insculpta, (*Riebeckia*) *decipiens*, Socotra; SMITH, J. Malac. vi,
p. 37, figg. : n. spp.
Subulina tugelensis, Natal; MELVILL & PONSONBY, Ann. Nat. Hist. xx,
p. 637, fig. : *S. pergracilis*, Bukende, p. 123, *conradti*, Usambara,
p. 124; MARTENS (282), figg. : n. spp.
Tornatellina sundana, Java; MOELLENDORFF, Nachrbl. Deutsch. malak.
Ges. 1897, p. 90 : n. sp.

SUCCINEIDÆ, ATHORACOPHORIDÆ, VAGINULIDÆ, and VERONICELLIDÆ.

- Amphikonora*, n. subgen., for *Athoracophorus marmoratus*; SUTER, P. Malac.
Soc. London, ii, p. 256.
Aneitella berghi, and its anatomy, New Pommern; PLATE, SB. Ak. Berlin,
1897, p. 141 : n. sp.
Athoracophorus dendyi, New Zealand; SUTER, P. Malac. Soc. London, ii,
p. 253, fig. : n. sp.
Janella schauinslandi, and its anatomy, New Zealand; PLATE, SB. Ak.
Berlin, 1897, p. 141 : n. sp.

- Succinea rotumana*, Rotuma; SMITH, Ann. Nat. Hist. xx, p. 521: *S. konaensis*, Hawaiian Islands; SYKES, P. Malac. Soc. London, ii, p. 299: n. spp.
- Vaginina*, new genus allied to *Vaginula*, with no type; SIMROTH, SB. Ges. Leipzig, 1895-6, p. 154.
- Vaginula*, anatomy; SIEGERT, Zool. Anz. xx, pp. 257-261: *V. gayi*, its anatomy; PLATE (374): anatomy of three species of *Vaginula*; SIMROTH (422).
- Vaginula djiloloensis*, Halmahera, p. 140, *borneensis*, Borneo, p. 142; SIMROTH, Abh. Senckenb. Ges. xxiv, figg.: n. spp.
- Veronicella*, notes on two species of; COCKERELL (82).

BASOMMATOPHORA.

AURICULIDÆ, LIMNÆIDÆ, PHYSIDÆ, and CHILINIDÆ.

- Ancylus uncinatus*, Argentine Republic; ANCEY, Boll. Mus. Torino, xii, p. 21: *A. libanicus*, Syria; NÆGELE, Nachrbl. Deutsch. malak. Ges. 1897, p. 13: *A. stuhlmanni*, Victoria Nyanza; MARTENS (282), p. 151, fig.: *A. javanus*, Java; MARTENS (281), p. 15, fig.: *A. rushii*, Uruguay; PILSBRY, P. Ac. Philad. 1897, p. 298, fig.: n. spp.
- Auriculacea*, monograph commenced by KOBELT (3 pls. only) in MARTINI & CHEMNITZ (288).
- Auricula socotrensis*, Socotra; SMITH, J. Malac. vi, p. 37, fig.: n. sp.
- Carychium sibiricum*, Siberia; WESTERLUND, Ann. Mus. St. Petersburg. 1897, p. 124: *C. stygium*, Mammoth Cave, Kentucky; CALL, Amer. Natural. xxxi, p. 387, fig.: *C. javanum*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 90: n. spp.
- Cassidula triparietalis*, Ceram, Batchian, and Flores; MARTENS (281), p. 145, fig.: n. sp.
- Isidora rollei*, Jaffa; KOBELT in Rossmässler's Icon. Neue Folge, Suppl.-Bd. i, p. 60, fig.: *I. strigosa*, *transversalis*, Victoria Nyanza; MARTENS (282), p. 139, figg.: *I. sumatrana*, Sumatra, *ovalina*, *minahassæ*, Celebes, p. 8, *timorensis*, Timor, p. 9, *stagnalis*, Sumatra, p. 10; MARTENS (281), figg.: n. spp.
- Limnæa brevispira*, Sumatra; MARTENS (281), p. 2, fig.: *L. (Fossaria) arctica*, Siberia; WESTERLUND, Ann. Mus. St. Petersburg. 1897, p. 141: *L. humerosa*, Uganda, *undussumæ*, Undussuma; MARTENS (282), p. 135, figg.: n. spp.
- Melampus hypoleucus*, Zanzibar; MARTENS (282), p. 263, fig.: n. sp.
- Pedipes dohrni*, Cameroons; AILLY (4), p. 118: n. sp.
- Physopsis tanganyicæ*, Tanganyika; MARTENS (282), p. 144, fig.: n. sp.
- Planorbis sumatrana*, *proclivis*, Sumatra; MARTENS (281), p. 12, figg.: *P. apertus*, Lake Albert Edward; MARTENS (282), p. 149, fig.: *P. (Spirodiscus) caucasicus*, p. 125, Caucasus, (*Gyraulus*) *rapidus*, Siberia, (*G.*) *foveolatus*, Russia, p. 126, (*G.*) *lentus*, (*G.*) *kamtschaticus*, (*Armiger*) *baicalensis*, p. 127, (*G.*) *centrifugus*, p. 141, *G. planoconus*, *G. granulatus*, p. 142, Siberia; WESTERLUND, Ann. Mus. St. Petersburg. 1897: *P. (Segmentina) planodiscus*, Natal; MELVILL & PONSONBY, Ann. Nat. Hist. xx, p. 638, fig.: n. spp.
- Plecotrema sykesii*, Karachi; MELVILL, P. Malac. Soc. London. ii, p. 292, fig.: n. sp.
- Protancylus*, n. g., p. 280, for *P. adhærens*, p. 281, and *pileolus*, p. 282, Celebes; SARASIN, Zool. Anz. xx, figg.: n. spp.
- Pythia scarabæus*, its anatomy; PLATE (374).
- MIRATESTIDÆ, n. fam. for *Miratesta* (n. g.) *celebensis*, n. sp., Celebes; SARASIN, Zool. Anz. xx, pp. 242-245, figg.

OPISTHOBRANCHIATA.

NUDIBRANCHIATA.

Nudibranchiata: collection from Ternate, with notes on classification and anatomy of several species; BERGH (30): Seventeen species found at Tromsö; KRAUSE (253).

Doris imperialis, W. Australia; KENT (238), p. 150, fig. : n. sp.

Phyllobranchus borgninii, with anatomy, Gulf of Naples; TRINCHESE, Mem. Acc. Bologna, v, p. 145, fig. : n. sp.

TECTIBRANCHIATA.

Aceras africana (P. Fisch. MS.), Senegal, p. 62, *fischeri*, Spain, p. 65; LOCARD (259), figg. : n. spp.

Actæon azoricus, Azores; LOCARD (259), p. 85, fig. : n. sp.

Amphisphyræ flava, Madeira; WATSON, J. Linn. Soc. xxvi, p. 234, fig. : n. sp.

Aplysiidæ, abstract account of anatomy; TRINCHESE, Atti Acc. Pontan. xxv, p. 1.

Berthella brocki, Amboina, p. 120, *edwardsii*, Azores, p. 122; VAYSSIÈRE, J. Conchyl. xlv, figg. : n. spp.

Bouvieria, n. subgen. of *Pleurobranchus*, for *P. scutatus*, Martens; VAYSSIÈRE, J. Conchyl. xlv, p. 116.

Bulla, notes on the genus, with *B. secunda*, Japan, p. 112, *dubiosa*, loc. incert., p. 113, *subaustralis*, Tahiti and Philippines, p. 114, *delorti*, Japan, 116; MABILLE, Bull. Soc. Philom. viii: *B. mabillei*, Cape Verd Is., p. 50, *insperata* (P. Fisch. MS), N. W. Africa, p. 54, *simplex*, N. W. Africa, p. 55; LOCARD (259) figg. : n. spp.

Bullina oblonga, S. Africa; SOWERBY (433), p. 20, fig. : n. sp.

Cylichna spreta, Madeira; WATSON, J. Linn. Soc. xxvi, p. 234, fig. : n. sp.

Doridium alboventrale, Ternate; BERGH, Abh. Senckenb. Ges. xxiv, p. 119, fig.: *D. (?) laurentianum*, p. 237, *maderense*, p. 238, Madeira; WATSON, J. Linn. Soc. xxvi, n. spp.

Haminea gracilis, p. 20, fig., *subcylindrica*, p. 29, S. Africa; SOWERBY (433): n. spp.

Leucotina jaskensis, Persian Gulf; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 21, fig. : n. sp.

Oscaniella, n. g., p. 94, for *O. purpurea*, p. 95, *O. affinis*, p. 105, Philippines, *O. styphla*, p. 107, Amboina, & *O. diversicolor*, p. 103, Moluccas; BERGH in Semper's Reisen im Arch. Phil. vol. vii, figg. : n. spp.

Oscaniopsis, n. g., p. 53 for *O. semperi*, p. 54, Philippines & *O. compta*, p. 58, Hong Kong: BERGH in Semper's Reisen im Arch. Philippinen, Wiss. Result. vol. vii, figg. : n. spp.

Oscanius semperi, Philippines; VAYSSIÈRE, J. Conchyl. xlv, p. 134, fig.: *O. petersi*, p. 89, Mozambique, *semonis*, p. 91, Amboina; BERGH, in Semper's Reisen im Arch. Philippinen, Wiss. Result. vol. vii, p. 89, figg. : n. spp.

Philine milne-edwardsi, Cape Verd Is.; LOCARD (259), p. 35, fig.: *P. complanata*, p. 235, *trachyostraca*, *desmotis*, p. 236, Madeira; WATSON, J. Linn. Soc. xxvi, figg. : n. spp.

Pleurobranchæa brockii, Indian Ocean, p. 41, *agassizi*, Bahamas, p. 48, *inconspicua*, Brazil, p. 49; BERGH in Semper's Reisen im Arch. Philippinen, Wiss. Result. vol. vii, figg. : n. spp.

Pleurobranchidæ; BERGH, in Semper's Reisen im Arch. Philippinen, Wiss. Result. vol. vii, pp. 1-115.

- Pleurobranchus perrieri*, Pacific Ocean, p. 126, *möbii*, Island of Querimba, p. 128; VAYSSIÈRE, J. Conchyl. xlv, figg.: *P. crossei*, Antilles, p. 353, *giardi*, Philippines, p. 354; VAYSSIÈRE, t. c. figg.: *P. dautzenbergi*, p. 239, *lowei*, p. 240, Madeira; WATSON, J. Linn. Soc. xxvi, figg.: n. spp.
- †*Pseudavena*, n. sub-gen. of *Tornatina*, for *S. tauroglandula*, n. sp.; SACCO (403), Pt. xxii, p. 39.
- Ringicula pirulina*, Morocco, p. 87, *minutula*, 'Tropiques,' p. 89; LOCARD (259), figg.: n. spp.
- Tornatina mirabilis*, Portugal, p. 72, *pusillina*, Spain, p. 75; LOCARD (259), figg.: n. spp.
- Tylodinella trinchessii*, n. gen. and sp., Gulf of Naples; MAZZARELLI, Zool. Jahrb. Syst. vol. x, p. 600, figg.
- TYLODINIDÆ, n. fam., including the genera *Tylodina* and *Tylodinella*, with anatomy; MAZZARELLI, t. c. p. 596.

PROSOBRANCHIATA.

PECTINIBRANCHIATA.

HETEROPODA.

- Pterosoma*, history of, with confirmation of Heteropod nature; CROSSE, J. Conchyl. xlv, p. 207.

TOXOGLOSSA.

TEREBRIDÆ, CONIDÆ, PLEUROTOMIDÆ, and CANCELLARIIDÆ.

- Aliccia*, n. g., type *A. ænigmatica*, n. sp., Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 182, fig.
- Bela abyssorum*, Spain and Azores, p. 246, *holomera*, Gulf of Gascony, p. 252, *furfuraculata*, Morocco, p. 254, *detegata*, p. 256, *graphica*, p. 257, Portugal, *minuscularia*, Cape Finistère, p. 259; LOCARD (259), figg.: n. spp.
- Belomitra fischeri*, Spain, p. 261, *spelta* (Monts. MS.), Spain and Canaries, p. 263, *lyrata* (Monts. MS.) Azores, p. 265; LOCARD (259), figg.: n. spp.
- Cancellaria souverbiei*, Crosse, is a synonym of *C. crenifera*; SMITH, P. Malac. Soc. ii, p. 231.
- Cithara semizonata*, p. 48, *subgibbosa*, *crystallina*, p. 49, *subglobosa*, *diaglypha*, p. 50, *eupæcila*, *subgracilis*, p. 52, *harpellina*, p. 53, *capillata*, *lepidella*, p. 54, *raffini*, p. 55; HERVIER, J. Conchyl. xlv: n. spp.
- Clathurella verrucosa*, S. Africa; SOWERBY (433), p. 3, fig.: *C. rugosissima*, Canaries, p. 237, *salarium* (P. Fisch. MS), Cape Verd Is., p. 238; LOCARD (259), figg.: *C. ephela*, *squarrosa*, p. 140, *phædra*, *spelsodea*, p. 141, *rufolirata*, p. 142, *euzonata*, p. 143, *subfelina*, p. 144, *iospira*, p. 145, *edychroa*, p. 146, *idiomorpha*, *perangulata*, p. 147, *subcylindrica*, p. 148, Lifu; HERVIER, J. Conchyl. xlv, figg.: n. spp.
- Clionella delicatulina*, Morocco and Azores, p. 222, *conspicienda*, Azores, p. 225; LOCARD (259), figg.: n. spp.
- Cythara victoriana*, Vancouver Island; DALL (110), p. 13, fig.: n. sp.
- Daphnella galactosticta*, *lifouana*, p. 150, Lifu; HERVIER, J. Conchyl. xlv, figg.: *D. cymatodes*, p. 47, *atractoides*, p. 48; HERVIER, J. Conchyl. xlv.: n. spp.
- Drillia cygnea*, Loyalty Islands; MELVILLE & STANDEN, J. Conch. viii, p. 379, fig.: n. sp.

- Mangilia nanisca*, p. 55, *dealbata*, p. 56, *colombi*, p. 57, *isodoma*, *isophanes*, p. 58, *diatula*, p. 59; HERVIER, J. Conchyl. xlv: *M. bulbulina*, Portugal; LOCARD (259), p. 235, figg. : n. spp.
- Pleurotoma bureaui*, p. 149, *chevreuxi*, p. 150, *anceyi*, p. 151, *dalmasi*, p. 153, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, figg. [Also (117), pp. 37-39]: *P. (Drillia) layardi*, p. 3, *burnupi*, p. 4, S. Africa; SOWERBY (433), figg: *P. milne-edwardsi*, Morocco and Azores, p. 156, *fischeri*, Morocco, p. 158, *talismani*, Morocco and Azores, p. 160, *errancum*, Morocco, p. 163, *scitulinum*, Azores, p. 165, *peregrinum*, Spain and Portugal, *devestitum*, N. W. Africa, p. 169, *neotericum*, N. W. Africa and Marseilles, p. 172, *circumcinctum*, Morocco, p. 174, *denudatum*, Morocco and Azores, p. 176, *nexuosolum*, p. 178, *vacantivum*, p. 180, Azores, *decoloratum*, p. 183, *inum*, p. 185, Morocco, *leptoconchum*, (P. Fisch. MS.), p. 191, *tenellunum*, p. 193, *urinator*, p. 195, Azores, *projecticium*, Morocco, p. 197, *mericiacium*, N. W. Africa, p. 199, *turrisulcatum*, Azores, p. 205, *monterosatoi*, Morocco, p. 209; LOCARD (259), figg. : *P. (Drillia) booleyi*, *P. (D.) ochroleuca*, p. 165, Andaman Islands; MELVILL & SYKES, P. Malac. Soc. London, ii, figg. : n. spp.
- Pleurotoma atlantica*, Spain and Morocco, p. 240, *demulcata*, Portugal and Morocco, p. 243; LOCARD (259), figg. : n. spp.
- Raphitoma peregrinator*, Spain; LOCARD (259), p. 229, fig. : n. sp.
- Surcula tenerima* (P. Fisch. MS.) Azores; LOCARD (259), p. 216, fig. : n. sp.
- + *Teleochilus*, n. gen., type *Daphnella gracillima*, Ten.-Woods; HARRIS (184), p. 64.
- Terebra severa*, p. 9, (*Euryta*) *thyræa*, p. 10, Mekran Coast; MELVILL, Mem. Manchester Soc. xiii, No. 7, figg. : n. spp.
- Thesbia nudator*, Azores; p. 218, *folini*, Morocco, p. 220; LOCARD (259), figg. : n. spp.

RACHIGLOSSA.

OLIVIDÆ, HARPIDÆ, MARGINELLIDÆ, VOLUTIDÆ, and MITRIDÆ.

- Ancilla decipiens*, *optima*, S. Africa; SOWERBY (433), p. 7, figg. : *A. booleyi*, Andaman Islands; MELVILL & SYKES, P. Malac. Soc. London, ii, p. 166, fig. : n. spp.
- Ancillaria hilgendorfi*, Japan; MARTENS, Archiv Naturg. lxiii, p. 167, fig. : n. sp.
- Gibberula retusa* (Monts. MS.), Spain and Morocco, p. 128, *abyssicola* (Monts. MS), Spain, p. 130, *monterosatoi*, Cape Finistère, p. 131; LOCARD (259), figg. : n. spp.
- Marginella jousseaumci*, p. 111, *marocana*, p. 114, Morocco and Canary Is., *crustata*, 'Tropiques,' p. 116, *parvula*, N. W. Africa, p. 117, *quadripunctata*, p. 119, *cernita*, p. 120, Cape Verde Is.; LOCARD (259), figg. : *M. burnupi*, *ponsonbyi*, S. Africa; SOWERBY (433), p. 10, figg. : *M. (Gibberula) charbarensis*, (*Cryptospira*) *shoplandi*, p. 8, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, figg. : n. spp.
- Mitra (Imbricaria) isomeres*, Andaman Islands; MELVILL & SYKES, P. Malac. Soc. London, ii, p. 107, fig. : *M. exilima*, N. W. Africa; LOCARD (259), p. 152, fig. : *M. amaaura*, *rufobalteata*, p. 60, *pagodula*, p. 61, *humilis*, *diabesa*, p. 62, *ochracea*, *alboteniata*, p. 63, *lanceolata*, *aubryana*, p. 64, *loyaltiensis*, p. 65, *rhodochroa*, *roseotincta*, p. 66, *goubini*, p. 67, *diutenera*, *verccundula*, p. 68; HERVIER, J. Conchyl. xlv: *M. (Costellaria) stephaneuca*, Persian Gulf; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 6, fig. : *M. semigranosa*, W. coast of S. America; MARTENS, Archiv Naturg. lxiii, p. 178 : n. spp.

- Mitra obscura*, Hutton, Note on; SUTER, P. Malac. Soc. London, ii, p. 201:
M. crouani, Crosse, is a synonym of *M. conica*; SMITH, P. Malac. Soc.
 ii, p. 231.
- Oliva dolicha*, Cape Verde Is.; LOCARD (259), p. 107, fig. : n. sp.
- Olivella williamsi*, Loyalty Islands; MELVILL & STANDEN, J. Conch. viii,
 p. 380, fig. : n. sp.
- Omogymna*, n. sect. of *Oliva*, type *O. paxillus*, Reeve; MARTENS, Archiv
 Naturg. lxiii, p. 157.
- Persicula saharica*, p. 122, *lucens*, p. 123, N. W. Africa, *bulbulina*, N. W.
 Africa, p. 125; LOCARD (259), figg. : n. spp.
- † *Pterospira*, n. subgen. of *Voluta*, type *V. hannafordi*, M'Coy; HARRIS
 (184), p. 100.
- Ternivoluta*, n. subgen. of *Voluta*, type *V. studeri*, n. sp., East Australia;
 MARTENS, Archiv Naturg. lxiii, p. 177.
- Voluta fusiformis*, note on; BEDDOME, P. Soc. Tasmania, 1896, p. 86.
- Voluta hilgendorfi*, Japan; MARTENS, Archiv Naturg. lxiii, p. 176, fig. :
 n. sp.
- Volutella parvulina*, Spain, p. 126, *minusculina*, Morocco, p. 127; LOCARD,
 (259), figg. : n. spp.

FASCIOLARIIDÆ, TURBINELLIDÆ, BUCCINIDÆ, NASSIDÆ, COLUM-
 BELLIDÆ, and MURICIDÆ.

- Bullia uruguayensis*, Uruguay; PILSBRY, Nautilus, xi, p. 6: *B. similis*,
 S. Africa; SOWERBY (433), p. 5, fig. : n. spp.
- Columbella nitidulina*, Morocco and Azores; LOCARD (259), p. 143, fig. :
C. langleyi, p. 10, *consanguinea*, p. 11, S. Africa; SOWERBY (433), fig. :
C. brasiliiana, Brazil and Uruguay, *japonica*, Japan; MARTENS, Archiv
 Naturg. lxiii, p. 170, fig. : *C. (Mitrella) cartwrighti*, Persian Gulf;
 MELVILL, Mem. Manchester Soc. xli, No. 7, p. 8, fig. : n. spp.
- Columbella stepheni*, n. n. = *C. pacei*, M. & S. non Smith; MELVILL &
 STANDEN, J. Conch. viii, p. 407.
- Columbellidæ*, monograph completed by KOBELT in MARTINI & CHEMNITZ
 (288).
- Coralliophila persica*, Persian Gulf; MELVILL, Mem. Manchester Soc. xli,
 No. 7, p. 6, fig. : n. sp.
- Euthria saharica*, N. W. Africa; LOCARD (259), p. 326, fig. : n. spp.
- Fulgur africanus*, S. Africa; SOWERBY (433), p. 1, fig. : n. sp.
- † *Fusimorio*, n. gen., for *Fusus calcarensis*, Micht.; SACCO (403), Pt. xxii,
 p. 25.
- Fusus sectus*, N. W. Africa; LOCARD (259), p. 331, fig. : n. sp.
- Latirolagena*, nom. nov., for *Lagena*, Schum. nom. præocc.; HARRIS (184),
 p. 150.
- Latiromitra specialis*, n. gen. et spec., Morocco; LOCARD (259), p. 321, fig.
- † *Loxotaphrus*, n. subgen. of *Phos*, type *P. variciferus*, Tate; HARRIS (184),
 p. 165.
- Meyeria decorata*, Azores; LOCARD (259), p. 337, fig. : n. sp.
- Murex (Ocinebra) medicago*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 242,
 fig. : *M. bojadorensis*, p. 304, *saharicus*, p. 305, *leucas* (P. Fisch. MS.),
 p. 306, N. W. Africa; LOCARD (259), figg. : n. spp.
- Murex huttoniæ*, Wright, and *M. fourrieri*, Crosse, are respectively syno-
 nyms of *M. penchinati*, Crosse, and *M. emarginatus*, Sby.; SMITH, P.
 Malac. Soc. ii, p. 230.
- Muricidæ*, critical notes on many genera and species; BAKER, Tr. Ac.
 St. Louis, vii, p. 371.
- Nassa camelus*, New Britain; MARTENS, Archiv Naturg. lxiii, p. 173, fig. :
N. (Niotha) eucomista, Andaman Islands; MELVILL & SYKES, P.

- Malac. Soc. London, ii, p. 169, fig. : *N. producta*, S. Africa; SOWERBY (433), p. 6, fig. : *N. antiquata*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 241, fig. : *N. (Niotha) mammillifera*, Persian Gulf, (*Hima*) *townsendi*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 4, figg. : n. spp.
- Neptunea aquitanica*, Spain, p. 354, *torra*, Spain and Morocco, p. 361, *pupoidea*, p. 363, *ecaudis*, p. 368, *peregra*, p. 371, Spain; LOCARD (259), figg. : *N. sachsenheimi*, Spitzbergen; KIMAKOWICZ, Verh. Siebenb. Ver. xlvi, p. 75 : n. spp.
- Ocenebra cala*, Uruguay; PILSBRY, P. Ac. Philad. 1897, p. 296, fig. : n. sp.
- †*Pholidotoma*, n. gen., for *Fusus subheptagonus*, D'Orb.; COSSMANN, C.R. Ass. France, 1896, p. 249.
- Pseudomurex monterosatoi*, Spain; LOCARD (259), p. 315, fig. : n. sp.
- Purpura lapillus*, note on variation and habits of; WENTWORTH, Nautilus, xi, p. 57.
- Sistrum rawsoni*, Persian Gulf; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 5, fig. : n. sp.
- Taranis monterosatoi*, Spain; LOCARD (259), p. 376, fig. : n. sp.
- Trophon decoratus*, Azores, p. 340, *cossmanni*, N. W. Africa, p. 312, *deversus*, Azores, p. 313; LOCARD (259), figg. : *T. lowei*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 244, fig. : n. spp.
- Urosalpinx rushii*, Uruguay; PILSBRY, P. Ac. Philad. 1897, p. 297, fig. : n. sp.

LOTORIIDÆ, CASSIDIDÆ, CYPRÆIDÆ, and STROMBIDÆ.

- Cassis crossei*, Philippines; HIDALGO, J. Conchyl. xliv, p. 217 : n. sp.
- Cypræa lynx*, deformed by disease; FORD, P. Ac. Philad. 1897, p. 328. : *C. achatidea*, Gray, varieties of; CROSSE, J. Conchyl. xliv, p. 218.
- Cypræa kaiseri*, *wilhelmina*, West Australia; KENYON, P. Linn. Soc. N. S. Wales, xxii, p. 145 : n. spp.
- Lotorium armatum*, Marquesas Islands (?); SOWERBY, P. Malac. Soc. London, ii, p. 137, fig. : n. sp.
- Pedicularia decurvata*, Azores; LOCARD (259), p. 96, fig. : n. sp.
- Tylospira*, n. gen., type *Buccinum scutulatum*, Martyn; HARRIS (184), p. 222.

CERITHIIDÆ, NERINEIDÆ, TURRITELLIDÆ, and CÆCIDÆ.

- Bittium depauperatum*, p. 245, *incile*, p. 246, Madeira; WATSON, J. Linn. Soc. xxvi, figg. : *B. (?) eburneum*, N. W. Africa; LOCARD (259), p. 388, fig. : n. spp.
- Cæcum atlantidis*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 248, fig. : n. sp.
- Cerithiella macrocephala*, Azores; DAUTZENBERG & FISCHER (117), p. 39 : & (118), p. 158, fig. : n. sp.
- Cerithiopsis lirata*, *exquisita*, S. Africa; SOWERBY (433), p. 14, figg. : *C. excavata*, Marseilles; LOCARD (259), p. 383, fig. : n. spp.
- Mathildia terebellata*, Azores; DAUTZENBERG & BOURY, Mem. Soc. zool. France, x, p. 73, figg. & (114), p. 33 : n. sp.
- Mesalia flammifera*, N. W. Africa; LOCARD (259), p. 396, fig. : n. sp.
- Serratocerithium*, new section of *Cerithium*, type *C. serratum*, Bruguière; VIGNAL, Feuille Natural. 1897, p. 183.
- Turritella*, monograph by KOBELT in MARTINI & CHEMNITZ (288).
- Turritella fultoni*, Persian Gulf; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 14, fig. : *T. leptomita*, Andaman Islands; MELVILL & SYKES, P. Malac. Soc. London, ii, p. 171, fig. : n. spp.
- Turritella oxyacris*, n. n. for *T. acuta*, Ten.-Woods non Mayer; TATE, Tr. R. Soc. S. Austral. xx, p. 41 : *T. monilis*, n. n. for *T. monilifera*, Ad. & Rve. præocc. ; KOBELT in MARTINI & CHEMNITZ (288), p. 13.

MELANIIDÆ, LITTORINIDÆ, and SOLARIIDÆ.

- † *Hisingeria*, n. g. for *Inachus planorbis*, Hisinger, from the Upper Silurian, I. of Gotland; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. ii, p. 1028.
- Lacuna cossmanni*, N. W. Africa; LOCARD (259), p. 493, fig. : n. sp.
- Littorina biangulata*, Sumatra; MARTENS (281), p. 209, fig. : n. sp.
- Melania pergracilis*, p. 199, *arcuatula*, p. 201, Nyassa; MARTENS (282), figg. : *M. strigata*, p. 11, Java, *palembangensis*, p. 12, Sumatra; STRUBELL, Nachrbl. Deutsch. malak. Ges. 1897: *M. curvicosta*, p. 36, *papillosa*, p. 38, *stricticosta*, p. 39, *bisinuata*, p. 43, Sumatra, *robusta*, p. 52, *buginensis*, p. 53, *vineta*, Celebes, *wichmanni*, p. 54, Timor, *adonarae*, Adonara, p. 59, *pulchella*, p. 61, *dissimulans*, p. 73, *pinguicula*, p. 74, Sumatra; MARTENS (281), figg. : *M. yokohamensis*, Yokohama; HARTMAN, Nautilus, xi, p. 41: *M. toradjorum*, p. 309, *patriarchalis*, p. 310, *palicolarum*, p. 312, *gemmifera*, p. 313, *zea-mais*, p. 314, *insulæ-sacræ*, *scalariopsis*, p. 315, *molesta*, p. 316, Celebes; SARASIN, Zool. Anz. xx, figg. : n. spp.
- Nassopsidia*, n. sect. of *Paramelania*, for *P. milne-edwardsiana* and others; MARTENS (282), p. 208.
- † *Nummocallar*, n. subgen. of *Solarium*, for *N. pustulosus*, n. sp., Cretaceous; COSSMANN, C.R. Ass. France, 1896, p. 259.
- † *Ophiletina*, n. g., type *O. sublaxa*, n. sp.; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. ii, pp. 1028 & 1029.
- † *Robicia*, n. gen. of *Melaniidæ*; BRUSINA (62), p. 17.
- † *Staja*, n. gen. of *Melaniidæ*; BRUSINA (62), p. 20.
- † *Taniodomus*, n. g., for *T. gracilis* & *T. crassa*, n. spp.; KRAUSE, Samml. geol. Mus. Leiden, v, p. 213, figg.
- Tectarium turbinoides*, Cape Verd Is.; LOCARD (259), p. 490, fig. : n. sp.
- Tylomelania*, n. g., p. 317, for *T. neritiformis*, *carbo*, p. 318, *porcellanica*, p. 319, Celebes; SARASIN, Zool. Anz. xx, figg. : n. spp.
- Typhobia horei*, drawing of living specimen; MOORE, Nature, lvi, p. 199.
- † *Vrazia*, n. gen. of *Melaniidæ*, BRUSINA (62), p. 17.

RISSOIIDÆ, HYDROBIIDÆ, VALVATIDÆ, ASSIMINEIDÆ, and PALUDINIDÆ.

- Amphirissoa*, n. g., for *A. cyclostomoides*, n. sp., Azores; DAUTZENBERG & FISCHER (117), p. 40 & (118), p. 161.
- Assimineea tyttha*, Pietermaritzburg; MELVILL & PONSONBY, Ann. Nat. Hist. xx, p. 639, fig. : *A. variegata*, Celebes; MARTENS (281), p. 314, fig. : n. spp.
- Assiminopsis abyssorum*, n. gen. et spec., Portugal; LOCARD (259), p. 466, fig. [also in Echange, xiii, p. 46].
- Baicalia (Maackia) nodosa*, Siberia; WESTERLUND, Ann. Mus. St. Petersb. 1897, p. 128 : n. sp.
- Bythinia (Elona?) costulata*, Russia, p. 142, (*Digyroidum*) *persica*, Persia, p. 143; WESTERLUND, Ann. Mus. St. Petersb. 1897: *B. (Gabbia) neumanni*, Masai Land, *puteana*, Zanzibar; MARTENS (282), p. 191, figg. : n. spp.
- Lanistes stuhlmanni*, Dar-es-Salaam; MARTENS (282), p. 171, fig. : n. sp.
- Pachydrobia lacustris*, Sumatra; MARTENS (281), p. 26, fig. : n. sp.
- Rissoa (Cingula) caffra*, S. Africa; SOWERBY (433), p. 17, fig. : *R. (Cingula) innominata*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 309 : n. spp.
- Rissoina newcombei*, British Columbia; DALL (110), p. 14, fig. : n. sp.
- Stenothyra moussoni*, Java and Celebes; MARTENS (281), p. 210, fig. : n. sp.

- Tatea* belongs to *Amnicolidae*, not *Rissoininae*, and contains three species (one, *T. paradisiaca*, New South Wales, p. 362, being new); PILSBRY, P. Ac. Philad. 1897, p. 360.
- Valvata (Cincinna) brandti*, Transcaucasia, p. 129, (*C.*) *confusa*, p. 130, Siberia; WESTERLUND, Ann. Mus. St. Petersb. 1897 : n. spp.
- Vivipara grossicostata*, Sumatra; MARTENS (281), p. 25, fig.: *V. meta*, Victoria Nyanza; MARTENS (282), p. 179, fig.: *V. crassibucca*, p. 283, *lutulenta*, *persculpta*, p. 284, *rudipellis*, p. 285, Celebes; SARASIN, Zool. Anz. xx, figg. : n. spp.
- Viviparidae* of Japan; IWAKAWA, Zool. Mag. Tokio, ix, No. 99: see also *idem*, Annot. Zool. Jap. i, pp. 83-92.

CYCLOPHORIDÆ and CYCLOSTOMATIDÆ.

- Catalogue of species, some genera which are not distinguished may be new; KOBELT & MOELLENDORFF (248).
- Adelomorpha canefriana, globosa*, New Guinea; SMITH, Ann. Nat. Hist. xx, p. 416, figg. : n. spp.
- Alycæus (Orthalycæus) crenilabris, reticulatus, (Chamalycæus) fruhstorferi*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 93 : n. spp.
- Arinia blanda*, Flores; SMITH, Ann. Nat. Hist. xix, p. 627: *A. (Leucarinia) minahassæ*, Minahassa; KOBELT, Abh. Senckenb. Ges. xxiv, p. 39, fig. : n. spp.
- Chamalycæus*, n. subgen. of *Alycæus*, first species *A. andamanica*, Bens.; KOBELT & MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 148.
- Cyathopoma artatum, prestoni, turbinatum*, p. 236, Ceylon; SYKES, P. Malac. Soc. London, ii, figg. : n. spp.
- Cyclophoridae*, notes on sections of; GODWIN-AUSTEN (167).
- Cyclophorus vesconesi*, Ecuador; JOUSSEAUME, Naturaliste, 1897, p. 250, fig.: *C. (Scabrina) basisulcatus*, Upper Burmah; MARTENS, Nachrbl. Deutsch. malak. Ges. 1897, p. 179: *C. intermedius*, Uganda; MARTENS (282), p. 8, fig. : n. spp.
- Cyclotus (Pseudocyclophorus) euryomphalus*, Halmahera; KOBELT, Nachrbl. Deutsch. malak. Ges. 1897, p. 27: also in Abh. Senckenb. Ges. xxiv, p. 32, fig. : n. sp.
- Cylindropalaina*, n. sect. of *Palaina*, for *P. chrysalis*; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 43.
- Diadema solutum*, Carolines; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 169 : n. sp.
- Diancta græffei* (Mouss. MS), *macrostoma* (Mouss. MS), Vitilevu; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 44 : n. spp.
- Dioryx cariniger*, Laos; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 41 : n. sp.
- Diplommatina floresiana, chrysostoma*, Flores; SMITH, Ann. Nat. Hist. xix, p. 626: *D. calcarata, (Pseudopalaina) sulcicollis*, p. 94, (*Sinica*) *cyclostoma, auricula*, p. 95, *tetragonostoma, perpusilla, planicollis*, p. 96, *javana*, p. 97, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897: *D. papuana*, New Guinea; SMITH, Ann. Nat. Hist. xx, p. 418, fig.: *D. (Nacida) prestoni*, Ceylon; SYKES, P. Malac. Soc. London, ii, p. 237, fig.: *D. leptospira*, Philippines; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 45 : n. spp.
- Diplommatina*, several species figured; GODWIN-AUSTEN (167).
- Ditropis fruhstorferi*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 92 : n. sp.
- Ditropopsis*, n. gen. for *D. papuana*, n. sp., New Guinea; SMITH, Ann. Nat. Hist. xx, p. 416, fig.; *D. (?) fultoni*, SMITH, t. c. p. 417, fig. : n. sp.

- Hargravesia luzonica*, Philippines; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 39 : n. sp.
- Lagocheilus reticulatum*, Celebes; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 34: *L. papuanus*, New Guinea; SMITH, Ann. Nat. Hist. xx, p. 415, fig.: *L. connexum*, p. 90, *humile*, *macromphalum*, p. 91, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897 : n. spp.
- Leptopoma fibulinum*, Philippines; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 33 : *L. kükenenthalii*, Halmahera, p. 26, *sarasinorum*, Minahassa, p. 29; KOBELT, Abh. Senckenb. Ges. xxiv, figg.: *L. altum*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 90 : n. spp.
- Lithidion bentii*, Socotra; SMITH, J. Malac. vi, p. 38, fig. : n. sp.
- Macropalaina*, n. sect. of *Palaina*, for *P. pomatiæformis*; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 43.
- Mascaria*, note on; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 169.
- Moulinsia semperi*, *dissimilis*, Philippines, *goldfussi*, Cameroons; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 40 : n. spp.
- Mychopoma exul*, German New Guinea; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 45 : n. sp.
- Natalia* [nom. præocc.] n. subgen. of *Cyclophorus* for *C. wahlbergi*; GODWIN-AUSTEN (167), p. 22.
- Omphalotropis albolabris*, Mauritius, p. 164, *catenata*, Koror I., *coronata*, Carolines, p. 165, *mutica* (Semper MS), *strictipila*, Pelew, *varians*, New Hebrides, p. 166, (*Stenotropis*) *ducalis* (Bttg. MS), Duke of York I. *geometrica* (Mouss. MS) Moorea, p. 167, *tumidula*, *carolinarum*, Carolines, p. 168; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897 : *O. rotumana*, Rotuma; SMITH, Ann. Nat. Hist. xx, p. 522 : n. spp.
- Opisthoporus deflexus*, n. n. for *O. borealis*, Heude, non Mlldff.; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 38.
- Otopoma*, review of; GODWIN-AUSTEN (167), p. 25.
- Palaina* (*Macropalaina*) *scalarina* (Mouss. MS), p. 43, *xiphidium*, p. 44, Carolines; *P. doliolum* (Mouss. MS), p. 41, *kubaryi*, *ovatula*, Carolines, p. 42; *P. gedeana*, *nubigena*, Java, p. 94; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897 : n. spp.
- Palaina dohertyi*, p. 418, *novoguineensis*, p. 419, New Guinea; SMITH, Ann. Nat. Hist. xx, figg. : n. spp.
- Platyrrhapha expansilabris*, Philippines, *schmackeri*, China; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 37 : n. spp.
- Pomatias*, note on genus; LOCARD, Echange, xiii, p. 66.
- Pomatias* [= *Hartmannia*, Newton] *braueri*, p. 90, *waldernari*, p. 94, Croatia; WAGNER, Anz. Ak. Wien, 1897 : n. spp.
- Pterocylus pseudocumingi* (Nev.), Travancore, *schmackeri*, Sytschuan; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 36 : *P. moluccensis*, Halmahera; KOBELT, Abh. Senckenb. Ges. xxiv, p. 33, fig. : n. spp.
- Pupina*, note on, with *P. limitaneus*, Burmah, p. 40, *tongupensis*, Arakan Hills, p. 41; GODWIN-AUSTEN (167), figg. : n. spp.
- Pupina dohertyi*, Flores; SMITH, Ann. Nat. Hist. xix, p. 625 : *P. compacta*, *verbeeki*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 92 : *P. bidentata*, Queensland; BEDDOME, P. Linn. Soc. N. S. Wales, xxi, p. 814, fig.: *P.* (*Siphonostyla*, n. subgen.) *longituba*, Halmahera; KOBELT, Nachrbl. Deutsch. malak. Ges. 1897, p. 27; also in Abh. Senckenb. Ges. xxiv, p. 36, fig. : n. spp.
- Pupinella hedleyi*, New Guinea; SMITH, Ann. Nat. Hist. xx, p. 419, fig. : n. sp.

- Pupisoma circumlitum*, Queensland; HEDLEY, Rec. Austral. Mus. iii, p. 44, fig. : n. sp.
Registoma floresianum, Flores; SMITH, Ann. Nat. Hist. xix, p. 626 : n. sp.
Rhaphaulus kikenthali, Borneo; KOBELT, Nachrbl. Deutsch. malak. Ges. 1897, p. 27 : also in Abh. Senckenb. Ges. xxiv, p. 37, fig. : n. sp.
Scabrina laotica, Luang-Prabang, Laos; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 35 : n. sp.
Siphonostyla, n. subgen. of *Pupina* for *P. longituba*, n. sp.; KOBELT, Nachrbl. Deutsch. malak. Ges. 1897, p. 27.
Tylotaechus, n. subgen. of *Pupina*, first species *P. adamsi*; KOBELT & MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 143.

TRUNCATELLIDÆ.

- Taheitia anctostoma*, Philippines, p. 31, *tessellata* (Bttg.), Bismarck Archipelago, p. 32; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897 : n. spp.
Truncatella gracilentia, New Guinea; SMITH, P. Malac. Soc. London, ii, p. 289, fig. : n. sp.

HIPPONYCIDÆ, XENOPHORIDÆ, LAMELLARIIDÆ, NATICIDÆ, SUBULITIDÆ, ADEORBIDÆ, and OOCORYTHIDÆ.

- Adeorbis unisulcatus*, Ireland; CHASTER, J. Conch. viii, p. 373, fig. : *A. sigaretinus*, Queensland; PILSBRY, P. Ac. Philad. 1897, p. 363, fig. : n. spp.
†*Amathinoides*, n. subgen. of *Capulus*, for *C. sulcosus*, Brocchi; SACCO (403), pt. xx, p. 41.
†*Ampullospira*, nom. nov., for *Euspira*, Cossmann non Desor and Agassiz; HARRIS (184), p. 265.
Crepidula, embryology of; CONKLIN (91).
†*Cyrtospira*, n. g., types *C. tortilis*, n. sp. and *Subulites ventricosus* Hall; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 1073.
Hipponyx australis, Quoy, parasitic on *Cidaris*; KÜKENTHAL, Abh. Senckenb. Ges. xxiv, p. 10.
Laciniorbis, n. g., type *Adeorbis fimbriatus*, Martens; MARTENS, Archiv Naturg. lxiii, p. 175, figg.
Natica strongyla, Persian Gulf; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 11, fig. : *N. prosistens*, Portugal, p. 473, *extenta*, Morocco and Azores, p. 476, *bullula*, N. W. Africa, p. 478, *olivella*, Spain and N. W. Africa, p. 479, *brassiculina*, N. W. Africa, p. 480, *amabilis*, Portugal, p. 482; LOCARD (259), figg. : *N. (Nacca) furva*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 248, fig. : *N. simplex*, S. Africa; SOWERBY (433), p. 12, fig. : n. spp.
Neverita pilula, Spain; LOCARD (259), p. 484, fig. : n. sp.
Oncidiopsis aurantiaca (P. Fisch. MS.), Gulf of Gascony; LOCARD (259), p. 485, fig. : n. sp.
Oocorys fischeri, Morocco and Azores; LOCARD (259), p. 291, fig. : n. sp.
Sigaretus oldroydii, California; DALL, Nautilus, xi, p. 85, n. sp.
Thyca pellucida, loc. not stated but *quaere* Ternate, parasitic on *Linckia*; KÜKENTHAL, Abh. Senckenb. Ges. xxiv, p. 7, fig. : n. sp. : *Thyca crystallina*, Gould, parasitic on *Linckia*; KÜKENTHAL, *tom. cit.* p. 9.
Xenophora senegalensis (P. Fisch. MS), Azores; LOCARD (259), p. 488, fig. : n. sp.

PTENOGLOSSA.

SCALARIIDÆ.

- Aclis vitrea*, p. 254, *trilineata*, *tricarinata*, p. 255, Madeira; WATSON, J. Linn. Soc. xxvi, figg. : n. spp.
- Cioniscus pellucidus*, S. Africa; SOWERBY (433), p. 13, fig. : n. sp.
- Scalariia rhips*, p. 250, *aspera*, p. 251, *fischeri*, p. 252, *smithii*, p. 253, Madeira; WATSON, J. Linn. Soc. xxvi, figg. : *S. zelebori*, p. 50, *novoseelandiæ*, p. 57, *reevei*, p. 63, New Zealand, *klunzingeri*, p. 49, *jickelii*, p. 57, Red Sea, *sowerbyi*, p. 63, Mauritius, *mexicana*, p. 69, Mexico; CLESSIN in MARTINI & CHEMNITZ (288), figg. : *S. problematica*, p. 62, *folini*, p. 65, *grimaldii*, p. 67, *richardi*, p. 68, *guerni*, p. 71, *vicina*, p. 72, Azores; DAUTZENBERG & BOURY, Mem. Soc. zool. France, x, figg., also (114) pp. 31-33 : *S. pachygyra*, (P. Fisch. MS), Cape Verd Is.; LOCARD (259), p. 401, fig. [also in Echange, xiii, p. 2] : *S. fimbriolata*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 11, fig. : *S. mirifica* (P. Fisch. MS), Morocco, p. 2, *polygyrella* (P. Fisch. MS), Azores, *dissoluta* (P. Fisch. MS), Portugal and Cape Verdes, p. 3; LOCARD, Echange, xiii : n. spp.
- Scalariidæ*, monograph completed by CLESSIN in MARTINI & CHEMNITZ (288).

GYMNOGLOSSA.

EULIMIDÆ AND PYRAMIDELLIDÆ.

- † *Allocosmia*, n. n. for *Heterocosmia*, Koken, nom. præocc. ; COSSMANN, Rev. Paleozool. i, p. 143.
- Apicalia biformis*, S. Africa; SOWERBY (433), p. 28 : n. sp.
- Elusa brunneo-maculata*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 13, fig. : *E. gradatula*, Loyalty Islands; MELVILL & STANDEN, J. Conch. viii, p. 380, fig. : n. spp.
- Eulima epiphanes*, Persian Gulf; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 13, fig. : *E. costellata*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 165, fig. & (117), p. 41 : *E. fulva*, p. 256, *sordida*, p. 257, *badia*, *rhapium*, p. 258, *trunca*, p. 259, *inconspicua*, p. 260, Madeira; WATSON, J. Linn. Soc. xxvi, figg. : *E. simplex*, S. Africa; SOWERBY (433), p. 14, fig. : n. spp.
- Eulimella nana*, Morocco; LOCARD (259), p. 431, fig., n. sp.
- Mucronalia eburnea*, Desh., parasitic on *Acrocladia*; KÜKENTHAL, Abh. Senckenb. Ges. xxiv, p. 1, fig. : n. sp.
- Mumiola* (?) *tenuis*, Queen Charlotte Islands; DALL (110), p. 14, fig. : n. sp.
- Niso richardi*, *joubini*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 166, fig. & (117), p. 41 : n. spp.
- Odontostomia* (*Miralda*) *inflecta* (Cpr. MS.), Queen Charlotte Islands and California; DALL (110), p. 14, fig. : n. sp.
- Odostomia versicolor*, Loyalty Islands; MELVILL & STANDEN, J. Conch. viii, p. 379, fig. : *O. omphaloessa*, p. 261, *undata*, p. 262, Madeira; WATSON, J. Linn. Soc. xxvi, figg. : n. spp.
- Parthenina atlantica*, Morocco and Spain; LOCARD (259), p. 444, fig. : n. sp.
- Pyramidella curtissima*, Portugal; LOCARD (259), p. 455, fig. : n. sp.
- Stylifer celebensis*, parasitic on *Choriaster*, Celebes; KÜKENTHAL, Abh. Senckenb. Ges. xxiv, p. 6, fig. : *S. abyssorum* (P. Fisch. MS.), Azores; LOCARD (259), p. 416, fig. : n. spp.
- Stylopsis marioni*, Marseilles; LOCARD (259), p. 432, fig. : n. sp.

- Syrnola karachiensis*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 12, fig. : n. sp.
Turbonilla dispar, uruguayensis, Uruguay; PILSBRY, P. Ac. Philad. 1897, p. 296, figg.: *T. pauperata*, Spain and N. W. Africa; LOCARD (259), p. 437, fig.: *T. corti*, p. 168, *gitaena*, p. 169, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, figg., also (117), pp. 41 & 42 : n. spp.

SCUTIBRANCHIATA.

HELICINIDÆ and HYDROCENIDÆ.

- Georissa javana, læviuscula*, Java; MOELLENDORFF, Nachrbl. Deutsch. malak. Ges. 1897, p. 97 : n. spp.
Helicina plicatula, note on; PILSBRY, Nautilus, x, p. 118: *H. dysoni* is arboreal in habitat; SIMPSON, Nautilus, xi, p. 13.
Helicina (Sulfurina) halmahera, Halmahera; KOBELT, Abh. Senckenb. Ges. xxiv, p. 39, fig.: *H. rabei*, Pelew Is.; PILSBRY, Nautilus, xi, p. 34, [a synonym of *H. rufocallosa*; ANCEY, t. c. p. 87] : n. spp.
Schazicheila hidalgoana, Mexico; DALL, Nautilus, xi, p. 61 : n. sp.

NERITIDÆ, TURBINIDÆ, TROCHIDÆ, DELPHINULIDÆ and
CYCLOSTREMATIDÆ.

- Basilissopsis*, n. g., type *B. watsoni*, n. sp., Azores; DAUTZENBERG & FISCHER (117), p. 40 & (118), p. 163, fig.
Calliostoma funiculare, off Mekran Coast; MELVILL, Manchester Soc. xli, No. 7, p. 18, fig.: *C. layardi*, S. Africa; SOWERBY (433), p. 18, fig. : n. spp.
Choristella, n. gen. for *C. leptalea*, p. 140, *brychia*, p. 141, N. America; BUSH, Tr. Connect. Ac. x, figg. : n. spp.
Circulus smithi, n. n. for *C. tricarinatus*, Smith non Wood, *dalli*, n. sp. from N. America, fig.; BUSH, Tr. Connect. Ac. x, p. 126.
Cocculina leptoglypta, p. 177, *conspersa*, p. 178, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, figg. : n. spp.
Cyclostrema sykesi, p. 173, *smithi, iheringi*, p. 174, *normani*, p. 175, *ponsonbyi*, p. 176; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, figg. : n. spp. [Also in Bull. Soc. zool. France, xxii, pp. 42-44.]
Cyclostrematidæ, review of species from Atlantic Coast of America, with new genera and species; BUSH, Tr. Connect. Ac. x, pp. 97-143.
Cyclostremella, n. gen. for *C. humilis*, N. America; BUSH, Tr. Connect. Ac. x, p. 140, fig. : n. sp.
Ethalia carneolata, Bass Island, p. 19, *minolina*, Persian Gulf, p. 20; MELVILL, Mem. Manchester Soc. xli, No. 7, figg. : n. spp.
Eucosmia lurida, Queen Charlotte Islands; DALL (110), p. 15, fig. : n. sp.
Gibbula micans, New Zealand; SUTER, P. Malac. Soc. London, ii, p. 279, fig. : *G. (Cantharidella) phædra*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 15, fig. : n. spp.
† *Gibbuloidella*, n. subgen. of *Forskalia*, for *Trochus divergens*, Bon.; SACCO (403), pt. xxi, p. 38.
Granigyra spinulosa, N. America; BUSH, Tr. Connect. Ac. x, p. 135 : n. sp.
Halistylus circumstriatus, Uruguay; PILSBRY, Nautilus, xi, p. 7 : n. sp.
Leptogyra, n. gen. for *L. verrilli*, p. 136, *inconspicua, eritincta*, p. 137, N. America; BUSH, Tr. Connect. Ac. x, figg. : n. spp.
Lissospira, n. gen. for *Cyclostrema proxima*, Tryon, p. 130, with *L. striata, convexa*, p. 132, N. America; BUSH, Tr. Connect. Ac. x, figg. : *L. (Ganesa) abyssicola, rarinota*, N. America; BUSH, t. c. p. 134 : n. spp.

- Lippistes rollei*, Japan; MARTENS, Archiv Naturg. lxxiii, p. 174, figg. : n. sp.
Mölleria quadra, British Columbia; DALL (110), p. 15, fig. : n. sp.
Mölleropsis, n. gen. for *M. abyssicola*, n. sp., N. America; BUSH, Tr. Connect. Ac. x, p. 137, fig.
Monilea astrolabensis, p. 15, *climacota*, p. 16, Mekran Coast, *nedyma*, Persia, p. 17; MELVILL, Mem. Manchester Soc. xli, No. 7, figg. : n. spp.
Monodonta bourcierii, is a synonym of *M. alveolata*, A. Adams; SMITH, P. Malac. Soc. ii, p. 231.
Monodontella, n. subgen. of *Monodonta*, for *M. labio*, L.; SACCO (403), pt. xxi, p. 23.
Neritina confluens, Flores and Adonara; MARTENS (281), p. 81, fig. : n. sp.
†*Ormastralium*, n. subgen. of *Astralium*, for *Turbo fimbriatus*, Bors.; SACCO (403), pt. xxi, p. 15.
Phorculellus, n. n. for *Phorculus*, Montrs. non Cossmann; SACCO (403), p. xxi, p. 35.
†*Pseudonina*, n. subgen. of *Collonia*, for *P. bellardii*, Micht.; SACCO (403), pt. xxi, p. 9.
Pseudotorella minuscula, N. America; BUSH, Tr. Connect. Ac. x, p. 118, fig. : n. sp.
Solariella splendens, p. 18, fig., *sculpta*, p. 29, S. Africa; SOWERBY (433) : n. sp.
Strigosella, n. subgen. of *Calliostoma*, for *Trochus strigosus*, Gmel.; SACCO (403), pt. xxi, p. 49.
Thalotia beluchistana, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 17, fig. : n. sp.
Tharsiella, n. gen. for *T. romettensis*, Seguenza; BUSH, Tr. Connect. Ac. x, p. 113.
†*Trochocerithium*, n. gen., for *Trochus turritus*, Bon.; SACCO (403), pt. xxii, p. 26.
Turbo ponsonbyi, S. Africa; SOWERBY (433), p. 17, fig. : n. sp.
Turcicula normani, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 172, fig.; & (117), p. 42 : n. sp.
Vitrinella tryoni, N. America; BUSH, Tr. Connect. Ac. x, p. 123, fig. : n. sp.

PLEUROTOMARIIDÆ, BELLEROPHONTIDÆ, and FISSURELLIDÆ.

- †BELLEROPHONTACEA, n. sub-order, to include 23 genera which they divide into 5 families : *Cyrtolitidæ*, *Protowarthiidæ*, *Bucaniidæ*, *Bellerophon-tidæ*, and *Carinaropsidæ*; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, p. 2, p. 844.
†*Bucanopsis*, n. g., type *B. carinifera*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, pp. 853 & 922.
†*Bucanospira*, n. g. for *B. expansa*, n. sp. from the Upper Silurian of Western Tennessee; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 1044, figg.
†*Clathrospira*, n. g., type *Pleurotomaria subconica*, Hall; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 954.
†*Conradella*, n. g., type *C. obliqua*, n. sp.; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, pp. 851 & 904.
†*Cyrtolitina*, n. g., type *Cyrtolites lamellifer*, Lindström; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, pp. 847 & 866.
†*Dyeria*, n. g. for *Cyrtolites costatus*, James; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 1044, fig.
†EOTOMACEA, n. sub-order for *Pleurotomariidæ*, *Trochidæ*, *Fissurellidæ* and allies; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 930.
†*Eotomaria*, n. g., type *E. sublævis* (Ulrich), n. sp.; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 954.

- †*Euconia*, n. g., types *Pleurotomaria etna* and *P. ramsayi*; BILLINGS; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 953.
- †*Euconospira*, n. g., types *Pleurotomaria turbiniformis*, Meek & Worthen, and *P. missouriensis*, Swallow; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 955.
- †*Euryalax*, n. n. for *Sagana*, Koken, nom. præocc.; COSSMANN, Rev. Paleozool. i, p. 140.
- †*Eymarella*, n. n. for *Echetus*, Koken, nom. præocc.; COSSMANN, Rev. Paleozool. i, p. 140.
- Fissurella townsendi*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 20, fig. : n. sp.
- †*Gyronema*, n. subgen. of *Trochonema* Salter, or n. g., type *T. (G.) pulchellum*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 1046.
- †*Kokenia*, n. g., type *Bucanella esthona*, Koken; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 849.
- †*Liospira*, n. g., types *Pleurotomaria micula*, Hall, and *P. americana*, Billings; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 953.
- †*Maclurina*, n. g., type *Maclurea manitobensis*, Whiteaves; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 1041.
- †*Meekospira*, n. g., type *Eulima? peracuta*, Meek & Worthen; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 1079.
- †*Megalomphala*, n. g., type *Bellerophon contortus*, Eichwald; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 850.
- †*Omospira*, n. g., type *O. laticincta*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, pp. 932 & 944.
- †*Owenella*, n. g., type *Bellerophon antiquatus*, Whitfield; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 847.
- †*Plethospira*, n. g., type *Holopea cassina*, Whitfield; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 958.
- Pleurotomaria beyrichii*, a living specimen described; MITSUKURI, Annot. Zool. Jap. i, p. 67: *P. quoyana*, anatomy of: BOUVIER & FISCHER (53).
- †*Polyelasma*, n. n., for *Euzone*, Koken, nom. præocc.: COSSMANN, Rev. Paleozool. i, p. 140.
- †*Protowarthia*, n. g., type *Bellerophon cancellatus*, Hall; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 848 & 867.
- †PROTOWARTHIDÆ, n. fam. for *Owenella*, n. g., *Protowarthia*, n. g., and *Bucanella*, Meek; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 847.
- Puncturella (Cranopsis) alicei*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 180, fig., and (117) p. 44 : n. sp.
- Raphistomina*, n. g., type *Raphistoma lupicida*, Salter; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 932 & 941.
- †RAPHISTOMIDÆ, n. fam. for *Raphistoma*, Hall, *Raphistomina*, n. g., *Euomphalopterus*, Roemer, *Omospira*, n. g., and ? *Scalites*, Emmons; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 930.
- Schismope depressa*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 263, fig. : n. sp.
- †*Schizolopha*, n. g., type *S. textilis*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 952.
- Scutus*, anatomy of; BERGH (30).
- †*Seelya*, n. g., type *S. ventricosa*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 958.
- †*Solenospira*, n. g., type *Eunema pagoda*, Salter; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 959.
- †*Tetranota*, n. g., type *Bucania bidorsata*, Hall; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, pp. 849 & 875.

- †*Trepostira*, n. g., type *Pleurotomaria sphaerulata*, Conrad; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 957.
 †TROCHONEMATIDÆ, n. fam.; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, p. 1043.
 †*Turritoma*, n. g., type *Murchisonia acrea*, Billings; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 959.

DOCOGLOSSA.

ACMÆIDÆ and PATELLIDÆ.

- Acmæa euglypta*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 181, fig. : n. sp.
 †*Archinacella*, n. g., type *A. powersi*, n. sp.; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, pp. 821 & 828.
Helcion pellucidum, peripheral glandular organ; BOUTAN, Arch. Zool. exp., v, pp. 437-482, figg.
 †*Helcionopsis*, n. g., type *H. fissicostata*, n. sp.; ULRICH & SCOFIELD, Geol. Surv. Minnesota, iii, pt. 2, pp. 821 & 826.

III. SCAPHOPODA.

- Bathoxiphus*, Pilsbry & Sharp, new sub-gen. of *Dentalium* for *D. ensiculus*; PILSBRY in TRYON (475) xvii, p. 121.
Cadulus hepburni, p. 12, *tolmiei*, p. 13, Vancouver Island; DALL (110), figg.: *C. senegalensis*, Senegal, p. 3, *strangulatus*, Gulf of Gascony, *monterosatoi*, Cape Finistère, *artatus* (Jeff. MS), Gulf of Gascony, p. 4; LOCARD, Echange, xiii : n. spp.
Coccodentalium, n. sub-gen. of *Dentalium*, for *D. radula*, Schröt.; SACCO (403), pt. xxii, p. 110.
Compressidens, Pilsbry & Sharp, new sub-gen. of *Dentalium* for *D. pressum*, S. & P., n. n.; PILSBRY in TRYON (475) xvii, p. 123.
Dentaliida, monograph by PILSBRY in TRYON (475) xvii.
Dentalium semivestitum (P. Fisch. MS), p. 9, *scamnatum* (P. Fisch. MS), *exuberans*, *milne-edwardsi*, W. Africa, p. 10; LOCARD, Echange, xiii : *D. letsonæ*, Sharp & Pilsbry, Philippines, p. 4, *neohexagonum*, S. & P., California, p. 19, *picteti*, Desh. MS, West Indies (?), p. 22, *agassizi*, S & P., California, p. 26, *dipsycha*, S. & P., hab. unknown, p. 33, *fischeri*, Stearns, California, p. 36, *liodon*, P. & S., West Indies, p. 107, *aquatorium*, P. & S., Ecuador, p. 112, *watsoni*, S. & P., California, p. 113, *dalli*, P. & S., West Coast of America, p. 114, *innumerabile*, P. & S., Panama Bay, etc., p. 119, *longum*, S. & P., hab. unknown, p. 120, *brevicornu*, S. & P., Galapagos Islands, *simplex*, P. & S., Oregon, p. 125; PILSBRY in TRYON (475), xvii, figg.: *D. conspicuum*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 21, fig. : n. spp.
Dentalium cheverti, S. & P., n. n., = *septemcostatum*, Brazier, non Abich, p. 9; *cookei*, S. & P., n. n., = *acus*, Cooke, non Eichwald, p. 29; *hungerfordi*, S. & P., n. n., = *compressum*, Sby., non auct., p. 84; *siculum*, Desh. MS, n. n., = *politum*, Costa, non L., p. 107; *pressum*, S. & P., n. n., = *compressum*, Watson, non D'Orb., p. 124; *stenoschizum*, P. & S., n. n., = *translucidum*, Sby., non Desh., p. 128; PILSBRY in TRYON (475) xvii.
Episiphon, Pilsbry and Sharp, new sub-gen. of *Dentalium*, for *D. sowerbyi* and others; PILSBRY in TRYON (475) xvii, p. 117.
Gryptacme, Pilsbry & Sharp, new sub-gen. of *Dentalium* for *D. sericatum* and others; PILSBRY in TRYON (475), xvii, p. 85.

- Rhabdus*, Pilsbry & Sharp, new sub-gen. of *Dentalium*, for *D. æquatorium*, n. sp.; PILSBRY in TRYON (475) xvii, p. 112.
Siphonodentaliidae, monograph commenced by PILSBRY in TRYON (475), xvii.

IV. PELECYPODA.

- Development and morphology of shell in several families; BERNARD (38).
 Pelecypods, gills in; RICE (390).
 Classification; RICE (390).
 Embryonal shell; BERNARD (35).
 Terminology of shell; HYATT (216).
 Species described from 'Investigator' Collections figured by ALCOCK & ANDERSON: Zool. Investigator, pls. i-iv.

SEPTIBRANCHIATA.

- Cuspidaria*, anatomy of; PLATE (375).
Cuspidaria simulans, St. Vincent's Gulf, p. 44, *trigonalis*, Investigator Straits, p. 45; TATE, Tr. R. Soc. S. Austral. xx: *C. striolata*, Mediterranean and Atlantic coasts of France; LOCARD, Echange, xiii, p. 94: *C. maxima*, p. 222, *colpodes*, p. 223, *ledæformis*, p. 224, *munieri*, p. 225, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, figg. also (116), pp. 28 & 29 : n. spp.
Poromya (*Cetoconcha*) *isocardioides*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 230, fig. & (116), p. 30 : n. sp.

EULAMELLIBRANCHIATA.

ANATINACEA.

- Chlamydoconcha orcutti*, Dall, anatomy; BERNARD, Ann. Sci. nat. iv, pp. 221-250, figg.
Pandora similis, S. Africa; SOWERBY (433), p. 29 : n. sp.
 † *Saffordia*, n. g., type *S. ventralis*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 625.
Thracia rushii, Uruguay; PILSBRY, P. Ac. Philad. 1897, p. 292, fig.: *T. durouchouxi*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 229, fig. & (116), p. 30 : n. spp.
 † *Triplicosta*, n. subgen. of *Pholadomya*, for *P. progressiva*, n. sp., Cretaceous of California; COOPER, P. Calif. Ac. vi, p. 333.
Verticordia lamothei, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 227, fig. & (116), p. 30 : n. sp.

PHOLADACEA.

- Teredo dallii*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 266, fig. : n. sp.

MYACEA and CARDIACEA.

- † *Budmania*, n. subgen. of *Limnocardium*; BRUSINA (62), p. 34.
Cardium oblongum, note on the siphonal papillæ; NAGEL (325).
Cardium burnupi, S. Africa; SOWERBY (433), p. 25, fig.: *C. perrieri*, N. Atlantic; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 211, fig. & (116), p. 27: *C. mendanaense*, Marquesas Islands; SOWERBY, P. Malac. Soc. London, ii, p. 138, fig. : n. spp.

Corbula coxi, New South Wales; PILSBRY, P. Ac. Philad. 1897, p. 363, fig. : *C. lyoni*, p. 294, *iheringiana*, p. 295, Uruguay; PILSBRY, P. Ac. Philad. 1897, figg. : n. spp.

VENERACEA and TELLINACEA.

- † *Anodontophora*, n. gen. for *Anoplophora lettica*, Quenst.; COSSMANN, Rev. Paleozool. i, p. 51.
- Chione mekranica*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 21, fig. : n. sp.
- Cytherea (Tivela) transversa*, p. 23, *alucinans*, p. 24, S. Africa; SOWERBY (433), figg. : n. spp.
- Donax simplex*, S. Africa; SOWERBY (433), p. 23, fig. : *D. aperittus*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 24, fig. : n. spp.
- Dosinia globa* (A. Ad. MS.), Arabian Sea; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 22, fig. : n. sp.
- Eastonia rugosa*, recent and fossil; MELI, Bull. Soc. malac. Ital. xx, pp. 45-64.
- Macoma inflatula*, Puget Sound, *liotricha*, Queen Charlotte Islands; DALL (110), p. 12, figg. : n. spp.
- Mactrella iheringi*, Bahia, Brazil; DALL, Nautilus, x, p. 123 : n. sp.
- Mesodesma archavalettoi* (Ihering MS), Uruguay; PILSBRY, P. Ac. Philad. 1897, p. 293, fig. : n. sp.
- Psammobia denickei*, Macassar, p. 243, *reevei*, Flores, p. 247; MARTENS (281), figg. : n. spp.
- Psammotellina pallens*, Bintang near Singapore, p. 235, *semmelinki*, Java and Borneo, p. 236; MARTENS (281), figg. : n. spp.
- Semele (Abra?) uruguayensis*, Uruguay; PILSBRY, P. Ac. Philad. 1897, p. 293, fig. : n. sp.
- Tapes oncodes*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 23, fig. : n. sp.
- Tellina queketti*, S. Africa; SOWERBY (433), p. 22, fig. : *T. (Maera) methoria*, Mekran Coast; MELVILL, Mem. Manchester Soc. xli, No. 7, p. 23, fig. : n. spp.
- Venus (Anaitis) latilirata*, S. Africa; SOWERBY (433), p. 24, fig. : n. sp.

SUBMYTILACEA.

- † *Actinomya*, n. g., type *Modiolopsis cincinnatiensis*, Hall & Whitfield; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 513.
- † *Allodesma*, n. g., type *A. (Modiolopsis) subellipticum*, Ulrich; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 617.
- Anodonta bactriana*, Bucharra; ROLLE, Nachrbl. Deutsch. malak. Ges. 1897, p. 172 : n. sp.
- † *Aristerella*, n. g. for *A. nitidula*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 524.
- Axinus dubius*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 215, fig. & (116), p. 27 : n. sp.
- † *Ceromyopsis*, n. g. for *Isocardia striata*; LORIOL, Abh. Schweiz. pal. Ges. xxiv, No. 4, p. 79.
- Chlamydoconcha* classed with *Scioberetia* and *Ephippodonta*; BERNARD, Bull. Mus. Paris, iii, p. 65.
- † *Colpomya*, n. g., type *C. constricta*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 522.
- Condylocardia*, n. gen. for *C. pauliana*, M.-Chalmas MS, n. sp.; BERNARD, J. Conchyl. xlv, p. 174 [confer Zool. Rec., Moll., xxxiii, p. 57].

- Condylocardia pauliana*, M.-Chalmas MS, Island of Saint-Paul, *crassicostrata*, Stewart Island, p. 175, *australis*, M.-Chalmas MS, Island of Saint-Paul, *concentrica*, Stewart Island, p. 176; BERNARD, J. Conchyl. xlv, figg. : n. spp. [confer Zool. Rec., Moll., xxxiii, p. 57].
- Coralliophaga johnsoni*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 265, fig. : n. sp.
- Corbicula subplanata*, p. 112, *celebensis*, p. 113, Celebes, *trapezoidea*, p. 115, *angulifera*, p. 116, *lacustris*, p. 118, *gibba*, p. 121, Sumatra; MARTENS (281), figg. : n. spp.
- † *Cossmannella*, n. subgen. of *Cardita* for *C. aegyptiaca*; MAYER-EYMAR, J. Conchyl. xlv, p. 366, fig.
- Crassatella (Eriphyla) maldonadoensis*, Uruguay; PILSBRY, P. Ac. Philad. 1897, p. 295 : n. sp.
- Cyrena moussoni*, Java, p. 94, *moluccensis*, Moluccas, p. 96; MARTENS (281), figg. : n. spp.
- Cyrenella rosea*, Cameroons; AILLY (4), p. 131, fig. : n. sp.
- † CYRTODONTIDÆ, n. fam., for *Cyrtodonta* and allies; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 533.
- Diplodonta berghi*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 216, fig. & (116), p. 28 : n. sp.
- Dreissensia holmi*, Cameroons; AILLY (4), p. 130, fig. : n. sp.
- † *Endodesma*, n. g., type *E. cuneatum*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 525.
- Lucina lacteola*, n. n. for *L. lactea*, Ad. non Lam. = *L. concentrica*, Ad. and Ang. non Lam.; TATE, Tr. R. Soc. S. Austral. xx, p. 48.
- Microcondylæa hageni*, *gracilis*, p. 8, *bicristata*, p. 9, Sumatra; STRUBELL; Nachrbl. Deutsch. malak. Ges. 1897 : n. spp.
- † *Modiolodon*, n. g., type *Modiolopsis oviformis*, Ulrich; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 521.
- † MODIOLOPSIDÆ, n. fam.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 500.
- Montacuta triangularis*, Madeira; WATSON, J. Linn. Soc. xxvi, p. 264, fig. : n. sp.
- † *Palæopteria*, n. g., for *P. parvula*, n. sp.; WHITEAVES, Geol. Surv. Canada. Pal. Foss. iii, p. 181, figg.
- Pisidium sterkianum*, p. 291, *vile*, p. 292, Uruguay; PILSBRY, P. Ac. Philad. 1897, figg. : *P. sumatranum*, Sumatra; MARTENS (281), p. 121, fig. : *P. (Fossarina) dilatatum*, Siberia; WESTERLUND, Ann. Mus. St. Petersb. 1897, p. 131 : n. spp.
- † *Prolobella*, n. g., type *P. striatula*, n. sp.; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 532.
- Pseudanodonta acutalis*, Sweden; DROUET, J. Conchyl. xlv, p. 134 : n. sp.
- † *Psilooncha*, n. g., type *P. grandis*, Ulrich; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 530.
- † *Sabbaia*, n. n., for *Rytia*, Stefanescu, nom. præocc.; COSSMANN, Rev. Paleozool. i, p. 156.
- † *Schafthüthia*, n. n., for *Gonodon*, Schaf. non Held; COSSMANN, Rev. Paleozool. i, p. 51.
- Scintilla compta*, *queketti*, *elongata*, *durbanensis*, S. Africa; SOWERBY (433), p. 26, figg. : n. spp.
- Spatha rotundata*, p. 242, Wembere Steppes, *trapezia*, p. 243, *divaricata*, Victoria Nyanza, *stuhlmanni*, p. 250, Albert Nyanza; MARTENS (282), figg. : n. spp.
- Sphærium stuhlmanni*, Victoria Nyanza; MARTENS (282), p. 261, fig. : n. sp.
- Unionidæ*, note on classification of; SIMPSON, Nautilus, xi, p. 18.
- Unio pinei*, p. 40, *buxtoni*, p. 55, *suttoni*, p. 56, Florida; WRIGHT, Nautilus, xi : *U. superiorenensis*, Lake Superior; MARSH, Nautilus, x, pp. 103, 121, fig. : *U. misoolensis*, Misool; SCHEPMAN, Notes Leyden Mus. xviii,

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- Amussiopecten*, n. subgen., of *Pectinidæ*; SACCO (403), pt. xxiv, p. 53.
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†*Byssonychia*, n. g., type *Ambonychia radiata*, Hall; ULRICH, Geol. Surv. Minnesota, iii, pt. 2, p. 498.
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†*Cobrachephalus*, n. g., for *C. angulosus*, n. sp.; WHIDBORNE, Devon. Fauna S. England, iii, pt. 2, p. 118.
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- †*Macrochlamys*, n. subgen. of *Pectinidæ*, [nom. præocc. !]; SACCO (403), pt. xxiv, p. 32.
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- Hochstetteria trapezina*, Stewart Island; BERNARD, J. Conchyl. xlv, p. 18, fig. : n. sp.
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- Modiolaria taylori*, Vancouver, *seminuda*, Alaska; DALL (110), p. 5, figg. : n. spp.
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- Leda sulculata*, anatomy of; STEMPELL (444).
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- Ledidæ* and *Nuculidæ* of Atlantic coast, revision of; VERRILL & BUSH (486).
- Malletia faba*, Washington and British Columbia, *gibbsii*, British Columbia, p. 10, *pacifica*, Alaska and California, (*Tindaria*) *kennerlayi*, Washington, p. 11; DALL (110), figg.: *M. perrieri*, Azores; DAUTZENBERG & FISCHER, Mem. Soc. zool. France, x, p. 209, fig. and (116) p. 27 : n. spp.
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VIII. BRACHIOPODA.

BY

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ASSISTED BY

E. A. SMITH, F.Z.S., AND G. O. CRICK, F.G.S.

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Devonian:—Fossils from the Morte Slates, N. Devon; HICKS (13); GREGORY (12).—Fauna of the Marwood and Pilton beds of North Devon and Somerset, with n. sp. of *Renssellaria*?, and *Rhynchonella* (*Camartachia*); WHIDBORNE (38).—Brachiopoda from Cornwall; COLLINS, Tr. geol. Soc. Cornwall, xii, p. 70.—Fossils from North Devon; WHIDBORNE, Quart. J. Geol. Soc. liii, pp. 450–456, figg.—Fossils from Santa Lucia (Spain), with some new species; EHLERT (24).—Correlation of the Devonian Faunas in Southern Illinois; WELLER (37).—Fossils from Eden, N. S. Wales; DUN, Rec. Geol. Surv. N. S. Wales, v, pp. 179 & 180.—Fauna of the Boulders occurring at the White Cliffs Opal-fields, N. S. Wales; DUN, *t. c.* pp. 162–168, figg.

Silurian:—Brachiopods of Sambre-et-Meuse; MALAISE, Ann. Soc. geol. Belgique, xxiv, pp. 257–261.—Revision of the fauna of the Guelph formation of Ontario, with new species; WHITEAVES (39).—Silurian of Tasmania, with new species; ETHERIDGE (7).

Ordovician:—Note on genus *Lingulepsis* with a new species; WALCOTT (36).—On *Orthis testudinaria*, auct., with *O. ignota*, *porrecta*, *futilis*, n. spp.; SARDESON (30).—Fauna of the Keisley Limestone with new species of *Orthis* (*Hebertella*?), *Atrypina*, *Syntrophia* and *Dayia*; REED (28).—Brachiopoda from Cornwall; COLLINS, Tr. geol. Soc. Cornwall, xii, p. 70.—Fossils from county Dublin, Ireland; REED, Quart. J. Geol. Soc. liii, pp. 537 & 538.—Fauna of the beds near Tramore, county Waterford; REED, Geol. Mag. 1897, pp. 502–506.—Fossils from the Galena-Trenton and Black River formations of Lake Winnipeg and its vicinity; WHITEAVES (41).—Systematic list, with references, of the fossils of the Hudson River or Cincinnati formation, Manitoba; WHITEAVES (40).

Cambrian:—*Protosiphon kempanum*, n. subg. (of *Siphonotreta*) and sp. from rocks of N. B. Canada; MATTHEW (20).

III. SYSTEMATIC.

A brief general account of the *Brachiopoda* illustrated with 3 cuts; ECKSTEIN (6).

General account of the *Brachiopoda*; PERRIER, *Traité de Zoologie*, pp. 1501–1529, figg.

Classification and Catalogue of American Fossil Fauna; SCHUCHERT (32).
 †*Orthis testudinaria*, auct., subdivision of, with *O. ignota*, *porrecta*, *futilis*, n. spp., figg.; SARDESON (30).

†*Protosiphon*, n. subg. (of *Siphonotreta*), *kempanum*, n. sp. from the Cambrian rocks of N. B. Canada; MATTHEW (20).

†*Terebratula isteinensis*, n. sp. from the Upper Rauracian of Baden; HUG, Mt. Badisch. Geol. Landesanst. iii, p. 409, fig.

†*Terebratulina tejonensis*, n. sp. from the Tejon beds of California; STANTON, Rep. U. S. Geol. Surv. xvii, pt. i, p. 1037, fig.

IX. BRYOZOA.

BY

FLORENCE BUCHANAN, B.Sc.

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Geological	3	Ctenostoma	4
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I. TITLES.*

1. AMI, H. M. Notes on some of the fossil organic remains comprised in the Geological formations and outliers of the Ottawa Palæozoic basin. Tr. R. Soc. Canada (2) ii, Sect. iv, p. 151.
2. BIDENKAP, O. Bryozoen von Ost-Spitzbergen. Zool. Ergebn. der im Jahre 1889 auf Kosten der Bremer geographischen Gesellsch. von Dr. Wilh. Kükenthal und Dr. Alfred Walter ausgeführten Expedition nach Ost-Spitzbergen. Zool. Jahrb. Syst. x, pp. 609-639, pl. xxv.
3. BRAEM, F. Die geschlechtliche Entwicklung von *Plumatella fungosa*. Stuttgart, (E. Nägele), 4to, 1897, 48 pp., 4 pls., and Bibl. Zoologica, xxiii.
4. HALL, T. S. On the occurrence of the anchoring tubes of *Adeona* in the older tertiaries of Victoria, with an account of their structure. P. Soc. Vict. ix, pp. 1-4, pl. i.
5. HARMER, S. F. Note on new or rare British Marine Polyzoa. J. Mar. biol. Ass. (n. s.) v, pp. 51-53.

* Papers published in 1897 which are not mentioned in this list will be recorded in 1898 Volume.

6. JOHNSON, J. Y. New Cyclostomous Bryozoa found at Madeira. *Ann. Nat. Hist.* (6), xx, pp. 60-65.
7. LOMNICKI, A. M. Materyaly do mioceńskiej fauny Lwowa i najbliższej okolicy. *Kosmos Polski*, xxii, Bryozoa, p. 34. [Contributions to the Miocene fauna of Lemberg.]
8. MATZDORFF, C. Jahresbericht über die Bryozoen für 1892 und 1893. *Arch. Naturg.* lix (1897), 2, pp. 45-76.
9. MEISSNER, M. (1) Moosthiere. *Die Thierwelt Ost-Africas*, iv. Berlin, (Dietr. Reimer), Lieferung i, 1896, 9 pp., 1 pl. and 4 figg. in text.
10. —. (2) Weiterer Beitrag zur Kenntniss der geographischen Verbreitung der Süßwasser-Bryozoengattung *Plumatella*. *Zool. Anz.* xx, pp. 173-174.
11. PARONA, F. & BONARELLI, G. Sur la faune du Callovien inférieur (Chanasiens) de Savoie. *Mém. Ac. Savoie* (4), vi, p. 83.
12. PETTY, S. L. Polyzoa and Hydrozoa at Filey. *Naturalist*, No. 266, pp. 275-276.
13. THORNELY, L. R. Notes on Rockall Island and Bank. vi. Report on the Polyzoa, *Tr. Irish Ac.* xxxi, pt. iii, pp. 79 & 80.
14. *VÁNGEL, E. Moosthiere (Bryozoa) [des Plattensees]. *Result. wiss. Erforsch. Balatonsees*, pp. 137-143, 2 figg.
15. VANHÖFFEN, E. Die Fauna und Flora Grönlands. *Grönl. Exp. Ges. Erdkunde Berlin*, 1891-1893, Berlin, (Kühl), 4to, 1897, ii, pt. i; *Marine Bryozoa*, pp. 227-234; General description and list of spp., p. 94.
16. WARD, H. B. Statoblasts ("Winter Eggs") of *Pectinatella*. *Amer. micr. J.* xviii, p. 232.
17. WATERS, A. W. Notes on *Bryozoa* from Rapallo and other Mediterranean localities.—Chiefly *Cellulariidae*. *J. Linn. Soc. Lond.* xxvi, pp. 1-21, pls. i & ii, & 3 figg. in text.
18. WESENBERG-LUND, C. Biologiske Studier over Ferskvandsbryozoer. *Vid. Medd.* viii, 1896 (7), pp. 252-363, pls. i-iv. French Abstract, pp. i-xxxvi.

II. BIOLOGY.

WESENBERG-LUND gives good descriptions and figures of the Danish freshwater forms. Of special importance is his account of the development of the cuticle in *Lophopus*, of a hibernating organ not previously described in several of the species, of the method of movement in *Cristatella* and other species and the relation of the power of movement to the development of the cuticle and to fission.

Ovicells in *Artea*; WATERS.

Development of *Plumatella*, BRAEM. Descriptions of larvæ of several species and of statoblasts, WESENBERG-LUND. Statoblasts of *Plumatella*, MEISSNER; of *Pectinatella*, WARD.

Classification:—Importance of tubular radicals and articulation, WATERS. Affinities of different freshwater Bryozoa with different marine groups, and the relationships of the Bryozoa as a whole to Sponges and Rotifers, WESENBERG-LUND.

Habits, &c.:—Symbiosis of *Plumatella* with *Paludina*, and enumeration of the different Gasteropods in Europe, Asia, Africa and Australia on which Statoblasts of *Plumatella* are found, MEISSNER (2) & (1). Significance of

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

Statoblasts; parasites of freshwater Bryozoa (an insect larva and an Oligochaet); Fossil Statoblasts of *Cristatella* and *Plumatella*; WESENBERG-LUND.

Methods:—MEISSNER (1).

III. DISTRIBUTION.

GEOGRAPHICAL.

Marine Forms.

British Coasts:—4 spp. not hitherto ascertained to be British near Plymouth or the Scilly Isles; HARMER. 14 spp. at Filey; PETTY.—42 spp. off Rockall I. and Bank, 18 new to the locality; THORNELY.

Greenland:—List of spp. and short descriptions; VANHOEFFEN.

E. Spitzbergen:—9 spp. *Cyclostoma*, 37 *Cheilostoma*, and 4 *Ctenostoma*. Bryozoa-fauna compared with that of Finland and Greenland, only 9 Spitzbergen species not in either; of these 1 sp. and 1 var. new; BIDENKAP.

Madeira:—6 spp. *Cyclostoma* (5 new); JOHNSON.

Mediterranean:—Near Genoa especially, 17 spp. chiefly *Cellulariidae* described, and remarks on other species; WATERS.

Freshwater Forms.

Denmark:—8 spp. *Phylactolæma*, 1 sp. *Gymnolæma*; WESENBERG-LUND.

L. Balaton:—List of spp.; VÁNGEL.

E. Africa:—9 spp. of *Plumatella* and one other sp.; MEISSNER (1).

GEOLOGICAL.

Fossil freshwater Bryozoa and their statoblasts; WESENBERG-LUND.

Tertiaries:—Miocene of Lemberg.—4 spp. *Cheilostoma*, 3 spp. *Cyclostoma*; LOMNICKI. Eocene of Victoria.—Anchoring tubes of *Adeona*; HALL.

Mesozoic:—Jurassics of Savoy (Lower Callovien).—New form of *Berenicea striata*; PARONA & BONARELLI.

Palæozoic:—Trenton Limestone of Ottawa basin and outliers.—50 spp. Bryozoa; AMI. Silurian of Ottawa basin.—2 spp.; AMI.

IV. SYSTEMATIC.

ENTOPROCTA.

[None.]

ECTOPROCTA.

GYMNOLÆMA.

CYCLOSTOMA.

Alecto simplex, n. sp., Madeira; JOHNSON, Ann. Nat. Hist. xx, p. 60.

Berenicea striata, Haime (?), f. *reussi*, n. f., Jurassic (Chanaz); PARONA & BONARELLI, Mem. Ac. Savoie (4), vi, p. 83.

- Diastopora catillus*, and *D. pulchella*, n. spp., Madeira; JOHNSON, Ann. Nat. Hist. xx, pp. 61 & 62.
Fron dipora maderensis, n. sp., on coral, deep water off Madeira; JOHNSON, l. c. p. 64.
Hornera pectinata, Busk, on worm-cases attached to sponges, Madeira, oecium described; JOHNSON, l. c. p. 61.
Lichenopora spinata, n. sp., on halichondrine sponge from deep water off Madeira; JOHNSON, l. c. p. 62.
Radiopora irregularis, n. sp., Funchal Bay, Madeira, attached to shells etc.; JOHNSON, l. c. p. 63.

CHEILOSTOMA.

- †*Adeona* in the Eocene of Victoria; HALL.
Aetea, ovicells; WATERS.
 (*Cellularia*), abolition of genus; WATERS.
Flustra spitzbergensis, n. sp., E. Spitzbergen; BIDENKAP, Zool. Jahrb. Syst. x, p. 617. *F. solida*, Stimps, referred to n. g. *Pseudoflustra*, Ib. t. c. p. 618.
Hypophorella expansa, Ehl., on British Coast, in Chaetopterus tubes; HARMER.
Membranipora spitzbergensis (Smith), n. nom. for (*M. arctica*, Smith), since this name already employed; BIDENKAP, p. 619.
Micropora complanata, Norm. on British Coast, (Scilly Isles), HARMER, p. 52.
Pseudoflustra, n. g., for *P. (Flustra) solida*, Stimps; BIDENKAP, p. 618.
Schizoporella cristata, Hincks, on British Coast in Pecten shells near Plymouth; HARMER, p. 53.

CTENOSTOMA.

- Alcyonidium mytili*, Dalyell. n. var. from E. Spitzbergen, on algae; BIDENKAP, p. 634.

PHYLACTOLÆMA.

- Fredericella sultana*, Kraep. in Denmark; WESENBERG-LUND, Vid. Medd. viii, p. 260.
Pectinatella, statoblasts; WARD.
Plumatella, Table to distinguish Danish spp.; WESENBERG-LUND, p. 286: E. African spp.; MEISSNER (1). Statoblasts; MEISSNER. Development; BRAEM.

X. CRUSTACEA.

(Including GIGANTOSTRACA AND PANTOPODA.)

BY

ALBERT WILLIAM BROWN, B.A., F.L.S.

Christ Church, Oxford.

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INTRODUCTION.

WHERE so many of the papers published in any year are devoted to the description of new and the redescription of known species, it is always difficult to estimate aright the progress made in our knowledge of a group. This is especially true of the Arthropodan sub-divisions—*Crustacea*, *Arachnida*, and *Myriopoda*. The Record of the first-named for 1897 is slightly larger than that of 1896, consisting of 208 papers. Of these 104 deal with species, and a number of others consist of faunistic lists.

Papers dealing with Plankton *Crustacea* are fairly numerous. The reader is referred to those by ZACHARIAS (204–206), and by PITARD on the freshwater Plankton of certain Swiss Lakes (128–131). KOFOID (92), in *Science*, criticises the present methods of Plankton collecting, pointing out very serious defects.

GARSTANG (63, 64) continues the publication of results obtained last year on the respiratory adaptations of certain *Decapoda*. His papers have an important bearing on the question of the utility of specific characters, and are therefore of general interest. BOHN (13, 14) also deals with certain points in the respiration of *Crustacea*.

An interesting discussion has been carried on in the pages of *Natural Science*, entitled “Are the *Arthropoda* a natural group?” Many eminent specialists on the various classes have contributed to the discussion. The conservative view is strongly advocated by RAY LANKESTER (95).

JAWOROWSKI (87) deals with his theory of Arthropodan appendages, and BOUVIER (19), in an important comparative study of the *Dromiacea*, gives reasons for the view that Crabs are derived from Lobster-like ancestors. There are no other papers dealing with morphological theory.

Embryology is considered by several authors: BRANDES (24, 25) describes the spermatozoa and reproduction of *Decapoda*; BUTCHINSKY (27) gives an important account of the segmentation of the ovum in *Nebalia*; and SAMASSA (153) of the winter eggs of *Cladocera*. STINGELIN (187), in a paper dealing with variation, publishes some observations on the reproduction of *Cladocera*.

The histology of the muscle-fibre of *Cirripectida* has been studied by GRUVEL (72). Miss NEWBIGIN (112) describes the pigments of *Decapoda* in the *Journal of Physiology*.

The present Record contains seven papers dealing with the Crustacean nervous system and sense-organs. These comprise CARLTON'S (29) monograph on the “Brain and optic ganglion of *Leptodora*,” BETHE'S (8) description of the nervous system of *Carcinus maenas*, NUSSBAUM & SCHREIBER'S (118) work on the “Peripheral,” and ZOGRAF'S (208) on the “Embryonic nervous system of *Crustacea*,” and lastly, STEUER'S two papers (177, 178) on the “Anatomy and physiology of the eye of *Corycaeus*.”

The placental parasitism of the *Monostrillidae* has been studied, both in its special and general aspects, by GIARD (65, 66), who also gives an account of the ontogeny of this group (69).

JANET'S interesting papers on the animals commensal with Ants (84, 85) must not be omitted. He describes several species of terrestrial Isopods found in their nests, and his papers are remarkable for the amount of patient observation they reveal.

Subterranean and cavernicolous *Crustacea* are considered at length by DOLLFUS (45), and by VIRÉ (190, 192, 193), who also discusses the degeneracy of their sense-organs and general adaptation to their environment.

GIARD (67) deals with the phenomena and probable parasitic cause of autotomy or self-mutilation amongst *Crustacea*.

Foremost amongst systematic works must stand HANSEN'S “Monograph

of the *Choniostomatida*" (77). It is beautifully illustrated by copper plates, and is in every way a valuable addition to the literature of *Crustacea*. GIESBRECHT (68) gives a systematic description of the "*Ascomyzontida*," and a systematic note on the *Copepoda* (70).

G. O. SARS continues the publication of the "*Crustacea of Norway*" (157). This, as the author's other works, is a model to systematists. Every single species is not only fully described, but adequately illustrated as well, forming an admirable contrast to that method of publishing descriptions of new species without figures, which can only end in the greatest confusion. Other papers by the same author deal with the "*Crustacea of the Caspian Sea*" (154, 155), and with the "*Phyllopora of the Jana Expedition*" (156).

ORTMANN has written two valuable articles. The first is entitled "*Carcinologische Studien*" (120) and is principally systematic. The second discusses the "*Geographical distribution of the Trapeziida*" (119).

HANSEN describes the *Isopoda* collected by the "*Albatross*" in the Pacific (76).

Palæontological papers are not very numerous. CALMAN (28) has studied the affinities of *Anaspides* with certain fossil forms; JONES & KIRBY (88) the Carboniferous *Ostracoda* of New Zealand; and WOODWARD (203) the higher *Crustacea* from the Cretaceous of Queen Charlotte and Vancouver Islands.

COUTIÈRE (36-39) adds to our knowledge of the *Alpheida* by description of a number of new forms from different regions, and RICHARD (144-149) does the same for the *Entomostraca*.

BOUVIER (15-20) describes new *Crustacea* from the Neotropical and Ethiopian regions, and in conjunction with MILNE-EDWARDS (53-55) new *Decapoda*. BRADY (22) adds a supplementary note to the report on the "*Challenger*" *Ostracoda*. MAN (101) publishes a report on new and rare *Brachyura* in the Hamburg Museum.

Amongst papers dealing with *Crustacea* from definite regions we may select the following, BOUVIER (20) on the *Pagurida* of Europe, and BRADY (23) on British species of *Daphnia*, as noteworthy. The *Copepoda* and *Cladocera* of Germany form the subject of two papers by STEUER (179, 180).

The *Cumacea* and *Schizopoda* of Heligoland have been catalogued and described by EHRENBAUM (56), and the *Cirripedia* by WELTNER (198).

BIRULA (11, 12) continues his faunistic studies on the Russian Seas. Some new *Amphipoda* from the Copenhagen Museum are figured by STEBBING (176).

American *Crustacea* received a good deal of attention during 1897. Miss RATHBUN published synopses of many American and African species of *Decapoda* (136-140) and has, in the first published number of the "*Annals of the Institute of Jamaica*," given an exhaustive list of the *Decapoda* of that island (143). SCHACHT (158) has listed the North American species of *Diaptomus*, and SHARP (166) the freshwater *Ostracoda*.

We must not omit to notice the appearance of DRYGALSKI'S volumes on the "*Grönland Expedition*," in which VANHÖFFEN gives some account of the *Crustacea* and *Pycnogonida* (51).

WEBER (196) describes the freshwater *Decapoda* of South Africa, WHITLEGGE (200) the *Crustacea* of Funafuti, and DÖLLFUS (46-50) the terrestrial *Isopoda* of Argentina and other countries.

Of the *Gigantostraca* only 11 papers are recorded in this issue. This small number, and the defects of certain other parts of the Record, are due to its preparation before certain of the foreign periodicals had reached the country.

I. TITLES.*

[For GIGANTOSTRACA, see p. 41; for PANTOPODA, see p. 43.]

1. ABELOUS, J. E. & BIARNÈS, G. Oxydase des Crustacés. C.R. Soc. Biol. ser. x, iv, 1897, pp. 249-251.
2. ANON. A successful experiment in Lobster rearing. Nature, lvi, p. 455.
3. ——. Are the *Arthropoda* a natural group? [Summary of opinion.] Nat. Sci. x, pp. 115-117.
4. AURIVILLIUS, C. W. S. Das Plankton der Baffins Bay und Davis Strait. Eine thiergeographische Studie. Festschrift Wilhelm Lilljeborg, pp. 181-211, pl. x.
5. BELL, F. J. The generic name of the river Crayfish. Ann. Nat. Hist. (6) xix, pp. 239 & 240.
6. BERNARD, H. M. Fossil *Apodida*. Nat. Sci. xi, pp. 397-403. (6 figg. in text.)
7. ——. Are the *Arthropoda* a natural group? *Op. cit.* x, pp. 98-100.
8. BETHE, A. Das Nervensystem von *Carcinus maenas*. Arch. mikr. Anat. 1, pp. 446-546, pls. xxv-xxx & pp. 589-640, pl. xxxiii.
BIARNÈS, G. [See ABELOUS & BIARNÈS (1).]
9. BIRGE, E. A. Notes on *Cludocera*. III. Tr. Wisconsin Ac. ix, 1893, pp. 275-317, pls. x-xiii.
10. ——. The vertical distribution of the Limnetic *Crustacea* of Lake Mendota. Biol. Centralbl. xvii, pp. 371-374.
11. BIRULA, A. Materialuidlya Biologii i Zoogeograficheskii Preimushchestvenns Russikikh mor'ei. II. *Hydrozoa, Polychæta, i Crustacea* cobrayiuiiya d-rom A. C. Botkine v Eiiseiskoi i Obskoigybakh lyetom. 1895 g. Annuaire Mus. St. Petersb. 1897, pp. 78-116, pls. ix & x.
Researches on Biology and Zoogeography of the Russian Seas. II. *Hydrozoa, Polychæta, and Crustacea*, collected by Dr Botkine in 1895, in the Gulfs of the Enisei and Obi.
12. ——. III. Ocherk phaunui *Crustacea-Decapoda* morei Murmanskagho i Byelagho. [Essai d'une faune des crustacés décapodes de la mer Blanche et Mourmanne.] *T. c.* pp. 405-452, pls. xx-xxii.
13. BOHN, G. Sur le renversement du courant respiratoire chez les Décapodes. C.R. Ac. Sci. cxxv, pp. 539-542.
14. ——. Sur la respiration du *Carcinus maenas*, Leach. *T. c.* pp. 441-444.
Abstract in J. R. Micr. Soc. 1897, p. 533.
15. BOUVIER, E. L. Observations sur les Argulidés du genre *Gyropeltis* recueillis par M. Geay au Vénézuéla. Bull. Mus. Paris, 1897, pp. 13-19, 7 figg. in text.
16. ——. Sur les *Cambarus* recueillis au Mexique par M. Diguët. *T. c.* pp. 224-228.

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

17. [BOUVIER, E. L.] Sur deux Paguriens nouveaux trouvés par M. Coutière dans les Récifs Madréporiques à Djibouti. Bull. Mus. Paris, 1897, pp. 228-233, 6 figg. in text.
18. —. Observations sur les Crabes de la famille des Dorippidés. C.R. Ac. Sci. cxxv, pp. 784-787.
19. —. Sur l'origine homarienne des Crabes; Étude comparative des Dromiacés vivants et fossiles. Bull. Soc. Philom. (8) viii, pp. 34-110, 43 figg. in text.
20. —. Les Pagurinéés des mers d'Europe (Crustacés). Tableaux dichotomiques des genres et des espèces. Feuille Natural. xxvi, pp. 125-128 & 149-155.
21. —. La transformation des Bernards l'Ermite en Lithodes. Naturaliste, xix, 1897, pp. 41-43.
— [See also EDWARDS & BOUVIER (53-55).]
22. BRADY, G. S. A supplementary report on the Crustaceans of the group *Myodocopa* obtained during the "Challenger" Expedition, with notes on new or imperfectly known species. Tr. Zool. Soc. London, xiv, pp. 85-100, pls. xv-xvii.
23. —. On the British species of *Entomostraca* belonging to *Daphnia* and other allied genera. Nat. Hist. Tr. Northumb. xiii, 1896, pp. 217-248, pls. vii-x.
24. BRANDES, G. Die Spermatozoen der Dekapoden. SB. Ak. Berlin, 1897, pp. 355-362.
25. —. Zur Begattung der Dekapoden. Biol. Centralbl. xvii, pp. 346-350.
26. BRANDT, K. Die Fauna der Ostsee, insbesondere die der Kieler Bucht. Verh. Deutsch. zool. Ges. 1897, pp. 10-34.
- 26A. BUCHANAN, F. Crustacea, including *Gigantosthraca* and *Pantopoda*. Zool. Rec. xxxiii, 42 pp.
27. BUTSCHINSKY, P. Die Furchung des Eies und die Blastodermbildung der *Nebalia*. Zool. Anz. xx, pp. 219 & 220.
Abstract in J. R. Micr. Soc. 1897, p. 381.
28. CALMAN, W. T. On the genus *Anaspides* and its affinities with certain fossil Crustacea. Tr. R. Soc. Edinb. xxxviii, pp. 787-802, 2 pls.
29. CARLTON, E. P. The brain and optic ganglion of *Leptodora hyalina*. Anat. Anz. xiii, pp. 293-304, 28 figg. in text.
Abstract in J. R. Micr. Soc. 1897, p. 205.
30. CARPENTER, G. H. Are the *Arthropoda* a natural group? Nat. Sci. x, p. 100.
31. CAULLERY, N. *Branchiophorus nyctiphane*, n. g., n. sp., Épicaride nouveau de la famille des *Dajidae*. Zool. Anz. xx, pp. 88-92.
Abstract in J. R. Micr. Soc. 1897, p. 204.
32. CHAPMAN, F. *Ostracoda* from the Chara-marl of Hitchin, Herts. Ann. Nat. Hist. (6) xix, pp. 591-597, pl. xv.
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II. BIOLOGY.

1. ANATOMY AND MORPHOLOGY.

- Anatomy of the *Ascomyzontidae*; GIESBRECHT (68).
Parallel resemblances and dimorphism of *Eupagurus excavatus* and *variabilis*; EDWARDS & BOUVIER (55).
Relation of Crustacean head to Annelid prostomium; GOODRICH (71).
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Structure of fossil *Apodidae*; BERNARD (5).
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Blind *Crustacea* of water conduits of Seine and Paris; VIRÉ (192).

2. PHYSIOLOGY.

- Physiology of the eye of *Corycaeus*; STEUER (177 & 178).
Respiration of *Carcinus maenas*; BOHN (14).—Respiratory phenomena of *Portumnus nasutus*; GARSTANG (64).
Structural adaptations for respiration in *Crustacea*; GARSTANG (63).
Reversal of respiratory current in Decapods; BOHN (13).
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Relations of nucleus and protoplasm in cells of hepatic tubes of *Oniscus murarius*; PRENANT (134).

3. HISTOLOGY AND METHODS.

- Blood globules and lymph organs of *Crustacea*, p. 161; CUÉNOT (40).
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Reproductive cells of *Cyclops*; HÄCKER (73).

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Utility of specific characters in *Crustacea*; GARSTANG (63).

7. BIOLOGY AND DISTRIBUTION.

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8. NOMENCLATURE.

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9. CLASSIFICATION.

Are the *Arthropoda* a natural group? ANON. (3), BERNARD (7), CARPENTER (30), CLAUS (34), HANSEN (75), HUTTON (83), JAWOROWSKI (86), KINGSLEY (90), LANKESTER (94), LAURIE (96), POCOCK (132), STEBBING (174).

Ascomyzontida, divided into:—

- Subfam. 1. *Ascomyzontinae*.
 ” 2. *Pontæcillinae*.
 ” 3. *Rataniinae*, nov.
 ” 4. *Dyspontiinae*.
 ” 5. *Cancerillinae*, nov.

GIESBRECHT (68).

Systematic position of *Anaspides*; CALMAN (28).

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Systematic note on *Copepoda*; GIESBRECHT (70).

Synopsis and classification of the *Cirripedia*; WELTNER (199).

III. DISTRIBUTION.

Where necessary the Freshwater forms have been indicated thus (F), and the Terrestrial forms thus (T). Where no indication is given the forms mentioned are either Marine or Marine and Freshwater.

1. GEOGRAPHICAL.

N.B.—Arrangement in each region alphabetical.

Palearctic Region.

- Austria-Hungary: *Cladocera* and *Copepoda* (F); STEUER (179).
 Azores: *Tanaida* (7 n. spp.); DOLLFUS (44): n. sp. of *Dorippida*, n. sp. of *Calatheida*; EDWARDS & BOUVIER (53): *Sympagurus*, n. sp.; EDWARDS & BOUVIER (54).
 Balaton Sea (= Platten Sea): *Crustacea*; DADAY (42A).
 Belgium: *Isopoda*; LAMEERE (94).
 Bergensfjord: *Crustacea* (Plankton); NORDGAARD (116).
 Bevagna (Umbria): *Isopoda* (F); SILVESTRI (168).
 Black Sea: *Crustacea*; FRIČ & VÁVRA (60).
 Böhmerwald Sea: *Crustacea* (F); FRIČ & VÁVRA (60).
 Brandenburg: Lower *Crustacea* (F); HARTWIG (78).
 Britain: *Entomostraca*; BRADY (23).—Loch Doon, Ayrshire: *Copepoda* (F); T. & A. SCOTT (162).
 Canary Is.: n. sp. of *Dorippida*; EDWARDS & BOUVIER (18).
 Cape Ghir: n. sp. of *Calatheida*; EDWARDS & BOUVIER (53).
 Cape Verd Is.: n. sp. of *Alpheus*; COUTIÈRE (37A): n. sp. of *Dorippida*; EDWARDS & BOUVIER (53).
 Caspian Sea: Pelagic *Entomostraca*; SARS (154): *Crustacea*, 5 n. spp.; SARS (155).
 Cevennes: *Isopoda* (subterranean); DOLLFUS (45).
 Europe: *Pagurida*; BOUVIER (20): *Isopoda* (T); DOLLFUS (50).
 Fernando-Velosa: n. sp. of *Alpheus*; COUTIÈRE (37A).
 French Coast: *Entomostraca*; TROUËSSART (185).
 Hamburg: *Asellida* (F, T); MICHAELSEN (105).
 Heligoland: *Schizopoda* and *Cumacea*; EHRENBAUM (56): *Cirripedia*; WELTNER (198).
 Ireland: *Ostracoda*; SCHARFF (159).—Ireland (W. coast): *Copepoda*; THOMPSON (184).—Irish Seas: 1 n. sp. of *Amphipoda*, 1 n. sp. of *Isopoda*; WALKER (195).
 Janina Lake: *Entomostraca* (1 n. sp.) (F); RICHARD (148).
 Jan Mayen: *Entomostraca*; RICHARD (145).
 Japan: n. sp. of *Alpheus*; COUTIÈRE (39).

- Jura (Pratteln): *Isopoda* (T); DOLLFUS (49).
 Karajak Fjord: Plankton *Crustacea*; VANHÖFFEN (187) pp. 254-292.
 Kiel Bay: *Crustacea*; BRANDT (26).
 La Praya: n. sp. of *Calatheidae*; EDWARDS & BOUVIER (53).
 Lake Brenet: Plankton *Crustacea*; PITARD (131).
 Lake Chavonnes: Plankton *Crustacea*; PITARD (128).
 Lake of Joux: Plankton *Crustacea*; PITARD (130).
 Lake Lowerz: Plankton *Crustacea*; PITARD (129).
 Leipzig: Plankton *Crustacea*; ZACHARIAS (206).
 Liguria: Cavernicolous *Isopod*, n. sp.; SILVESTRI (169).
 Mongolia: *Entomostraca* (2) (F); RICHARD (144).
 Moscow: *Copepoda* (F); MATILE (102).
 Norway: *Isopoda*; SARS (157).
 Paris: *Entomostraca* (F); RICHARD (146).
 Pays-Bas: *Crustacea* (list); MAITLAND (100).
 Plön: *Entomostraca* (F); SCOURFIELD (164).
 Puddefjord: *Crustacea* (Plankton); NORDGAARD (116).
 Rockall Island and Bank: *Crustacea*; p. 77 (117).
 Russian Seas: *Crustacea*; BIRULA (11).
 Scutari Lake: *Entomostraca* (F); RICHARD (148).
 Seine (Water Conduits); Cavernicolous *Crustacea*; VIRÉ (192).
 Spitzbergen: *Entomostraca*; RICHARD (145): *Entomostraca* (F, T); SCOURFIELD (165).
 Tatra Sea: *Crustacea*; DADAY (42).
 Tessin (Alpine Lakes): *Crustacea* (F); FUHRMANN (61).
 Teufels Sea: *Crustacea*; FRIČ & VÁVRA (60).
 Trachenberg: *Crustacea* (F); ZACHARIAS (205).
 Trieste: *Cladocera* and *Copepoda*, n. spp. (F); STEUER (180).
 Tundra Seas: *Branchiopoda*, including 2 new genera; SARS (156).
 Vallombrosa (Apennines): *Isopoda* (F); DOLLFUS (46).
 White Sea: *Decapoda*; BIRULA (12).

Nearctic Region.

- Alaska: *Sphaeromida*, n. g.; RICHARDSON (151).
 America: *Ostracoda* (F) p. 417; SHARPE (166): *Sesarma*; RATHBUN (136).
 Baffin's Bay: *Crustacea* (Plankton); AURIVILLIUS (4).
 California: *Cancer*, n. sp.; RATHBUN (139).
 Davis Strait: Plankton *Crustacea*; AURIVILLIUS (4); VANHÖFFEN (187).
 Florida: *Sphaeroma*, n. sp.; RICHARDSON (150).
 Greenland: Plankton *Crustacea*, pp. 162-175: list of *Crustacea*, pp. 193-214; VANHÖFFEN (187).
 Lake Mendota: Vertical distribution of *Crustacea*; BIRGE (10).
 Manitoba: *Cladocera* (1 new species) (F); ROSS (152).
 Mississippi: *Ethusa*, n. sp. (F); RATHBUN (138).
 N. America: *Diaptomus* (1 new species); SCHACHT (158): *Ostracoda* (F); SHARPE (166). Texas: *Scalpellum* and *Balanus*; PILSBRY (126). Wisconsin: *Copepoda*, 4 new species (F); BIRGE (9).

Palaearctic and Nearctic Regions (Marine).

- Atlantic: 1 new species of *Cypridina*; BRADY (22).
 North Sea, Atlantic Ocean: Plankton *Crustacea*; VANHÖFFEN (187) pp. 293-320.
 N. Atlantic: 3 new species *Copepoda*; HERDMAN, THOMPSON, & SCOTT (80).

Neotropical Region.

- Amazons: 1 new species of *Potamocarcinus*; ORTMANN (120).
 Antigua: new genus of *Amphipoda*; STEBBING (176).
 Argentina: *Isopoda* (T); DOLLFUS (47): *Æglea laevis*; WIERZEJSKI (201).
 Bolivia: *Isopoda* (T); DOLLFUS (47).
 Brazil: new species of *Petrolisthes*; ORTMANN (120).
 Buenos Aires: *Entomostraca*; RICHARD (149).
 Cuba: new species of *Amphipoda*; STEBBING (176).
 Ecuador: new species of *Potamocarcinus*; ORTMANN (120).
 Jamaica: *Decapoda*; RATHBUN (143).
 Mexico: *Cambarus*, spp.; BOUVIER (16).
 Pacific: *Isopoda*, 14 new species, 4 new genera; HANSEN (76).
 Panama, Darien, and adjacent regions: *Decapoda*; NOBILI (114).
 Rio Santiago: 2 new species of *Pseudothelphusa*; NOBILI (113).
 S. and C. America: 6 new species of *Palicus*; RATHBUN (137).
 S. America: 5 new species of *Pseudothelphusa*; RATHBUN (142): *Entomostraca*; RICHARD (147).
 Valparaiso: new species of *Ostracoda*; BRADY (22).
 Venezuela: new species of *Argulidæ*; BOUVIER (15).
 W. Indies: new species of *Sesarma*; RATHBUN (136): new species of *Amphipoda*; STEBBING (176).

Ethiopian Region.

- Africa: *Callinectes* and new species; RATHBUN (140). (E. Africa): a new Land Crab (T); HILGENDORF (81): *Copepoda*; MRÁZEK (106): *Ostracoda*; VAVRA (189): *Cladocera*, 4 new species; WELTNER (197). (S. Africa): Freshwater *Decapoda*; WEBER (196).
 Djeddah: new species of *Alpheus*; COUTIÈRE (39).
 Djibouti: new genus and 2 new species of *Paguridæ*; BOUVIER (17): *Alpheida*, 5 new species and new genus; COUTIÈRE (36).
 Tropical Atlantic: new species of *Amphipoda*; STEBBING (176).

Oriental Region.

- Ceylon: new species of *Amphipoda*; STEBBING (176).
 E. Archipelago: new species of *Cypridina*; BRADY (22).
 Madras: new genus of *Ostracoda*; BRADY (22).

Australian Region.

- Flinder's Passage: new species of *Cypridina*, new species of *Philomedes*; BRADY (22).
 Funafuti: *Crustacea*, 5 new species; WHITLEGGE (200).
 Gellibrand River, Victoria: new genus of *Isopoda* (T); SPENCER & HALL (170).
 New South Wales: *Crustacea* (57).
 New Zealand: new species of *Amphipoda*; CHILTON (33): Deep sea *Crustacea*; HAMILTON (74): new species of *Sesarma*; ORTMANN (120).
 Bay of Islands: 2 new species of Gammarids; THOMSON (182).
 Port Jackson, Australia: new genus of *Amphipoda*; STEBBING (176).
 Samoa: *Crustacea*; KRÄMER (93).
 Tague Islands: new species of *Alpheus*; COUTIÈRE (37A).
 Tahiti: new species of *Petrolisthes*; ORTMANN (120).
 Thursday Island: new species of *Alpheus*; COUTIÈRE (37A).

2. GEOLOGICAL.

Cretaceous.—America: *Phyllopoda*; SCHUCHERT (161).—Baluchistan: 1 new species of *Ranina* (*Decapoda*); NOETLING (115).—Charlotte Islands: new species of *Homolopsis*; WOODWARD (203).—Kansas: *Cirripedia*; LOGAN (98).—Upper Schleswig: *Cirripedia*; LEONHARD (97).—Raudnitz: *Crustacea*; ZAHÁLKA (207).—Vancouver Island: new species of *Plagiolophus*, *Palaeocorystes*, and *Callianassa*; WOODWARD (203).—Upper Cretaceous.—Dakota: new species of *Linuparus*; ORTMANN (122).

Carboniferous.—Ireland: *Ostracoda*, 5 new species; JONES & KIRKBY (88).

Chara-marl of Hitchin (Herts).—*Ostracoda*; CHAPMAN (32).

Silurian.—Portugal: *Crustacea*; DELGADO (43).

Stramberg Beds.—*Crustacea*; MÆRICKE (99).

3. PARASITIC.

On *Malacostraca*, the *Choniostomatida*; HANSEN (77).

On *Nyctiphanes*, *Branchiophryxus nyctiphane*, n. g. & n. sp.; CAULLERY (31).

On *Polycirrus auriantiacus*, *Saccopsis alleni*, n. sp., p. 1464; LACAZE-DUTHIERS (52).

IV. SYSTEMATIC.*

MALACOSTRACA.

PODOPHTHALMA.

DECAPODA.

[Cf. BOUVIER (16, 17, 18 & 20), COUTIÈRE (36, 37, 38 & 39), EDWARDS & BOUVIER (53, 54 & 55), HILGENDORF (81), KISHINONYE (91), MAN (101), MÜLLER (109 & 110), NOBILI (113 & 114), ORTMANN (119, 120, 121 & 122), PFEFFER (125), RATHBUN (136, 137, 138, 139, 140, 142 & 143), WEBER (196), WIERZEJSKI (201), WOODWARD (203).]

Acanthonyx petiverii, Jamaica, p. 6; RATHBUN, Ann. Inst. Jamaica, i.

Acanthothelphusa, n. subg. of *Potamon*, for *pacilei*, *brazzae*, &c.; ORTMANN, Zool. Jahrb. Syst. x.

Achelous spinimanus, Jamaica, p. 24; RATHBUN, Ann. Inst. Jamaica, i.

Actæa rugata, Funafuti, p. 129; WHITLEGGE, Mem. Austral. Mus. iii.

A. setigera, *acantha*, p. 13, *rufopunctata-nodosa*, p. 14, Jamaica; RATHBUN, Ann. Inst. Jamaica, i.

Æglea lævis, occurrence in Argentina, &c.; WIERZEJSKI, Boll. Mus. Torino, xii, No. 281.

Albunea oxyophthalma, Jamaica, p. 42; RATHBUN, Ann. Inst. Jamaica, i.

Alpheus cristatus, Thursday Is., p. 303, *paragracilis*, Tague Is., p. 304,

heurteli, Fernando-Velosa, p. 305, *platydactylus*, Cape Verd Is., p. 306,

barbatus, p. 235, *splendidus*, *spongiarum*, p. 236, Djibouti; COUTIÈRE,

Bull. Mus. Paris, 1897; *A. hoplocheles*, Japan, p. 197, *djeddensis*,

Djeddah, p. 202, COUTIÈRE, Notes Leyden Mus. xix: n. spp.

* Where the character of a reference is not indicated it is to be understood as consisting of either description or distribution. Fossil forms distinguished thus †.

- A. laevis, gracilipes*, p. 195, *dentipes, macrodactylus*, p. 196, *strenuus, lobidens*, p. 199, *acanthomerus*, p. 202, *rapax*, p. 203, *carinatus*, p. 206; COUTIÈRE, Notes Leyden Mus. xix.
- Aratus pisonii*, Jamaica, p. 35; RATHBUN, Ann. Inst. Jamaica, i.
- Arenæus cribrarius*, Jamaica, p. 23; RATHBUN, *t. c.*
- Arete dorsalis*, p. 235; COUTIÈRE, Bull. Mus. Paris, 1897.
- Aretus vitensis*, p. 270, *haani*, p. 271, *cutrifer* n. n. for *hanni*, p. 272, spp. discussed and distribution; ORTMANN, Zool. Jahrb. Syst. x.
- Astacus nobilis*, pigment, p. 238; NEWBIGIN, J. Physiol. xxi.
- Athanas dispar*, n. n. for *A. leptocheles* = ♀, and *solenomerus* = ♂, p. 233; COUTIÈRE, Bull. Mus. Paris, 1897.
- A. djiboutensis*, Djibouti, p. 234; COUTIÈRE, *t. c.*: n. sp.
- Athanopsis*, n. g. defined for *platyrhynchus*, Djibouti, p. 301, COUTIÈRE, *t. c.*, n. sp.
- Atya scabra*, Jamaica, p. 44; RATHBUN, Ann. Inst. Jamaica, i.
- Atyoida potimirim*, described, p. 155, pls. ix & x; MÜLLER, Arch. Mus. Rio Jan. viii, 1892.
- Automate dolichognatha*, described, p. 235; COUTIÈRE, Bull. Mus. Paris, 1897.
- Banarcia armata*, New Caledonia, p. 75; MAN, Mt. Mus. Hamburg, xiii.
- Betæus minutus*, Funafuti, p. 117, pl. vii, figg. 4a, b, WHITLEGGE, Mem. Austral. Mus. iii, n. sp.
- Bithynis jamaicensis*, p. 44, *faustinus*, p. 45, Jamaica; RATHBUN, Ann. Inst. Jamaica, i.
- Bythocaris simplicirostris*, p. 427, pl. xx, fig. 3, *payeri*, p. 428; BIRULA, Annuaire Mus. St. Petersb. 1897.
- Calappa flammea, gallus*, Jamaica, p. 36; RATHBUN, Ann. Inst. Jamaica, i.
- †*Callianassa whiteavesii*, Cretaceous, Vancouver I., p. 223, WOODWARD, Quart. J. Geol. Soc. lii, n. sp.
- Callinectes latimanus*, Lagos, p. 151, RATHBUN, P. Soc. Washington, xi, n. sp.
- C. sapidus, ornatus, danæ, marginatus*, p. 23, Jamaica; RATHBUN, Ann. Inst. Jamaica, i. *C. marginatus*, p. 149, *gladiator*, p. 150, *bocourti*, p. 151, Africa; RATHBUN, P. Soc. Washington, xi.
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GIGANTOSTRACA,

i. e., TRILOBITA, XIPIOSURA, EURYPTERIDA.

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II. BIOLOGY.

Classification of Trilobites; BEECHER (2).

III. DISTRIBUTION.

Bohemia: Palæozoic *Gigantostraca*; SEMPER (11).
 Ottawa: Palæozoic Trilobites; AMI (1).
 Portugal: Silurian Trilobites; DELGADO (5).
 Tasmania: Silurian Trilobites; ETHERIDGE (6).
 Maccuru: Devonian Trilobites; KATZER (8).
 Wetzlar: Chalk Trilobites; BEYER (3).
 W. Prussia: Diluvium Trilobita; KIESOW (10).

IV. SYSTEMATIC.

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- †*Acidaspis radiata*, Haina, p. 66, pl. ii, fig. 28; BEYER, *Verh. Ver. Rheinland*, liii, 1896.
- †*Amphion brevispinus*, Silurian, Tasmania, p. 36, pl., fig. 9, ETHERIDGE, *P. Soc. Tasmania*, 1896, n. sp.
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 +*Ogygia lignieresii*, p. 170; BRÖGGER, Nyt Mag. Naturv. xxxvi, 1897.
 +*Phacops levigata*, Diluvium, W. Prussia, described, p. 29; KIESOW, Schr. Ges. Danzig, ix.
 +*Proetus subplanatus*, p. 59, pl. i, figg. 1-11, *suborbitatus*, pl. i, fig. 12, *crassimargo*, pl. i, fig. 14, p. 63; BEYER, Verh. Ver. Rheinland, liii, 1896.
 +*Slimonia*, cf. *acuminata*, Hungary, Palæozoic, p. 84, pl. xii, fig. 10; SEMPER, Beitr. Pal. Oesterr.-Ung. xi.
 +*Tropidocoryphe novaki*, Haina, p. 65, pl. i, figg. 16-22, BEYER, Verh. Ver. Rheinland, liii, 1896, n. sp.

EURYPTERIDA.

- +*Eurypterus acrocephalus*, Hungary, Palæozoic, p. 85, pl. xiii, SEMPER, Beitr. Pal. Oesterr.-Ung. xi, n. sp.
 +*Pterygotus bohemicus*, p. 73, pl. xii, fig. 8, *nobilis*, p. 76, pl. xii, fig. 9, *affbohemicus*, p. 77, cf. *problematicus*, p. 81; SEMPER, *t. c.*
 +*P. barrandei*, p. 78, pl. xii, figg. 1-4, *beraunensis*, p. 81, pl. xii, figg. 5-7, *blahai*, p. 82, Hungary, Palæozoic, SEMPER, *t. c.* n. spp.

PANTOPODA.

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- [Sec DRYGALSKI (51).]

XI. ARACHNIDA.

BY

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INTRODUCTION.

AN analysis of the subjoined list of papers reveals a remarkable increase in specific descriptions during 1897, the systematic part of this Record being more than twice as large as that of 1896. The reason for this is twofold. The Recorder was compelled owing to the short time given him in which to prepare last year's Record to omit certain large papers—e.g. CAMBRIDGE, O. P. (15), in the *Biologia Centrali-Americana*—which have added to the bulk of the present issue. The second cause of increase is to be found in the publication of large Systematic works of which Part I, vol. II, of SIMON'S "Araignées" (21) is the most important. Even when allowance is made for these the Record still shews a greater number of papers than its predecessor. The concluding part of BECKER'S "Arachnides de Belgique" (5) and some parts of BERLESE'S "Acari, Myriop. et Scorp. ital." (7) were published in 1896, but were not available for the Recorder till this year.

ACLOQUE (1) in a paper on the relation of Insects to other Arthropods refers to the *Arachnida*. Of somewhat similar bearings are the series of papers entitled "Are the Arthropoda a natural group?" JAWOROWSKI (56)

discusses some matters relating to his theory of Arthropodan appendages. Epithelial secretions in the reproductive apparatus of *Arachnida* are considered by BALBIANI (3). In the Records of the Australian Museum the Fauna of Funafuti is described and RAINBOW (114) deals with the *Arachnida*, publishing descriptions of a number of new species principally of the genus *Epeira*.

F. O. PICKARD CAMBRIDGE'S papers (17 & 18) on Cteniform spiders from various parts of the world merit special attention as also do the first few parts of his systematic account of the spiders of Central America in *Biologia Centrali-Americana* (18 a).

Spiders from various parts of the world form the subject of many papers.

Pocock (111) describes a collection from the Moluccas. LENZ (75) describes those from Greenland, THORELL from Burma (142), Pocock (109) the *Mygalomorphæ* from Africa. PAVESI gives an account of *Arachnida* from the Zambesi (90) and Somaliland (91). Pocock further describes the *Ctenizidæ* of South and West Australia (103).

SIMON'S papers this year describe a vast number of new species from various regions. Oriental *Aranææ* (122 & 128), Neotropical (124, 132 & 133) and Ethiopian (127) occupy several papers. He has also listed some Swiss *Aranææ* (123) and published Part III of "The Spiders of St Vincent" (130). Three other papers (125, 126 & 129) are composed of miscellaneous specific descriptions.

Acari as usual form the subject of many papers. TROUESSART describes the wine mites, BRANDES (12) gives account of *Argas reflexus* as a parasite of man, whilst FAVETTE & TROUESSART (35) have applied photography to the study of *Sarcoptidæ*. MICHAEL (83) devoted his Presidential address to the Royal Microscopical Society to a résumé of the Anatomy of *Bdella*. He also in another place criticises some views of the classification of the *Oribatidæ* (82). JOURDAIN has two interesting memoirs in the "Comptes Rendus," viz. on the "Pseudolarval copulation of *Sarcoptidæ*" (58) and on the "Development of *Trombidium*" (59). NEUMANN continues his Revision of the *Ixodidæ* (86) and OUDEMANS (88) his list of Dutch *Acari*. Other interesting memoirs on Acari comprise MICHAEL'S on Polar Acari of the Jackson-Harmsworth Expedition (84), CANESTRINI'S on Acari from Burma and New Guinea (19 & 20), KRAMER'S on the *Trombididæ* of Madagascar (72) and lastly CALL'S description of two new species from the Mammoth Cave of Kentucky.

The subdivision of Acari most studied would appear to be the *Hydrachnidæ*. PIERSIG, especially, devotes five papers to them, dealing principally with those found in Germany (95-99). PISAROVIC (102) on Bohemian, DADAY on Platten Sea (31) and KÆNIKE (64) on E. African forms must also be mentioned.

It is a pleasure to see the smaller groups of Arachnids receiving more attention this year. To the literature of Scorpions Pocock (104, 106, 107 & 112) and KRAEPELIN (66, 67 & 69) are the principal contributors, both dealing with E. African forms amongst others.

Pedipalpi are discussed by Pocock (106) and by LÖNNBERG (76 & 77), whilst PEREYASLAWZEWA (92 & 93) publishes researches on their development. HANSEN & SØRENSEN discuss the structure and relationships of the order Palpigradi (44).

Pocock (105) & KRAEPELIN (68) also contribute the greater part of the literature on Opiliones. DADAY (30) describes *Pseudoscorpiones* from New Guinea.

Lastly, special attention must be drawn to Mr Pocock's paper on the Tropical African *Solifugæ* (108). As it contains a most interesting account of the habits of these animals it possesses an importance for other than Systematists on this order.

This Record must not be allowed to pass without some protest being entered against the present method of publishing multitudes of specific descriptions without figures—diagrammatic or otherwise. Doubtless the descriptions of a thoroughly trained and competent arachnologist may be better than bad figures and it is not for one moment contended that it is always necessary to publish figures, but some radical changes from the present fashion are necessary, or future systematists will find the task of grappling with the literature of the group almost an impossible one.

The Recorder would also like to ask Systematists, when publishing papers, to notify the families to which they consider the genera to belong. No two arachnologists seem to agree on the limits of any particular family and a great deal of confusion exists through the lack of any clue to the author's views. In consequence, this year the Recorder has been regretfully compelled to arrange the Acari alphabetically, there being no possibility of placing the genera otherwise.

Finally the Recorder most gratefully thanks Mr R. I. Pocock (of the British Museum), for much valuable help in harmonising conflicting views and in placing genera in the Systematic list.

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1. General.

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The cribellum and calamistrum of *Arachnida*, p. 121, BECKER, Arach. de Belgique II, in Ann. Mus. Belgique XII.

Epithelial secretions in female reproductive apparatus of *Arachnida*; BALBIANI (3).

Lymph organs of *Arachnida*; CUÉNOT (27), p. 162.

Relation of Arachnid head to Annelid prostomium; GOODRICH (42).

Relationship of *Arachnida* to Insects; ACLOQUE (1).

Theory of appendages in the *Arthropoda*; JAWOROWSKI (56).

Visual centres of Arthropods; PATTON (89).

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Habit, of Scorpion, of carrying a flower; NEWNHAM (87).

3. Pedipalpi.

Discussion of the order *Palpigradi* and its affinities; HANSEN & SÖRENSEN (44).

Early development of *Pedipalpi*; PEREYASLAWZEWA (92). Later development of *Pedipalpi*; PEREYASLAWZEWA (93).

4. Solifugæ.

General account of the *Galeodidæ*; BERNARD (8).

Habits of *Solifugæ*; POCOCK (108), p. 267.

5. Pseudoscorpiones. 6. Opiliones.

KNAB (62).

7. Araneæ.

Araneida in nests of Ants; JANET (53).

Capture and disarming of bees by *Thomisus*; FABRE, Souvenirs entomologiques v, pp. 299-302.

Geographical variation of *Liobunum vittatum* in N. America; WEED (149), pp. 264-270.

Miniery in Brazilian Spider; GOELDI (41).

Stridulating organ in *Theraphosinae*; POCKOCK (109), p. 771.

Classification of *Theraphosidae*; POCKOCK (109), p. 742.

8. *Acari.*

Digestive organs of *Acari*; BERLESE (6).

Organ of fixation of larva of *Trombidium*; TROUËSSART (136).

Development of *Trombidium holosericeum*; JOURDAIN (59).

Pseudo-larval copulation in *Sarcoptidae*; JOURDAIN (58).

Period required for hatching different genera of *Hydrachnidae*; SOAR (133).

Heliotaxis in larva of *Bryobia ribis*; THOMAS (140).

Acari commensal with Ants; JANET (53), p. 8. List of *Acari* found in the nests of *Lasius mixtus*; JANET (52), p. 19.

Topographical distribution of Marine *Acari* on French coasts; TROUËSSART (139).

Systematic account of the *Hydrachnidae*; PIERSIG (100).

Classification of the *Oribatidae*. Criticism of Oudemann's views; MICHAEL (82), p. 34.

Classification of *Sarcoptidae* & *Oribatidae*; BERLESE (7).

Microphotography of *Acari*; FAVETTE & TROUËSSART (35).

9. *Tardigrada.*

Pigment in *Tardigrada*; RYWOSCH (119).

III. DISTRIBUTION.

A. GEOGRAPHICAL.

Palearctic Region.

I. SCORPIONIDÆ.

Geographical Distribution of Scorpions; LÖNNBERG (77).
Russia; *Buthus*, n. sp.; BIRULA (10).

II. PEDIPALPI.

Geographical distribution of *Pedipalpi*, LÖNNBERG (77), p. 203.

III. ARANEÆ.

Edinburgh; CARPENTER & EVANS (22).

Belgium; BECKER (5).

Bex, Switzerland; SIMON (123).

Hamburg; BÖSENBERG (11).

Spain; *Anyphaena*, n. sp.; SIMON (125).—Sierra Nevada; *Tomopisthes*, n. sp.; SIMON (125).

St Vincent; 46 n. spp. 3 n. gg.; SIMON (130, 124).

Algeria; *Anyphaena*, n. sp.; SIMON (125).

Batoum; *Tegenaria*, n. sp.; SIMON (129).

Syria; *Anagraphis*, 2 n. spp.; SIMON (125).

Turkestan; *Agræca*, n. sp.; SIMON (129).

V. PSEUDOSCORPIONES.

Belgium; BECKER (5).

VI. OPILIONES.

Belgium; BECKER (5).

Hamburg; *Phalangidæ*, n. sp.; KRAEPELIN (68).

VII. ACARI.

Great Britain; *Hydrachnidæ*; SOAR (134).Holland; *Trombididæ*; OUDEMANS (88).

Germany; *Hydrachnidæ*; KÆNIKE (63); PIERSIG (97 & 98), 2 n. spp.—
Borkum; *Oribatidæ*, 2 n. spp.; KRAMER (71).—Trachenberg; *Hydrach-*
nidæ; ZACHARIAS (151).—Balaton Sea; *Hydrachnidæ*; DADAY (31).—Tatra
Sea; *Acari*; DADAY (29).—Bohemia; *Hydrachnidæ* (3 n. spp.); PISAROVIC
(102).—Bohmerwald Sea, Black Sea, Teufel Sea; *Hydrachnidæ*; FRIČ &
VÁVRA (37).

Tessin (Alpine Lakes), *Acari*, 1 sp.; FUHRMANN (38).Italy; *Acari*; BERLESE (7).—Naples; *Halacarus*, n. sp.; VOINOV (146).Algeria; *Trombididæ*, n. gen.; CAMBRIDGE, O. P. (16).Syria; *Dermacentor*, n. sp.; NEUMANN (86).Tokio; *Hæmaphysalia*, n. sp.; NEUMANN (86).

VIII. TARDIGRADA.

Spitzbergen; SCOURFIELD (120).

Ethiopian Region.

I. SCORPIONIDÆ.

E. Africa; KRAEPELIN (66).—Kota Kota, Lake Nyasa; *Uroplectes*,
n. sp.; *Opisthacanthus*, n. sp.; POCKOCK (104).—Tanganyika; *Heterometrus*,
n. sp.; KRAEPELIN (67).—Zambesi; PAVESI (90).—S. W. Africa; *Cheloctenus*,
n. sp.; KRAEPELIN (67).

Madagascar; *Hadogenes*, n. sp.; KRAEPELIN (67).—Seychelles; *Archis-*
sometrus, n. sp.; KRAEPELIN (67).

II. PEDIPALPI.

Assab; *Phrynus*, n. sp.; FENIZIA (36).

III. ARANEÆ.

Africa; *Mygalomorpha*; POCKOCK (109).—Muscat; 3 n. spp.; SIMON (127).
—British Central Africa; JOHNSTON (57).—E. Africa; *Araneus*, n. sp.;
Ceto, n. sp.; *Ctenus (Leptoctenus)*, n. sp.; SIMON (125).—Zambesi; PAVESI
(90).—Natal; *Clubiona*, 4 n. spp.; *Pronophaea*, n. sp.; *Ceto*, n. sp.; *Chira-*
canthium, n. sp.; *Thaumastochilus*, n. sp.; SIMON (129).—Transvaal;
Nemoscolus, 2 n. spp.; *Sparassus*, n. sp.; *Micrommata*, n. sp.; *Orthobula*,
n. sp.; SIMON (125).—S. Africa; *Ctenus (Leptoctenus)*, n. sp.; SIMON (125).
—British S. Africa; POCKOCK in JOHNSON (57).—Port Elizabeth; *Clubiona*,
2 n. spp.; SIMON (129).—W. Africa; *Poltys*, n. sp.; *Remmius*, 2 n. spp.;
Epidius, n. sp.; *Stasina*, n. sp.; *Ctenus (Leptoctenus)*, 2 n. spp.; *Caloctenus*,
n. sp.; SIMON (125).—Sierra Leone; *Anahita*, n. sp.; *Apostenus*, n. sp.;
Orthobula, n. sp.; SIMON (125).—Congo; *Anahita*, n. sp.; SIMON (125).—
Madagascar; *Chiracanthium*, n. sp.; *Rhitymna*, n. sp.; SIMON (125).

IV. SOLIFUGÆ.

Aden; *Blossia*, n. sp.; Pocock (108).—E. Karoo; *Solpuga*, n. sp.; Pocock (108).—Natal; *Solpuga*, 2 n. spp.; Pocock (108).—Nyasaland; *Ceroma*, n. sp.; Pocock (108).—Mashonaland; *Solpuga*, 2 n. spp.; Pocock (108).—Somaliland; *Solpuga*, n. sp.; Pocock (108).—Zambesi; PAVESI (90).

VII. ACARI.

Khartoum; *Ixodida*, n. sp.; NEUMANN (86).—Somaliland; PAVESI (91).—Congo; *Dermacentor*, n. sp.; NEUMANN (86).—E. Africa; *Hydrachnida*, 5 n. spp.; KÆNIKE (64).—Transvaal; *Ixodida*, n. sp.; NEUMANN (86).—Madagascar; *Trombidium*, n. sp.; KRAMER (72); *Hæmaphysalis*, 2 n. spp.; NEUMANN (86).

Oriental Region.

I. SCORPIONIDÆ.

India; *Scorpionida*, 16 n. spp.; Pocock (112).—Tanga; *Babycurus*, n. sp.; KRAEPELIN (67).—Ceylon; *Isometrus*, n. sp.; Pocock (111).

III. ARANEÆ.

India; *Heteropoda*, n. sp.; *Palystes*, n. sp.; SIMON (125); *Agelena*, n. sp.; SIMON (129).—Dehra Dun; *Apochinomma*, n. sp.; *Ctenus*, n. sp.; *Sparassus*, n. sp.; *Echemus*, n. sp.; *Callilepis*, n. sp.; *Ædignatha*, n. sp.; SIMON (122).—Dekkan; *Heteropoda*, n. sp.; *Acattyma*, n. sp.; *Thanatus*, n. sp.; SIMON (122).—Guzerath, N.; *Drassodes*, n. sp.; *Sphedanus*, n. sp.; SIMON (122).—Himalayas; *Heteropoda*, 2 n. spp.; *Sparassus*, n. sp.; SIMON (122).—Konkan; *Sparassus*, n. sp.; SIMON (122).—Poona; *Scytodes*, n. sp.; *Plator*, n. sp.; SIMON (122).—Kurrachee; 11 n. spp.; SIMON (128).—Mathéran; 4 n. spp.; SIMON (128).

Ceylon; *Ctenus*, 3 spp., 2 new; CAMBRIDGE, F. O. P. (18).—Colombo; *Orthobula*, n. sp.; SIMON (125).

Indo-China; *Araneus*, n. sp.; *Poltys*, n. sp.; SIMON (125).—Burmah; THORELL (142); *Ctenus*, 4 spp.; *Leptoctenus*, 2 spp.; CAMBRIDGE, F. O. P. (18).—Singapore; *Stasina*, n. sp.; *Acantheis*, n. sp.; *Orthobula*, n. sp.; SIMON (125).—Pinang; *Ctenus*, 2 spp., new; CAMBRIDGE, F. O. P. (18).

Nicobar; *Dolopæus*, sp.; CAMBRIDGE, F. O. P. (18).

Sumatra; *Ctenus*, 2 spp.; *Acanthoctenus*, sp.; *Leptoctenus*, sp.; *Nydia*, sp.; CAMBRIDGE, F. O. P. (18).

Nias; *Acanthoctenus*, sp.; CAMBRIDGE, F. O. P. (18).

Java; *Rhitymna*, 2 n. spp.; *Adrastis*, n. sp.; *Caloctenus*, n. sp.; *Matidia*, n. sp.; *Paraplectana*, 2 n. spp.; SIMON (125); *Ctenus*, n. sp.; *Phlogiellus* (n. g.), n. sp.; Pocock (111).

Borneo; *Ctenus*, 4 spp., 2 new; *Thalassius*, 2 n. spp.; *Acanthoctenus*, sp.; CAMBRIDGE, F. O. P. (18); *Bathippus*, n. sp.; *Acantheis*, n. sp.; *Heteropoda*, n. sp.; *Oliophthalmus* (n. g.), n. sp.; *Ctenus*, n. sp.; Pocock (111).

Batjan; *Oliophthalmus*, n. sp.; *Tapponia*, n. sp.; *Thelctiopsis*, n. sp.; Pocock (111).

Philippines; *Prychia*, n. sp.; SIMON (125).—Manila; *Tychicus*, n. sp.; *Epidius*, n. sp.; SIMON (125); *Ædignatha*, n. sp.; SIMON (129).—Luzon Is.; *Syrisca*, n. sp.; *Matidia*, n. sp.; SIMON (125); *Ctenus*, n. sp.; CAMBRIDGE, F. O. P. (18).

Taprobane Is.; *Matidia*, 3 n. spp.; SIMON (125); *Sphingius*, n. sp.; *Ædignatha*, 7 n. spp.; SIMON (129).

VI. OPILIONES.

Ceylon; *Pettalus*, n. sp.; POCOCK (105).—Bangkok; *Oncopus*, n. sp.; POCOCK (105).—Borneo; *Gagrella*, n. sp.; *Pelitnus*, n. sp.; *Oncopus*, n. sp.; *Stylocellus*, n. sp.; POCOCK (105).

VII. ACARI.

India; *Hæmaphysalis*, n. sp.; NEUMANN (86).—Ramnad; *Hæmaphysalis*, n. sp.; NEUMANN (86).

Burma; CANESTRINI (19).

Sumatra; *Hæmaphysalis*, n. sp.; *Ixodidae*, n. sp.; NEUMANN (86).

Australian Region.

I. SCORPIONIDÆ.

Funafuti; n. sp.; RAINBOW (114).

III. ARANEÆ.

New Guinea; *Lobetina*, n. sp.; *Ctenus (Leptoctenus)*, n. sp.; SIMON (125).—Celebes; *Gasteracantha*, n. sp.; *Heteropoda*, n. sp.; *Ctenus*, 2 n. spp.; POCOCK (111).—Amboina; *Ordogarius*, n. sp.; SIMON (125).—Jolo Is.; *Matidia*, n. sp.; SIMON (125).—Halmahera; *Cocalodes* (n. g.) (*Attidae*), 2 n. spp.; *Plexippus*, n. sp.; *Heteropoda*, n. sp.; *Hygropoda*, n. sp.; *Oliophthalmus* (n. g.), n. sp.; POCOCK (111).—Moluccas; POCOCK (111).

Funafuti; 12 n. spp.; RAINBOW (114).

New Holland; *Nicodamus*, n. sp.; *Asadipus*, n. sp.; SIMON (129); *Cteninæ*; CAMBRIDGE, F. O. P. (18).—W. Australia; *Anidiops*, n. sp.; POCOCK (103).

New Zealand; URQUHART (144).

V. PSEUDOSCORPIONES.

N. Guinea; 5 n. spp.; DADAY (30).

Funafuti; n. sp.; RAINBOW (114).

VII. ACARI.

New Guinea; 43 n. spp., 3 n. genn.; CANESTRINI (20).

Funafuti; n. sp.; RAINBOW (114).

Nearctic Region.

III. ARANEÆ.

N. America; CAMBRIDGE, F. O. P. (17).—Ottawa; *Icius*, n. sp.; *Thargalia*, n. sp.; BANKS (4); HARRINGTON (45).—Washington; *Theridium*, n. sp.; BANKS (4); *Tegenaria*, 2 n. spp.; SIMON (129).—California; *Theridium*, n. sp.; CURTIS (28).—Mesilla; *Icius*, n. sp.; COCKERELL (25).—Chicago; *Plæsiocrærius*, n. sp.; BANKS (4).—Texas; *Teminius*, n. sp.; *Theridium*, n. sp.; BANKS (4).—Florida; *Amyphaena*, n. sp.; BANKS (4).

Greenland; 3 n. spp.; LENZ (75); VANHÖFFEN, Grönland, Exped. II. (145), pp. 149 & 158.

VII. ACARI.

Ottawa; HARRINGTON (45).—United States; *Dermacentor*, n. sp.; NEUMANN (86).—Mammoth Cave; *Acari*, 2 n. spp.; CALL (14).—Cape Flora, Northbrook Is., Franz-Josef Archipelago; MICHAEL (84).—Greenland; 3 n. spp.; KRAMER (70); VANHÖFFEN (145), pp. 150 & 158.

VIII. TARDIGRADA.

Greenland; Fresh water *Tardigrada*; VANHÖFFEN (145), p. 175.

Neotropical Region.

I. SCORPIONIDÆ.

Brazil; *Tityus*, 2 n. spp.; POCOCK (107).—Amazons; *Tityus*, 3 n. spp.; *Brotheas*, sp.; *Broteochactas*, n. sp.; POCOCK (106).—Curaçao, *Diplocentrus*, n. sp.; KRAEPELIN (67).—Porto Rico; *Tityus*, n. sp.; POCOCK (107).—Trinidad; *Tityus*, 3 n. spp.; POCOCK (107).—Colombia; *Tityus*, 2 n. spp.; POCOCK (107).—Ecuador; *Heterochactas*, n. sp.; *Tityus*, 2 n. spp.; KRAEPELIN (67).

II. PEDIPALPI.

Para; *Admetus*, sp.; *Thelyphonellus*, sp.; *Heterophrynus*, sp.; POCOCK (106).

III. ARANEÆ.

C. America; 1 n. g., 6 n. spp.; CAMBRIDGE, F. O. P. (18a); 17 n. genn., 86 n. spp.; CAMBRIDGE, O. P. (15).

Antilles; *Odo*, n. sp.; SIMON (125).—Santa Domingo; *Aysa*, 2 n. spp.; SIMON (125).—Costa Rica; *Ctenus*, n. sp.; CAMBRIDGE, F. O. P. (17).—Demerara; *Ctenus*, n. sp.; *Lycotenus*, n. sp.; CAMBRIDGE, F. O. P. (17).—Venezuela; *Caloctenus*, n. sp.; *Haptisus*, n. sp.; *Temnida*, 2 n. spp.; *Theridiosoma*, 3 n. spp.; *Spilasma*, n. sp.; *Micrathena*, 3 n. spp.; *Glyptogona*, n. sp.; *Haptisus*, n. sp.; SIMON (125).

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XII. MYRIOPODA AND PROTO- TRACHEATA.

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INTRODUCTION.

THERE is little for the Recorder to say by way of introduction this year. The Record is considerably larger than that of 1896, but the increase in the number of titles is entirely due to the inclusion of a number of short papers bearing on the question, "Are the *Arthropoda* a natural group?" [See BIOLOGY.] The Recorder has endeavoured to make the section Distribution more exhaustive, and this, in addition to the greater number of species described, has helped to lengthen out the later part.

As in 1896, so now, the bulk of the literature is contributed by a few investigators, and is almost entirely occupied with specific and faunistic lists. The *Diplopoda* claim by far the greater attention, whilst the *Pauropoda* once more pass unnoticed.

Taking the papers dealing with the Biology of the group, attention must be first drawn to HEYMONS'S (30) article on the segmentation and structure

of the Myriopodan body, and to his other discussion of the abdominal appendages (29). COOK'S "Brandtia" contains, amongst others, two interesting short papers, one on a spinning Diplopod (21), and the other on the larvæ of *Stemmatoiuulus* (23). DUBOSCQ deals with the vessels of *Scolopendridæ* (26), and CUÉNOT incidentally with the lymphatic organs and corpuscles of *Myriopoda* (25). NEMEC has described the structure of the Diplopodan eye (42), and WILLEM the coxal glands of *Lithobius* (65).

Nothing dealing with the embryology of the group has been published during the year, save a short paragraph on egg-cleavage by CLAYPOLE (13).

JANET (32) gives a list of *Myriopoda* commensal with Ants, and LÉGER (40) has described some new *Coccidia* from the digestive canal of *Myriopoda*.

SILVESTRI (51) has revised, with additions, the classification of the *Diplopoda* published last year in "I Diplopodi." The revision takes the form of a list of Orders, Tribes, and Families, and should be consulted in connection with the work mentioned.

In the course of his systematic papers, VERHOEFF deals incidentally with several points, amongst which may be mentioned the morphology of the abdominal appendages (58), the comparative morphology of the first pair of legs of *Julidæ* (57), the comparative morphology and physiology of the copulatory apparatus of *Heteroporatia* (61), the copulation feet of *Brachydesmus* (60), and the vulva of *Lysiopetalidæ* (60).

BRÖLEMANN (8) gives an account of the structure and systematic position of the peculiar Myriopod, *Scolopendropsis bahiensis*.

To give a list of the systematic papers would obviously be out of place here, but a few of the more important may be mentioned. BRÖLEMANN has enriched our knowledge of the *Myriopoda* of Algeria (7) and France (10). SILVESTRI has described a great number of new species and genera from Sicily (53), Mexico (48), Ecuador (49), Argentina (48), and Somaliland (50), and some miscellaneous collections (52 & 54). Pocock (45) has published a valuable contribution to the literature of Oriental and Australian *Platyrrhachidæ*. Lastly, VERHOEFF continues his series of papers on Palæarctic *Myriopoda* (51, & 59-64).

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17. ——. IV. On the *Xyodesmidæ*, a new family. *T. c.* pp. 15-17.
18. ——. V. *Cryptodesmus*, and its allies. *T. c.* pp. 19-28.
19. ——. VI. The genera of *Oryidæ*. *T. c.* pp. 33 & 34.
20. ——. VII. *Geophiloidea* from Liberia and Togo. *T. c.* pp. 35-40.
21. ——. VIII. A spinning Diplopod. *T. c.* pp. 41 & 42.
22. ——. IX. An American Glomeroid. *T. c.* pp. 43-45.
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- Relation of Myriopodan head to Annelid prostomium; GOODRICH (27).
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Algeria: *Juloidæ*, 5 spp. and 2 n. spp. of *Julus*; BRÖLEMANN (7).

Ethiopian Region.

Africa: 18 n. spp. *Oxydesmidae*; COOK (16): 5 n. spp. *Diplopoda*, 1 n. g.; SILVESTRI (54).—Abyssinia: n. sp. of *Odontopyge*; SILVESTRI (52).—Somaliland: *Myriopoda*, 7 n. spp.; SILVESTRI (50).—E. Africa: *Myriopoda*, 10 n. spp.; ATTEMS (3): n. g. of *Oryida*; COOK (19).—Transvaal: n. sp. of *Odontopyge*; SILVESTRI (52).—British S. Africa: *Myriopoda*; POCOCK in JOHNSON (34).—W. Africa: *Geophiloidae*; COOK (20).—Congo: n. sp. of *Archispirostreptus*; SILVESTRI (52).—Cameroons: n. g. of *Oryida*; COOK (19): 2 n. g. of *Xyodesmidae*, n. fam.; COOK (17).

Oriental and Australasian Regions.

India: 2 n. spp. of *Arthrosphara*; SILVESTRI (52): n. g. of *Strongylosomatidae*; SILVESTRI (52).—Malay Peninsula: n. sp. of *Acanthodesmus*; POCOCK (45).—Singapore: n. sp. of *Acanthodesmus*, n. sp. of *Phractodesmus*; POCOCK (45).—Pinang: n. sp. of *Acanthodesmus*; POCOCK (45).—Perak: n. sp. of *Acanthodesmus*; POCOCK (45).

Malay Archipelago: *Platyrrhachidae*, 3 n. spp.; COOK (14): 43 n. spp. and 4 n. gg. *Diplopoda*; SILVESTRI (54).—Java: 1 n. sp. *Spirostreptus*; ATTEMS (2): 3 n. spp. *Ophrydesmus*, n. g. of *Pterodesmidae*; COOK (18): 2 n. spp. of *Doratodesmus*; COOK (18): n. sp. of *Ophrydesmus*, n. g. of *Pterodesmidae*; COOK (18).—Borneo: 1 n. sp. of *Rhinocricus*, 4 n. spp. of *Trigoniulus*, 4 n. spp. of *Spirostreptus*, 3 n. spp. of *Platyrrhachus*, 2 n. spp. of *Strongylosoma*, 1 n. sp. of *Zephronia*; ATTEMS (2): 4 n. spp. of *Phyodesmus*, 3 n. spp. of *Stenoniodes*, n. g., 3 n. spp. of *Eurydirorhachis*, n. g., 2 n. spp. of *Hoplurorhachis*, n. g.; POCOCK (45).—Batjan: 1 n. sp. of *Rhinocricus*, 2 n. spp. of *Trigoniulus*, 1 n. sp. of *Platyrrhachus*; ATTEMS (2).—Soah Konorah: 1 n. sp. of *Strongylosoma*; ATTEMS (2).—Halma-hera: 5 n. spp. of *Rhinocricus*, 3 n. spp. of *Trigoniulus*, 4 n. spp. of *Platyrrhachus*, 1 n. sp. of *Zephronia*, 1 n. sp. of *Otocryptops*, 1 n. sp. of *Heterostoma*, 1 n. sp. of *Geophagus* (*Geophilidae*), n. g.; ATTEMS (2).—Luzon Is.: n. sp. of *Ilodesmus*; POCOCK (45).—Palawan Is.: n. sp. of *Polydesmorrhachis*, n. g.; POCOCK (45).—Celebes: 2 n. spp. of *Rhinocricus*, 1 n. sp. of *Trigoniulus*, 2 n. spp. of *Platyrrhachus*, 1 n. sp. of *Strongylosoma*, 1 n. sp. of *Zephronia*, 1 n. sp. of *Glomeris*; ATTEMS (2): n. sp. of *Taphodesmus*; POCOCK (45).

Sibutu Is.: n. sp. of *Stenoniodes*, n. g.; POCOCK (45).—New Guinea; 2 n. spp. of *Eutrachyrhachis*; POCOCK (45).

Solomon Is.: 2 n. spp. of *Diodontodesmus*, n. g., n. sp. of *Paradesmorrhachis*, n. g.; POCOCK (45).

Sydney: n. sp. of *Geophilus*; SILVESTRI (52).

Nearctic Region.

America: n. g. of *Glomeroidea*; COOK (22).—Florida: n. sp. of *Psochodesmus*; COOK (18).

Neotropical Region.

Mexico: n. family of *Polydesmoidea*; SILVESTRI (47).—Porto Rico: n. g. of *Chytodesmidae*, n. fam.; COOK (18).—Santa Lucia: n. g. of *Platyrrhachidae*; COOK (24).—S. America: n. g. of *Pterodesmidae*; COOK (18): 5 n. spp. of *Diplopoda*; SILVESTRI (54).—Guiana: n. g. of *Platyrrhachidae*; COOK (24).—Cayenna: n. sp. of *Pseudonannolene*, n. sp. of *Trigoniulus*, n. sp. of *Rhinocricus*, 2 n. spp. of *Orthoporus*, n. sp. of *Archispirostreptus*; SILVESTRI (52).—Venezuela: n. sp. of *Geophilus*; SILVESTRI (52).—

Colombia: n. g. of *Platyrrhachidæ*; COOK (24) : n. sp. of *Nannolene*; SILVESTRI (52).—Bogota: n. g. of *Chytodesmidæ*, n. fam.; COOK (18): n. g. of *Xyodesmidæ*, n. fam.; COOK (17).—Ecuador: n. g. of *Platyrrhachidæ*; COOK (24): *Myriopoda*, 4 n. g., 25 n. spp.; SILVESTRI (49).—Brazil: n. g. of *Oryidæ*; COOK (19): n. sp. of *Nannophilus*, n. sp. of *Archispirostreptus*, n. sp. of *Rhinocricus*; SILVESTRI (52).—Pernambuco: n. sp. of *Catharodesmus*, n. sp. of *Rhinocricus*; SILVESTRI (52).—Bolivia: *Myriopoda*, 10 n. spp.; SILVESTRI (48).—Argentina: *Myriopoda*, 5 n. spp.; SILVESTRI (48).—Straits of Magellan: *Schendyla*, 1 n. sp., *Scolioplanes*, 1 n. sp.; ATTEMS (4).

IV. SYSTEMATIC.*

CHILOPODA.

LITHOBIIDÆ.

- Henicops inermipes*, S. Lorenzo, Argentina, p. 2, SILVESTRI, Boll. Mus. Torino, xii, No. 283, n. sp.
Lithobius (*Archilothobius*) *cryptobius*, Messina, p. 7, SILVESTRI, Bull. Soc. ent. Ital. xxix; *L. martini*, Nabrigas, p. 115, *dubosequi*, Sannois, p. 116, BRÖLEMANN, Feuille Natural. xxvi; *L. bostryx*, Ahusquy, p. 29, BRÖLEMANN, *op. cit.* xxviii : n. spp.
L. nudicornis, p. 4, *borealis*, *infossus*, *pusillus*, p. 6, *castaneus*, *crassipes*, p. 7, Sicily; SILVESTRI, Bull. Soc. ent. Ital. xxix.

SCOLOPENDRIDÆ.

- Bothriogaster egyptiacus*, Cairo, p. 25, ATTEMS, Mt. Mus. Hamburg, xiii, n. sp.
Cryptops bottegii, Fra Matagoi e Lugh, p. 302, SILVESTRI, Ann. Mus. Genova, xvii, n. sp.
Heterostoma venenosum, Halmahera, p. 478, ATTEMS, Abh. Senckenb. Ges. xxiii, n. sp.
Otocryptops aculeata, Halmahera, p. 478, pl. xxi, fig. 5, ATTEMS, *t. c.* n. sp.
Scolioplanes magellanicus, p. 4, figg. 1-4, ATTEMS, Ergobnisse der Hamburger Magalhaensischen Sammelreise, 2^{te} Lief, n. sp.
Scolopendra cingulata è *ovipara*, p. 56; SILVESTRI, Rend. Acc. Lincei, vi.
Scolopendropsis bahiensis, Bahia, described, p. 142; BRÖLEMANN, Bull. Soc. zool. France, xxii.

HIMENTARIIDÆ.

- Meinertophilus*, n. g. for *Himantarium superbum*, p. 9; SILVESTRI, Bull. Soc. ent. Ital. xxix.

GEOPHILIDÆ.

- Synopsis of families of genera of *Geophiloidea*, p. 35; COOK, Brandtia.
Ballophilus clavicornis, *maculosus*, Togo, p. 37; COOK, *t. c.*
Ctenophilus africanus, Togo, p. 37, *edentulus*, Kamerun, p. 38; COOK, *t. c.*
C. paurodus, *simplex*, Togo, p. 38, COOK, *t. c.*, n. spp.

* In the following list where the character of the reference is not indicated it is to be understood as referring to either description or distribution or both.

- Ctenorya*, n. g. for *jombene*, Jombene Range, S. Africa, p. 34, COOK, *t. c.*, n. sp.
Geophagus, n. g., p. 475, for *G. serangodes*, Halmahera, p. 476, pl. xxi, figg. 1-4, ATTEMS, Abh. Senckenb. Ges. xxiii, n. sp.
Geophilus duponti, Sydney, p. 345, *venezuelæ*, Venezuela, p. 346, SILVESTRI, Ann. Soc. ent. Belgique, 1897, n. spp.
Heniorya, n. g. for *longissima*, Brazil, p. 34, COOK, Brandtia, n. sp.
Lamnonyx leonensis, Sierra Leone, p. 39, *guineensis*, Sao Thome Is., *punctifrons*, Kamerun, p. 40; COOK, *t. c.*
L. togensis, Togo, p. 39, COOK, *t. c.*, n. sp.
Nannophilus bolivianus, Caiza, Bolivia, p. 2; SILVESTRI, Boll. Mus. Torino, xii, No. 283. *N. brasilianus*, Brazil, p. 346; SILVESTRI, Ann. Soc. ent. Belgique, 1897 : n. spp.
Orphnæus phosphoreus, Togo Colony, p. 37; COOK, Brandtia.
Polyricus æquatoralis, Valle del Santiago, p. 2, fig. 1; SILVESTRI, Boll. Mus. Torino, xii, No. 305, n. sp.
Ptenorya, n. g. for *afra*, Kamerun, p. 34; COOK, Brandtia, n. sp.
Schizotænia prognatha, Liberia, *quadrisulcata*, *unguiculata*, p. 38, *æqualis*, *porosa*, Kamerun, p. 39; COOK, *t. c.*
S. suppar, Mishœhe, *vara*, Africa, p. 39; COOK, *t. c.*, n. spp.
Schendyla mediterranea, Sicily, p. 11, figg. 1 & 2; SILVESTRI, Bull. Soc. ent. Ital. xxix, n. sp.
Schendyloides, new subgen. of *Schendyla* for *psilopus*, p. 7; ATTEMS, Ergebnisse der Hamburger Magalhaensischen Sammelreise, 2^o Lief, n. sp.
Tretechthus, n. generic name for *Geophilus uliginosus* (Porat), p. 39; COOK, Brandtia.

DIPLOPODA.

See SILVESTRI (51).

Key-tables to Diplopoda of Rheinland, p. 206; VERHOEFF (62).

PSELAPHOGNATHA.

POLYXENIDÆ.

Polyxenus lagurus, in Rhenish Prussia, p. 245; VERHOEFF, Verh. Ver. Rheinland, liii, 1896.

CHILOGNATHA.

ONISCOMORPHA.

GLOMERIDELLIDÆ.

Family defined, p. 48; COOK, Brandtia.

Glomeridella vasconica, Ahusquy, Lower Pyrennees, p. 89, figg. xii & xiii; BRÖLEMANN, Feuille Natural. xxvii, n. sp.

ONOMERIDIDÆ, n. fam.

Family defined, p. 45; COOK, Brandtia.

Onomeris, n. g. for *underwoodii*, America, p. 44; COOK, *t. c.*, n. sp.

GLOMERIDÆ.

- Glomeris europæa* and varieties, distribution in Rhenish Prussia, p. 246; VERHOEFF, Verh. Ver. Rheinland, liii, 1896. *G. limbata*, p. 41; LAMÈRE, Ann. Soc. Belge Micr. xxii.
G. kirropeza, Celebes, p. 480; ATTEMS, Abh. Senckenb. Ges. xxiii, n. sp.

ZEPHRONIIDÆ.

- Arthrosphæra corrugata*, p. 359, figg. 49-51, *marginella*, p. 360, fig. 52, India; SILVESTRI, Ann. Soc. ent. Belgique, 1897, n. spp.
Castanotherium nigro-maculatum, Borneo, pl. ii, figg. 75-77, *conspicuum*, Borneo, pl. ii, figg. 78 & 79, *celebense*, Celebes, p. 15; SILVESTRI, Abh. Mus. Dresden, vi, n. spp.
Cyliosoma unicolor, New Holland, p. 16, pl. ii, figg. 80-82; SILVESTRI, t. c. n. sp.
Sphæropæus tigratus, pl. ii, figg. 71-73, *punctulatissimus*, pl. ii, fig. 74, Sumatra, p. 14, SILVESTRI, t. c. n. spp.
Zephronia pyrromelana, Borneo, p. 480, pl. xxi, figg. 6 & 7, *criniceps*, Celebes, p. 482, pl. xxi, fig. 8, *anythra*, Halmahera, p. 483; ATTEMS, Abh. Senckenb. Ges. xxiii, n. spp.

COLOBOGNATHA.

POLYZONOIDEA.

POLYZONIIDÆ.

- Polyzonium germanicum*, small form of, p. 6, figg. 18-20; NĚMEC, SB. Bohmisch. Ges. 1896, Art. xli.

OLOGNATHA, new order.

SILVESTRI (51), p. 3.

LYSIOPETALIDÆ.

- Lysiopetalum degenerans*, *bosniense*, Bosna-Quelle, p. 152, pl. xiv, fig. 8, *herzogowinense*, Trebinje, p. 153, *carinatum*, p. 153, pl. xiv, figg. 11 & 12, *lendenfeldii*, p. 154, pl. xiv, figg. 9 & 14, *degenerans*, *bosniense*, p. 200; VERHOEFF, Arch. Naturg. i, 1897.

CHORDEUMIDÆ (incl. CRASPEDOSOMATIDÆ).

- Anamastigona meridionale*, Messina, p. 15, figg. 3, 4, & 5, SILVESTRI, Bull. Soc. ent. Ital. xxix, n. sp.
Anthroherposoma, p. 199, for *angustum*, Italy, p. 200; VERHOEFF, Arch. Naturg. i, 1897.
Atractosoma, defined, p. 136; VERHOEFF, t. c. *A. athesinum*, distribution in Rhenish Prussia, p. 254; VERHOEFF, Verh. Ver. Rheinland, liii, 1896.
Attemsia, defined, p. 130; VERHOEFF, Arch. Naturg. i, 1897.
Bielzia, n. g. for *B. kimakowizii*, p. 100; VERHOEFF, Zool. Anz. xx: gen. defined, p. 133; VERHOEFF, Arch. Naturg. i, 1897.
Brachytropisoma, n. g. for *giardinæ*, Ficuzza, Sicily, p. 16, figg. 6-12, SILVESTRI, Bull. Soc. ent. Ital. xxix, n. sp.

- Ceratosoma*, defined, p. 136, *apfelbecki*, Trekvic, p. 148, pl. xiv, fig. 2; VERHOEFF, Arch. Naturg. i, 1897.
- Chordeuma*, defined, p. 132; VERHOEFF, t. c. i, 1897. *C. silvestre*, distribution in Rhenish Prussia, p. 255; VERHOEFF, Verh. Ver. Rheinland, liii, 1896.
- Chordeumella*, subg. n., cf. *Microchordeuma*, q. v.
- Craspedosoma*, characterised, p. 138, *rawlinsii*, *bosniense*, p. 181, figg. 1-4, *rawlinsii*, *transylvanicum*, p. 182, figg. 5 & 6; VERHOEFF, Arch. Naturg. 1897, Band i. *C. rawlinsii*, p. 253, distribution in Rhenish Prussia; VERHOEFF, Verh. Ver. Rheinland, liii, 1896. *C. rawlinsii*, n. var. *simplex*, Bohemia, p. 1, figg. 1-5; NEMEC, SB. Bohmisch. Ges. 1896, Art. xli.
- Craspedosoma*, subgen. of *Craspedosoma*, characterised, VERHOEFF, Arch. Naturg. i, 1897.
- Dyocerasoma*, subgen. of *Polymicroda*, characterised, p. 137; VERHOEFF, t. c.
- Haasea*, defined, p. 136; VERHOEFF, t. c.
- Haploporatia*, subgen. of *Heteroporatia*, defined, p. 134; VERHOEFF, t. c.
- Heterobraueria*, n. g. for *H. karoli*, Verh., p. 104; VERHOEFF, Zool. Anz. xx: defined, p. 133; VERHOEFF, Arch. Naturg. i, 1897.
- Heterolatzelia*, n. g. for *nivale*, pp. 137 & 185, figg. 10-14; VERHOEFF, t. c.
- Heteroporatia*, defined, p. 134; VERHOEFF, t. c.: defined, 188, *bosniense*, Bosnia, p. 193, *mehelyi*, Buda-pesth, p. 195, figg. 15-17, *carniolense*, figg. 18 & 19, Adelsberg, p. 196, *alpestre*, Sulden, p. 197, figg. 20 & 21, sp. ? Trebovic, p. 198, fig. 34; VERHOEFF, t. c. *H. alpivagum*, described, p. 102, *transylvanicum*, described, p. 99; VERHOEFF, Zool. Anz. xx.
- Macheiriophoron*, defined, p. 138; VERHOEFF, Arch. Naturg. i, 1897.
- Mastigophorophyllon*, defined, p. 133; VERHOEFF, t. c.
- Mastigoporatia*, subgen. of *Heteroporatia*, defined, p. 134; VERHOEFF, t. c.
- Microbrachysoma*, n. g. for *alpestre*, pl. xiv, fig. 7, pp. 149 & 150; VERHOEFF, t. c.: defined, p. 132; VERHOEFF, t. c.
- Microchordeuma*, defined, p. 131; VERHOEFF, t. c. *M. gallicum*, distribution in Rhenish Prussia, p. 256; VERHOEFF, Verh. Ver. Rheinland, liii, 1896. *M. transylvanicum*, Kronstadt, p. 98; VERHOEFF, Zool. Anz. xx.
- M. (Chordeumiella)*, n. subgen. for *brölemanni* Sarajevo, p. 151, pl. xiv, figg. 4 & 6, VERHOEFF, Arch. Naturg. i, 1897.
- Neotractosoma*, n. g., for *kleinenbergi*, Ficuzza, p. 18, figg. 13-18, SILVESTRI, Bull. Soc. ent. Ital. xxix, n. sp.
- Orobainosoma*, defined, p. 135; VERHOEFF, Arch. Naturg. i, 1897.
- Orthochordeuma*, defined, p. 131; VERHOEFF, t. c. *O. germanicum*, distribution in Rhenish Prussia, p. 255; VERHOEFF, Verh. Ver. Rheinland, liii, 1896.
- Oxydactylon*, defined, p. 136; VERHOEFF, Arch. Naturg. i, 1897.
- Polymicrodon*, defined, p. 137, *furcilliferum*, W. Bosnia, p. 148, *nivisatelles*, described, p. 183, figg. 7-9, subgen. of *Polymicrodon*, characterised, p. 137; VERHOEFF, t. c.
- Pterygophorosoma*, subgen. of *Craspedosoma*, characterised, p. 138; VERHOEFF, t. c.
- Rhiscosoma*, defined, p. 132; VERHOEFF, t. c.
- Scotherpes*, defined, p. 132; VERHOEFF, t. c.
- Trachysoma*, defined, p. 130; VERHOEFF, t. c.
- Triakontazona*, defined, p. 136; VERHOEFF, t. c.
- Verhoeffia*, defined, p. 137; VERHOEFF, t. c.
- Xiphochæteporatia*, subgen. of *Heteroporatia*, defined, p. 134; VERHOEFF, t. c.

POLYDESMOIDEA.

CHELODESMIDÆ.

- Catharodesmus alegrensis*, Brazil, p. 19, pl. iii, figg. 29-31, SILVESTRI, Abh. Mus. Dresden, vi; *C. lartiguei*, Pernambuco, p. 358, figg. 45-48, SILVESTRI, Ann. Soc. ent. Belgique, 1897 : n. spp.
Chondrodesmus, n. g. for *armatus*, S. José, fig. 37, p. 13, SILVESTRI, Boll. Mus. Torino, xii, No. 305, n. sp.
Leptodesmus incarnatus, Gualaquiza, p. 13, fig. 38, *interrupticolor*, Valle del Santiago, p. 14, fig. 39, SILVESTRI, t. c. n. spp.
Leiodesmus, n. g., for *major*, Bolivia and Argentina, p. 5, or *trifidus*, Bolivia, p. 6, SILVESTRI, t. c. No. 283, n. spp.
L. proximus, syn. for *Odontopeltis proxima*, p. 6; SILVESTRI, t. c.

CHYTODESMIDÆ, n. fam.

- Family defined, p. 20; Cook, Brandtia.
Docodesmus, defined, p. 20; Cook, t. c.
Stictodesmus, n. g. for *creper*, Bogota, p. 20, COOK, t. c. n. sp.
Tridesmus, n.g. for *sectilis*, Porto Rico, p. 21, COOK, t. c. n. sp.

COMODESMIDÆ.

- Family defined, p. 25; Cook, Brandtia.
Modesmus, n. g. for *jamaicensis*, p. 25; COOK, t. c.

CRYPTODESMIDÆ.

- Family defined, p. 19; Cook, Brandtia.

CRYPTURODESMIDÆ, n. fam.

- SILVESTRI, Boll. Mus. Torino, xii, No. 277.
Crypturodesmus, n. g. for *targionii*, Mexico, p. 1, SILVESTRI, t. c. n. sp.

CYCLODESMIDÆ.

- Family defined, p. 28; Cook, Brandtia.

CYRTODESMIDÆ.

- Family defined, p. 28; Cook, Brandtia.

DALODESMIDÆ, n. fam.

- Family defined, p. 26; Cook, Brandtia.

DORATODESMIDÆ.

- Family defined, p. 27; Cook, Brandtia.
Doratodesmus muralis, vestitus, W. Java, p. 27, COOK, t. c. n. spp.

HERCODESMIDÆ, n. fam.

- Family defined, p. 20; Cook, Brandtia.

HYNIDESMIDÆ, n. fam.

Family defined, p. 26; COOK, Brandtia.

ONISCODESMIDÆ.

Family defined, p. 28; COOK, Brandtia.

OTODESMIDÆ, n. fam.

Family defined, for *Trichopeltis* and *Otodesmus*, p. 24; COOK, Brandtia.

OXYDESMIDÆ.

Key to genera, and list of species; COOK, Brandtia, p. 9.

Ceratodesmus ansatus, Tanga, p. 13, COOK, *t. c. n. sp.*

Ctenodesmus gibber, Jombene Range, E. Africa, p. 13, COOK, *t. c. n. sp.*

Lacnodesmus valgus, Africa, p. 10, *ituri*, N.W. of Albert Nyanza, *thyridotus*, Kamerun, p. 11, COOK, *t. c. n. spp.*

Lyodesmus zoster, Kawondo, E. Africa, p. 13, COOK, *t. c. n. sp.*

Orodesmus ellipticus, Ngatana, *camelus*, Tanga, p. 14, COOK, *t. c. n. spp.*

Oxydesmus asaba, Asaba, R. Niger, *barombi*, Kamerun, *dentatus*, Africa, *dollfusii*, Africa, p. 11, *fuambo*, Fuambo, nr. Lake Tanganyika, *johnstonei*, Rio del Rey, *lævis*, Togo Colony, *vittatus*, Cameroons, *xanthomelas*, Kilimanjaro, p. 12, COOK, *t. c. n. spp.*

Phobodesmus cristatus, Usambara, p. 13, COOK, *t. c. n. sp.*

Rhododesmus priodus, Dar es Salaam, p. 13, COOK, *t. c. n. sp.*

PLATYRRHACHIDÆ.

Acisternum pergranulatum, Celebes, p. 13, SILVESTRI, Abh. Mus. Dresden, vi, n. sp.

Acanthodesmus pinangensis, Pinang, p. 433, figg. 6 & 6a, *perakensis*, Perak, p. 434, fig. 7, *petersii*, Malay Peninsula, p. 434, fig. 8, *lineatus*, Singapore, p. 434, fig. 9, POCOCK, Ann. Nat. Hist. xx, n. spp.

A. pilipes, Borneo, generic type, p. 3; COOK, Brandtia.

Adontodesmus, n. g. for *tricuspidatus*, Timor, p. 14, pl. ii, figg. 69 & 70, SILVESTRI, Abh. Mus. Dresden, vi, n. sp.

Barydesmus æquatorialis, S. José, p. 16, fig. 42, *gualaquizensis*, Gualaquiza, p. 17, fig. 43, SILVESTRI, Boll. Mus. Torino, xii, No. 305, n. spp.

Cradodesmus subspinosus, generic type, p. 3; COOK, Brandtia.

Cyphorrhacus, n. g. for *andinus*, Ecuador, p. 52, COOK, *t. c. n. sp.*

C. festæ, S. José, p. 16, SILVESTRI, Boll. Mus. Torino, xii, No. 305, n. sp.

Cyrtorachis trifidus, Aru, p. 13, SILVESTRI, Abh. Mus. Dresden, vi, n. sp.

Derodesmus flagellifer, Ternate, p. 1, COOK, Brandtia, n. sp.

Dicrodesmus bidens, generic type, Sumatra, p. 3, COOK, *t. c.*

Diodontodesmus, n. g. for *D. woodfordi*, Solomon Is., p. 443, fig. 17, *verrucosus*, Solomon Is., p. 444, fig. 18, POCOCK, Ann. Nat. Hist. xx, n. spp.

Euryurus devillei, Ecuador, p. 18, fig. 44, SILVESTRI, Boll. Mus. Torino, xii, No. 305, n. sp.

Eurydirorhachis, n. g., p. 435, for *E. dulitensis*, N. Borneo, p. 436, fig. 10, *baramensis*, N. Borneo, p. 436, *discrepans*, Borneo, p. 437, fig. 10, POCOCK, Ann. Nat. Hist. xx, n. spp.

Eutrachyrhachis, n. g., p. 441, for *E. margaritatus*, New Guinea, p. 442, figg. 16 & 16a, *victoriæ*, New Guinea, p. 442, POCOCK, *t. c. n. spp.*

- Harpodesmus laticollis*, generic type, Sumatra, p. 3, COOK, Brandtia.
Hoplurorhachis, n. g., p. 437, for *H. everettii*, N. W. Borneo, p. 437, figg. 12 & 12a, *hosei*, Baram (Borneo), p. 438, fig. 13, POCOCK, Ann. Nat. Hist. xx, n. spp.
Ilodesmus meyenii, generic type, p. 1, COOK, Brandtia.
I. whiteheadi, Luzon, p. 439, fig. 15, POCOCK, Ann. Nat. Hist. xx, n. sp.
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- S. ilicis*, Banyuls, p. 116, figg. xxiii-xxv, BRÖLEMANN, Feuille Natural. xxvii, n. sp.
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CAMBALIDÆ.

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- P. rugosetta*, Cayenna, p. 355, fig. 37, SILVESTRI, Ann. Soc. ent. Belgique, 1897, n. spp.

SPIROSTREPTOIDEA.

SPIROSTREPTIDÆ.

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- Tropitrachelus*, n. g. for *unidentatus*, Carolina Is., p. 4, figg. v-vii; SILVESTRI, t. c., n. sp.
- Urotropis cameranii* = *Archispirostreptus cameranii*, Bolivia, p. 6; SILVESTRI, Boll. Mus. Torino, xii, No. 283.

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SPIROBOLIDÆ.

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PROTOTRACHEATA*.

1. BROWN, A. W. XII. *Myriopoda* and *Prototracheata*. Zool. Record, xxxiii, 1896, p. 11.
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XIII. INSECTA.

BY D. SHARP.

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INTRODUCTION.

THE most remarkable discovery of the year is the unsegmented animal considered by ADENSAMER (7) to be the female imago of a pupiparous Dipteron.

Much greater attention has been given to Termitidæ than was ever the case before. HAVILAND describes (463) a large number of new forms, so that his paper with those of WASMANN (1153) and FROGGATT (370) just about double the number of described forms. The illustrations of Australian Termitaria by SAVILLE-KENT (957) are very valuable.

The eighth Vol. of DALLA TORRE'S (229) Catalogue brings this important work within measurable distance of completion. This volume is entirely devoted to fossorial Hymenoptera and is the most bulky of the series.

Sir George HAMPSON has continued his remodelling of the taxonomy of Pyraloid moths by the treatment of several families (452, 453).

Faunistic works are as usual both numerous and important. The *Biologia Centrali-Americana* (416) has made fair progress. Colonel BINGHAM'S Volume (76) on the *Hymenoptera* of British India is a valuable addition to entomological literature. HORMUZAKI'S paper (495) on the *Lepidoptera* of the Bukowina deserves notice; KERREMANS' memoir (567) on the *Buprestidæ* of Brazil contributes no less than 235 new species. Mr MEYRICK has treated the Australian *Elachistidæ*, recording 254 species, nearly all of which are new (747). Lord WALSINGHAM (1139) records 302 species of *Micro-lepidoptera* from the West Indies; Cuba has as yet produced only 23 species, though it probably shelters several hundred. One of the most considerable faunistic works is that of DAVIS on N. American *Tryphoninæ* (234). COQUILLET (218) on N. American parasitic *Diptera* is also important; and CASEY (162) has added a large number of new species of *Coleoptera* to the N. American fauna.

In Morphology we may call attention to GENTHE'S paper (396) on the comparative anatomy of the mouth-parts of *Micro-lepidoptera*; to PÉREZ'S discovery (824) of a new kind of bee proboscis; to BORDAS' extensive investigations (104-109) on the internal anatomy of *Orthoptera*; and to BRÜEL'S (137) anatomy and development of the sexual ducts and annexes in *Muscidæ*; while KLAPÁLEK'S memoir on comparative anatomy of *Perlidæ* (593) appears to be of considerable value, and PRATT'S account (881) of imaginal discs in *Diptera* will be found very useful by students of metamorphosis. MEINERT'S (736) views as to the morphology of mouth-parts will require careful consideration.

KULAGIN (642) has made another contribution to the embryology of parasitic *Hymenoptera*, and Dr HEYMONS has given us an opportune sketch (478) of the development of a Thysanuran.

The most important work on embryology is however the history of the development of a Mason-bee by CARRIÈRE and BÜRGER (161). The work is divided into two parts; it was commenced by Prof. Carrière, and after his decease prepared for publication by his colleague, who appears to be chiefly responsible for the second part of the work. They confirm the view, previously put forward for *Orthoptera*, that the mesenteron is derived either from ectoderm or directly from blastoderm.

The publication of a fifth volume of FABRE'S "Souvenirs" (303) is welcome. It gives details of the habits and life-histories previously unknown of several common Mediterranean Insects. Unfortunately the volume exhibits, in more than one place, an inadequate acquaintance with the work of other Naturalists. None the less important and interesting because of its brevity is PANTEL'S sketch (819) of the larval

life of a Tachinid fly parasitising a Phasmid in Spain. AURIVILLIUS' paper (36), on forms intermediate between solitary and social bees, contains much that is important from a general point of view, besides the interest of the facts he records: VERHOEFF (1123) also contributes to this subject. MARCHAL (707) on Hessian flies and their parasites is remarkable from the variety of points of general interest it discusses.

By a curious coincidence we have two important biological papers on the same larva of one of the neglected groups of Insects. Both MIALI and SHELFORD (750) and BENGTSSON (66) have apparently treated their subject in a thoroughly serious manner, and BENGTSSON has added some important morphological considerations as to Insects generally, especially in connection with the trophi.

URECH (1109) introduces a new method of experimenting on the colouration of butterflies by ligature of the pupa.

JANET has given us four parts of his studies on ants (545-548); they give a great variety of information in a concise and interesting manner. BORRIES (113) also makes an important addition to the natural history of Aculeate *Hymenoptera* in the Danish language. In his papers on the larvæ of *Sphingidæ* PIEPERS (867, 868) discusses the subject in a philosophical manner from the standpoint of thirty years of observation: he dismisses as "phantasy" all that has been written as to the protective value of their colouration.

In reference to mimicry we have WEBSTER's plea (1175) in favour of the actions of the individual as being a factor of importance. MAYER's work (728) on the colouration of butterflies also treats of mimicry.

The new periodical "L'Année biologique" gives analyses of memoirs, and in some cases adds to them criticisms and comments. We have in several cases treated analyses of this kind as original communications. The Recorder takes the liberty of asking that entomologists should distinguish the new genera and species they describe by adding "n. gen." or "n. sp." after the name. The practice of indicating novelties by appending "mihi" or the describer's name is bad, not being sufficiently distinctive. He also asks entomologists to be so kind as to point out any errors or omissions of importance in the Record, and thanks those who have already done this.

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(e.) *Central and Eastern Europe, incl. Denmark* [see also (a.) and (b.)].

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(f.) *France* [see also (a.) (b.) and (g.)].

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(h.) *Caucasus and West and Central Asia, including ARABIA*
[see also (a.) and (b.)]: for THIBET see 6.

Coleoptera. Caucasus, JAKOWLEW (542), PIC (844, 857), REITTER (911), SCHULTZE (984), SEMENOW (1002).—Transcaucasus, JACOBSON (531).—Asia, JAKOWLEFF (544), REITTER (913, 919).—Russian Turkestan, TSCHITSCHÉRINE (1098).—Centr. Asia, JAKOWLEW (540), REITTER (904).—Altai, PIC (865).—Aden, THOMAS (1081).—Mascot, RÉGIMBART (895).—Persia, BRENSKE, Ent. Zeit. Stettin, lviii, p. 115.—Beluchistan, BRENSKE (129).

Hymenoptera. W. Asia, MORAWITZ (773).

Lepidoptera. Central Asia, ALPHÉRAKY (16), STAUDINGER (1056); *Geometridæ*, WARREN (1151, p. 389); *Geometrid.* Merv, WARREN, Nov. Zool. iv, p. 214.—Persia, AUSTAUT (41).

Odonata. Centr. Asia, RIS (928).

Orthoptera. Transcaucasus, RODZIANKO (940).—W. Asia, BRANCSIK (123).—Persian Gulf, BURR, Entomologist, 1897, pp. 187–189.

Aptera. Mascot, *Thysanura*, BOUVIER (120).

4. AFRICA (TROPICAL AND SOUTH; for NORTH AFRICA, see 3 (g.); for COMORO Is., see 5).

Insecta. JOHNSTON (555), SMITH (1028).

Coleoptera. AURIVILLIUS (39), BOILEAU (88), BRANCSIK (124), BRENSKE (128, 130), Transvaal *Cetoniides*, DISTANT (248), FAIRMAIRE (306, 307), FAUST (318), FLEUTIAUX (343), GESTRO (400), GORHAM (419), GRIFFINI (424), HARTMANN (461, 462), HINTZ (485), HORN (479, 499, 500, 502, 503), JACOBY (533), KERREMANS (569), KOLBE (601, 602, 603, 604, 605), KRAATZ (621–626, 629, 630, 633, 634, 636), LEWIS (680, 681), OERTZEN (798), D'ORBIGNY (800), PIC (840, 841, 853, 856, 858, 861), RAFFRAY (887, 888), SCHAUFUSS (961, 962); SCHOCH, *Cetoniides* (975); *Coprides*, SHIPP (1013); THÉRY (1073), THOMAS (1082), WASMANN (1164, 1168, 1168A), WATERHOUSE (1171), WEISE (1179, 1180, 1182).

Hymenoptera. ANDRÉ (22), BUYSSON (151), CAMERON (156), EMERY, Somaliland (293), FOREL (349), GRIBODO (423), STADELMANN & LUCAS (1049), VACHAL (1112).

Lepidoptera. AURIVILLIUS (38), BUTLER (145, 148, 149, 150).—Somaliland, BUTLER, pp. 923-925, P. Zool. Soc. London, 1897.—DISTANT, Transvaal; *Sphingidæ* (249), *Zygænidæ*, *Pyralidæ* (250), *Bombyces* (252), *Saturniidæ* (254).—HAMPSON (451, 453); *Xanthospilopteryx*, HOLLAND (491); KARSCH, Usambara (564); MABILLE (701), MARSHALL (719), OBERTHÜR (796).—ROTHSCHILD (950).—ROTHSCHILD, *Nymphalidæ*, *Saturniidæ*, *Agaristidæ* (947); *Saturniidæ*, *Agaristidæ* (948); *Rhopalocera* (949).—SCHAUS (964).—SHARPE, *Acræidæ* (1010); Suakim, SHARPE, pp. 775-777, P. Zool. Soc. London, 1897.—STAUDINGER (1056), WALSINGHAM (1141), WARREN (1149, 1150), WEYMER (1185).

Diptera. WANDOLLECK (1144).

Hemiptera. BREDDIN, *Heter.* (126); DISTANT, *Homoptera* (246); GIARD *Coccidæ* (406); KIRKALDY, *Notonectidæ* (589); MASKELL, *Coccidæ* (722); MONTANDON, *Heteroptera* (760, 767, 769).

Neuroptera. FÖRSTER, *Odonata* (355); HAVILAND, *Termitidæ* (463); KOLBE (601); SJÖSTEDT, *Termitidæ* (1017, 1018, 1019); WASMANN (1153).

Orthoptera. BRANCSIK (122, 123), BRONGNIART (135), GRIFFINI (425).

5. MADAGASCAR, including SEYCHELLES and MASCARENE IS.

Insecta. Seychelles, Aldabra, &c. LINELL (686).

Coleoptera. ALLUAUD (12, 13, 15).—ALLUAUD, Mascarene islds. and Seychelles (14).—BRANCSIK (124), BRENSKE (128), HORN (500), FAIRMAIRE (305), FAUST (322), FLEUTIAUX (343), JACOBY (533), LESNE (677), RAFFRAY (888, 889).—RÉGIMBART, Seychelles and Mauritius (896).—Seychelles and Madagascar, SCHAUFUSS (962).—SCHOCH (975).—THÉRY, Seychelles (1073, 1075).—WASMANN (1165).

Hymenoptera. FOREL (349), WASMANN (1162).

Lepidoptera. HAMPSON (451, 453), MABILLE (701).—OBERTHÜR, Madagascar and Comoro (796).—WARREN (1149).—Madagascar and Mauritius, WARREN (1150).—Réunion, *Sesamia*, GIARD, p. 30, Bull. Soc. ent. France, 1897.

Hemiptera. BERGROTH (69).—DISTANT, *Pæcilopsaltria* (247).—MARTIN (721), MONTANDON (760, 767, 768, 769).—*Coccidæ*, NEWSTEAD (783).

Neuroptera. WASMANN (1153).

Orthoptera. BRANCSIK, Nossi-Bé (122).—BRANCSIK (123), BRONGNIART (134, 135), RODZIANKO (940).

6. TROPICAL AND EASTERN ASIA, WITH JAPAN.

For outskirts see also 3 (a.), (g.), (h.). ARABIA, see 3 (h.).

Coleoptera. AURIVILLIUS, India (39).—BRENSKE (128, 130), FAIRMAIRE (308).—FAIRMAIRE, China and E. Tibet (309); FAUST (323).—FAUST, China (319).—FAUST, India (321).—FAUVEL, Tonkin (325).—FAUVEL, Cambodia (328).—FLEUTIAUX, India (343, 345).—GAHAN (390); GESTRO (398); GORHAM (419); GROUVELLE (441).—HELLER, India (471).—HORN, Burma (496).—HORN, India (502).—JACOBY, India (536).—India, KERREMANS (570).—KRAATZ (627, 628).—KRAATZ, India (631).—LESNE, India (671, 672).—LESNE, Cochin China (673).—LÉVEILLÉ, Malacca (679).—D'ORBIGNY (800).—PIC, India (861, 862).—PIC, Burma (843, 864).—PIC, Obock (853).—PIC, Ceylon (859).—PLANET, Tibet and India (871).—RAFFRAY (888).—REITTER, Bukhara (914, 917).—Bukhara, Afghanistan, REITTER (902).—RITSEMA, Cochin China (930).—RITSEMA, India, Burma, Malacca (931).—ROESCHKE,

China (944).—SCHAUFUSS (961).—SCHILSKY, China (968).—SCHOCH, Ceylon (975).—Supplement to Catalogue, Japan, SCHOENFELDT (976).—SEMENOW, E. Asia and Japan (1001).—TSCHITSCHÉRINE (1097).—TSCHITSCHÉRINE, China (1096).—VAULOGER, India, Bukhara (1118).—WASMANN, Burma (1159).—WATERHOUSE, China (1172).—WEISE, India, etc. (1179).

Hymenoptera. The *Hymenoptera aculeata* of British India, BINGHAM (78).—CAMERON (154); EMERY (287).—EMERY, India (288).—KONOW, Burma (610).—KONOW, Japan (617).—KONOW, Japan and Sikkim (618).—MAYR, Ceylon and Singapore (732).—VACHAL (1112).

Lepidoptera. ALPHÉRAKY, China (Sé-Tchouen and Kham) (17).—ALPHÉRAKY, Korea and Amur (18).—ALPHÉRAKY, China and Mongolia (20).—BETHUNE-BAKER, Perak (73).—DAVIDSON, BELL, & AITKEN, Canara, Bombay (232).—DUDGEON, Sikhim and Bhutan, Catalogue of moths (271).—ELWES & EDWARDS (286).—FAWCETT, Burma (329).—HAMPSON (451, 453).—HAMPSON, India (450).—LEECH, China, Japan and Corea (664).—MACKINNON & DE NICÉVILLE, Mussoorie (703).—MOORE, India (772).—NICÉVILLE (784).—OBERTHÜR, China (795).—OBERTHÜR, Tonkin (796).—OBERTHÜR, Yunnan (802).—PÜNGELER, Japan (884).—ELWES, Ladak *Colias*, p. 465, J. Bombay Soc. xi.—SWINHOE (1067).—SWINHOE, India (1068).—WATSON, Burma (1173).—WARREN (1149, 1150, 1151).

Diptera. KERTÉSZ, Assam (573).—ORMEROD, India (804).—WULP, Ceylon (1196).

Hemiptera. BUCKTON, India, *Aphididae* (139).—COCKERELL, Japan, *Coccidae* (189, 193).—COOLEY, Japan, *Coccidae* (217).—DISTANT, Burma, *Cicadidae* (251).—HANDLIRSCH (454).—KIRKALDY, China, *Notonectidae* (589).—MASKELL, Japan, China, India, etc. *Coccidae* (722).—MASKELL, Japan and China, *Coccidae* (723).—MASKELL, India, *Aphididae* (724).—MONTANDON (760, 769).—MONTANDON, Burma (766).—MONTANDON, India and Ceylon (767).—MONTANDON, Tibet (760).—NEWSTEAD, India, *Coccidae* (783).—SHARP, Burma (1008).

Neuroptera. HAVILAND, *Termitidae* (463).—McLACHLAN, China? *Odonata* (704).—SELYS (1000).—SELYS, Japan (1000).

Orthoptera. BOLIVAR, Burma (94).—BOLIVAR, India (93).—BRONGNIART, Siam (135).—GRIFFINI, Perak (426, 427) and *Miscell. ent.* v, p. 139.

7. ASIATIC ARCHIPELAGO, including PAPUA.

Insecta. Col., Hym., Dipt. HEYDEN (477).

Coleoptera. AURIVILLIUS, Borneo, Palawan (39).—BOILEAU, Borneo (88, 90).—BOILEAU, Sumatra (89).—BRENSKE (128, 130); FAIRMAIRE (308, 310).—FAIRMAIRE, Sumatra (311).—FAUST (320, 323).—FAUST, Celebes (317).—FLEUTIAUX (346).—FLEUTIAUX, Sumatra, Philippines (343).—GAHAN (390).—Sumatra, GESTRO (401); GESTRO, catalogue of *Hispidæ* (398).—Sumatra, *Hispidæ*, GESTRO, Notes Leyden Mus. xix, pp. 174–176. —GESTRO, Batù (399).—GESTRO, Java (402).—GESTRO, New Guinea (404).—GORHAM (419); GROUVELLE (441).—HARTMANN, Java (461).—HELLER (470, 471).—HELLER, Timor Laut and New Guinea (468).—HELLER, Celebes (467).—HELLER, Philippines (472).—HORN, Java (496).—HORN, Celebes (500).—JACOBY (535).—JAKOWLEW, Borneo, Mindoro (541).—JORDAN (557).—JORDAN, Batchian, New Guinea, *Anthribidae* (558).—KERREMANS, Bunguran Is. (569).—KOLBE, Lombok (604).—KRAATZ, Celebes (632).—KRAATZ, Sumatra and Nias (635).—LESNE (671).—LEWIS, Sumatra (681).—OLIVIER (799); PIC (846).—PIC, Borneo (859).—RAFFRAY (888).—RITSEMA, Java (932).—RITSEMA, Borneo (933).—RITSEMA, Sumatra (934).—RITSEMA, Sumatra, Borneo (935).—RITSEMA, Philippines (931).—RITSEMA, Sumatra, *Macroma*, p. 115, Notes Leyden Mus. xix.—RITSEMA, Sumatra, *Lucanidae*, Notes Leyden Mus. xix, p. 234.—SCHAUFUSS, Philippines (962).—SCHOCH,

Sumbava and Borneo (974).—SENNA, Celebes (1004).—SENNA, Batu (1006).—THÉRY (1073).—VEEN, Java (1120, 1122).—WEISE (1179).

Hymenoptera. New Guinea, BIRÓ (76).—CAMERON, Borneo (154).—EMERY (287, 292).—EMERY, New Guinea, Lombok (290).—KONOW, Borneo (611).—VACHAL (1112).

Lepidoptera. BETHUNE-BAKER, Sanger (73).—BUTLER, Sumatra (146).—BUTLER, Borneo (144).—New Guinea, DANNATT (231).—H. H. DRUCE (267); ELWES & EDWARDS (286).—FAWCETT, Sumatra (329).—FRUHSTORFER (377, 380, 382, 385).—FRUHSTORFER, Java (379).—FRUHSTORFER, Borneo (376).—Lombok, FRUHSTORFER (375, 378) and *Miscell. ent.* v, p. 105.—HAGEN, New Guinea and New Pomerania (447).—HAMPSON (451, 452, 453).—KIRBY, Sumatra (587), v, p. 239.—MEYRICK (748); NICÉVILLE (784).—NICÉVILLE, Java, pp. 127 & 128, *Berlin. ent. Zeitschr.* 1897.—NICÉVILLE, Bali (785).—NICÉVILLE, New Guinea (786).—PAGENSTECHE (817).—RÖBER, Java (936).—RÖBER, Celebes and Java (937).—ROTHSCHILD (948).—ROTHSCHILD, Borneo, New Guinea (949).—ROTHSCHILD, Celebes (947).—SMITH, New Guinea (1029, 1030, 1031, 1032).—SMITH, Celebes, New Guinea (1033).—SMITH & KIRBY (1034).—SNELLEN, Java (1040, 1041, 1042).—SWINHOE, Gilolo and Borneo (1067).—SWINHOE, Sumba, Batchian (1068).—Nias Island, THIEME (1077).—THIERRY-MIEG, Batchian (1078).—VEEN, Java (1122).—WARREN (1149, 1150, 1151).

Diptera. ADENSAMER, Java (7).—KERTÉSZ, New Guinea (572).—WANDOLLECK, Sumatra (1144, 1146).—WULP, Java (1197).

Hemiptera. DISTANT, New Guinea (244).—DISTANT, Mentawai island (245).—DISTANT, Lombok, Celebes (253).—HANDLIRSCH, Borneo and Sumatra (454).—MONTANDON, Borneo (769).—New Guinea, MONTANDON (760, 768).—MONTANDON, Borneo, Sumatra, New Guinea (767).

Neuroptera. CARPENTER, New Guinea, *Odonata* (159).—FÖRSTER, Borneo, *Odonata* (354).—FOERSTER, Borneo and New Guinea, *Odonata* (357).—FÖRSTER, Key and Lombok, *Odonata* (356).—HAVILAND, *Termitidæ* (463).

Orthoptera. BOLIVAR, Philippines (97).—BRANCSIK, New Guinea (123).—BRONGNIART (134); BURR (141).

8. AUSTRALIA AND TASMANIA.

Coleoptera. AURIVILLIUS (39); BLACKBURN (79, 80, 81); FLEUTIAUX (343); LEWIS (681); GROUVELLE, Australia and Tasmania (441); LEA (660, 661); LESNE (676); PIC (854, 855); SENNA (1005); SHIPP (1012); SLOANE (1026, 1027).

Hymenoptera. EMERY (292); MANTERO (706); TURNER (1101).

Lepidoptera. *Catalogue of Victorian Lepidoptera*, continued, LOWER, *Victorian Naturalist*, xiii, xiv.—BUTLER (146); HAMPSON (451, 453); KERSHAW (571); LOWER (691, 692, 693); MEYRICK (747, 749); ROTHSCCHILD (948); TURNER (1100); N. S. Wales, *Heteronympha*, WATERHOUSE, pp. 240–243, *P. Linn. Soc. N. S. Wales* xxii.—WARREN (1149, 1150, 1151).

Diptera. FROGGATT (373).

Hemiptera. FROGGATT, *Coccidæ* (372); FULLER, *Coccidæ* (387); KIRKALDY (589); MARTIN (720); MASKELL, *Coccidæ* (722); SCHWARZ (988).

Neuroptera. FROGGATT (370); SELYS, *Odonata* (1000); *Chrysopa*, McLACHLAN, p. 157, *Ent. Mag.* xxxiii.

Orthoptera. BRANCSIK (122, 123); BRONGNIART (134, 135); RAINBOW (890, 891).

9. NORTH AMERICA.

Insecta. GODMAN & SALVIN (416).—Myrmecophilous Insects, and ants, Toronto, KING (582).—Ottawa, introduced species, etc. *Ottawa Natural.*

xi, pp. 11-17.—Jackman, Maine, HARVEY & KNIGHT, p. 77, Psyche, viii.—Mt. Washington, Alpine, SLOSSON, pp. 237-240, Ent. News Philad. 1897.—Florida and Georgia, CASTLE & LAURENT, pp. 7-9, Ent. News Philad. 1897.—Bermuda, HURDIS (520).

Coleoptera. CASEY (162); DIETZ (241); FALL, S. California islands (316); HAYWARD (465); HUBBARD (517); KEEN, Queen Charlotte islands (565); LEWIS (681), LINELL (687, 688, 689), SCHWARZ (987), WASMANN (1166, 1169), WICKHAM, Canada (1187).—SCHWARZ, p. 52, P. ent. Soc. Washington, iv.—N. E. America, *Bembidium*, HAYWARD, J. N. York Ent. Soc. v, pp. 134-149.—Kansas *Lachnosterna*, KNAUS, pp. 214-217, Ent. News Philad. 1897.—N. Jersey salt meadows, WENZEL, p. 218, Ent. News Philad. 1897.—N. Idaho, WICKHAM, pp. 165-168, Ent. News Philad. 1897.—Washington County, EHRMANN, pp. 168-170, Ent. News Philad. 1897.

Hymenoptera. ASHMEAD (25-33), COCKERELL (198-215), DAVIS (233, 234), DIMMOCK (243), DUNNING (272, 273, 274), DYAR (283), FOX (358, 361); HARRINGTON, Vancouver Island (459); HOWARD (510, 511, 512); KONOW (617), LEWIS (682), MACGILLIVRAY (702), ROBERTSON (939), VACHAL (1112).—Fauna ottawaensis, *Proctotrypidæ*, HARRINGTON, Ottawa Natural. x, pp. 217-219.

Lepidoptera. BARNES (53), BEUTENMÜLLER (74), FRENCH (362), HAMPSON (453), MURTFELDT (777), OTTOLENGUI (813), SKINNER (1020), SKINNER (1021), SNYDER (1045), STRECKER (1064), HENSHAW, Science, v, p. 845.—Franklin, *Rhopalocera*, BELL, p. 143, Psyche, viii.—Cleveland, Ohio, *Rhopalocera*, BUBNA, pp. 97-99, Ent. News Philad. 1897.—S. Dakota, TRUMAN, pp. 27-29, Ent. News Philad. 1897.—New Jersey, DYAR, p. 96, J. N. York ent. Soc. v.—New Brunswick, *Argynnis idalia*, FLETCHER, p. 93, Canad. Ent. xxix.—Canada, *Noctuidæ*, WINN, p. 99, Ent. News Philad. 1897.—Riverside, California, *Rhopalocera*, TWOGOOD, pp. 29-32, Ent. News Philad. 1897.—MOFFAT, *Sphinx luscitiosa*, Canad. Ent. xxix, p. 224.—Canada, at electric light, MOFFAT, pp. 177 & 178, Canad. Ent. xxix.—Red river, HANHAM, p. 3, Canad. Ent. xxix.—List of Manitoba moths, HANHAM, pp. 291-297, Canad. Ent. xxix.

Diptera. BROWN (136).—COQUILLET (153, 218); Alaska and U. S. HUNTER (519); JOHNSON (554), KAHL (560), KINCAID (581), PATTON (821), SLINGERLAND (1025), TOWNSEND (1086, 1090).—New Mexico, TOWNSEND, pp. 126, 138, Psyche, viii, and *t. c.* pp. 147-150.—WHEELER (1186).—N. York *Syrphidæ*, BANKS, p. 40, J. N. York Ent. Soc. v.—*Simulium*, COCKERELL, p. 100, Ent. News Philad. 1897.—Localities for *Syrphidæ*, WESTCOTT, pp. 190 & 191, Ent. News Philad. 1897.

Hemiptera. ASHMEAD, Canada (35); BAKER (43, 44, 45), BALL (47), BERGROTH (68), COCKERELL, *Coccidæ* (189-191, 194, 196, 197, 198).—COCKERELL, *Aleurodes* (188, 188A).—COOLEY, *Coccidæ* (217).—HANDLIRSCH (454).—KING, *Coccidæ* (583).—KING & COCKERELL, *Coccidæ* (585).—KIRKALDY (589), KIRKLAND (591), MONTANDON (768), OSBORN (807), OSBORN & BALL (806), UHLER (1107).—Ohio, *Cicada septendecim*, WEBSTER (1177).—Sangre de Cristo mountains, *Aphididæ*, COCKERELL, pp. 201 & 202, Ent. News Philad. 1897.—Colorado, BAKER, pp. 53 & 54, Ent. News Philad. 1897.

Neuroptera. BANKS (48, 49, 50).—NEEDHAM, *Odonata* (780).—Buffalo, *Odonata*, VAN DUZEE, pp. 87-91, J. N. York Ent. Soc. v.—New York State, *Odonata*, CALVERT, pp. 91-95, J. N. York Ent. Soc. v.—CHAPMAN, *Mallophaga* (165).

Thysanoptera. BEACH (58), OSBORN (805).

Orthoptera. MORSE (776).—PIERS, Nova Scotia (869).—SCUDDER (993, 995, 996).—Iowa, BALL, P. Ac. Iowa, iv, pp. 234-241.—Canada, *Gryllidæ*, LOCHHEAD, pp. 39-44, Rep. ent. Soc. Ontario, xxviii.—Canada, *Schistocerca americana*, WALKER, p. 89, Canad. Ent. xxix.—Greenhouse *Orthoptera*, SCUDDER, p. 71, Psyche, viii.

Aptera. BANKS, *Smynturus* (51).—COQUILLET (153), SCHÖTT (977).

10. CENTRAL AMERICA. (MEXICO to PANAMA incl.)

Insecta. GODMAN & SALVIN (416), TRISTAN, Costa Rica (1094).—Costa Rica, *Coleoptera*, *Hemiptera*, *Orthoptera*, *Hymenoptera*, *Lepidoptera*, TRISTAN, Informe Mus. Nac. Costa Rica, 1896, pp. 9–19.

Coleoptera. CASEY (162), FLEUTIAUX (343), GROUVELLE (440), HORN (498), KERREMANS (567), KUWERT (646), LESNE (675), PIC (858, 863), RAFFRAY (888), SENNA (1005), WASMANN (1170).

Hymenoptera. CAMERON (155), COCKERELL (200, 201, 208), MOCSÁRY (756).

Lepidoptera. GODMAN & SALVIN (415), DRUCE (266), OBERTHÜR (796), SCHAUS (963), WARREN (1152).—PITTIER & BIOLLEY, Costa Rica (870).

Diptera. TOWNSEND (1085, 1086, 1088).

Hemiptera. BAKER (45), COCKERELL, *Coccidæ* (195), HANDLIRSCH (454), MONTANDON (764, 768, 770), TOWNSEND, *Coccidæ* (1091), UHLER (1107).

Neuroptera. *Odonata*, CARPENTER (159).

Orthoptera. FINOT (336), GIGLIO-TOS (411).

Aptera. SCHÖTT (977).

11. ANTILLES.

GODMAN & SALVIN (416), HOWARD (509), Bermudas, HURDIS (520).

Coleoptera. CHAMPION (164), FLEUTIAUX, Cuba (343); GROUVELLE (440), JACOBY (534), KERREMANS (567), LEWIS, Grenada (681).

Hymenoptera. FOREL, Grenada (352).

Lepidoptera. HAMPSON (452, 453), WALSINGHAM (1139), WARREN (1152).—St Lucia *Geometridæ*, SCHAUS, J. N. York Ent. Soc. v, p. 165.

Diptera. WILLISTON (1193).

Hemiptera. GIARD, *Coccidæ* (405); HANDLIRSCH (454); UHLER, Cuba (1107).

Orthoptera. FINOT (336).

12. SOUTH AMERICA, incl. TRINIDAD.

Insecta. GODMAN & SALVIN (416).

Coleoptera. AURIVILLIUS (39), BELON, *Lepturid* (64, 65).—BELON, Chili (63).—BOILEAU (91), FLEUTIAUX (343).—GOELDI, Pará (417).—GROUVELLE (439, 440), HELLER (469), HORN (499, 500, 501), JACOBY (537, 538), JORDAN (558), KERREMANS (567), LEWIS (680), PIC (855, 858), RAFFRAY (888), SCHAUFUSS (961), SENNA (1005), SHIPP (1013), THÉRY (1073).

Hymenoptera. ASHMEAD (32), FOX (359, 360), KONOW (607, 611), LUCAS (694, 695, 696), MOCSÁRY (756).

Lepidoptera. BERG (67), BUTLER (147), DOGNIN (258, 259, 260), DRUCE (266), FRUHSTORFER (383), GODMAN & SALVIN (415), HAMPSON (451, 452, 453), MABILLE (701), SCHAUS (963), SMITH & KIRBY, incl. Trinidad (1034). STAUDINGER (1051, 1056), WARREN, incl. Trinidad (1152), ROTHSCHILD (948, 949).—SEITZ, Argentina, pp. 73, etc. Soc. ent. xii.

Diptera. WANDOLLECK (1143), WILLISTON (1193).

Hemiptera. BAKER (42, 45); BREDDIN, Patagonia (127); GIARD, Chili, *Coccidæ* (408); HANDLIRSCH (454), MONTANDON (761, 762, 764, 765, 768, 769, 770).

Neuroptera. Amazons, *Odonata*, KIRBY (586).

Orthoptera. BOLIVAR (96).—Patagonia, Paraguay, etc. BRANCSIK (123).—BURR (141).—FINOT (336); GIGLIO-TOS (412).—List of *Forficulidæ* of S. America, FINOT, Act. Soc. Chili, vi, pp. 3–10.

Aptera. Chili and Patagonia, SCHÄFFER (959).

PALÆO-ENTOMOLOGY.

- Notes on Silurian Insect forms in New Brunswick, MATTHEW (726).
 Observations on, with figures, the fossil *Neuroptera*, *Orthoptera*, *Hemiptera*, *Coleoptera* and *Hymenoptera* of the Teyler Museum, with special reference to the determinations of Weyenbergh, MEUNIER (744).
 Brongniart's discoveries, SAJOHELYI (955).
Hymenoptera. KONOW (608).
Tenthredo vetusta Heer referred to *Taxonus*, KONOW, p. 36, Ent. Nachr. xxiii.
Electrocephus, n. g., p. 37, for *E. stralendorffi*, n. sp. Dantzig amber, p. 38, KONOW, Ent. Nachr. xxiii.
Pimpla antiqua note on, MEUNIER, p. 277, Ann. Soc. Bruxelles, xx.
Diptera. Notes on mesozoic, MEUNIER (743).
 Review of Tertiary fossil *Diptera*, MEUNIER (740).
Palæoempalia, n. g. for a fossil *Mycetophilid*, MEUNIER, p. 218, Bull. Soc. ent. France, 1897.
Palæomedeterus, n. g. for a *Dolichopid* from tertiary amber, MEUNIER, p. 174, Ann. Soc. Bruxelles, xix.
Neuroptera. *Hylæoneura lignei*, a Sialid from the Wealden of Bernissart; also a larva allied to *Mormolucoides articulatus*, LAMEERE & SEVERIN, pp. 35-38, Ann. Soc. ent. Belgique, xli.
Aptera. *Geracus* (? n. g.) *tubifer*, Silurian of New Brunswick, MATTHEW, p. 55, Bull. Soc. N. Brunswick, xv, n. sp.

III. SYSTEMATIC.

N.B.—The reference-numbers collected under the headings of the various groups refer to "Titles" on pp. 4-62, and are intended to give, in each case, a complete list of all memoirs containing anything of importance in connection with the group.

- The orders and phylogeny of Insects, SMITH (1035).
 Colour as pattern and design: plates dealing with all the Orders, BRUNNER (138), BLES (87).
 The maxilla of Insects, CHATIN (169).
 Occurrence of black pigment in Insects, VERHOEFF (1124).
 Hybridisation in Insects, ACKERMANN (5).
 List of insects attacked by *Laboulbeniaceæ*, LINDAU, pp. 225-229, Ent. Nachr. xxiii.

(A.) COLEOPTERA.

- Structure of the elytra, VERHOEFF (1126).
 The process of coloration in pupa and imago, VERHOEFF (1127).
 Parasites (internal) of adult *Coleoptera*, CHITTENDEN (170).
 Defence by exudation of fluid, CUÉNOT (223, 224).

CICINDELIDÆ.

[The following titles relate to *Cicindelidæ*, viz., CASEY (162), FAIRMAIRE (305, 308), FLEUTIAUX (345), HELLER (467), HORN (496-503), KOLBE (601), LEA (660), SLOANE (1026).]

- List of *Cicindelidæ* of Java with critical and synonymical remarks, HORN, Deutsche ent. Zeitschr. 1897, pp. 49–60.
 Revision of Mexican *Cicindelidæ*, HORN (498).
 For synonymy of Dokhtoureff's species see HORN, p. 62, Deutsche ent. Zeitschr. 1897.
- Beckerium*, n. g. for *Odontochila leptalis* Bates, HORN, p. 164, Deutsche ent. Zeitschr. 1897.
- Bennigsenium*, n. g., *Cicindelini*, for *B. planicorne*, n. sp. E. Africa, HORN, p. 61, *t. c.*
- B. horni*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 347, n. sp.
- Cicindela*; characters and synonymy of the *Neolaphyra* group, BOURGEOIS, p. 40, Bull. Soc. ent. France, 1897. *C. spp.*, larval habits etc., WEED (1178) pp. 19–27. Notes on N. American, pp. 295 & 299, *C. purpurea*, var. n. *lauta*, *plutonica*, p. 296, CASEY, Ann. N. York Ac. ix. Burrows of *Cicindela hybrida*, LESNE, p. 273, Bull. Soc. ent. France, 1897. *C. togata*, var. n. *apicalis*, HORN, p. 17, Ent. Nachr. xxiii. *C. hybrida*, var. n. *reitteri*, p. 253, *princeps*, var. n. *ducalis*, p. 254, HORN, Deutsche ent. Zeitschr. 1897. *C. speculifera*, var. n. *brevipennis*, HORN, p. 58, *t. c.* *C. scotina*, var. n. *chloris*, p. 168, *C. obsoleta*, var. n. *latemaculata*, *juvenilis*, p. 169, *C. rufiventris*, var. n. *beckeri*, *reducta*, *hoegeana*, p. 171, HORN, BECKER & HÖGE, Deutsche ent. Zeitschr. 1897.
- C. bennigseni*, E. Africa, HORN, p. 61, Deutsche ent. Zeitschr. 1897; *C. quadristriata*, Huilla, *grandis*, Benguela, HORN, p. 239, Ent. Nachr. xxiii; *C. livingstoni*, Centr. Africa, p. 238, *C. (Thopeutica) aurothoracica*, Celebes, p. 239, HORN, Notes Leyden Mus. xix; *C. perroti*, Madagascar, FAIRMAIRE, p. 92, Ann. Soc. ent. Belgique, xli; *C. maheva*, p. 363, *perrieri*, *truncatilabris*, p. 364, Madagascar, FAIRMAIRE, *t. c.*; *C. kolbei*, E. Africa, p. 253, *anulipes*, Minas Geracs, p. 255, HORN, Deutsche ent. Zeitschr. 1897; *C. maindroni*, Sind, HORN, p. 98, Ent. Nachr. xxiii; *C. fallaciosa*, Burma, HORN, p. 57, Deutsche ent. Zeitschr. 1897; *C. excoffieri*, Yunnan, FAIRMAIRE, p. 209, Notes Leyden Mus. xix; *C. (Thopeutica) waltheri*, Celebes, HELLER, Abh. Mus. Dresden, vi, No. 10; *C. sloanei*, W. Australia, LEA, p. 584, P. Linn. Soc. N. S. Wales, 1897; *C. denverensis*, *depressula*, p. 297, *echo*, *inquisitor*, p. 298, N. America, CASEY, Ann. N. York Ac. ix; *C. beckeri*, HÖGE, p. 185, Mexico, *diguetti*, Lower California, HORN, p. 186, Deutsche ent. Zeitschr. 1897; *C. piligera*, Minas Geraes, *mathani*, Ecuador, HORN, p. 18, Ent. Nachr. xxiii : n. spp.
- Collyris bipartita*, India, FLEUTIAUX, p. 24, Bull. Soc. ent. France, 1897, n. sp.
- Cosmema kolbei*, Transvaal, HORN, p. 238, Ent. Nachr. xxiii; *C. discoidalis*, *helleri*, Transvaal, HORN, p. 237, Notes Leyden Mus. xix : n. spp.
- Dromica (Cosmema) semilevis*, Zululand, HORN, p. 98, Ent. Nachr. xxiii; *D. tricostata*, Benguela, HORN, p. 237, *t. c.* : n. spp.
- Dromochorus sericeus*, Texas, *pruininus*, Kansas, CASEY, p. 294, Ann. N. York Ac. ix, n. spp.
- Hiresia fleutiauxi*, Brazil, HORN, p. 255, Deutsche ent. Zeitschr. 1897, n. sp.
- Megacephala neumanni*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 346; *M. spenceri*, W. Australia, SLOANE, p. 33, P. Linn. Soc. N. S. Wales, xxii : n. spp.
- Megalomma flagellicorne*, Madagascar, HORN, p. 235, Notes Leyden Mus. xix, n. sp.
- Myrmecoptera ritsemæ*, Centr. Africa, HORN, p. 236, Notes Leyden Mus. xix; *M. neumanni*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 347 : n. spp.
- Neolaphyra*: *ritchii*, *truquii*, *leucosticta* are one species, HORN, p. 20, Ent. Nachr. xxiii.
- Omus*; table of the species, CASEY, pp. 288 & 289, Ann. N. York Ac. ix.

- O. montanus*, *lugubris*, p. 290, *punctifrons*, *confluens*, p. 291, *sculptilis*, p. 292, *elongatus*, p. 293, California, *id. t. c. n. spp.*
Oxychila bolivari, Bolivia, HORN, p. 239, Notes Leyden Mus. xix, n. sp.
Tetracha excisilatera, Centr. Australia, SLOANE, p. 34, P. Linn. Soc. N. S. Wales, xxii; *T. oxychiloides*, Minas Geraës, HORN, p. 240, Notes Leyden Mus. xix : n. spp.
Therates cyanea, variation, HORN, pp. 52-54, Deutsche ent. Zeitschr. 1897.

CARABIDÆ.

- [The following titles relate to *Carabidæ*, viz., ALLUAUD (12, 15), BEDEL & FRANÇOIS (62), BRANCSIK (124), CASEY (162), DIEZ (242), ESCHERICH (299), FAIRMAIRE (305, 308), FLEISCHER (340), GANGLBAUER (1205), GUILLEBEAU (445), HAYWARD (465), KOLBE (601, 602, 605), LAPOUGE (651), LESNE (678), REITTER (898-900, 903, 905-908), ROESCHKE (944), SEMENOW (1001, 1003), SLOANE (1027), TSCHITSCHÉRINE (1096-1098), VAULOGER (1116, 1117), VORBRINGER (1135).]
- Stridulating organs of *Siagona*, BEDEL & FRANÇOIS, Bull. Soc. ent. France, 1897, p. 38.
- Critical remarks on Reitter's tables of *Carabini*, SEMENOW, pp. 504-540, Horæ Soc. ent. Ross. xxxi. Notes on Reitter's tables, BORN, pp. 97 etc., Soc. ent. xii. Notes on Reitter's tables, ROESCHKE, pp. 77-79, Ent. Nachr. xxiii. Remarks on the genera of palæarctic *Carabini*, in reply to observations of Roeschke and of Kraatz, REITTER, pp. 17-25, and 26-30, Deutsche ent. Zeitschr. 1897.
- Note on the habits of some *Carabidæ* in Sumatra, BOUCHARD, p. 11, Bull. Soc. ent. France, 1897.
- Development of the elytral sculpture of *Carabus*, DIEZ (242).
- Abacetus salamensis*, p. 74, *abacillus*, p. 75, East Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. : n. spp.
- Acathaicus*, discussed, SEMENOW, pp. 482-497, Horæ Soc. ent. Ross. xxxi.
- Acrogeniodon*, n. g., p. 65, *Anisodactylides* for *A. bedeli*, n. sp., Mou-pin, p. 66, TSCHITSCHÉRINE, Abeille, xxix.
- Agonum perprasinum*, Syria, REITTER, p. 45, Wien. ent. Zeit. xvi, n. sp.
- Amara majuscula*, habitat and characters, p. 69, *A. tumida* (= *Harpalus simulans*, Sahlb.), p. 70, TSCHITSCHÉRINE, Abeille, xxix. *A. pumilio* (= *A. [Percosia] phœnix*, Tsch.), TSCHITSCHÉRINE, p. 30, *t. c.*
- A.* (subg. n. *Cyclothorax*) for *A. harpaloides*, n. sp., Greece, FLEISCHER, p. 72, Wien. ent. Zeit. xvi; *A. (Triæna) davidi*, Mou-pin, p. 67, *A. (Celia) vagans*, China, p. 68, TSCHITSCHÉRINE, Abeille, xxix : n. spp.
- Amaroschesis*, n. g., p. 28, for *Amathitis yunnana*, and *Zabrus chinensis*, Fairm., with *A. delavayi*, n. sp., Yunnan, p. 29, TSCHITSCHÉRINE, Abeille, xxix.
- A. davidi*, Mou-pin, TSCHITSCHÉRINE, p. 58, *t. c.*, n. sp.
- Anisodactylus winthemi*, var. n. *metallicus*, BEDEL, p. 308, Bull. Soc. ent. France, 1897.
- Anophthalmus carantii*, habitat, BALBI, pp. 72-75, Natural. Sicil. n. s. ii.
- Anthia menyharthi*, Zambesi, BRANCSIK, p. 108, pl. iv, fig. 1, Jahresh. Ver. Trencsen, xix, n. sp.
- Antimerina*, n. g., p. 170, near *Lobocephalus*, for *A. elegans*, n. sp., Madagascar, ALLUAUD, p. 171, Ann. Soc. ent. France, 1897.
- Apatocarabus*, subg. n. of *Carabus* for *C. favieri*, SEMENOW, p. 508, Horæ Soc. ent. Ross. xxxi.
- Archæocarabus*, sect. n. of *Carabus*, q. v.
- Atractonotus mulsanti*, var. n., *sansibarica*, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 59.
- Axinocarabus*, revision, SEMENOW, pp. 371-388, Horæ Soc. ent. Ross. xxxi.

- Bembidium*; revision of North American, HAYWARD, Tr. Amer. ent. Soc. xxiv, pp. 32-143.
- B. escherichi*, Asia Minor, GANGLBAUER, p. 12, Ent. Zeit. Stettin, lviii; *B. (Lopha) dormeyeri*, Lake Baikal, REITTER, p. 122, Wien. ent. Zeit. xvi; *B. robusticolle*, p. 50, *blanchardi*, p. 56, *brevistriatum*, p. 58, *simplex*, p. 63, *nigrocæruleum*, *macklini*, p. 66, *grandiceps*, p. 70, *con-sanguineum*, p. 76, *canadense*, p. 77, *platynoides*, p. 78, *subangustatum*, p. 83, *californicum*, p. 84, *rickseckeri*, p. 85, *henshawii*, p. 87, *consimile*, p. 88, *hageni*, p. 89, *graciliforme*, p. 97, *coloradense*, p. 98, *convexulum*, p. 106, *mormon*, p. 110, *wickhami*, *constricticolle*, p. 112, *horni*, p. 116, *muscicola*, p. 122, *puritanum*, p. 129, N. America, HAYWARD, Tr. Amer. ent. Soc. xxiv : n. spp.
- Brachinus oculicollis*, Madagascar, FAIRMAIRE, p. 95, Ann. Soc. ent. Belgique, xli; *B. canaliculatus*, p. 366, *fuscifrons*, *impressifrons*, *te-trastigma*, p. 367, Madagascar, FAIRMAIRE, t. c. : n. spp.
- Brennus*; revision, CASEY, pp. 305-338, Ann. N. York Ac. ix.
- B. basalis*, p. 311, *duplicatus*, p. 312, *incipiens*, p. 313, *decipiens*, p. 316, *gravidus*, p. 317, *symmetricus*, p. 319, *gentilis*, *strictus*, p. 322, *catenu-latus*, p. 324, *convergens*, p. 326, *opacicollis*, *sculptipennis*, p. 327, *porcatus*, p. 328, *sinuatus*, *politus*, p. 330, *corpulentus*, p. 331, *composi-tus*, p. 332, *cupripennis*, *insularis*, p. 334, *confusus*, p. 336, N. America, CASEY, t. c. : n. spp.
- Calleida fastuosa*, characters, FAIRMAIRE, p. 94, Ann. Soc. ent. Belgique, xli.
- C. ignicincta*, Madagascar, FAIRMAIRE, l. c., n. sp.
- Calocarabus*, discussion, SEMENOW, pp. 457-462, Horæ Soc. ent. Ross. xxxi.
- Calocheenus*, discussed, and revised, SEMENOW, pp. 450-457, t. c.
- Calosoma sycophanta*, black var., HELLER, p. 312, Ent. Nachr. xxiii.
- C. calida*, *sayi*, *frigida*, *obsoleta*, n. subspp. of, pp. 344 & 345; *pime-loides zimmermanni*, *striatula*, distinguished, p. 345, CASEY, Ann. N. York Ac. ix.
- C. marginalis*, *sponsa*, p. 340, *parviceps*, p. 341, *monticola*, p. 342, *arcuata*, p. 343, N. America, CASEY, Ann. N. York Ac. ix : n. spp.
- Carabus (Coptolabrus) smaragdinus*, variation, subspp. n. *chinganensis*, p. 320, *mandshuricus*, p. 324, *C. subformosus*, subsp. n. *spurius*, p. 331, *C. (Microplectes) argonautarum*, n. n. for *cupreus*, Chaud. pp. 388 & 394, *C. (Acathaicus) idolon*, n. n. for *potanini* Sem. p. 489, *C. koku-jewi*, n. n. for *C. fischeri* Reitt. p. 515, *C. arcanus*, n. n. for *C. (Plectes) concinnus*, Sem. p. 525, SEMENOW, Horæ Soc. ent. Ross. xxxi. *C. auratus*, var. n. *nicolasi*, CHOBOUT, p. 25, Echange, 1897. *C. solieri*, var. n. *cyaneo-viridis*, CARRET, p. 38, Echange, 1897. *C. (Xystrocarabus) catenatus*, var. n. *fontanellæ*, REITTER, p. 203, Wien. ent. Zeit. xvi. *C. cavernosus*, var. *variolatus*, note on REITTER, p. 77, t. c. *C. deubeli*, note on REITTER, p. 242, Wien. ent. Zeit. xvi, and KRAATZ & REITTER, p. 283, t. c. *C. tibialis*, characters, ROESCHKE, p. 80, Deutsche ent. Zeitschr. 1897.
- C. (Plectes) jason*, p. 315, *olgae*, p. 317, Caucasus, *C. (Damaster) anurus*, Japan, p. 318, *C. (Coptolabrus) dux*, E. China, p. 325, *grumorum*, Gan-su, p. 327, *berezowskii*, with subsp. *sunpanensis*, W. China, p. 329, *C. (Archæocarabus* sect. n.) *relictus*, W. China, p. 337, *C. kukunorensis*, Gan-su, p. 342, *C. (Ophiocarabus) kozlowi*, p. 344, *præcox*, p. 347, Tjan-schan, *ascendens*, W. China, p. 349, *C. (Archæocarabus) sininensis*, Gan-su, p. 351, *indigestus*, W. China, p. 352, *C. (Tachycarabus* sect. n.) *poëta*, p. 357, *Korsakowi*, p. 361, *pusio*, p. 362, *C. (Hypsocarabus* sect. n.) *latro*, p. 367, W. China, *C. (Eccoptolabrus* subg. n.) *exiguus*, Se-tschuan, p. 400, *C. (Neoplesius) nanschancicus*, Kuku-nor, p. 416, *lama*, p. 418, *Kaschkarowi*, p. 423, *alpherakii*, p. 425, Se-tschuan, *C. (Pseudocranion) tiro*, Sunpan, p. 440, *fumigatus*, p. 442, *C. (Crato-cranion* sect. n.) *benjamini*, p. 445, *sackeni*, p. 448, Se-tschuan, *C.*

- (*Calocephenus*) *sewertzowi*, Nan-schan Mts., p. 455, *C.* (*Cryptocephenus* subg. n. p. 462) *sifanicus*, Se-tschuan, p. 465, *C.* (*Eotribax* subg. n.) *celsus*, Bukhara, p. 522, SEMENOW, Horæ Soc. ent. Ross. xxxi; *C. tauricus*, ?*bessarabici*, var., Crimea, ROESCHKE, p. 79, Deutsche ent. Zeitschr. 1897; *C.* (*Mimocarabus*) *roseni*, N. Persia, REITTER, p. 121, Wien. ent. Zeit. xvi; *C.* (*Apostocarabus*) *chaffangoni*, Jakutsk, LESNE, p. 297, cut, Bull. Soc. ent. France, 1897; *C.* (*Coptolabrus*) *mesites*, Tibet, FAIRMAIRE, p. 210, Notes Leyden Mus. xix; *C. kolbei*, China, ROESCHKE, p. 116, Ent. Nachr. xxiii : n. spp.
- Carenides*: notes on various, SLOANE, pp. 190–229, P. Linn. Soc. N. S. Wales, xxii.
- Carenidium leai*, W. Australia, SLOANE, p. 223, t. c. n. sp.
- Carenum reflexum*, p. 194, *occidentale*, p. 195, *cordipenne*, p. 196, *froggatti*, p. 198, *sulcaticeps*, p. 199, *purpureum*, p. 201, *imitator*, p. 206, *amplicolle*, p. 207, *versicolor*, p. 208, *opacicolle*, p. 209, *venustum*, p. 212, *acutipes*, p. 213, *pulchrum*, p. 215, Australia, SLOANE, t. c. : n. spp.
- Catomabax*, subg. n., cf. *Eucamptognathus*.
- Cephalomorphus*, subg. n. of *Ophonus* for *O. capito*, Mor., TSCHITSCHÉRINE, p. 45, Abeille, xxix.
- Chlœnius lyratus* = (*lateripictus*, Fairm.), BEDEL, p. 35, Abeille, xxix.
- Colpodes grandidieri*, p. 172, *solidus*, *hova*, p. 173, *coquereli*, p. 174, *antankara*, *simplex catati*, p. 175, *sylvaticus*, *mica-auri*, p. 176, *parenthesis*, *gemmula*, *imerince*, *fairmairei*, p. 177, *subimpressus*, *obtusidens*, *dirrhaphis*, p. 178, *radama*, *dieganus*, *blandus*, p. 179, *suturellus*, *sikorai*, *oberthuri*, p. 180, *perforatus variolosus*, p. 181, Madagascar, ALLUAUD, Ann. Soc. ent. France, 1897 : n. spp.
- Coptolabrinus*, subg. n. of *Carabus* for *C. pustulifer*, Luc., REITTER, p. 203, Wien. ent. Zeit. xvi.
- Cratocephalus*, discussion, SEMENOW, pp. 467–482, Horæ Soc. ent. Ross. xxxi.
- Cratocranion*, sect. n. of *Carabus*, q. v.
- Cryptocephenus*, subg. n. of *Carabus*, q. v.
- Cyclosomus basalis*, Zambesi, KOLBE, p. 349, Ent. Nachr. xxiii, n. sp.
- Cyclothorax*, subg. n. of *Amara*, q. v.; cf. also *Euderocycla*.
- Cymindis bedeli*, Algeria, TSCHITSCHÉRINE, p. 21, Abeille, xxix; *C.* (*Psammoxenus*) *triangularis*, Thian-Schan, REITTER, p. 247, pl. iii, f. 2, Wien. ent. Zeit. xvi; *C. kilimana*, Africa, KOLBE, Deutsch-Ost-Afrika, lv, Col. p. 51 : n. spp.
- Dioryche seriata*, E. Africa, KOLBE, p. 79, Mt. Mus. Hamburg, xiv, n. sp.
- Diplochila alternans*, p. 347, *cliens*, *nupera*, p. 348, N. America, CASEY, Ann. N. York Ac. vi : n. spp.
- Drimostoma basale*, p. 165, *ovum*, p. 166, Madagascar, ALLUAUD, Ann. Soc. ent. France, 1897 : n. spp.
- Dromius opacicolor*, Syria, REITTER, p. 30, Deutsche ent. Zeitschr. 1897, n. sp.
- Drypta cyanicollis*, p. 93, *quadrispina*, p. 94, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli; *D. perrieri*, *waterhousei*, FAIRMAIRE, p. 365, t. c. : n. spp.
- Dyschirius gibbicollis*, Madagascar, FAIRMAIRE, p. 367, Ann. Soc. ent. Belgique, xli, n. sp.
- Eccoptolabrus*, subg. n. of *Carabus*, q. v.
- Eccoptoptera adonia*, E. Africa, KOLBE, p. 76, Mt. Mus. Hamburg, xiv, n. sp.
- Elaphrus* (*Elaphroterus*) *tschitscherini*, Caucasus, SEMENOW, p. 595, Horæ Soc. ent. Ross. xxxi; *E. politus*, California, CASEY, p. 345, Ann. N. York Ac. vi : n. spp.
- Eocarabus*, subg. n. for *Coptolabrus jankowskii*, Oberth., SEMENOW, p. 403, Horæ Soc. ent. Ross. xxxi,

- Eotribax*, subg. n. of *Carabus* for *C. eous*, etc. SEMENOW, p. 520, Horæ Soc. ent. Ross. xxxi.
- Eucamptognathus prasinus*, p. 166, *E. (Catomabax* subg. n.) *dieganus*, p. 167, Madagascar, ALLUAUD, Ann. Soc. ent. France, 1897 : n. spp.
- Eucoptolabrus*, sect. n. of *Coptolabrus* for *gemmifer* and *pustulifer*, SEMENOW, p. 336, Horæ Soc. ent. Ross. xxxi.
- Euderocycla*, n. n. to replace *Cyclothorax*, Fleischer supra, and *fleischeri* n. n. for *harpaloides* Fl., TSCHITSCHÉRINE, p. 30, Abeille, xxix.
- Eunema*, subg. n., cf. *Feronia*.
- Eupachycechenus*, subg. n. of *Carabus* for *C. rifensis* Fairm., SEMENOW, p. 512, Horæ Soc. ent. Ross. xxxi.
- Eurydera femorata* (= *obscurata* Fairm.), FAIRMAIRE, p. 97, Ann. Soc. ent. Belgique, xli.
- E. stellulata*, Madagascar, *id. l. c.*, n. sp.
- Eustuhlmannium*, n. n. for *Stuhlmannium* K. *E. mirabile*, figure, pl. 1, fig. 2, KOLBE, p. 65, Deutsch-Ost-Afrika, Col. iv.
- Eutoma gratiosum*, p. 217, *aberrans*, p. 218, Australia, SLOANE, P. Linn. Soc. N. S. Wales, xxii, n. spp.
- Eutrichopus*, n. g. for *Feronia canariensis* Br., TSCHITSCHÉRINE, Abeille, xxix, p. 32.
- Feronia lissodera*, synonymy, p. 30, *F. nitens* var. n. *warentzowi*, p. 32, TSCHITSCHÉRINE, Abeille, xxix. *F. festiva* and *kamberskyi* are synonyms, TSCHITSCHÉRINE, p. 74, *t. c.*
- F. (Eunema*, subg. n.) for *F. filum*, p. 70, Mou-pin, *F. (Pterostichus) davidi*, Yunnan, p. 71, *F. (Pseudopedius) aegyptius*, Egypt, p. 73, TSCHITSCHÉRINE, Abeille, xxix : n. spp.
- Galerita bicolor*, varr. n. *obliqua intermedia*, CASEY, p. 350, Ann. N. York Ac. ix.
- G. thoracica*, Florida, *infirmata*, Arizona, CASEY, p. 350, *t. c.*, n. spp.
- Glycia rugicollis*, Madagascar, FAIRMAIRE, p. 366, Ann. Soc. ent. Belgique, xli, n. sp.
- Graphipterus lineellus*, Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 59, n. sp.
- Haplocarabus*, sect. n. of *Carabus* for *C. confinis* Sem., SEMENOW, p. 536, Horæ Soc. ent. Ross. xxxi.
- Harpalus metallinus*, and allies, synonymy and distinctions, TSCHITSCHÉRINE, p. 25, Abeille, xxix.
- H. triseriatus*, Thessaly, FLEISCHER, p. 73, Wien. ent. Zeit. xvi; *H. errans*, p. 77, *maurus*, p. 78, *plebeius*, p. 79, Turkestan, TSCHITSCHÉRINE, Abeille, xxix; *H. pewtzowi*, Centr. Asia, p. 49, *davidi*, p. 51, *misellus*, p. 53, Peking, *bouvieri*, p. 54, *pauper*, p. 55, *consors*, *vicinus*, p. 56, *miser*, p. 57, Mou-pin, TSCHITSCHÉRINE, *t. c.*; *H. plancyi*, Peking, p. 22, *trichophorus*, Asia minor, p. 24, *polychromus*, p. 26, *raddei*, p. 27, Transcaucasus, TSCHITSCHÉRINE, *t. c.*; *H. (Hypolithus) xanthocnemis*, Madagascar, ALLUAUD, p. 169, Ann. Soc. ent. France, 1897 : n. spp.
- Hemitelestus hova*, Madagascar, ALLUAUD, p. 165, Ann. Soc. ent. France, 1897, n. sp.
- Hypolithus magnicollis*, *conviva*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 348; *H. magnicollis*, E. Africa, KOLBE, p. 78, Mt. Mus. Hamburg, xiv : n. spp.
- Hypsocarabus*, sect. n. of *Carabus*, q. v.
- Iridessus*: position and characters, TSCHITSCHÉRINE, p. 60, Abeille, xxix.
- Laccopterum macleayi* (= *spencii* Mael. nec Westw.), N. S. Wales, SLOANE, P. Linn. Soc. N. S. Wales, xxii, p. 192, n. sp.
- Lebia cyanocephala*, var. *distincta*, FUENTE, p. 129, Act. Soc. Espan. 1897.
- L. diegana*, Madagascar, ALLUAUD, p. 169, Ann. Soc. ent. France, 1897, n. sp.

- Leistus frater*, E. Siberia, REITTER, p. 121, Wien. ent. Zeit. xvi, n. sp.
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- Globa* and allies, characters tabulated, RAFFRAY, pp. 256, etc. Ann. Soc. ent. France, 1896.
- Imerina*, n. g., p. 281, *Clavigerides*, near *Radama*, for *I. breviceps wasmanni*, n. spp., Madagascar, p. 282, RAFFRAY, *t. c.*
- Laphioderus brevipennis*, Cape Colony, RAFFRAY, p. 102, Tr. S. African Soc. x, n. sp.
- Marellus granosus*, Natal, RAFFRAY, p. 113, Tr. S. African Soc. x, n. sp.
- Megafaronus*, n. g., *Faronini* for *M. ventralis*, n. sp., Oregon, CASEY, p. 550, Ann. N. York Ac. ix.
- Melba*, n. g., p. 565, for a part of the N. American *Trimium* and *M. texana*, p. 566, *sulcatuta*, p. 567, *fossiger*, p. 568, *uniformis*, p. 569, n. spp., N. America, CASEY, Ann. N. York Ac. ix.
- Metopioxys hamatus*, p. 252, *tricuspidatus*, p. 253, Amazons, RAFFRAY, Ann. Soc. ent. France, 1896, n. spp.
- Mina laticollis*, p. 233, *rugiceps*, p. 234, Sumatra, RAFFRAY, *t. c.* n. sp.
- Miroclaviger alluaudi*, Madagascar, RAFFRAY, p. 270, Ann. Soc. ent. France, 1897, n. sp.
- Nisaxis parviceps*, Nebraska, CASEY, p. 610, Ann. N. York Ac. ix, n. sp.
- Novoclaviger wroughtoni*, referred to *Fustigerodes*, WASMANN, p. 202, Wien. ent. Zeit. xvi.
- Odontalgus costatus*, Cape Colony, RAFFRAY, p. 106, pl. xvii, fig. 9, Tr. S. African Soc. x, n. sp.
- Pilopius*, n. g., p. 617, for the American *Ctenistes*, with the following n. spp., *P. lacustris*, p. 619, *saginitus*, p. 620, *georgianus*, p. 621, *iowensis granicollis*, p. 622, *floridanus*, p. 623, *cinderella*, *impressipennis*, p. 624, N. America, CASEY, Ann. N. York Ac. ix.
- Prodalma*, n. g., near *Euplectus*, for *P. capensis*, pl. xvi, fig. 19, n. sp., S. Africa, RAFFRAY, p. 51, Tr. S. African Soc. x.
- Proterus*, n. g., near *Mechanicus*, for *P. punctatus*, pl. x, fig. 9, n. sp., Sumatra, RAFFRAY, p. 231, Ann. Soc. ent. France, 1896.
- Pselaphischnus*, n. g., near *Pselaphus*, for *P. squamosus*, pl. xvii, fig. 2, n. sp., Cape Town, RAFFRAY, p. 99, Tr. S. African Soc. x.
- Pselaphocerus diversus*, Cape Town, p. 111, *antennatus*, p. 112, pl. xvii, fig. 13, RAFFRAY, Tr. S. African Soc. x, n. spp.
- Pselaphodes sumatrensis*, Palembang, RAFFRAY, p. 277, Ann. Soc. ent. France, 1896, n. sp.
- Pselaptus grouvellei*, Bahia, RAFFRAY, p. 260, Ann. Soc. ent. France, 1896, n. sp.
- Pseudotychus*, n. g., *Tyrini*, for *P. nigerrimus*, n. sp., Cape Colony, RAFFRAY, p. 114, Tr. S. African Soc. x.
- Pycnoplectus*, n. g. for part of *Euplectus* and *P. tenellus*, p. 552, *imperfectus*, p. 553, n. spp., N. America, CASEY, Ann. N. York Ac. ix.
- Pygoxyon apfelbecki*, Bosnia, GANGLBAUER, p. 493, Wiss. Mitt. Bosnien, v, n. sp.
- Radama sulcatus*, Madagascar, WASMANN, p. 262, pl. i, fig. 3, Deutsche ent. Zeitschr. 1897, n. sp.

- Radamides*, n. g., p. 261, *Clavigerides* for *R. trifoveolatus*, n. sp., Madagascar, p. 262, pl. i, fig. 2, Wasmann, Deutsche ent. Zeitschr. 1897.
- Raffrayia caviceps*, p. 64, *deplanata*, *incerta*, p. 65, *variabilis*, p. 66, *nasuta*, p. 67, *calcarata*, p. 68, *armata*, p. 69, *cruciata*, p. 70, *bicolor*, p. 71, *laticollis*, p. 73, *abdominalis*, *pilosella*, p. 74, *natalensis*, *nodosa*, p. 75, *microcephala*, p. 76, *obscura*, p. 77, S. Africa, RAFFRAY, Tr. S. African Soc. x, n. spp.
- Ramecia*: position and affinities, CASEY, p. 552, Ann. N. York Ac. ix.
- Reichenbachia*: table of N. American species, CASEY, pp. 586–592, Ann. N. York Ac. ix. *R. subsimilis*, p. 594, *kansana*, p. 595, *ursina*, p. 596, *insolita*, p. 597, *sodalis*, p. 598, *fusciventris*, *peregrinator*, p. 599, *corporalis*, p. 600, *borealis*, p. 601, *distans*, p. 602, *procera*, p. 603, *arcifer*, p. 604, *taphrocera*, p. 605, *falli*, p. 606, *turgidicornis*, p. 607, *binodifer articularis fusticornis*, p. 608, *spatulifer*, p. 609, N. America, CASEY, t. c.; *R. decipiens*, *subpubescens*, p. 92, *discreta*, p. 93, *afra*, p. 94, *rivularis*, p. 129, S. Africa, RAFFRAY, Tr. S. African Soc. x; *R. auriculata*, *viduana*, p. 266, *usitata*, p. 267, Madagascar, RAFFRAY, Ann. Soc. ent. France, 1897: n. spp.
- Simplona*, n. g., p. 561, for *S. arizonica*, n. sp., Williams, p. 562, CASEY, Ann. N. York Ac. ix.
- Syrbatus princeps*, Reitter, referred to *Batrisus*, RAFFRAY, p. 236, Ann. Soc. ent. France, 1896.
- S. mashuna*, S. Africa, RAFFRAY, p. 86, pl. xvii, fig. 3, Tr. S. African Soc. x, n. sp.
- Tanypleurus variolosus*, p. 268, *bouchardi*, p. 269, Sumatra, RAFFRAY, Ann. Soc. ent. France, 1896, n. spp.
- Theocerus*, n. g., *Clavigerides* for *T. crenulatus*, n. sp., Madagascar, RAFFRAY, p. 280, Ann. Soc. ent. France, 1896.
- Tmesiphorus rugicollis*, Africa, RAFFRAY, p. 108, Tr. S. African Soc. x, n. sp.
- Trichonomorphus porcinus*, Sumatra, RAFFRAY, p. 232, Ann. Soc. ent. France, 1896, n. sp.
- Trimiodytes*, n. g., near *Euplectus*, for *T. palustris*, pl. xvi, fig. 18, n. sp., p. 52, and *T. setifer*, n. sp., p. 127, Cape Colony, RAFFRAY, Tr. S. African Soc. x.
- Trimiomelba*, n. g., p. 563, for *T. levis*, n. sp. Columbia, N. A., p. 564, CASEY, Ann. N. York Ac. ix.
- Trimioplectus*, characters, CASEY, p. 572, Ann. N. York Ac. ix.
- Trimium*, tabulation of N. American forms allied to, CASEY, pp. 557 & 558, Ann. N. York Ac. ix.
- Tychus bosnicus*, Sarajevo, GANGLBAUER, p. 495, Wiss. Mitt. Bosnien, v, n. sp. ?; *T. pocahontas*, p. 615, *hexagonus*, p. 616, N. America, CASEY, Ann. N. York Ac. ix: n. spp.
- Tyrus carinifer*, p. 628, *semiruber*, *consimilis*, p. 629, N. America, CASEY, Ann. N. York Ac. ix, n. spp.
- Xenogyna*, n. g., p. 60, near *Eutyphlus*, for *X. heterocera*, n. sp. Cape Colony, p. 61, RAFFRAY, Tr. S. African Soc. x.
- Xybarida*, n. g.; near *Xybaris*, for *X. clavata*, n. sp. Brazil, RAFFRAY, p. 260, Ann. Soc. ent. France, 1896.
- Zethopsus laticeps*, *sulcicollis*, S. Africa, RAFFRAY, p. 50, Tr. S. African Soc. x; *Z. major*, *sulcicollis*, p. 228, *cornutus*, *latifrons*, p. 229, Zanzibar, RAFFRAY, Ann. Soc. ent. France, 1896: n. spp.
- Zolium*, n. g. for *Trimiopsis eggersi*, CASEY, p. 562, Ann. N. York Ac. ix.

PAUSSIDÆ.

[Cf. PÉRINGUEY (828), Wasmann (1157), Waterhouse (1172).]

Habits and peculiarities, Wasmann (1157).

- The *Paussidæ* of S. Africa, PÉRINGUEY, pp. 1-42, pls. xii & xiii, Tr. S. African Phil. Soc. x.
Paussus mimus, p. 22, *braunsi*, p. 39, *elizabethæ*, p. 40a, S. Africa, PÉRINGUEY, Tr. S. African Phil. Soc. 1897, n. spp.
Protopaussus walkeri, China, WATERHOUSE, p. 391, Tr. ent. Soc. London, 1897, n. sp.

SCYDMÆNIDÆ.

[Cf. CASEY (162), GUILLEBEAU (443, 444), XAMBEU (1198).]

- Revision of the N. American with discussion on classification and establishment of ten tribes, CASEY, Ann. N. York Ac. ix, pp. 351, etc.
Acholerops, n. g., p. 535, near *Eumicrus*, for *zimmermanni*, Schaum, and *A. retrusa*, n. sp. Pennsylvania, p. 537, CASEY, Ann. N. York Ac. ix.
Ascydmus, n. g., p. 505, for *A. tener*, n. sp. Pennsylvania, p. 506, CASEY, t. c.
Catalinus, n. g. for *Scydmænus angustus*, Lec. CASEY, p. 492, t. c.
Cephennium guillebeaudi, E. Pyrenees, XAMBEU, p. 84, Echange, 1897; *C. virginicum*, N. America, CASEY, p. 503, t. c. : n. spp.
Ceramphis, n. g. for *Scydmænus deformata*, Horn, CASEY, p. 538, Ann. N. York Ac. ix.
Chevrolatia chobauti, Algeria, GUILLEBEAU, p. 163, Bull. Soc. ent. France, 1897, n. sp.
Connophron, n. g. for most of the N. American species of *Euconnus*, and with 68 n. spp. from N. America, CASEY, pp. 390-466, Ann. N. York Ac. ix.
Delius, n. g. for *D. robustulus*, n. sp. Pennsylvania, CASEY, p. 497, t. c.
Drastophus, n. g., near *Euconnus*, for *D. lævicollis*, n. sp. California, CASEY, p. 389, t. c.
Euconnus ventralis, p. 366, *semiruber*, p. 368, *varicornis*, p. 369, *E. (Scopophus, subg. n.) cavipennis*, p. 371, *occultus*, p. 372, *nigrescens*, p. 373, *affinis*, p. 374, *gratus*, p. 375, *putus*, p. 376, *merus*, p. 377, *relucens*, p. 378, *E. (Psomophus, subg. n.) hædillus*, p. 380, *impotens*, p. 382, *callidus*, *debilis*, p. 383, *capitatus*, p. 384, N. America, CASEY, t. c. : n. spp.
Eumicrus occipitalis, p. 526, *foveatus*, p. 528, *floridanus*, p. 530, *longicollis*, p. 531, *ochreateus*, p. 532, *saginat*, p. 533, *cruralis*, p. 534, N. America, CASEY, t. c., n. spp.
Eustemmus diversus, p. 23, *theryi*, *sternalis*, *bonnairei*, p. 24, Algeria, *E. (Cholerus) reitteri*, p. 25, GUILLEBEAU, 1897, n. spp.
Eutheia americana, Pennsylvania, CASEY, p. 508, Ann. N. York Ac. ix, n. sp.
Leptoscydmus, n. g., p. 518, for *Eumicrus caseyi* and *L. cavifrons*, n. sp. Pennsylvania, p. 521, CASEY, t. c.
Lophioderus, n. g., p. 356, for *Scydmænus biformis*, Mäkl. *gracilis*, Lec. and with *L. arcifer*, p. 359, *myops*, p. 361, n. spp. N. America, CASEY, t. c.
Neladius, n. g., p. 498, for *N. tenuis*, n. sp. Pennsylvania, p. 499, CASEY, t. c.
Noctophus, n. g., p. 387, near *Euconnus*, for *N. schmitti*, n. sp. N. Carolina, p. 388, CASEY, t. c.
Opresus, n. g., p. 494, for *Scydmænus misellus*, Lec. and *O. luteus*, p. 495, *atomus*, p. 496, n. spp. Pennsylvania, CASEY, t. c.
Papusus, n. g. *Clidicini*, p. 542, for *P. macer*, n. sp. California, p. 544, CASEY, t. c.
Parascydmus, subg. n. of *Scydmænus*, q. v. CASEY, p. 473, t. c.
Psomophus, subg. n. cf. *Euconnus*.
Pycnophus, n. g. for *Scydmænus rasmus*, Lec. CASEY, p. 385, t. c.

- Scopophus*, subg. n. of *Euconnus*, q. v. CASEY, p. 365, *t. c.*
Scydmaenus badius, p. 475, *conjux*, p. 476, *turbatus*, p. 478, *puncticeps sculpticeps*, p. 479, *ovipennis*, p. 480, *S. (Brachycephsis) pacificus*, p. 482, *tristis*, p. 484, *pubipennis*, p. 486, *S. (Parascydmsus, subg. n.) ventriculus*, p. 487, *corpusculum*, *caducus*, p. 488, *exiguus*, p. 489, N. America, CASEY, Ann. N. York Ac. ix, n. spp.
Smicrophus, n. g., near *Euconnus*, for *S. leviceps*, Iowa, p. 467, *evanescens*, Florida, p. 468, n. spp. CASEY, *t. c.*
Tuphrosydmsus, subg. n. of *Scydmaenus*, for *S. californicus*, Motsch. CASEY, p. 473, *t. c.*
Veraphis, n. g., p. 509, for some N. American species of *Eutheia* and *V. cavicornis*, p. 511, *capitata*, p. 512, n. spp. N. America, CASEY, *t. c.*
Xestophus, subg. n. of *Euconnus* for *Scydmaenus salinator*, Lec. CASEY, p. 365, *t. c.*

SILPHIDÆ.

- [Cf. FABRE (304), GUILLEBEAU (445), HAMANN (448), REITTER (900, 912), SCHWARZ (987), WASMANN (1170).]
Aclypea seriatorugosa, Askhabad, REITTER, p. 211, Deutsche ent. Zeitschr. 1897, n. sp.
Agathidium fronticorne, Talysch, REITTER, p. 123, Wien. ent. Zeit. xvi, n. sp.
Hydnobius secundus, Vacluse, GUILLEBEAU, p. 224, Bull. Soc. ent. France, 1897, n. sp.
Leptoderus hohenwarti, nervous system, HAMANN (448).
Lomechon, n. g., *Cholevini* (myrmecophilous) for *L. alfaroi*, n. sp., Costa Rica, pl. ii, fig. 5, WASMANN, p. 284, Deutsche ent. Zeitschr. 1897.
Necrophorus: habits and instinct, FABRE (304). *N. nepalensis*, Hope (= *quadripunctatus*, Kr.), *N. vespilloides* var. n. *sylvivagus*, REITTER, p. 48, Wien. ent. Zeit. xvi.
Pinodytes hamiltoni, habits, HAMILTON, p. 34, Ent. News Philad. 1897.
Ptomaphagus cavernicola, Missouri, SCHWARZ, p. 58, P. ent. Soc. Washington, iv, n. sp.

TRICHOPTERYGIDÆ and SCAPHIDIIDÆ.

- Ptenidium scutellare*, Algeria, GUILLEBEAU, p. 22, Echange, 1897, n. sp.
Scaphidium interruptum, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli, n. sp.

HISTERIDÆ.

- [Cf. KOLBE (601), LEWIS (680, 681), REITTER (900), THÉRY (1074, 1076).]
Anaglymma: Phelister impar Mars. referred to this, LEWIS, p. 362, Ann. Nat. Hist. xx.
A. consobrina, Cameroons, LEWIS, p. 180, *t. c.* n. sp.
Apobletes servulus, Cameroons, LEWIS, p. 356, *t. c.* n. sp.
Chalcurgus, n. g., near *Pachycrærus*, for *C. cyaneus, minor*, n. spp. E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 100.
Coproxenus, n. g., p. 190, for *C. marshalli*, S. Africa, p. 191, *opacipennis*, Cameroons, p. 192, n. spp., LEWIS, Ann. Nat. Hist. xx.
Heterius, relations to Ants, ESCHERICH, pp. 234-236, Wien. ent. Zeit. xvi.
H. chobauti, Algeria, THÉRY, p. 26, Bull. Soc. ent. France, 1897; [*H. plicicollis* (= *chobauti* Théry), PIC, p. 311, Bull. Soc. ent. France, 1897]: n. sp.

- Hister intrepidus*, Natal, p. 187, *rivalis*, Congo, *marshalli*, Mashonaland, p. 188, *rubricatus*, Cameroons, p. 190, LEWIS, Ann. Nat. Hist. xx; *H. colensoi*, Natal, *planiformis*, Antilles, LEWIS, p. 359, *t. c.* : n. spp.
- Hololepta mastersi* and *sidnensis*, distinguished, LEA, p. 585, P. Linn. Soc. N. S. Wales, 1897.
- Pachycrærus*: habits, LEWIS, p. 179, Ann. Nat. Hist. xx.
- P. morulus*, Zanzibar, LEWIS, p. 358, *t. c.*; *P. striaticeps*, Cameroons, *frater*, E. Africa, p. 181, *meridianus*, p. 182, *spatiosus*, *cariniceps*, p. 183, *tenuistriatus*, p. 184, *cavifrons*, *brevipennis*, p. 185, *sulcicollis*, p. 186, *mimicus*, p. 187, Cameroons, LEWIS, *t. c.* : n. spp.
- Pachylopus schmidti*, Algeria, THÉRY, p. 67, Bull. Soc. ent. France, 1897, n. sp.
- Paratropus*: habits, LEWIS, p. 179, Ann. Nat. Hist. xx.
- P. fungorum*, Mashonaland, LEWIS, p. 192, *t. c.* n. sp.
- Phelister hilarulus*, Cameroons, LEWIS, p. 361, Ann. Nat. Hist. xx, n. sp.
- Phylloma hirtipes*, Surinam, LEWIS, p. 179, *t. c.* n. sp.
- Platysoma extrarium*, Queensland, LEWIS, p. 357, *t. c.* n. sp.
- Plegaderus fortesculptus*, Talysch, REITTER, p. 124, Wien. ent. Zeit. xvi, n. sp.
- Pygocælis*, n. g., near *Trypeticus*, with *P. duplicatus*, n. sp., Cameroons, LEWIS, p. 194, Ann. Nat. Hist. xx. *Pygocælis*: sexes, LEWIS, p. 364, *t. c.*
- Stictostix mormoni*, Utah, LEWIS, p. 360, *t. c.* n. sp.
- Triballus agrestis*, characters, LEWIS, p. 193, *t. c.*
- Trypeticus planisternus*, p. 362, *incilis mustelinus*, p. 363, Sumatra, LEWIS, *t. c.* *T. usambicus*, Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 104 : n. spp.
- Trypobius* and *Trypeticus*, distinctions, LEWIS, p. 364, Ann. Nat. Hist. xx.
- Trypobius pinguis*, *æthiops*, p. 195, *cylindraceus*, p. 196, Cameroons, LEWIS, *t. c.* n. spp.

PHALACRIDÆ.

- Olibrus lævisternus*, Akbes, GUILLEBEAU, p. 12, Echange, 1897; *O. siettii*, Hyères, GUILLEBEAU, p. 224, Bull. Soc. ent. France, 1897 : n. spp.

NITIDULIDÆ.

- [Cf. BRANCSIK (124), GROUVELLE (440, 441), GUILLEBEAU (445), REITTER (900).]
- Æthina puncticollis*, Tenasserim, p. 366, *basalis*, Sumatra, p. 367, GROUVELLE, Ann. Mus. Genova, *t. c.* xxxviii, n. spp.
- Amphicrossus oblongus*, *bouchardi*, Sumatra, GROUVELLE, p. 368, *t. c.* n. spp.
- Brachypeplus hispidulus*, p. 342, *B. (Selis) dorsalis*, p. 343, Sumatra, *mixtus*, Perak, *nitidulus*, p. 344, *opacus*, Perak, *nitidus*, p. 345, *dimidiatus*, p. 346, Sumatra, GROUVELLE, *t. c.* : n. spp.
- Camptodes nigriceps*, *mirabilis*, Bahia, p. 182, *gounellei*, Minas Geraes, p. 183, GROUVELLE, Ann. Soc. ent. France, 1896, n. spp.
- Carpophilus (Urophorus) sanguinipennis*, p. 350, *C. modiglianii*, p. 351, *pygidialis*, *debilis*, p. 352, Sumatra, *familiaris*, Tenasserim, p. 353, GROUVELLE, *t. c.* : n. spp.
- Cilleus modiglianii*, p. 347, *elongatissimus*, p. 348, Sumatra, GROUVELLE, Ann. Mus. Genova, xxxviii, n. spp.
- Circopes ruficollis*, Celebes, GROUVELLE, p. 368, *t. c.*, n. sp.
- Colastus modiglianii*, Sumatra, GROUVELLE, p. 342, *t. c.*; *C. gounellei*, Brazil, GROUVELLE, p. 177, Ann. Soc. ent. France, 1897 : n. spp.

- Cryptarcha octopunctata*, Burma, *basalis*, Victoria, p. 371, *modiglianii*, Sumatra, *coccinelloides*, p. 372, *elegans*, Perak, *rufomaculata*, Tenasserim, p. 373, GROUVELLE, Ann. Mus. Genova, xxxviii : n. spp.
- Cyllodes corax*, Madagascar, BRANCSIK, p. 110, Jahresh. Ver. Trencsen. xix ; *C. frontalis*, p. 369, Sumatra, *variegatus*, India, *orientalis*, Borneo, p. 370, GROUVELLE, Ann. Mus. Genova, xxxviii : n. spp.
- Eidocolastus nigricans*, Sumatra, GROUVELLE, p. 357, Ann. Mus. Genova, xxxviii, n. sp.
- Epurea modiglianii*, Sumatra, p. 358, *pumila*, India, *subreticulata*, Sumatra, p. 359, *simsoni*, p. 360, *tasmanica*, p. 361, Tasmania, GROUVELLE, t. c. : n. spp.
- Europs birmanica*, Ruby mines, GROUVELLE, p. 373, t. c. *E. (Hesperobenus) impressus*, Brazil, *maculatus*, St. Domingo, p. 210, *sordidus vicinus*, p. 211, Brazil, *corticinus*, p. 212, *frontalis chilensis*, p. 213, Chili, GROUVELLE, Ann. Soc. ent. France, 1896 : n. spp.
- Haptoncura opaca*, *nitescens*, p. 362, *dubia*, p. 363, Sumatra, GROUVELLE, Ann. Mus. Genova, xxxviii, n. spp.
- Haptoncus prolatus*, *depressus*, Sumatra, GROUVELLE, p. 357, t. c., n. spp.
- Lasiodactylus modiglianii*, Sumatra, GROUVELLE, t. c., n. sp.
- Librodor nitidulus*, Minas Geraes, GROUVELLE, p. 184, Ann. Soc. ent. France, 1896, n. sp.
- Lobiopa pubescens*, Brazil, GROUVELLE, p. 179, t. c., n. sp.
- Meligethes fulvipes* Bris. (= *rubripes* Muls.), BEDEL, p. 35, Abeille, xxix.
- M. asperrimus*, p. 225, *caudatus*, p. 226, France, GUILLEBEAU, Bull. Soc. ent. France, 1897, n. spp.
- Micrurula fallax*, Sumatra, GROUVELLE, p. 361, Ann. Mus. Genova, xxxviii, n. sp.
- Perilopa ferruginea*, p. 180, *confusa*, p. 181, Bahia, GROUVELLE, Ann. Soc. ent. France, 1896, n. spp.
- Platynema ritsemai*, Sumatra, GROUVELLE, p. 347, Ann. Mus. Genova, xxxviii, n. sp.
- Prometopia dorsalis*, Sumatra, p. 363, *suturalis*, Perak, p. 364, *obscura*, Sumatra, p. 365, GROUVELLE, t. c., n. spp.
- Pseudoischæna*, n. g., near *Ischæna*, for *P. longula*, n. sp., Sumatra, GROUVELLE, p. 349, t. c.
- Rhizophagus oblongicollis* (= *punctulatus* Guill.), CHAMPION, p. 278, Ent. Mag. xxxiii. *R. punctiventris*, characters, REITTER, p. 78, Wien. ent. Zeit. xvi.
- R. punctulatus*, Nantua, GUILLEBEAU, p. 226, Bull. Soc. ent. France, 1897 ; *R. magniceps*, Caucasus, REITTER, p. 123, Wien. ent. Zeit. xvi : n. spp.
- Soronia minuta*, Brazil, GROUVELLE, p. 178, Ann. Soc. ent. France, 1896, n. sp.
- Stauroglossicus variabilis*, Malacca, p. 354, *dubitabilis*, Burma, p. 355, *opaculus*, Java, p. 356, GROUVELLE, Ann. Mus. Genova, xxxviii, n. spp.
- Trimenus piceus*, Sumatra, GROUVELLE, p. 348, t. c., n. sp.

TROGOSITIDÆ.

- Xenoglena vicina*, p. 202, *chrysobothroides*, p. 203, Malacca, LÉVEILLÉ, Bull. Soc. ent. France, 1897, n. spp.

COLYDIIDÆ.

- [Cf. CASEY (162), GROUVELLE (440, 441), KOLBE (601), PIC (850), REITTER (903).]

- Aditoma*, n. g., for *A. bifida*, n. sp., Florida, CASEY, p. 630, Ann. N. York Ac. ix.
- Atyscus ovatus*, Sumatra, GROUVELLE, p. 376, Ann. Mus. Genova, xxxviii, n. sp.
- Bitoma suffusa*, Arizona, CASEY, p. 631, Ann. N. York Ac. ix, n. sp.
- Bothrideres modiglianii*, p. 383, *bouchardi*, p. 384, Sumatra, GROUVELLE, Ann. Mus. Genova, xxxviii, n. spp.
- Bupala elongata*, Sumatra, GROUVELLE, p. 381, *t. c.*, n. sp.
- Cassidoloma*, n. g., *Discolomini*, for *C. discoidea*, n. sp., Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col., p. 113.
- Cantomus crassus*, p. 391, *striatus*, p. 392, *singularis*, p. 393, Sumatra, GROUVELLE, Ann. Mus. Genova, xxxviii, n. spp.
- Cerylon usambicum*, Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col., p. 112; *C. bouchardi*, p. 384, *piliger*, p. 385, Sumatra, *exiguum*, Engano, *beccarii*, p. 386, *angulosum*, p. 387, *punctum*, Sumatra, *pilosum*, Tenasserim, p. 388, GROUVELLE, Ann. Mus. Genova, xxxviii; *C. sylvaticum*, p. 635, *sticticum*, *clypeale*, p. 636, North America, CASEY, N. York Ac. ix : n. spp.
- Colobicus seriatus*, Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col., p. 112, n. sp.
- Corticus syriacus*, var. n., *latus*, PIC, p. 5, Echange, 1897.
- C. rotundicollis*, Algeria, PIC, p. 78, Bull. Soc. ent. France, 1897, n. sp.
- Discogenia*, n. g., *Discolomini* for *D. disciformis*, n. sp., Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col., p. 112.
- D. rufipes*, Zanzibar, KOLBE, *t. c.*, p. 111; *D. gounellei*, Bahia, GROUVELLE, p. 185, Ann. Soc. ent. France, 1896 : n. spp.
- Eucicones latus*, N. America, CASEY, p. 633, Ann. N. York Ac. ix; *E. gounellei*, Bahia, GROUVELLE, p. 186, Ann. Soc. ent. France, 1896 : n. spp.
- Eumecidium*, n. g., near *Aprostoma* for *E. glabriceps*, n. sp., Usambara, KOLBE, Deutsch-Ost-Afrika, Col., iv, p. 110.
- Hyberis multifasciculatus*, p. 376, *crassus*, *brevicornis*, p. 377, *bouchardi*, *fasciculatus*, p. 378, *modiglianii*, p. 379, Sumatra, GROUVELLE, Ann. Mus. Genova, xxxviii : n. spp.
- Labromimus raffrayi*, *squamosus*, Sumatra, GROUVELLE, p. 380, Ann. Mus. Genova, xxxviii, n. spp.
- Lemnis tuberosus*, Brazil, GROUVELLE, p. 187, Ann. Soc. ent. France, 1896, n. sp.
- Lepidosynchis*, n. g., *Synchitini* for *L. albosetosa*, n. sp., Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col., p. 111.
- Nematidium angustatum*, Sumatra, GROUVELLE, p. 382, Ann. Mus. Genova, xxxviii, n. sp.
- Neotrichus bicolor*, Brazil, GROUVELLE, p. 195, Ann. Soc. ent. France, 1896; *N. crassus*, Sumatra, GROUVELLE, p. 382, Ann. Mus. Genova, xxxviii : n. spp.
- Pachyochthes*, n. g., p. 248, *Cerylonides*, for *P. edithæ*, n. sp., Ordubad, p. 249, pl. iii, fig. 4, REITTER, Wien. ent. Zeit. xvi.
- Penthelispa angusticollis*, Sumatra, GROUVELLE, p. 383, Ann. Mus. Genova, xxxviii, n. sp.
- Pseudocerylon*, n. g., *Cerylonini* for *P. trimaculatum*, p. 389, *bicolor*, *bouchardi*, p. 390, Sumatra, n. spp., GROUVELLE, *t. c.*
- Sosylus extensus*, Texas, CASEY, p. 633, Ann. N. York Ac. ix, n. sp.
- Syncolyidium*, n. g., near *Colyidium* for *S. glabratum*, n. sp., Usambara, KOLBE, Deutsch-Ost-Afrika, Col., iv, p. 110.
- Ulonotus brasiliensis*, Minas Geraes, GROUVELLE, p. 185, Ann. Soc. ent. France, 1896, n. sp.

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- [*Cf.* BLACKBURN (79), GANGLBAUER (1205), GROUVELLE (440, 441).]
- Hemipeplus gounellei*, Bahia, GROUVELLE, p. 189, Ann. Soc. ent. France, 1896; *H. insularis*, St. Domingo, p. 196, *mexicanus*, Mexico, GROUVELLE, *t. c.* : n. spp.
- Inopeplus nigrutilus*, Minas Geraes, GROUVELLE, p. 190, *t. c.*; *I. frater*, Sumatra, GROUVELLE, p. 393, Ann. Mus. Genova, xxxviii : n. spp.
- Læmophlæus*, table of S. American, GROUVELLE, p. 202, Ann. Soc. ent. France, 1896; *L. minutus* Ol. (= *pusillus* Sch.), BEDEL, p. 35, Abeille, xxix.
- L. Kraussi*, Styria, GANGLBAUER, p. 569, Verh. Ges. Wien, 1897; *L. bimaculosus*, Engano, *mariae*, p. 394, *glabriculus*, p. 395, Sumatra, GROUVELLE, Ann. Mus. Genova, xxxviii; *L. gounellei*, p. 190, *deletus*, p. 191, Bahia, GROUVELLE, Ann. Soc. ent. France, 1896; *L. germani*, p. 200, *nigrifrons*, *quinquearticulatus*, p. 201, S. America, GROUVELLE, *t. c.* : n. spp.
- Nausibius*, table of American, GROUVELLE, p. 209, Ann. Soc. ent. France, 1896.
- N. ingens*, p. 191, *elongatus*, p. 192, *tenebrionoides*, p. 193, Brazil, GROUVELLE, *t. c.*; *N. gigas*, *sahlbergi*, p. 206, *lobatus*, p. 207, *inermis*, p. 208, Brazil, GROUVELLE, *t. c.* : n. spp.
- Pediacus ater*, Sumatra, GROUVELLE, p. 396, Ann. Mus. Genova, xxxviii, n. sp.
- Phlæostichus denticollis*, larva, WEISE, p. 393, Deutsche ent. Zeitschr. 1897.
- Prostomis intermedius*, Australia, BLACKBURN, p. 88, Tr. R. Soc. S. Austral. xxi, n. sp.
- Rhinomalus vicinus*, Mexico, p. 197, *subfasciatus*, *facetus*, *germani*, p. 198, *fulvicollis*, p. 199, S. America, GROUVELLE, Ann. Soc. ent. France, 1896 : n. spp.
- Silvanus gossypii*, in Indian cotton seed, CHITTENDEN, p. 13, Bull. Dep. Agric. Ent. viii; *S. granosus*, p. 396, *levicollis*, *cribricollis*, p. 397, *tenuicollis*, p. 398, Sumatra, GROUVELLE, Ann. Mus. Genova, xxxviii : n. spp.
- Telephanus sahlbergi*, Tijuca, GROUVELLE, p. 188, Ann. Soc. ent. France, 1896, n. sp.
- Tristaria gounellei*, Bahia, GROUVELLE, p. 193, *t. c.*, n. sp.

CRYPTOPHAGIDÆ.

- Cryptophagus hamatus*, p. 560, *pumilio*, p. 561, *deubeli*, *silesiacus*, p. 562, *transsilvanicus*, p. 563, *straussi*, p. 564, Centr. Europe, GANGLBAUER, Verh. Ges. Wien, 1897; *C. dorsaliformis*, East Siberia, REITTER, p. 212, Deutsche ent. Zeitschr. 1897 : n. spp.
- Telmatophilus sparganii*, ♂ characters, CHAMPION, p. 214, Ent. Mag. xxxiii.

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- Abothria*, subg. n. of *Corticaria*, BELON, p. 147, Rev. Ent. franc. 1897.
- Adasia*, subg. n. of *Corticaria*, BELON, p. 147, *t. c.*
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- Cartodere grouvellei*, *bicarinata*, Chili, BELON, p. 137, *t. c.* n. spp.
- Epipeda*, subg. n. of *Corticaria*, BELON, p. 147, *t. c.*
- Eporus*, n. g., near *Europs*, for *E. insignis*, n. sp., Assam, GROUVELLE, p. 374, Ann. Mus. Genova, xxxviii.

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Symbiotes, Redt. (= *Microchondrus* Woll. and *Eponomastus* Buyss.), BEDEL, p. 35, Abeille, xxix.

Tritoma jaroslawnensis, p. 547, *tschitscherini*, p. 549, CAUCASUS, SEMENOW, Horæ Soc. ent. Ross. xxxi; *T. ciscaucasica*, CAUCASUS, SEMENOW, p. 596, Horæ Soc. ent. Ross. xxxi; *T. lederi*, Irkutsk, REITTER, p. 228, Deutsche ent. Zeitschr. 1897 : n. spp.

THORICTIDÆ.

Thorictus mecheriensis, Algeria, PIC, p. 232, Bull. Soc. zool. France, 1897; *T. fecæ*, Burma, GROUVELLE, p. 398, Ann. Mus. Genova, xxxviii : n. spp.

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[Cf. CHOBOUT (180), FAIRMAIRE (305), FALL (316).]

Dermestidæ living on vegetable foods, CHITTENDEN, pp. 15–24, Bull. Dep. Agric. Ent. viii.

Notes on the distinctions of larvæ of species of *Anthrenus*, VOGLER, pp. 683–686, Illustr. Zeitschr. Ent. ii.

Anatomy of alimentary canal of *Anthrenus* larva, MÖBUSZ (755).

The scales of *Anthrenus*, VOGLER (1134).

Æthriostoma fasciolata, Madagascar, FAIRMAIRE, p. 97, Ann. Soc. ent. Belgique, xli, n. sp.

Anthrenus (*Anthrenops*) *bellulus*, Algeria, CHOBOUT, p. 277, Bull. Soc. ent. France, 1897, n. sp.

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Limnichus rufulopubens, Madagascar, FAIRMAIRE, p. 368, Ann. Soc. ent. Belgique, xli, n. sp.

Georyssus crenulipennis, Madagascar, FAIRMAIRE, p. 369, t. c. n. sp.

PARNIDÆ.

[Cf. FAIRMAIRE (305), GROUVELLE (439, 440), KOLBE (601), REITTER (898).]

Elmidolia, n. g. for *E. sericans*, n. sp., Madagascar, FAIRMAIRE, p. 369, Ann. Soc. ent. Belgique, xli.

Elmis perrieri, Madagascar, FAIRMAIRE, p. 98, t. c.; *E. subsulcatus*, *nitidulus*, Madagascar, FAIRMAIRE, p. 369, t. c. : n. spp.

- Helichus brasiliensis*, Theresopolis, GROUVELLE, p. 214, Ann. Soc. ent. France, 1896, n. sp.
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H. flavitarsis, Uruguay, GROUVELLE, p. 9, An. Mus. Buenos Aires, v, n. sp.
Parnus schneideri, Borkum, REITTER, p. 46, Wien. ent. Zeit. xvi, n. sp.
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Pomatinus gigas, Brazil, GROUVELLE, p. 216, t. c. n. sp.
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H. scutellaris, Algeria, GUILLEBEAU, p. 163, Bull. Soc. ent. France, 1897, n. sp.

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- Dichotomous tables of the species of *Passalidæ*, KUWERT, Nov. Zool. iv, pp. 274-306.
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Paxillus parvus, Honduras, CASEY, p. 644, t. c., n. sp.
Proculejoïdes crassulus, Honduras, CASEY, p. 642, t. c., n. sp.
Proculus magister, Honduras, CASEY, p. 641, t. c., n. sp.
Rimor munitus, Mexico, CASEY, p. 643, t. c., n. sp.
Soranus imbellis, Mexico, CASEY, p. 645, t. c., n. sp.
Verres vernicatus, Honduras, p. 646, *cavilabris*, Mexico, p. 647, CASEY, t. c., n. sp.

LUCANIDÆ.

- [Cf. BLACKBURN (80), BOILEAU (88-92), CASEY (162), JAKOWLEW (541), KOLBE (604), PLANET (871), RITSEMA (935).]
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Æ. armatus, Borneo, BOILEAU, p. 287, cuts, Bull. Soc. ent. France, 1897 : n. spp.
Ægus insolitus, Mindoro, p. 241, *oxygonus*, Borneo, p. 243, JAKOWLEW, Horæ Soc. ent. Ross. xxxi; *Æ. bigibbosus*, Sumatra, RITSEMA, p. 185, Notes Leyden Mus. xix : n. spp.
Calodaemon, n. g. for *C. multicolor*, n. sp., Bolivia, BOILEAU, p. 248, Naturaliste, 1897.
Cantharolethrus azambrei, Ecuador, BOILEAU, p. 275, t. c., n. sp.
Ceratognathus frenchi, Victoria, BLACKBURN, p. 28, Tr. R. Soc. S. Austral. xxi, n. sp.
Eurytrachelus rama, Sumatra, BOILEAU, p. 181, Naturaliste, 1897, n. sp.

- Lucanus cervus*, var. n., *poujadei*, PLANET, p. 267, cut, Naturaliste, 1897.
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Metopodontus planeti, Congo, BOILEAU, p. 287, Natural. 1897, n. sp.
Nigidius kinabaluensis, Borneo, RITSEMA, p. 187, Notes Leyden Mus. xix, n. sp.
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Platycerus chalybeus, *marginalis*, N. America, CASEY, p. 639, Ann. N. York Ac. ix, n. spp.
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[The titles indicated by the following numbers refer to *Scarabæidæ*, viz. :—
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- Habits of Mediterranean *Coprines*, FABRE, Souvenirs, v, Chapp. i–xii.
Aphengium cupreum, Espirito Santo, SHIPP, p. 187, Nov. Zool. iv, n. sp.
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Aphodius barbarus, Fairm. (= *irritans*, Reitt.), REITTER, p. 217, Wien. ent. Zeit. xvi. *A. irritans*, Reitt. = *barbarus*, Fairm., CLOUET, p. 15, Bull. Soc. ent. France, 1897. *A. multiplex*, n. n. for *granulifrons*, Reitter, REITTER, p. 241, *t. c.*
A. (Orodalus) reitterianus, Switzerland, SCHWARZ, p. 32, Wien. ent. Zeit. xvi; *A. (Nialus) kocæ*, Slavonia, REITTER, p. 204, Wien. ent. Zeit. xvi; *A. (Volinus) transvolgensis*, Russia, p. 597, *A. scuticollis* (= *nigrovittis*, Reitt. nec Solsky), p. 598, SEMENOW, Horæ Soc. ent. Ross. xxxi; *A. troitzkyi*, Centr. Siberia, JACOBSON, p. 87, Horæ Soc. ent. Ross. xxxi; *A. tenuitarsis*, p. 98, *pictipennis*, p. 99, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli; *A. atomus*, Madagascar, FAIRMAIRE, p. 370, *t. c.*; *A. smithi*, E. Africa, SHIPP (1028), p. 451; *A. victoriae*, Australia, BLACKBURN, p. 88, Tr. R. Soc. S. Austral. xxi : n. spp.
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C. nepticulus, Zanzibar, KOLBE, p. 82, Mt. Mus. Hamburg, xiv; *C. interioris*, p. 143, *nepticulus*, p. 144, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col.; *C. convexiusculus*, E. Africa, SHIPP (1028), p. 450 : n. spp.
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- G. substriatellus*, Szé-tchouen, FAIRMAIRE, p. 242, Notes Leyden Mus. xix, n. sp.
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- Lethrus gladiator*, Altai, REITTER, p. 213, Deutsche ent. Zeitschr. 1897; *L. (Microlethrus) inermis*, Bukhara, REITTER, p. 235, *t. c.* n. spp.
- Ochodæus miliaris*, varr. (= *canellinus*, *infuscatus*, Fairm.), FAIRMAIRE, p. 100, Ann. Soc. ent. Belgique, xli.
- O. grandiceps*, Szé-tchouen, FAIRMAIRE, p. 241, Notes Leyden Mus. xix, n. sp.
- Onitis lunaris*, *subcrenatus*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, p. 145, n. spp.
- Onthophagus vitulus*, Fab. (= *camelus*, Fab.), BEDEL, p. 35, Abeille, xxix. *O. truchmenus*, var. n. *latiplaga*, REITTER, p. 219, Wien. ent. Zeit. xvi.
- O. formaneki*, Araxes Valley, REITTER, p. 204, Wien. ent. Zeit. xvi; *O. maindroni*, Obock, p. 232, *brisouti*, Europe, *abeillei*, Obock, p. 233, *latigena*, Spain, p. 234, *opacicollis*, Mediterranean, p. 236, *dorso-signatus*, Trebizond, p. 237, *latipennis*, p. 238, *martini*, Africa, Arabia, *biexcavatus*, India, p. 239, *ochreatus*, Africa, Asia, *incertus*, p. 241, *semicinctus*, p. 242, *O. (Phalops) cyanescens*, p. 243, India, D'ORBIGNY, Ann. Soc. ent. France, 1897; *O. lutosopictus*, Ishigaki-Sima, FAIRMAIRE, p. 69, Bull. Soc. ent. France, 1897; *O. smithi*, E. Africa, SHIPP (1028), p. 450; *O. regulus*, Madagascar, BRANCSIK, p. 111, Jahresh. Ver. Trencsen. xix : n. spp.
- Orphnus distinctus*, n. n. for *O. hova*, Fairm. nec *owas*, Westw., FAIRMAIRE, p. 100, Ann. Soc. ent. Belgique, xli.
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Anomolyna, n. g., near *Pachycolus*, p. 106, for *A. picticollis*, n. sp., Madagascar, p. 107, FAIRMAIRE, Ann. Soc. ent. Belgique, xli.

Apogonia: table of the species, HELLER, Abh. Mus. Dresden, vi, No. 10, pp. 3-10.

A. viridifulva, p. 189, *rizali*, p. 191, Philippines, HELLER, Notes Leyden Mus. xix; *A. hopei*, p. 117, Madras, *orbitalis*, Malacca, p. 118, *brenskæi*, Burma, p. 119, *oberthurii*, Palawan, p. 121, *magnifica*, p. 122, *adoretoides*, p. 123, Philippines, RITSEMA, Notes Leyden Mus. xix; *A. tuberculiventris*, Borneo, RITSEMA, p. 131, *t. c.*; *A. pulchra*, p. 10, *pseudamaura*, *glabricollis*, p. 11, *difficilis*, *cephalus*, p. 12, *variëvestis*, *heterosquamulata*, p. 13, *soror*, *kolbei*, p. 14, *subpilosula*, p. 15, *gracilipes montivaga*, p. 16, *eremita*, p. 17, *marginata*, *latescutellata*, p. 18, Celebes, *saleijana*, Saleijer, p. 19, *vastratrix*, p. 20, Celebes, HELLER, Abh. Mus. Dresden, vi, No. 10 : n. spp.

Brahmina fulgida, *plagiatura*, N. India, BRENSKE, p. 351, Berlin. ent. Zeitschr. 1896, n. spp.

Camenta longiclava, Sierra Leone, BRENSKE, p. 99, Ent. Zeit. Stettin, lviii; *C. bohemani*, Natal, BRENSKE, p. 339, Berlin. ent. Zeitschr. 1897 : n. spp.

Clitopa leviplagiata, E. Africa, KOLBE, p. 84, pl., fig. 4, Mt. Mus. Hamburg, xiv, n. sp.

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Cyphonoxia brenskæi (= *glasunowi* Sem.), REITTER, p. 78, Wien. ent. Zeit. xvi.

Cyrtocamenta, n. g., near *Abladera* for *C. pygmæa*, Senegal, p. 104, *flavescens*, Abyssinia, p. 105, *rubra*, S. Africa, p. 106, n. spp., BRENSKE, Ent. Zeit. Stettin, lviii.

Diaclaspus, n. g., *Leptopodides*, p. 359, for *D. delagoensis*, n. sp., Delagoa Bay, p. 360, BRENSKE, Berlin. ent. Zeitschr. 1896.

Dicentrines tesserula, Madagascar, FAIRMAIRE, p. 375, Ann. Soc. ent. Belgique, xli, n. sp.

Diphucephala kershawi, Victoria, BLACKBURN, p. 89, Tr. R. Soc. S. Austral. xxi, n. sp.

Ectinoplia triplagiata, Tibet, FAIRMAIRE, p. 211, Notes Leyden Mus. xix; *E. nigrotincta*, Szé-tchouen, FAIRMAIRE, p. 243, *t. c.* : n. spp.

Empeccamenta variolosa, p. 100, *sierræ-leonis*, p. 101, W. Africa, *abyssinica*, Erythræa, p. 102, BRENSKE, Ent. Zeit. Stettin, lviii; *E. boromensis*, Zambesi, BRANCSIK, p. 113, pl. iv, fig. 4, Jahresh. Ver. Trencsen. xix : n. spp.

- Empecta atomaria*, Madagascar, FAIRMAIRE, p. 376, Ann. Soc. ent. Belgique, xli, n. sp.
- Hemicamenta*, n. g., for *H. theryi*, n. sp., Sierra Leone, BRENSKE, p. 103, Ent. Zeit. Stettin, lviii.
- Hemictenius*, n. g., for part of *Pachydema*, p. 222, with *H. magnitarsis*, p. 223, *nigrociliatus*, p. 224, *simplicitarsis*, p. 225, n. spp., Afghanistan, REITTER, Wien. ent. Zeit. xvi.
- Holotrichia sichotana*, Wladiwostock, p. 343, with var. *amurensis*, p. 344, *assamensis*, Assam, p. 345, *simlana*, India, p. 346, *sumbawana*, Sumbawa, *luteosericea*, Kurseong, p. 347, *flavosericea*, Sikkim, p. 348, *tenasserima*, p. 349, *pilosa*, p. 350, Tenasserim, BRENSKE, Berlin. ent. Zeitschr. 1896 : n. spp.
- Homaloplia sieversi*, Caucasus, REITTER, p. 124, Wien. ent. Zeit. xvi; *H. abbreviata*, *discoidalis*, Szé-tchouen, FAIRMAIRE, p. 244, Notes Leyden Mus. xix; *H. granulipennis*, *picticollis*, Madagascar, FAIRMAIRE, p. 376, Ann. Soc. ent. Belgique, xli : n. spp.
- Homæoschiza flavescens*, Dar-es-Salaam, BRENSKE, p. 110, Ent. Zeit. Stettin, lviii, n. sp.
- Hoplia maculosa*, n. n., for *maculata*, Reitt. nec Bates, REITTER, p. 48, Wien. ent. Zeit. xvi.
- H. congoana*, Africa, BRENSKE, p. 96, Ent. Zeit. Stettin, lviii; *H. fulvovittis*, Zambesi, BRANCSIK, p. 111, Jahresh. Ver. Trencsen. xix; *H. plagulata*, p. 101, *angulopicta*, *impressidorsis*, p. 102, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli; *H. multifasciata*, p. 371, *validipes*, *vitticollis*, p. 372, *atropicta*, *velutina*, p. 373, *biapicata*, *fuscopunctata*, *griscosetosa*, *scutellata*, p. 374, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli : n. spp.
- Hovachelus*, n. g., p. 370, near *Monochelus*, for *H. oberthuri*, n. sp., Madagascar, p. 371, FAIRMAIRE, t. c.
- Lepidioderma* (sub *Lepidiota*) *scutellata*, Macl. (= *undata*, Br.), BRENSKE, p. 364, Berlin. ent. Zeitschr. 1896.
- Megistophylla junghuhnii*, Sumatra, BRENSKE, p. 114, Ent. Zeit. Stettin, lviii, n. sp.
- Melolontha vulgaris* in Sweden, statistics for years 1885–1895, LYTTKENS, pp. 97–107, Ent. Tidskr. 1897.
- Odontoplia*, n. g., p. 100, near *Hoplia*, for *O. alluaudi*, n. sp., Madagascar, p. 101, FAIRMAIRE, Ann. Soc. ent. Belgique, xli.
- Omaloplia pernitida*, Madagascar, FAIRMAIRE, p. 103, t. c., n. sp.
- Ootoma bipartita* (= *Pachydema africana*, Brenske), HEYDEN, p. 416, Deutsche ent. Zeitschr. 1897.
- Oreotrogus*, n. g., near *Lecanotrogus*, for *O. volkensi*, n. sp., E. Africa, KOLBE, Deutsch-Ost-Africa, Col. iv, p. 165.
- Otoclinius*, n. g. *Elaphocerides*, for *O. gracilipes*, n. sp., Beluchistan, BRENSKE, p. 320, Berlin. ent. Zeitschr. 1896.
- Pachychæta*, n. g., *Pachydemides*, for *P. flavomicans*, n. sp., Jerusalem, BRENSKE, p. 362, Berlin. ent. Zeitschr. 1896.
- Pachycolus capillatus*, Madagascar, BRENSKE, p. 355, t. c., n. sp.
- Pachydema ganglbaueri*, Persia, p. 115, *africana*, Las Palmas, p. 117, *P. (Phygotoxeuma, subg. n.) theryi*, Algeria, p. 118, BRENSKE, Ent. Zeit. Stettin, lviii; *P. bucharica*, p. 221, *suturifera*, p. 222, Bukhara, REITTER, Wien. ent. Zeit. xvi : n. spp.
- Pachygastra victoriae*, Australia, BLACKBURN, p. 90, Tr. R. Soc. S. Austral. xxi, n. sp.
- Pentecamenta*, n. g., near *Camenta*, p. 341, for *P. salaama*, E. Africa *kinabaluensis*, Borneo, n. spp., p. 342, BRENSKE, Berlin. ent. Zeitschr. 1896.
- Perichlitopa*, n. g., *Leptopodides*, for *P. fischeri*, n. sp., Transvaal, BRENSKE, p. 358, t. c.

- P. brenskci*, Zambesi, BRANCSIK, p. 114, pl. iv, fig. 6, Jahresh. Ver. Trencsen. xix, n. sp.
- Phalangonyx*, related to *Pachydema*, REITTER, p. 221, Wien. ent. Zeit. xvi.
- Phiara*, n. g., p. 107, *Schizonychides*, for *P. flava*, n. sp., Sennaar, p. 108, BRENSKE, Ent. Zeit. Stettin, lviii.
- Phila*, n. g., p. 110, *Leucopholides*, for *P. amboinæ*, n. sp., Amboina, p. 111, BRENSKE, t. c.
- Photyna*, n. g., *Scricoides*, for *P. rugicollis*, p. 97, *tomentosa*, p. 98, n. spp., China, BRENSKE, t. c.
- Phygotoxuma*, subg. n., cf. *Pachydema*.
- Protroschiza*, n. g., *Schizonychides*, for *P. wituensis*, n. sp., E. Africa, BRENSKE, p. 353, Berlin. ent. Zeitschr. 1896.
- Pseudolontha*, n. g., p. 211, between *Melolonthides* and *Rhizotrogides*, for *P. canaliculata*, p. 212, Tibet, *gononii*, p. 213, China, n. spp., FAIRMAIRE, Notes Leyden Mus. xix.
- Rhizotrogus escherichi*, Asia Minor, BRENSKE, p. 21, Ent. Zeit. Stettin, lviii; *R. (Amphimallus) beludschistanus*, Beluchistan, BRENSKE, p. 318, Berlin. ent. Zeitschr. 1897 : n. spp.
- Schizonycha Kolbei*, Dar-es-Salaam, BRENSKE, p. 109, Ent. Zeit. Stettin, lviii; *S. amitina*, E. Africa, KOLBE, p. 84, Mt. Mus. Hamburg, xiv; *S. amitina*, Bagamoyo, KOLBE, Deutsch-Ost-Afrika, iv, p. 349; *S. natalensis*, n. sp., S. Africa, BRENSKE, p. 352, Berlin. ent. Zeitschr. 1896 : n. spp.
- Schonherria squamulifera*, Java, BRENSKE, p. 112, Ent. Zeit. Stettin, lviii; *S. clypeata*, Celebes, HELLER, p. 21, Abh. Mus. Dresden, vi, No. 10 : n. spp.
- Serica koltzei*, Wladiwostock, REITTER, p. 214, Deutsche ent. Zeitschr. 1897; *S. zambesina*, Zambesi, BRANCSIK, p. 112, Jahresh. Ver. Trencsen. xix; *S. fusciceps*, Madagascar, FAIRMAIRE, p. 103, Ann. Soc. ent. Belgique, xli; *S. pericollis*, Madagascar, FAIRMAIRE, p. 375, t. c. : n. spp.
- Synclitopa*, n. g., *Pachypodinae*, for *S. simulatrix*, n. sp. E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 169.
- Toxocerus riantii*, China, FAIRMAIRE, p. 243, Notes Leyden Mus. xix, n. sp.
- Triodonta lincolata*, p. 113, *boromensis*, p. 114, pl. iv, fig. 5, Zambesi, BRANCSIK, Jahresh. Ver. Trencsen. xix; *T. rufina*, E. Africa, KOLBE, p. 84, pl. fig. 5, Mt. Mus. Hamburg, xiv; *T. hovana*, Madagascar, FAIRMAIRE, p. 103, Ann. Soc. ent. Belgique, xli : n. spp.

Rutelini.

- Adoretus hystrix, sulcirostris*, p. 104, *discoidalis, insularis*, p. 105, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli; *A. subaeneus, flavilabris*, p. 377, *aeneopicus, perrieri*, p. 378, *rufulus, pallidopictus*, p. 379, Madagascar, FAIRMAIRE, t. c.; *A. conularis*, E. Africa, KOLBE, p. 87, pl., fig. 2, Mt. Mus. Hamburg, xiv : n. spp.
- Anomala basalis*, Blanch. (= *Peripopillia oberthuri*, Kr.), KRAATZ, p. 333, Deutsche ent. Zeitschr. 1897; *A. circumcincta*, characters, REITTER, p. 79, Wien. ent. Zeit. xvi.
- A. separata*, p. 115, *discedens*, p. 116, Zambesi, BRANCSIK, Jahresh. Ver. Trencsen. xix; *A. contenta*, E. Africa, KOLBE, p. 86, Mt. Mus. Hamburg, xiv; *A. usambica, rufa*, Usambara, KOLBE, Deutsche-Ost-Afrika, iv, Col. p. 172; *A. scroculata*, p. 213, *micans*, p. 214, Tibet, *sculpticollis*, China, p. 215, FAIRMAIRE, Notes Leyden Mus. xix : n. spp.
- Ischnopopillia purpuricollis*, So Pin-Lou Chan, KRAATZ, p. 331, Deutsche ent. Zeitschr. 1897; *I. andrewsi*, India, id. t. c. p. 332, n. spp.
- Lutera striata*, Celebes, HELLER, p. 22, Abh. Mus. Dresden, vi, No. 10, n. sp.

- Phænomeris rufipennis*, Zambesi, BRANCSIK, p. 117, Jahresh. Ver. Trencsen. xix, n. sp.
Popillia flavotæniata, note on, KRAATZ, p. 333, Deutsche ent. Zeitschr. 1897.
P. circumducta, Liou-Kiou islands, p. 327, *lugubris*, p. 328, *puncticollis*, India, *plagicollis*, p. 329, Se Pin-Lou Chan, KRAATZ, Deutsche ent. Zeitschr. 1897; *P. ohausi*, E. Afrika, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 175 : spp.
Prodoretus tædiosus, Madagascar, FAIRMAIRE, p. 106, Ann. Soc. ent. Belgique, xli, n. sp.
Stomanomala, n. g., p. 85, for *S. epistomatica*, n. sp. Zanzibar, p. 86, pl., fig. 3, KOLBE, Mt. Mus. Hamburg, xiv; *Stomanomala*, n. g., near *Anomala*, for *S. epistomatica*, n. sp. Zanzibar, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 349.

Dynastini.

- Asemantus leai*, W. Australia, BLACKBURN, p. 29, T. R. Soc. S. Austral. xxi, n. sp.
Camelonotus, Fairm. (= *Neodipelicus* Rits. = *Palmerstonia* Blackb.), HELLER, p. 163, Notes Leyden Mus. xix.
C. quadratifer, Ternate, p. 168, *alveolatus*, New Guinea, p. 169, *ritsemæ*, Saleyer, p. 171, *robustus*, Celebes, p. 172, with var. *moluccanus*, p. 173, HELLER, t. c. : n. spp.
Heteronychus bidentulus, Fairm. referred to *Pentodon*, BEDEL, p. 35, Abeille, xxix.
H. infans, E. Africa, KOLBE, p. 83, pl., Mt. Mus. Hamburg, xiv; *H. impressicollis*, *foveipennis*, Madagascar, FAIRMAIRE, p. 107, Ann. Soc. ent. Belgique, xli : n. spp.
Isodon novitius, W. Australia, BLACKBURN, p. 28, Tr. R. Soc. S. Austral. xxi, n. sp.
Neohyphus celebesus ♀, characters, HELLER, p. 23, Abh. Mus. Dresden, vi, No. 10.
Oryctes dollei, Madagascar, FAIRMAIRE, p. 108, Ann. Soc. ent. Belgique, xli; *O. clypealis*, Madagascar, FAIRMAIRE, p. 380, t. c. : n. spp.
Phyllognathus prostomis, S. Africa, FAIRMAIRE, p. 208, Notes Leyden Mus. xix, n. sp.
Xanthelaus, n. g., near *Vertumnus*, for *X. plicifrons*, n. sp., Senegal, FAIRMAIRE, p. 109, Ann. Soc. ent. France, 1897.

Cetoniini.

- [Cf. BRANCSIK (124), DISTANT (248), FAIRMAIRE (305, 309, 314), HELLER (467, 468, 471), KOLBE (601, 603), KRAATZ (622-624, 626, 629-636), LINELL (686), SCHOCH (974, 975).]
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Anatona atro-cærulea, Ceylon, SCHOCH, p. 56, Mt. Schweiz. ent. Ges. x, n. sp.
Anoplochilus variabilis (= *Onychotarsus ater* Schoch), KRAATZ, p. 404, Deutsche ent. Zeitschr. 1897.
Atænia cordata, Borneo, SCHOCH, p. 467, Mt. Schweiz. ent. Ges. ix, n. sp.

- Atrichia bugnioni*, note, KRAATZ, p. 408, Deutsche ent. Zeitschr. 1897.
- Callynomes fairmairei*, India, p. 177, *anthracinus*, Sumatra, p. 179, HELLER, Notes Leyden Mus. xix; *C. helleri*, Szé-tchouen, FAIRMAIRE, p. 248, Notes Leyden Mus. xix : n. spp.
- Cetonia peregrina* (= *Anatona atrocaerulea*, Schoch), KRAATZ, p. 402, Deutsche ent. Zeitschr. 1897.
- C. purpurascens*, Sikkim, KRAATZ, p. 405, Deutsche ent. Zeitschr. 1897, n. sp.
- Chordodera*: systematic position, KRAATZ, p. 248, Deutsche ent. Zeitschr. 1897.
- C. guttulata*, Cameroons, KRAATZ, p. 152, t. c. n. sp.
- Chromovalgus*, n. g., for *Valgus peyroni*, Muls. KOLBE, Ent. Zeit. Stettin, lviii.
- Clinteria vittigera*, Sumbava, SCHOCH, p. 462, Mt. Schweiz. ent. Ges. ix, n. sp.
- Comythovalgus*, n. g., p. 197, with *C. æmulus*, p. 199, *unicolor*, p. 200, n. spp. Cameroons, KOLBE, Ent. Zeit. Stettin, lviii.
- Cosmovalgus*, n. g., p. 204, for *C. conradti*, p. 205, *inornatus*, p. 206, n. spp. Cameroons, KOLBE, Ent. Zeit. Stettin, lviii.
- Cymophorus lacteosignatus, squamosus*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 349, n. spp.
- Desicasta nonfriedi*, Honduras, SCHOCH, p. 460, Schweiz. ent. Ges. ix, n. sp.
- Dialithus magnificus*, note, KRAATZ, p. 326, Deutsche ent. Zeitschr. 1897.
- Diathermus*, n. g., for *Odontorrhina globosa*, Schoch, and *D. frater*, n. sp. Congo, KRAATZ, p. 402, Deutsche ent. Zeitschr. 1897.
- Dicerus westwoodi*, Sumbava, SCHOCH, p. 457, Mt. Schweiz. ent. Ges. ix, n. sp.
- Diplognatha viridichalcea*, Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 192; *D. viridis*, Guinea, KRAATZ, p. 412, Deutsche ent. Zeitschr. 1897 : n. spp.
- Dischista cincta*, var. n. *soror*, KRAATZ, p. 413, Deutsche ent. Zeitschr. 1897.
- Discopeltis holubi*, Zambesi, SCHOCH, p. 51, Mt. Schweiz. ent. Ges. x, n. sp.
- Epistalagma multiimpressa*, Fairm. (= *Pygoropsis albomaculata*, Schoch), KRAATZ, p. 336, Deutsche ent. Zeitschr. 1897.
- Epi-xanthis maculitarsis*, var. n. *ruficrus*, BRANCSIK, p. 117, Jahresh. Ver. Trencsen. xix.
- Euchrœa cœlestis*, var. n. *Urania*, FAIRMAIRE, p. 108, Ann. Soc. ent. Belgique, xli.
- E. riphœus*, Madagascar, id. t. c. p. 109, n. sp.
- Euphoria inda*, metamorphoses, SLINGERLAND, p. 50, pl. iii, Canad. Ent. xxix.
- Genuchus dealbatus*, Transvaal, DISTANT, p. 578, Ann. Nat. Hist. xix, n. sp.
- Gnathocera cruda*, var. n. *major*, KOLBE, p. 88, Mt. Mus. Hamburg, xiv.
- G. pilosa*, E. Africa, KRAATZ, p. 408, Deutsche ent. Zeitschr. 1897, n. sp.
- Goliathus giganteus*, variation; var. *atlas*, KRAATZ, pp. 249-252, Deutsche ent. Zeitschr. 1897.
- Grypocnemis*, n. g., near *Cosmiomorpha*, for *G. angolensis*, n. sp. Africa, KRAATZ, p. 151, Deutsche ent. Zeitschr. 1897.
- Heteroclita* ? *jansoni*, Transvaal, DISTANT, p. 577, Ann. Nat. Hist. xix, n. sp.
- Heterosoma* (= *Eucatheta*, Fairm.), FAIRMAIRE, p. 110, Ann. Soc. ent. Belgique, xli.
- H. sycophanta*, Madagascar, FAIRMAIRE, p. 109, t. c. n. sp.
- Homovalgus*, n. g., for *Valgus seticollis*, Beauv. KOLBE, p. 214, Ent. Zeit. Stettin, lviii.
- Ischnovalgus*, n. g., p. 190, for *I. gracilis*, p. 191, *collinus, concentricalis*, p. 192, n. spp. Africa, KOLBE, t. c.
- Lobovalgus*, n. g., for *glabratus*, Kol., KOLBE, p. 207, t. c.

- Macroma insignis*, note, RITSEMA, p. 115, Notes Leyden Mus. xix.
Macronota gestroi, Sumatra, *nyassica*, Nias island, KRAATZ, p. 409, Deutsche ent. Zeitschr. 1897, n. spp.
Mausoleopsis zambesina, Africa, BRANCSIK, p. 117, pl. iv, fig. 7, Jahresh. Ver. Trencsen. xix, n. sp.
Mecinonota intermedia, Celebes, HELLER, p. 24, Abh. Mus. Dresden, vi, No. 10, n. sp.
Microlomaptera nisbeti, New Guinea, HELLER, p. 1, Abh. Mus. Dresden, vi, No. 11, n. sp.
Microthyrea aldabrensis, Aldabra, p. 701, *providenciae*, Providence Island, p. 705, LINELL, P. U. S. Mus. xix, n. spp.
Molynoptera, n. g., near *Eucosma*, for *M. multiguttata*, n. sp. Usambara, KRAATZ, p. 335, Deutsche ent. Zeitschr. 1897.
Myoderma gestroi, E. Afrika, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 194, n. sp.
Neoscelis, n. g., for *Ischnoscelis dohrni*, SCHOCH, p. 453, Mt. Schweiz. ent. Ges. lx.
Niphetopora maculipes ♂, KRAATZ, p. 411, Deutsche ent. Zeitschr. 1897.
Odontorrhina glöbosa, Natal, SCHOCH, p. 55, Schweiz. ent. Ges. x, n. sp.
Odontothyrea, n. g., near *Tephrea*, for *O. cinnamomea*, n. sp. Zambesi, SCHOCH, p. 50, t. c.
Ædipovalgus, n. g., p. 208, for *Æ. nigrescens*, p. 211, *fulvus*, p. 212, n. spp. Cameroons, n. spp. KOLBE, Ent. Zeit. Stettin, lviii.
Oncosterna friderici, Celebes, HELLER, p. 23, Abh. Mus. Dresden, vi, No. 10, n. sp.
Onychotarsus, n. g., *Ischnostomides* for *O. ater*, n. sp., East Africa, SCHOCH, p. 57, Mt. Schweiz. ent. Ges. x.
Oxythyrea aldabrensis, Aldabra Is., p. 700, *abbotti*, p. 703, Glorioso Is., LINELL, P. U. S. Mus. xix, n. sp.
Pachnodula, n. g. for *Pachnoda interrupta*, SCHOCH, p. 59, Mt. Schweiz. ent. Ges. x.
Panglaphyra duboulayi, var. n., *marginicollis*, KRAATZ, p. 334, Deutsche ent. Zeitschr. 1897.
Potosia angustata, var. n., *mulleri*, REITTER, p. 47, Wien. ent. Zeit. xvi. *P. funebris* (= *C. doriae*, Reiche), BEDEL, p. 35, Abeille, xxix.
Protetia microbalia, p. 25, *puncticollis*, p. 26, Celebes, HELLER, Abh. Mus. Dresden, vi, No. 10; *P. heydeni*, Celebes, KRAATZ, p. 406, Deutsche ent. Zeitschr. 1897 : n. spp.
Pseudoprotetia pilicollis, E. Africa, KRAATZ, p. 406, t. c. n. sp.
Pseudopygora, n. g. for *Pygora erythroderes* (= *ruficollis*, Schoch), KRAATZ, p. 404, Deutsche ent. Zeitschr. 1897.
Pygora ruficollis, Madagascar, SCHOCH, p. 56, Mt. Schweiz. ent. Ges. x, n. sp.
Pygovalgus sequax, Guinea, KOLBE, p. 203, Ent. Zeit. Stettin, lviii, n. sp.
Rhabdotis sobrina, *picta*, variation, KRAATZ, p. 191, Deutsche ent. Zeitschr. 1897.
Rhomborhina vernicata, p. 246, *diffusa*, p. 247, *maculicrus*, p. 248, Szé-tchouen, FAIRMAIRE, Notes Leyden Mus. xix, n. spp.
Stenovalgus bifasciatus, *quinguedentatus*, Zanzibar, KRAATZ, p. 247, Deutsche ent. Zeitschr. 1897, n. spp.
Stephanorrhina neumanni, *adelpa*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 182, n. spp.
Synistovalgus, n. g., p. 194, with *S. minutus*, n. sp., Cameroons, p. 196, KOLBE, Ent. Zeit. Stettin, lviii.
Tmesorhina lævis, *mesosternalis*, Cameroons, KRAATZ, p. 150, Deutsche ent. Zeitschr. 1897, n. spp.
Trichius lagopus, Liou-Kiou Is., FAIRMAIRE, p. 166, Bull. Soc. ent. France, 1897, n. sp.

Trichotarsus, n. g. for *Ischnoscelis dohrni*, Westw., KRAATZ, p. 157, Deutsche ent. Zeitschr. 1897.

Trigonophorus riaultii, China, FAIRMAIRE, p. 245, Notes Leyden Mus. xix, n. sp.

BUPRESTIDÆ.

[Cf. ABEILLE (1, 4), BLACKBURN (80), BRANCSIK (124), FAIRMAIRE (305, 306), KERREMANS (567, 569, 570), KOLBE (601, 602, 605), REITTER (903, 912), RITSEMA (932), SEMENOW (1003), THÉRY (1073).]

Acmæodera pulchra, variation and synonymy, THÉRY, p. 369, Ann. Soc. ent. France, 1897.

A. subscalaris, Afghanistan, REITTER, p. 20, Deutsche ent. Zeitschr. 1897; *A. atomosparsa*, Madagascar, FAIRMAIRE, p. 381, Ann. Soc. ent. Belgique, xli; *A. solitaria*, p. 40, *interrupta*, *unica*, p. 41, Mexico, *contigua*, Guadeloupe, p. 42, *meridionalis*, Paraguay, p. 43, KERREMANS, Mem. Soc. ent. Belgique, vi : n. spp.

Actenodes suavis, Madagascar, BRANCSIK, p. 119, pl. iv, fig. 8, Jahresh. Ver. Trencsen. xix; *A. viridicollis*, Mexico, p. 20, *parvicollis*, p. 21, *amazonica*, p. 22, Brazil, KERREMANS, Mem. Soc. ent. Belgique, vi : n. spp.

Agrilus fissifrons, Carpathians, p. 9, *acuticornis*, Caucasus, p. 10, *araxicola*, Caucasus, p. 11, *delphinensis*, France, p. 12, *epistomalis*, Moravia, *rudis*, Transcaucasus, p. 13, *reitteri*, Caucasus, p. 16, *sexualis*, Europe, p. 17, *pruinosulus*, France, p. 19, *uhagoni*, Spain, *trochilus*, Djiboutil, p. 20, *croaticus*, Croatia, *jxtasuturalis*, Caucasus, p. 21, *chobauti*, Algeria, *roscidulus*, Morocco, p. 22, *nigrivestis*, France, *mephistopheles*, Europe, p. 23, *panchlorus*, N. Italy, p. 24, *planiceps*, France, *sericarius*, p. 25, *vaginalis*, p. 26, Caucasus, *molitor*, Algeria, p. 28, ABEILLE, Rev. Ent. franc. 1897; *A. barbatus*, Caucasus, p. 34, *cervicornis*, Algeria, p. 35, ABEILLE, t. c.; *A. albifrons*, Herat, REITTER, p. 249, pl. iii, fig. 5, Wien. ent. Zeit. xvi; *A. gounellei*, *bifoveicollis*, p. 55, *gilvopictus*, p. 56, *carus*, p. 57, *canaliculicollis*, *parens*, p. 58, *pictus*, p. 59, *præcipuus*, *postulator*, p. 60, *credulus*, p. 61, *utens*, p. 62, Brazil, *probus*, Venezuela, p. 63, *electus*, *dichrous*, p. 64, *rarus*, p. 65, *unicus*, *oberthuri*, p. 66, *verutus*, p. 67, *prolixus*, p. 68, *pinguis*, *volucer*, p. 69, *votus*, *lætabilis*, p. 70, *quietus*, p. 71, *gaudens*, *inflatus*, p. 72, *dives*, p. 73, *puerilis*, p. 74, *celsus*, *aurifrons*, p. 75, *indulgens*, p. 76, *docilis*, *mundus*, p. 77, *suavis*, *sincerus*, p. 78, *badius*, p. 79, *sculpturatus*, *splendens*, p. 80, *deliciosus*, p. 81, *decorus*, Brazil, *humeralis*, Guatemala, p. 82, *dugesii*, Mexico, *subniger*, p. 83, *subviolaceus*, p. 84, Guatemala, *opacus*, Mexico, p. 85, *dilaticornis*, Paraguay, *tubulus*, p. 86, *transitorius*, *dubius*, p. 87, Brazil, *prudens*, Venezuela, p. 88, *consentaneus*, *villosulus*, p. 89, *munificus*, p. 90, *expolitus*, *lucens*, p. 91, *eximius*, p. 92, *ignavus*, *impudens*, p. 93, *affabilis*, *venustus*, p. 94, *laudabilis*, *turgitus*, p. 95, *urbanus*, p. 96, *timidus*, *æstimatus*, p. 97, *voluptuosus*, *opimus*, p. 98, *sensitivus*, p. 99, *desideratus*, p. 100, *amazonicus*, *strigosus*, p. 101, *vescus*, *fastigatus*, p. 102, *placens*, p. 103, *cardiaspis*, *ignarus*, p. 104, *consularis*, *hesperus*, p. 105, *exiguus*, p. 106, *dirus*, *dicax*, p. 107, *pudens*, *squameus*, p. 108, *impar*, *prælucens*, p. 109, *tersus*, p. 110, *rimosicollis*, *faber*, p. 111, Brazil, *piliferus*, Buenos Ayres, *intermedius*, p. 112, *baliolus*, p. 113, *expletus*, p. 114, *variatus*, *prælongus*, p. 115, *clausus*, *infuscatus*, p. 116, *prismaticus*, *puniceus*, p. 117, *vespilio*, p. 118, *dolatus*, *verax*, p. 119, *suspiciosus*, *pertenuis*, p. 120, *cingulatus*, *tenebricosus*, p. 121, *deceptor*, *meracus*, p. 122, *luctuosus*, p. 123, *perangustus*, *cupidus*, p. 124, Brazil, *rusticus*, Chili, p. 125, KERREMANS, Mem. Soc. ent. Belgique, vi : n. spp.

Amorphosoma gounellei, *apicale*, p. 49, *jucundum*, p. 50, *undulatum*, *luteum*, p. 51, *gibbicolle*, *minutum*, p. 52, Brazil, KERREMANS, Mem. Soc. ent. Belgique, vi, n. spp.

- Anilara brasiliensis*, Bahia, KERREMANS, p. 15, *t. c.* n. sp.
Anthaxia congregata (= *denticulata*, Roth, = *obockiana*, Fairm.), BEDEL, p. 36, Abeille, xxix.
A. duo, Transcaucasus, SEMENOW, p. 599, Horæ Soc. ent. Ross. xxxi: *A. angusta*, p. 16, *opima*, *modesta*, p. 17, *agriloides*, *plagiata*, p. 18, *meridionalis*, *aruginosa*, p. 19, Brazil, KERREMANS, Mem. Soc. ent. Belgique, vi : n. spp.
Aphanisticus actuensis, n. n. for *siculus*, Mars., ABEILLE, p. 32, Rev. Ent. franc. 1897.
A. consanguineus, Java, RITSEMA, p. 125, Notes Leyden Mus. xix, n. sp.
Brachys nodosus, *pretiosus*, p. 131, *gounellei*, p. 132, *humeralis*, *lineatus*, p. 133, *fulvus*, *cælestis*, p. 134, *cyaneoniger*, *pictus*, p. 135, *purpuratus*, p. 136, *cuprinus*, *nigricans*, p. 137, *zonalis*, p. 138, Brazil, KERREMANS, Mem. Soc. ent. Belgique, vi, n. spp.
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Chalcogenia theryi, Egypt, ABEILLE, p. 28, Bull. Soc. ent. France, 1897, n. sp.
Chrysobothris sericeifrons, Cayenne, THÉRY, p. 366, Ann. Soc. ent. France, 1897; *C. rutilans*, Goyaz, p. 24, *puncticollis*, Venezuela, p. 25, *dilatocollis*, *amazonica*, p. 26, *porracea*, p. 27, *timida*, p. 28, *lobata*, Brazil, *boliviana*, Bolivia, p. 29, *gounellei*, *auropicta*, Brazil, p. 30, *bogotensis*, Colombia, p. 31, *placida*, *punctata*, p. 32, Brazil, *gentilis*, p. 33, *staudingeri*, Amazons, *punctiventris*, p. 34, *pygmæa*, Brazil, *tenebricosa*, p. 35, *polita*, Amazons, *taciturna*, Buenos Ayres, p. 36, *sexangula*, Cayenne, p. 37, *dugesii*, Mexico, p. 38, KERREMANS, Mem. Soc. ent. Belgique, vi : n. spp.
Chrysochroa: table of specific characters, synonymy, KERREMANS, pp. 145–152, Notes Leyden Mus. xix. *C. suturalis*, variation, p. 367, *mnizechi*, var. n. *viridisplendens*, *caroli*, var. n. *funebri*, p. 368, THÉRY, Ann. Soc. ent. France, 1897.
C. hasselti, Bunguran Is., p. 152, *haasi*, Congo, p. 153, KERREMANS, Notes Leyden Mus. xix, n. spp.
Cisseis rufobasalis, Madagascar, FAIRMAIRE, p. 380, Ann. Soc. ent. Belgique, xli, n. sp.
Colobogaster cupricollis, p. 22, Chiriqui, *biguttata*, p. 23, Goyaz, KERREMANS, Mem. Soc. ent. Belgique, vi, n. spp.
Coræbus ærtzeni Gangl. (= *carinifer* Ab.), *C. maculifer*, n. n. for *ærtzeni* Ab. ABEILLE, p. 33, Rev. Ent. franc. 1897. *C. marmoratus*, referred to *Cisseoides*, Kerr., THÉRY, p. 369, Ann. Soc. ent. France, 1897.
C. heydeni, Syria, ABEILLE, p. 34, Rev. Ent. franc. 1897; *C. pertusicollis*, Guinea, FAIRMAIRE, p. 110, Ann. Soc. ent. France, 1897 : n. spp.
Cylindromorphus cribratus, Algeria, p. 30, *opacus*, Wallachia, *acus*, Finland, p. 31, ABEILLE, Rev. Ent. franc. 1897; *C. sinuatus*, Algeria, ABEILLE, p. 36, *t. c.* : n. spp.
Dactylozodes fairmairei, Montevideo, p. 46, *chevrolati*, Buenos Ayres, *oberthuri*, Ecuador, p. 47, KERREMANS, Mem. Soc. ent. Belgique, vi, n. spp.
Diplolophotus, n. g., near *Agrilus*, for *D. martini*, n. sp., Djiboutil, and *Agrilus desertus*, Kl., ABEILLE, p. 1, Rev. Ent. franc. 1897.
Discoderes saxosicollis, Madagascar, FAIRMAIRE, p. 381, Ann. Soc. ent. Belgique, xli, n. sp.
Galbella Westw. = *Janthe* Mars., ABEILLE, p. 36, Rev. Ent. franc. 1897.
G. felicissima, Cyprus, ABEILLE, *l. c.* n. sp.
Halecia viridis, p. 2, *gounellei*, *bahiana*, p. 3, *cuprina*, p. 4, Brazil, *auro-punctata*, Colombia, p. 5, KERREMANS, Mem. Soc. ent. Belgique, vi, n. spp.

- Hyperantha*: species tabulated, KERREMANS, pp. 44 & 45, *t. c.*
H. judex, oberthuri, Brazil, p. 45, *pygmæa*, Buenos Ayres, p. 46, *id. t. c. n. spp.*
Julodis, cocoons, FERRAUDIÈRE, p. 113, Bull. Soc. ent. France, 1897.
J. atkinsoni, India, KERREMANS, p. 48, Ind. Mus. Notes, iv, n. sp.
Kisanthobia ariasi, var. n., *algerica*, PIC, p. 41, Misc. ent. v.
Leiopleura beltii, Nicaragua, WATERHOUSE, p. 666, Biol. Centr. Amer. Col. iii, 1; *L. dubia*, Bolivia, p. 141, *rotundata, tristis, cyanura*, p. 142, *pallidicollis, clara*, p. 143, *cœruleicollis*, p. 144, Brazil, KERREMANS, Mem. Soc. ent. Belgique, vi : n. spp.
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Omochyseus pici, Colombia, THÉRY, p. 365, Ann. Soc. ent. France, 1897, n. sp.
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Paradomorphus fohri, Mexico, WATERHOUSE, p. 664, Biol. Centr. Amer. Col. iii, 1, n. sp.
Paragrilus crassus, major, p. 53, *credulus*, p. 54, Brazil, KERREMANS, Mem. Soc. ent. Belgique, vi, n. spp.
Paratania eburneovittis, Zambesi, BRANCSIK, p. 118, Jahresh. Ver. Tröncsen. xix, n. sp.
Philoctenus elegans, Borneo, THÉRY, p. 364, Ann. Soc. ent. France, 1897, n. sp.
Pœcilonota rutilans, var. n., *inornata*, THÉRY, p. 367, *t. c.*
Polycesta perlucida, New Grenada, p. 38, *bicolor*, Brazil, p. 39, KERREMANS, Mem. Soc. ent. Belgique, vi, n. spp.
Psiloptera albicincta (= *abyssinica* Har.), *P. derosa* (= *marginella* Kerr.), THÉRY, p. 369, Ann. Soc. ent. France, 1897.
P. stuhlmanni, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 202, pl. ii, fig. 20, ? n. sp.; *P. obliquata*, KOLBE, *t. c.* p. 350; *P. obliquata*, E. Africa, KOLBE, p. 89, Mt. Mus. Hamburg, xiv; *P. nigerrima*, p. 6, *apiata*, p. 7, *frontalis*, p. 8, *gounellei, bahiana*, p. 9, Brazil, *cincta*, Ecuador, p. 10, *vulnerata, cicatricosa*, Brazil, p. 11, KERREMANS, Mem. Soc. ent. Belgique, vi : n. spp.
Sphenoptera chobauti, Algeria, ABEILLE, p. 28, Bull. Soc. ent. France, 1897; *S. (Chrysoblemma) cylindracea*, Afghanistan, REITTER, p. 21, Deutsche ent. Zeitschr. 1897 : n. spp.
Stenogaster marmoreus, Bahia, KERREMANS, p. 48, Mem. Soc. ent. Belgique, vi, n. sp.
Steraspis kerremansi, Benguela, THÉRY, p. 364, Ann. Soc. ent. France, 1897, n. sp.
Sternocera boucardi, variation, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 197. *S. chrysis*, var. n., *hybrida*, THÉRY, p. 367, Ann. Soc. ent. France, 1897. *S. orissa*, var. n., *reimeri*, KOLBE, p. 350, Ent. Nachr. xxiii.
S. zechiana, Togo, *id. t. c.* p. 351, n. sp.
Stigmodera insularis, Tasmania, p. 30, *campestris*, Queensland, *pulchripes*, Victoria, p. 31, BLACKBURN, Tr. R. Soc. S. Austral. xxi, n. spp.
Taphrocerus agriliformis, Goyaz, KERREMANS, p. 125, Mem. Soc. ent. Belgique, vi, n. sp.
Tetragonoschema purpurascens, Pernambuco, KERREMANS, p. 15, *t. c. n. sp.*
Trachys pygmæa, Fab. (= *corusca* Ponz.), BEDEL, p. 36, Abeille, xxix.
T. argenteosparsa, Sierra Leone, THÉRY, p. 367, Ann. Soc. ent. France, 1897; *T. boliviana*, Cochimba, KERREMANS, p. 126, Mem. Soc. ent. Belgique, vi, n. sp.

- Trypanitius*, n. n., for *Trypanidius flohri*, Wat., WATERHOUSE, p. 664, Biol. Centr. Amer. Col. iii, 1.
Tyndaris fairmairei, Chili, KERREMANS, p. 39, Mem. Soc. ent. Belgique, vi, n. sp.

EUCNEMIDÆ.

- [Cf. CHAMPION (416), FLEUTIAUX (343, 344, 346), KIRSCHBERG (592).]
Eucnemidæ of Berlin Museum, FLEUTIAUX (343, 344).
Anischia crassicornis, Central America, CHAMPION, p. 668, Biol. Centr. Amer. Col. iii, 1; *A. mexicana*, Motzorongo, FLEUTIAUX, p. 261, Ann. Soc. ent. Belgique, xli : n. spp.
Arrhipis castanea, India, FLEUTIAUX, p. 256, Ann. Soc. ent. Belgique, xli ;
A. sumatrensis, Deli, FLEUTIAUX, p. 178, Nov. Zool. iv : n. spp.
Cephalodendron gigas, Madagascar, FLEUTIAUX, p. 258, Ann. Soc. ent. Belgique, xli, n. sp.
Ceratus rothschildi, New Guinea, FLEUTIAUX, p. 177, Nov. Zool. iv, n. sp.
Fornax granulatus, Mexico, CHAMPION, p. 668, Biol. Centr. Amer. Col. iii, 1; *F. flohri*, Mexico, FLEUTIAUX, p. 262, Ann. Soc. ent. Belgique, xli ;
F. dirceoides, Philippines, p. 252, *cervinus*, Colombia, *ebeninus*, Cuba, p. 253, FLEUTIAUX, t. c. : n. spp.
Galba nigra, Trobriand islds., FLEUTIAUX, p. 178, Nov. Zool. iv, n. sp.
Microrhagus melasoides, Brazil, FLEUTIAUX, p. 255, Ann. Soc. ent. Belgique, xli, n. sp.
Nematodes major, habitat is Victoria, Australia, not N. America, FLEUTIAUX, p. 257, t. c.
Phyllocerus ullmanni, Pola, KIRSCHBERG, p. 677, Verh. Ges. Wien, 1897, n. sp.
Pseudophyllocerus atricolor, Reitter, is *Plastocerus angulosus*, Germ. SCHWARZ, p. 64, Deutsche ent. Zeitschr. 1897.
Semnodema ornatum, Sumatra, FLEUTIAUX, p. 259, Ann. Soc. ent. Belgique, xli, n. sp.
Soleniscus africanus, Togo, FLEUTIAUX, p. 260, t. c. n. sp.
Tharops antennalis, Sumatra, FLEUTIAUX, p. 250, t. c. n. sp.
Thylacosternus vittatus, Nicaragua, CHAMPION, Biol. Centr.-Amer. Col. iii, 1; *T. thiemei*, Colombia, FLEUTIAUX, p. 260, Ann. Soc. ent. Belgique, xli : n. spp.

ELATERIDÆ.

- [Cf. BRANCSIK (124), CHAMPION (164), DUBOIS (268), FAIRMAIRE (305), LESNE (677), PIC (860), SCHWARZ (989, 990, 992).]
Notes on larval habits etc. of some N. American, WEED (1178), pp. 31-41.
Luminous apparatus of *Pyrophorus*, DUBOIS (268).
Alaus pectinatus, Madagascar, FAIRMAIRE, p. 381, Ann. Soc. ent. Belgique, xli, n. sp.
Anchastus rosti, Caucasus, SCHWARZ, p. 128, Wien. ent. Zeit. xvi, n. sp.
Anisomerus, n. g. for part of *Dicronychus*, SCHWARZ, p. 13, Deutsche ent. Zeitschr. 1897.
Athous niger, var. n., *maculicollis*, PIC, p. 5, Echange, 1897.
A. rosti, Circassia, p. 131, *koenigi*, Armenia, p. 132, *ganglbaueri*, Nanos, p. 133, *monilicornis*, Bulgaria, p. 134, *brevipennis*, Abchassia, p. 135, SCHWARZ, Wien. ent. Zeit. xvi, n. spp.
Calostirus purpureus, var. n., *atropilosus*, BUYSSON, p. 296, Bull. Soc. ent. France, 1897.
Cardiophorus discicollis, var. n., *ganglbaueri*, BUYSSON, p. 259, Bull. Soc. ent. France, 1897.

- C. pallidipennis*, Algeria, PIC, p. 2, *Miscell. ent.* v, n. sp.
Coryssodactylus, n. g., *Physodactylini* for *Dicronychus puerulus*, Cand., SCHWARZ, p. 15, *Deutsche ent. Zeitschr.* 1897.
Crepidius flavipes, St. Vincent, CHAMPION, p. 284, *Tr. ent. Soc. London*, 1897, n. sp.
Cryptohypnus costicollis, Madagascar, FAIRMAIRE, p. 382, *Ann. Soc. ent. Belgique*, xli, n. sp.
Diacanthus decoratus, Turkestan, SCHWARZ, p. 136, *Wien. ent. Zeit.* xvi, n. sp.
Dicrepidius insularis, St. Vincent, CHAMPION, p. 283, *Tr. ent. Soc. London*, 1897, n. sp.
Dicronychidæ, new family for *Dicronychus*, *Tarsalgus*, and *Anisomerus*, n. g. SCHWARZ, pp. 9-15, *Deutsche ent. Zeitschr.* 1897.
Elater punctatus and *ocellatus*, distinguished, BUYSSON, p. 40, *Bull. Soc. ent. France*, 1897. *E. wentworthensis*, note on, BLACKBURN, p. 32, *Tr. R. Soc. S. Austral.* xxi.
Elathous niger, Parnassus, SCHWARZ, p. 130, *Wien. ent. Zeit.* xvi, n. sp.
Esthesopus grenadensis, W. Indies, CHAMPION, p. 289, *Tr. ent. Soc. London*, 1897, n. sp.
Horistonotus sericeus, St. Vincent, CHAMPION, p. 288, *Tr. ent. Soc. London*, 1897, n. sp.
Hypnoidus (Zorochrus) delicatulus, Bagdad, SCHWARZ, p. 129, *Wien. ent. Zeit.* xvi, n. sp.
Idiotropa, n. g. for *Athous henoni*, Ab., SCHWARZ, p. 63, *Deutsche ent. Zeitschr.* 1897.
Ludius tauricus, Asia Minor, SCHWARZ, p. 400, *t. c.* n. sp.
Melantho filia, Madagascar, BRANCSIK, p. 119, pl. iv, fig. 9, *Jahresh. Ver. Trencsen.* xix, n. sp.
Meristhus angulicollis, Madagascar, FAIRMAIRE, p. 382, *Ann. Soc. ent. Belgique*, xli, n. sp.
Paracardiophorus schusteri, Bagdad, SCHWARZ, p. 129, *Wien. ent. Zeit.* xvi, n. sp.
Parelater, n. g., anomalous, for *P. madagascariensis*, n. sp., Madagascar, LESNE, p. 102, *cuts*, *Bull. Soc. ent. France*, 1897.
Silesis oertzeni, Crete, SCHWARZ, p. 136, *Wien. ent. Zeit.* xvi, n. sp.
Tarsalgus, referred to *Dicronychidæ*, q. v. supra.

CEBRIONIDÆ and RHIPICERIDÆ.

- [*Cf.* CHAMPION (416), CHOBOUT (178), FAIRMAIRE (306), KOLBE (605).]
Cebrio bajonnei, Algeria, CHOBOUT, p. 204, *Bull. Soc. ent. France*, 1897;
C. forcipatus, Senegal, FAIRMAIRE, *Ann. Soc. ent. France*, 1897 : n. spp.
Chamærrhipis beringei, Ugogo, KOLBE, p. 352, *Ent. Nachr.* xxiii, n. sp.
Physodactylini: for n. g. see *Elateridæ*, *Coryssodactylus*.
Sandalus castanescens, E. Africa, FAIRMAIRE, p. 111, *Ann. Soc. ent. France*, 1897; *S. nictoi*, pl. 24, fig. 28, *conicicollis*, fig. 30, Mexico, CHAMPION, p. 585, *Biol. Centr.-Amer. Col.* iii, 1 : n. spp.
Trigonoderus hauseri, Natal, FAIRMAIRE, p. 111, *Ann. Soc. ent. France*, 1897, n. sp.

DASCILLIDÆ.

- [*Cf.* BLACKBURN (80), CHAMPION (164, 416), FAIRMAIRE (305, 309), KOLBE (601).]
Anchytarsus substriatus, Nicaragua, CHAMPION, p. 593, pl. xxvi, fig. 8, *Biol. Centr. Amer. Col.* iii, 1, n. sp.

- Artematopus irroratus*, p. 587, pl. xxvi, fig. 1, *obliquus*, p. 588, fig. 4, *scapularis*, fig. 6, *puncticollis*, p. 589, *rufescens*, fig. 2, *costaricensis*, *rotundicollis*, p. 590, *seticornis*, fig. 5, p. 591, Centr. America, CHAMPION, *t. c.* : n. spp.
- Chetodactyla*, n. g., near *Ptilodactyla*, p. 660, for *C. lyciformis*, n. sp., Nicaragua, p. 661, pl. xxvii, fig. 27, CHAMPION, *t. c.*
- Cneoglossa lampyroides*, Mexico, pl. xxvi, fig. 11, *brevis*, Panama, CHAMPION, *t. c.*, n. spp.
- Ctesibius*, n. g., *Artematopinae*, for *C. eumolpoides*, n. sp., Mexico, pl. xxvi, fig. 7, CHAMPION, p. 592, *t. c.*
- Cyphon bifoveolatus*, pl. xxvii, fig. 7, p. 618, *quadrifoveolatus*, fig. 8, *parallelus*, fig. 9, p. 619, *impressipennis*, fig. 10, *truncatus*, fig. 11, p. 620, *atratus*, p. 621, *guatemalensis*, *ampliceps*, p. 622, Central America, CHAMPION, *t. c.*; *C. dehiscens*, p. 293, *caraibus*, p. 294, St. Vincent, CHAMPION, Tr. ent. Soc. London, 1897 : n. spp.
- Dicranopselaphus pictus*, fig. 12, *flavicornis*, fig. 14, pl. xxvi, Biol. Centr.-Amer. Col. iii, 1.
- D. venosus*, Guatemala, CHAMPION, *t. c.* pl. xxvi, fig. 13, p. 597, n. sp.
- Ectopria reticulata*, pl. xxvi, fig. 15, *vermiculata*, fig. 17, Panama, CHAMPION, *t. c.* p. 598, n. spp.
- Eucinetus strigipennis*, Guatemala, CHAMPION, pl. xxvi, fig. 18, p. 599, *t. c.*, n. sp.
- Haploglossa collaris*, figured, pl. xxvii, fig. 12, p. 624, CHAMPION, Biol. Centr.-Amer. Col. iii, 1.
- H. angustata*, Panama, *ferruginea*, Guatemala, *id. t. c.* p. 625, n. spp.
- Helodes hydroporoides*, Madagascar, FAIRMAIRE, p. 382, Ann. Soc. ent. Belgique, xli; *H. mexicana*, Chilpancingo, CHAMPION, pl. xxvi, fig. 19, p. 600, Biol. Centr.-Amer. Col. iii, 1, n. sp.
- Lachnodactyla*, n. g., p. 658, near *Ptilodactyla*, for *L. monticola*, pl. xxvii, fig. 25, *parviscutum*, n. spp., Mexico, p. 659, CHAMPION, *t. c.*
- Macrohelodes tasmanicus*, Tasmania, BLACKBURN, p. 33, Tr. R. Soc. S. Austral. xxi, n. sp.
- Microdemon*, n. g., with *M. angustatus*, *infuscatus*, p. 213, *flavescens*, *biplagiatus*, p. 214, n. spp., E. Africa, KOLBE, Deutsch-Ost-Africa, iv, Col.
- Ora troberti* (= *chevrolati*, Clk.), figured, pl. xxvi, fig. 24, CHAMPION, Biol. Centr.-Amer. Col. iii, 1.
- O. obliqua*, pl. xxvi, fig. 25, *discoidea*, fig. 26, p. 604, *marmorata*, *mixta*, fig. 27, p. 605, *nigricornis*, p. 606, Centr. America, CHAMPION, *t. c.*, n. spp.
- Paralichas striolatus*, Szé-tchouen, FAIRMAIRE, p. 249, Notes Leyden Mus. xix, n. sp.
- Prionocyphon pilicornis*, pl. xxvi, fig. 20, *auritus*, fig. 22, Centr. America, CHAMPION, p. 601, *t. c.*; n. spp.
- Prionoscirtes*, n. g., near *Scirtes* and *Cyphon*, for *P. saltitans*, n. sp., pl. xxvi, fig. 23, p. 602, and *P. nigripennis*, p. 662, Guatemala, CHAMPION, Biol. Centr.-Amer. Col. iii, 1.
- P. dilaticornis*, St. Vincent, CHAMPION, p. 291, Tr. ent. Soc. London, 1897, n. sp.
- Ptilodactyla sancti-vincentis*, p. 295, *antillarum*, p. 296, St. Vincent, CHAMPION, Tr. ent. Soc. London, 1897; *P. rufa*, pl. xxvii, fig. 13, *maculata*, fig. 15, p. 630, *nigricornis*, *ebenina*, p. 631, *glabrata*, *substriata*, pl. xxvii, fig. 16, p. 632, *gibbicollis*, *convexicollis*, p. 633, *cucullata*, *canaliculata*, p. 634, *deplanata*, *fuscicornis*, p. 635, *obovata*, *brevicollis*, fig. 17, *corvina*, fig. 21, p. 636, *marginata*, *chiriquensis*, p. 637, *convexa*, *confinis*, p. 638, *guatemalensis*, *submaculata*, p. 639, *rufotestacea*, *tabascoana*, p. 640, *gracilis*, *antennalis*, p. 641, *humerosa*, *lutescens*, p. 642, *montana*, fig. 24, *scapularis*, p. 643, *rugulosa*, fig. 18,

- varicornis*, p. 644, *integra*, *punctatissima*, p. 645, *scutata*, *breviscutum*, *dilaticollis*, fig. 19, p. 646, *denticollis*, fig. 20, *sulcata*, p. 647, *pruinosa*, *caudata*, fig. 22, p. 648, *tropicalis*, p. 649, *mexicana*, *opima*, p. 650, *denticulata*, fig. 23, *æquinoctialis*, p. 651, *serrata*, *germana*, p. 652, *subparallela*, *forcipata*, p. 653, *granulicollis*, p. 654, *forticornis*, *pallescens*, *parallela*, p. 655, *deleta*, *marcida*, p. 656, *debilis*, *rotundicollis tenuis*, fig. 26, p. 657, *costaricensis*, p. 658, Central America, CHAMPION, Biol. Centr.-Amer., Col. iii, 1 : n. spp.
- Scirtes fuscicrus*, Madagascar, FAIRMAIRE, p. 383, Ann. Soc. ent. Belgique, xli; *S. insularis*, St. Vincent, CHAMPION, p. 292, Tr. ent. Soc. London, 1897; *S. cæruleus*, pl. xxvi, fig. 29, *rotundatus*, pl. xxvii, fig. 1, p. 609, *circumcinctus*, fig. 2, *thoracicus*, fig. 3, p. 610, *scapularis*, fig. 4, p. 611, *ellipticus*, *pulicarius*, p. 612, *tenuicornis*, *ater*, p. 613, *longicornis*, *collaris*, *suborbiculatus*, fig. 5, p. 614, *saltator*, *quadrinotatus*, fig. 6, p. 615, *longulus*, *angustatus*, pp. 616 & 662, *puncticollis*, *salicis*, *scymnoides*, p. 617, Central America, CHAMPION, Biol. Centr.-Amer., Col. iii, 1 : n. spp.
- Stirophora*, n. g. near *Ptilodactyla* for *S. sulcipennis*, n. sp., Nicaragua, CHAMPION, p. 660, Biol. Centr.-Amer., Col. iii, 1.
- Telon*, n. g. near *Cladotoma*, for *T. cucullatus*, n. sp., Panama, CHAMPION, p. 626, pl. xxvii, fig. 14, t. c.
- Tetraglossa*, n. g., *Anchytarsini*, p. 593, for *T. palpalis*, n. sp., Centr. Amer. p. 594, pl. xxvi, fig. 9, CHAMPION, t. c.

MALACODERMIDÆ.

- [Cf. BLACKBURN (80), BOURGEOIS (117, 118), CHOBOUT (179), DUBOIS (268), FAIRMAIRE (308, 309, 312), FALL (316), GESTRO (402), KOLBE (601, 602), LINELL (686), OLIVIER (799), PIC (843, 851, 856), REITTER (901), SCHILSKY (967, 968).]
- Acanthocnemus asiaticus*, Burma, PIC, p. 79, Bull. Soc. zool. France, 1897, n. sp.
- Antholinus amictus*, metamorphoses, habits, XAMBEU, p. 102, Naturaliste, 1897.
- Aphyctus brevicornis*, Dobrudscha, SCHILSKY, Käf. Eur. xxxiv, 71, n. sp.
- Attalus mozabita*, Algeria, CHOBOUT, p. 278, Bull. Soc. ent. France, 1897; *A. subfasciatus*, S. California islands, FALL, p. 243, Canad. Ent. xxix, n. sp.
- Brachidia*: referred to *Galerucides*, GERMAIN, p. 229, Act. Soc. Chili, vii.
- Cantharis oceanica*, New Hebrides, *laperousei*, Vanikoro, BOURGEOIS, p. 73, Bull. Soc. ent. France, 1897, n. spp.
- Cerallus apicalis*, Turkestan, SCHILSKY, Käf. Eur. xxxiv, 82, n. sp.
- Cladophorus gagates*, *francoisi*, Vanikoro, BOURGEOIS, p. 72, Bull. Soc. ent. France, 1897, n. spp.
- Danacæa*: synonymical notes, PIC, pp. 94-97, Miscell. ent. v.
- D. cypria*, *syriaca*, *acutangula*, *temporalis*, *ochroleuca*, *kruperi*, *conicicollis*, *insularis*, *neglecta*, *baudii*, *vitticollis*, *milleri*, *olympiaca*, *confinis*, *pesruchesi*, *anatolica*, *clavipes*, *limbata*, *tripolitana*, *quedenfeldti*, *sericea*, *oertzeni*, *consimilis*, *cylindricollis*, *quadricollis*, *korbi*, *parnassia*, Mediterranean Region, SCHILSKY, Käf. Eur. xxxiii, n. spp.
- Dasytillus impressus*, Gorh. (sub. *Listrus*) (= *D. ovalis*, Cas.), CASEY, p. 682, Ann. N. York Ac. ix.
- Dasytes edoughensis*, Algeria, PIC, p. 219, Bull. Soc. ent. France, 1897; *D. confinis*, Algeria, *staudingeri*, Spain, *levicollis*, *seriatopunctatus*, Syria; *D. (Mesodasytes) punctulatus*, Algeria, SCHILSKY, Käf. Eur. xxxiii : n. spp.

- Dasytiscus wartmanni*, Algeria, REITTER, p. 219, Wien. ent. Zeit. xvi;
D. (Dasytidius) neglectus, Algeria, SCHILSKY, Käf. Eur. xxxiii, 84;
D. turkestanicus, Turkestan, *gestroi*, Tunis, SCHILSKY, Käf. Eur. xxxiv,
 74 & 75 : n. spp.
- Diaphanes raapi*, Batu, OLIVIER, p. 412, Ann. Mus. Genova, xxxviii, n. sp.
Divales abeillei, *korbi*, *aequalis*, *breviusculus*, *brevicollis*, *viertli*, Mediter-
 ranean region, SCHILSKY, Käf. Eur. xxxiv, n. spp.
- Eros (Pyropterus) rubripes*, Algeria, PIC, p. 220, Bull. Soc. ent. France,
 1897, n. sp.
- Eulampyris basicrus*, Szé-tchouen, FAIRMAIRE, p. 250, Notes Leyden Mus.
 xix, n. sp.
- Eurylampyris bivitrea*, Ishigaki-Sima, FAIRMAIRE, p. 69, Bull. Soc. ent.
 France, 1897, n. sp.
- Haplocnemus rufo-marginatus*, var. n., *edoughensis*, PIC, p. 41, Miscell.
 ent. v.
- H. uhagoni*, *flavicornis*, *cupreatus*, *caucasicus*, *pesruchesi*, *longulus*, *acutan-*
gulus, *venustulus*, *diaphanus*, *rugicollis*, *biscraensis*, *aerosus*, *punctiger*,
mirabilis, *dentatus*, Mediterranean region, SCHILSKY, Käf. Eur. xxxiii;
H. turcicus, *breviusculus*, *afer*, *perforatus*, *gracilicornis*, *persicus*, *margi-*
nicollis, *castiliensis*, *cribrosus*, *viertli*, *korbi*, *depressicollis*, *parumpunc-*
tatus, *gestroi*, *melitensis*, Mediterranean Region, SCHILSKY, Käf. Eur.
 xxxiv : n. spp.
- Ichthyurus zehntneri*, Java, GESTRO, p. 129, Notes Leyden Mus. xix, n. sp.
- Laius cyanoxanthus*, New Hebrides, BOURGEOIS, p. 74, Bull. Soc. ent.
 France, 1897, n. sp.
- Lamprophorus lutosipennis*, p. 215, Ceylon, *yunnanus*, Yunnan, p. 216,
 FAIRMAIRE, Notes Leyden Mus. xix; *L. scutatus*, Szé-tchouen, FAIR-
 MAIRE, p. 250, *t. c.*, n. spp.
- Lampyris noctiluca*, light-organs of young and adult, DUBOIS (268).
- Lampyris mosambica*, E. Africa, KOLBE, p. 90, Mt. Mus. Hamburg, xiv;
L. kilimana, p. 217, *volkensi*, *ugandana*, *piligera*, *fraterna*, *breviuscula*,
planitiana, *costulata*, p. 218, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv,
 Col. : n. spp.
- Luciola cowleyi*, Queensland, BLACKBURN, p. 34, Tr. R. Soc. S. Austral.
 xxi; *L. abbotti*, Glorioso I., LINELL, p. 703, P. U. S. Mus. xix : n. spp.
- Lycus stuhlmanni*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 215,
 pl. ii, fig. 21, n. sp.
- Malthinus fuscipes*, Algeria, BOURGEOIS, p. 42, Rev. Ent. franc. 1897, n. sp.
- Melyris discoidalis*, Fairm. referred to *Zygia*, BEDEL, p. 36, Abeille, xxix.
- M. ruficolor*, Algeria, CHABAUT, p. 239, Bull. Soc. ent. France, 1897;
M. opaca, N. Africa, SCHILSKY, Käf. Eur. xxxiv, 100 : n. spp.
- Melyrodes*, Gorh., and *Alymeris*, Cas., are probably synonyms, CASEY, p. 682,
 Ann. N. York Ac. ix.
- Progeutes longipennis*, var. n., *nigripes*, BOURGEOIS, p. 40, Rev. Ent. franc.
 1897.
- P. chobauti*, Algeria, *id.* p. 41, *t. c.*, n. sp.
- Psilothrix kurdistanicus*, Kasikoporan, SCHILSKY, Käf. Eur. xxxiv, 25, n. sp.
- Selasia minuta*, E. Africa, KOLBE, p. 91, Mt. Mus. Hamburg, xiv; *S. win-*
denmanni, *kilimana*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col.
 p. 219 : n. spp.
- Telephorus araticollis*, China, FAIRMAIRE, p. 216, Notes Leyden Mus. xix,
 n. sp.
- Trichoceble heydeni*, China, SCHILSKY, p. 155, Deutsche ent. Zeitschr.
 1897; *T. elongata*, Asia minor, SCHILSKY, Käf. Eur. xxxiii, 85 : n. sp.
- Trichochrous ferrugineus*, Gorh. (sub. *Listrus*) (= *T. exiguus*, Cas.), CASEY,
 p. 682, Ann. N. York Ac. ix.
- Zygia longicollis*, Turkey, SCHILSKY, Käf. Eur. xxxiv, 88; *Z. viridipennis*,
 Centr. Africa, *elongata*, Niger, PIC, p. 124, Naturaliste, 1897 : n. spp.

CLERIDÆ.

[Cf. BLACKBURN (79), CHOBOUT (179), HINTZ (485).]

- Corynetinus fimetarius*, Woll. (= *fulgidicollis*, Desbr.), REITTER, p. 217, Wien. ent. Zeit. xvi. *C. fimetarius* (= *desbrochersi*, Reitt. = *fulgidicollis*, Desb.), PIC, p. 123, Bull. Soc. ent. France, 1897.
- Lissaulicus rufus*, Usambara, HINTZ, p. 287, Deutsche ent. Zeitschr. 1897, n. sp.
- Phlæocopus bayonnei*, Algeria, CHOBOUT, p. 241, Bull. Soc. ent. France, 1897; *P. kuverti*, Usambara, HINTZ, p. 286, Deutsche ent. Zeitschr. 1897 : n. spp.
- Stigmatium (Astigmus) sericeum*, Usambara, HINTZ, p. 288, Deutsche ent. Zeitschr. 1897; *S. bimaculatum*, W. Australia, BLACKBURN, p. 91, Tr. R. Soc. S. Austral. xxi, n. sp.
- Tillus mozabita*, Algeria, CHOBOUT, p. 240, Bull. Soc. ent. France, 1897, n. sp.

CUPESIDÆ.

- Cupes cretaceo-tinctus*, E. Africa, p. 353, *capensis*, S. Africa, p. 354, KOLBE, Ent. Nachr. xxiii; *C. oculatus*, Indiana, CASEY, p. 338, Ann. N. York Ac. ix : n. spp.

PTINIDÆ.

[Cf. ABEILLE (3), KOLBE (601), PIC (841, 842, 861, 862, 863), REITTER (899, 901, 912), ZOUFAL (1202).]

- Bruchoptinus vicinus*, Bosnia, PIC, p. 102, Feuille Natural. xxvii, n. sp.
- Byrrhus (Hadrobregmus) ruber*, Caucasus, REITTER, p. 216, Deutsche ent. Zeitschr. 1897, n. sp.
- Clada costipennis*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col.; *C. lineata*, p. 41, *antennata*, p. 42, India, PIC, p. 42, Miscell. ent. v : n. spp.
- Gastrallus striatus*, Syria, *unistriatus*, Greece, ZOUFAL, p. 206, Wien. ent. Zeit. xvi, n. spp.
- Hedobia pubescens*, var. n. *nigrina*, REITTER, p. 21, Deutsche ent. Zeitschr. 1897.
- Lasioderma semirufulum*, Corsica, REITTER, p. 217, Wien. ent. Zeit. xvi, n. sp.
- Pseudomezium*, n. g. for *P. sulcithorax*, n. sp., S. Africa, PIC, p. 102, Feuille Natural. xxvii.
- Pseudoptinus caucasicus*, Caucasus, PIC, p. 102, t. c. n. sp.
- Ptinus pubens*, p. 131, *superbus*, p. 132, France, ABEILLE, Bull. Soc. ent. France, 1897; *P. (Bruchus) andrewesi*, p. 26, *P. (Eutaphrus) brevithorax*, p. 27, India, PIC, Miscell. ent. v; *P. (Gynopterus) pyrenæus*, Pyrenees, *P. (Eutaphrus) tuniseus*, Sfax, PIC, p. 61, t. c.; *P. Bruchoptinus henoni*, Lenkoran, p. 119, *P. (Eutaphrus) rotundipennis*, Syria, p. 120, PIC, Feuille Natural. xxvii : n. spp.
- Xestobium (Hyperisus) subcæneus*, Araxes Valley, REITTER, p. 216, Deutsche ent. Zeitschr. 1897, n. sp.
- Xylotheca*, n. g., p. 204, *Dorcatomini*, for *X. meieri*, Hamburg (? imported), n. sp., REITTER, p. 205, Wien. ent. Zeit. xvi.

BOSTRYCHIDÆ.

[Cf. BLACKBURN (79), CHOBOUT (177), LESNE (671—676).]

Monograph of *Bostrychidæ*, pt. ii, *Dinoderinæ*, with description of skeleton and wings, LESNE (671).

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- Apate carbonnieri*, Algeria, LESNE, p. 235, Bull. Soc. ent. France, 1897, n. sp.
Bostrychus normandi, Algeria, LESNE, p. 236, Bull. Soc. ent. France, 1897;
B. khmerensis, Cochinchina, LESNE, p. 511, Ann. Soc. ent. France, 1896 : n. spp.
Dinoderus bifoveolatus (= *perpunctatus*, Lesne), LESNE, p. 147, Bull. Soc. ent. France, 1897.
D. australiensis, Port Darwin, LESNE, p. 184, Notes Leyden Mus. xix;
D. nitidus, Marquesas Is., p. 323, *distinctus*, Philippines, p. 325,
punctatissimus, E. India, p. 329, LESNE, *t. c.* : n. spp.
Heterarthron subdepressus, Mexico, LESNE, p. 146, Bull. Soc. ent. France, 1897, n. sp.
Prostephanus, n. g., p. 320, and p. 342 for, *truncatus*, Horn, etc., LESNE, Ann. Soc. ent. France, 1897.
Sinoxylon pygmaeum, *atratum*, p. 20, *crassum*, *anale*, p. 21, *indicum*, *circuitum*, p. 22, India, LESNE, Ann. Soc. ent. Belgique, xli, n. spp.
Xylopertha auberti, Algeria, CHABAUT, p. 170, Bull. Soc. ent. France, 1897;
X. ornata, *parvula*, India, LESNE, p. 19, Ann. Soc. ent. Belgique, 1897; *X. hirticollis*, W. Australia, BLACKBURN, p. 92, Tr. R. Soc. S. Austral. xxi : n. spp.

TENEBRIONIDÆ.

- [*Cf.* ALLUAUD (13, 15), BLACKBURN (79, 80), BRANCSIK (124), CHABAUT (178), FAIRMAIRE (305, 306, 308, 309, 312, 313, 314, 315), FALL (316), KOLBE (601, 602), KRAATZ (621, 625), LEA (660), LINELL (689), OERTZEN (798), REITTER (912, 913), VAULOGER (1118, 1119), WASMANN (1165).]
- Adordanea*, subg. n. of *Microdera*, for *M. subseriata*, REITTER, p. 229, Deutsche ent. Zeitschr. 1897.
Alphitobius grandis, Madagascar, FAIRMAIRE, p. 113, Ann. Soc. ent. Belgique, xli, n. sp.
Amarygmus callichromus, Ishigaki-Sima, FAIRMAIRE, p. 70, Bull. Soc. ent. France, 1897, n. sp.
Amenophis annulicrus, W. Africa, FAIRMAIRE, p. 126, Ann. Soc. ent. France, 1897, n. sp.
Amiantus nitidipennis, E. Africa, FAIRMAIRE, p. 114, *t. c.* n. sp.
Anadischidus, n. g. for *Nyctobates iphthinoides*, Quedenf., KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 242.
Anarmostodera, n. g. near *Praogena* for *A. crassicornis*, n. sp., Madagascar, FAIRMAIRE, p. 114, Ann. Soc. ent. Belgique, xli.
Anchophthalmus impressicollis, E. Africa, FAIRMAIRE, p. 121, Ann. Soc. ent. France, 1897, n. sp.
Anomalipus: revision and table of species, OERTZEN, pp. 33-46, Deutsche ent. Zeitschr. 1897.
Anomalipus ovalipennis, p. 33, *coriaceus*, p. 34, *seriatus*, *hybridus*, *variabilis*, p. 35, *kolbei*, p. 36, *damaricus*, *carinatus*, p. 37, *acutangulus*, *costatus*, p. 38, *thoracicus*, p. 39, *asidioides*, p. 40, S. Africa, *id. t. c.* : n. spp.
Arthrodes maindroni, Kurrachee, *castaneus*, Bukhara, VAULOGER, p. 294, Bull. Soc. ent. France, 1897, n. spp.
Asbolodes semigranosus, Perak, FAIRMAIRE, p. 225, Notes Leyden Mus. xix, n. sp.
Aspidosternum rugulosum, p. 129, *cariosum*, *tenuecostatum*, p. 130, W. Africa, FAIRMAIRE, Ann. Soc. ent. France, 1897, n. spp.
Axynaon, n. g., p. 34, *Mericanthides aberrant*, for *A. championi*, n. sp. Queensland, p. 35, BLACKBURN, Tr. R. Soc. S. Austral. xxi.

- Blastarnus*, n. g., near *Micrantereus*, for *B. grallator*, *pruinus*, p. 132, *hirtulus*, p. 133, n. spp., Africa, FAIRMAIRE, Ann. Soc. ent. France, 1897.
- Brachyidium ovatulum*, Madagascar, FAIRMAIRE, p. 384, Ann. Soc. ent. Belgique, xli, n. sp.
- Brachypophlœus*, n. g. for *Hypophlœus dimidiatipennis*, Fairm., FAIRMAIRE, p. 113, Ann. Soc. ent. Belgique, xli.
- Bradymerus* (sub. *Eucyrtus*) *carinatus*, Fairm. (= *corinthius*, Fairm.), FAIRMAIRE, p. 218, Notes Leyden Mus. xix.
- B. javanus*, Java, p. 217, *cucullatus*, Bombay, p. 218, FAIRMAIRE, t. c. n. spp.
- Bysacnus martini*, Natal, FAIRMAIRE, p. 124, Ann. Soc. ent. France, 1897, n. sp.
- Camarimena brevicollis*, Java, FAIRMAIRE, p. 226, Notes Leyden Mus. xix, n. sp.
- Catomulus olcesi*, Fairm. (= *subæneus*, Reitt.), REITTER, p. 218, Wien. ent. Zeit. xvi.
- Ceropria viridis*, Africa, KRAATZ, p. 160, Deutsche ent. Zeitschr. 1897, n. sp.
- Clitobius oblongiusculus*, Fairm. (= *Halonomus schneideri*, All.), BEDEL, p. 36, Abeille, xxix.
- Cælus pacificus, remotus*, S. California islands, FALL, p. 241, Canad. Ent. xxix, n. spp.
- Crypticanus*, n. g. near *Trigonopus* for *C. cuneatus*, n. sp. Port Elizabeth, FAIRMAIRE, p. 119, Ann. Soc. ent. France, 1897.
- Cyriogeton pernitidus*, Szé-tchouen, FAIRMAIRE, p. 251, Notes Leyden Mus. xix, n. sp.
- Cyrtotyctus*, n. g. *Eutelincæ* for *C. osdaroides*, n. sp. E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 241.
- Damatris camæna*, Madagascar, FAIRMAIRE, p. 384, Ann. Soc. ent. Belgique, xli, n. sp.
- Derosphærus sanguinicrus*, Gaboon, FAIRMAIRE, p. 125, Ann. Soc. ent. France, 1897, n. sp.
- Derothropus impressifrons*, Capo Good Hope, FAIRMAIRE, p. 126, t. c. n. sp.
- Dichillus angelicæ*, Armenia, REITTER, p. 217, Deutsche ent. Zeitschr. 1897, n. sp.
- Dichotymus cæruleatus, cupreatus, amplus*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 248, n. spp.
- Dysgena gagatina* (= *Derosphærus subopacus*, Fairm.), FAIRMAIRE, p. 126, Ann. Soc. ent. France, 1897.
- D. gigas*, E. Africa, KOLBE, p. 93, Mt. Mus. Hamburg, xiv, n. sp.
- Ebenolus*, n. g., p. 227, near *Pœcilesthus* for *E. vernicatus*, n. sp. New Guinea, p. 228, FAIRMAIRE, Notes Leyden Mus. xix.
- Encyalesthus variicolor, iridipennis*, New Guinea, FAIRMAIRE, p. 220, t. c. n. spp.
- Endostomus fuscopictus*, E. Africa, FAIRMAIRE, p. 120, Ann. Soc. ent. France, 1897, n. sp.
- Ergenna*, n. g. near *Lamprobothris* for *E. cærulescens*, n. sp. E. Africa, FAIRMAIRE, p. 139, t. c.
- Erodium antennarius, impressicollis*, Algeria, p. 307, *nanus*, Tunis, p. 308, VAULOGER, Bull. Soc. ent. France, 1897, n. spp.
- Erycastus*, n. g. near *Hoplonyx*, p. 133, for *E. navicularis*, n. sp. Natal, p. 134, FAIRMAIRE, Ann. Soc. ent. France, 1897.
- Eubalia cyaneostriata*, Madagascar, FAIRMAIRE, p. 113, Ann. Soc. ent. Belgique, xli, n. sp.
- Eucyrtus helleri*, n. n. for *gloriosus*, Fairm. 1896, nec Kr. 1880, FAIRMAIRE, p. 221, Notes Leyden Mus. xix.
- E. viridanus*, Celebes, id. l. c. n. sp.

- Eulytus foveipennis*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 248, n. sp.
- Euphlæus bigranosus*, Madura, FAIRMAIRE, p. 221, Notes Leyden Mus. xix, n. sp.
- Euphrynus*, n. g. near *Phrynocolus* for *E. spinithorax*, n. sp. S. Africa, FAIRMAIRE, p. 114, Ann. Soc. ent. France, 1897.
- Eurycaulus henoni*, Egypt, FAIRMAIRE, p. 121, Bull. Soc. ent. France, 1897, n. sp.
- Eurynotus tenuicostatus*, Port Elizabeth, FAIRMAIRE, p. 117, Ann. Soc. ent. France, 1897, n. sp.
- Exangeltus*, n. g. p. 93, *Scaurides* ? for *E. angustus*, n. sp. Centr. Australia, p. 94, BLACKBURN, Tr. R. Soc. S. Austral. xxi.
- Gargilius typhæus*, W. Africa, FAIRMAIRE, p. 123, Ann. Soc. ent. France, 1897, n. sp.
- Gauromaia approximans*, Malasia, FAIRMAIRE, p. 221, Notes Leyden Mus. xix, n. sp.
- Gonocnemis æthiopicus*, Abyssinia, FAIRMAIRE, p. 134, Ann. Soc. ent. France, 1897, n. sp.
- Hadrus cinerascens*, W. (= *verrucatus*, Desb.), *illotus*, W. (= *subellipticus*, Desb.), FAUVEL, p. 38, Rev. Ent. franc. 1897.
- Helæus*, synonymical notes, LEA, pp. 585, 586, P. Linn. Soc. N. S. Wales, 1897.
- H. ellipticus*, W. Australia, LEA, p. 586, *t. c.* n. sp.
- Helops seminitens*, China, FAIRMAIRE, p. 226, Notes Leyden Mus. xix, n. sp.
- Himatismus saharensis*, Algeria, CHOBOUT, p. 205, Bull. Soc. ent. France, 1897; *H. trochantericus*, Madagascar, FAIRMAIRE, p. 384, Ann. Soc. ent. Belgique, xli : n. spp.
- Hionthis occidentalis*, Tibrant, FAIRMAIRE, p. 180, Bull. Soc. ent. France, 1897, n. sp.
- Hopatrum granohispidum*, E. Africa, KOLBE, p. 238, Deutsch-Ost-Afrika, iv, Col. n. sp.
- Hyboproctus*, n. g. *Eutelinae* for *H. nodifer*, *tibialis*, n. spp. E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 241.
- Hypophlæus longicollis*, *nemosomoides*, Madagascar, FAIRMAIRE, p. 112, Ann. Soc. ent. Belgique, xli, n. spp.
- Ischnodactylus tetradymus*, Zanzibar, FAIRMAIRE, p. 123, Ann. Soc. ent. France, 1897, n. sp.
- Lachnopus** *hauseri*, Bukhara, REITTER, p. 217, Deutsche ent. Zeitschr. 1897, n. sp.
- Læna turkestanica*, Margelan, REITTER, p. 221, *t. c.* n. sp.
- Latheticus oryzae* (= *Lyphia costulata*, Fairm.), BEDEL, p. 36, Abeille, xxix.
- Leptoscapa basalis*, Madagascar, ALLUAUD, p. 152, Bull. Soc. ent. France, 1897, n. sp.
- Machla echinoderma*, S. Africa, FAIRMAIRE, p. 112, Ann. Soc. ent. France, 1897, n. sp.
- Machleida nossibiana*, Madagascar, FAIRMAIRE, p. 110, Ann. Soc. ent. Belgique, xli, n. sp.
- Megacantha rudicollis*, E. Africa, FAIRMAIRE, p. 135, Ann. Soc. ent. France, 1897, n. sp.
- Melanesthes simplex*, *subcoriaceus*, Issyk-Kul, REITTER, p. 220, Deutsche ent. Zeitschr. 1897, n. spp.
- Micrantereus armipes*, *septemcostatus*, E. Africa, FAIRMAIRE, p. 131, Ann. Soc. ent. France, 1897, n. spp.
- Micreuphlæus*, n. g., p. 223, near *Sphaerocaulus*, for *M. asperipellis*, n. sp. Ceylon, p. 224, FAIRMAIRE, Notes Leyden Mus. xix.

* This name is in double use in Coleoptera: but we presume the Heteromeros, not the Rhynchophorus, *Lachnopus* is intended. Recorder.

- Microdera interrupta*, Mongolia, p. 230, *semenowi*, Kashgar, p. 231, *aciculata*, Kirghisia, *strigipleuris*, Persia, p. 232, *minax*, Afghanistan, p. 233, *pulla*, Persia, p. 234, REITTER, Deutsche ent. Zeitschr. 1897: n. spp.
- Myrmecocatops*, n. g., p. 268, *Crypticini*?, for *M. latus*, n. sp. Madagascar, p. 269, pl. ii, fig. 1, WASMANN, Deutsche ent. Zeitschr. 1897.
- Nyctobates inæqualis*, referred to *Encyalesthus*, FAIRMAIRE, p. 218, Notes Leyden Mus. xix.
- N.* ? *subcruciatus*, Gaboon, FAIRMAIRE, p. 124, Ann. Soc. ent. France, 1897; *N. parallelus*, Szé-tchouen, FAIRMAIRE, p. 251, Notes Leyden Mus. xix : n. spp.
- Opatrum riparium*, characters, GERHARDT, pp. 1-4, Zeitschr. ent. Breslau, xxii.
- O. asperipenne*, Mongolia, REITTER, p. 219, Deutsche ent. Zeitschr. 1897, n. sp.
- Ospidus gibbus*, Queensland, BLACKBURN, p. 94, Tr. R. Soc. S. Austral. xxi, n. sp.
- Osternus nitidipennis*, synonyms rectified, ALLUAUD, p. 150, Bull. Soc. ent. France, 1897.
- Ozænimorphus* ? *grandicollis*, Togoland, FAIRMAIRE, p. 128, Ann. Soc. ent. France, 1897, n. sp.
- Pachylesthus*, n. g., near *Encyalesthus*, for *P. validus*, Malasia, n. sp. FAIRMAIRE, p. 219, Notes Leyden Mus. xix.
- Paramarygmus metallicus*, E. Africa, FAIRMAIRE, p. 135, Ann. Soc. ent. France, 1897, n. sp.
- Pedinus tibetanus*, Tibet, FAIRMAIRE, p. 217, Notes Leyden Mus. xix, n. sp.
- Peltoides longulus*, Abyssinia, FAIRMAIRE, p. 126, Ann. Soc. ent. France, 1897, n. sp.
- Pentaphyllus angustior*, Madagascar, FAIRMAIRE, p. 112, Ann. Soc. ent. Belgique, xli, n. sp.
- Phaleria cinctipennis*, Madagascar, ALLUAUD, p. 374, Bull. Mus. Paris, 1896, n. sp.
- Phrynocolus ikutanus*, E. Africa, FAIRMAIRE, p. 113, Ann. Soc. ent. France, 1897, n. sp.
- Phylacastus*, n. g., p. 116, near *Micrositus*, for *P. striolatus*, n. sp. Transvaal, FAIRMAIRE, p. 117, t. c.
- Plesia*: a distinct genus, characters, FAIRMAIRE, p. 114, Ann. Soc. ent. Belgique, xli.
- Plesiophthalmus amplipennis*, Szé-tchouen, FAIRMAIRE, p. 252, Notes Leyden Mus. xix, n. sp.
- Praogena rutilia*, p. 137, *quadricollis*, p. 138, E. Africa, FAIRMAIRE, Ann. Soc. ent. France, 1897, n. spp.
- Praostetha*, n. g., near *Praogena*, for *P. impressifrons*, n. sp. Congo, FAIRMAIRE, p. 138, t. c.
- Prioscelis serrata*, larva, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 244, pl. iii, fig. 25.
- P. tridens*, E. Africa, KOLBE, p. 92, Mt. Mus. Hamburg, xiv, n. sp.
- Prolabrus*, n. g., near *Læna*?, for *P. parallelus*, n. sp. Madagascar, FAIRMAIRE, p. 111, Ann. Soc. ent. Belgique, xli.
- Psammodes impressiventris*, E. Africa, FAIRMAIRE, p. 115, Ann. Soc. ent. France, 1897; *P. bennigsenii*, p. 46, *validus*, p. 48, E. Africa, KRAATZ, Deutsche ent. Zeitschr. 1897 : n. spp.
- Pseudadrus*, n. g., for *Hadrus scaphoides*, Mars. FAIRMAIRE, p. 39, Rev. Ent. franc. 1897.
- Pterocoma subnuda*, Mongolia, *chan*, Bukhara, REITTER, p. 218, Deutsche ent. Zeitschr. 1897, n. spp.
- Pterohelæus tenuistriatus*, n. n., for *tristis*, Lea, LEA, p. 586, P. Linn. Soc. N. S. Wales, 1897.

- Pycna impressifrons, minor*, Madagascar, FAIRMAIRE, p. 111, Ann. Soc. ent. Belgique, xli, n. spp.
- Rhytinota cavernosa*, p. 112, *polita*, p. 113, Africa, FAIRMAIRE, Ann. Soc. ent. France, 1897, n. spp.
- Saragus lugubris*, Australia, LEA, p. 587, P. Linn. Soc. N. S. Wales, 1897, n. sp.
- Scotinesthes tuberculatus*, Madagascar, FAIRMAIRE, p. 383, Ann. Soc. ent. Belgique, xli, n. sp.
- Selinus asperulus, crenatus*, p. 121, *costulifer, levistriatus, medius*, p. 122, *plicicollis*, p. 123, Africa, FAIRMAIRE, Ann. Soc. ent. France, 1897, n. spp.
- Sepidium sexcornutum*, E. Africa, FAIRMAIRE, p. 115, *t. c.* n. sp.
- Stizopus rotundicollis*, Transvaal, FAIRMAIRE, p. 116, Ann. Soc. ent. France, 1897; *S. caraboides*, Transvaal, FAIRMAIRE, p. 119, *t. c.* : n. spp.
- Strongylium tanganum*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 249; *S. oshimanum*, Liou-Kiou Islands, FAIRMAIRE, p. 167, Bull. Soc. ent. France, 1897 : n. spp.
- Suarezius confrater*, Madagascar, BRANCSIK, p. 120, Jahresh. Ver. Trencsen. xix; *S. metallescens*, Madagascar, FAIRMAIRE, p. 385, Ann. Soc. ent. Belgique, xli : n. spp.
- Tanchirus*, n. g., p. 224, near *Sphaerocaulus*, for *T. compactus*, n. sp. Trichinopolis, p. 225, FAIRMAIRE, Notes Leyden Mus. xix.
- Taraxides crenato-striatus*, var. n., *subsulcata*, KOLBE, p. 92, Mt. Mus. Hamburg, xiv.
- T. degener*, E. Africa, FAIRMAIRE, p. 125, Ann. Soc. ent. France, 1897, n. sp.
- Tenebrio giganteus, laticornis*, Africa, FAIRMAIRE, p. 127, Ann. Soc. ent. France, 1897, n. spp.
- Trigonopus ampliocollis, brevior*, S. Africa, FAIRMAIRE, p. 118, Ann. Soc. ent. France, 1897, n. spp.
- Typhleusechus*, n. g., new tribe between *Anepsini* and *Nyctoporini*, p. 154, for *T. singularis*, n. sp., California, p. 156, LINELL, Ent. News Philad. 1897.
- Uloma procera*, Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 239; *U. hondana*, E. Africa, KOLBE, p. 350, *t. c.*; *U. hondana*, E. Africa, KOLBE, p. 91, Mt. Mus. Hamburg, xiv : n. spp.
- Vieta bulbifera*, E. Africa, FAIRMAIRE, p. 116, Ann. Soc. ent. France, 1897, n. sp.
- Xanthotopia fuscocyanescens*, Port Elizabeth, FAIRMAIRE, *t. c.*, n. sp.
- Zophosis mozabita*, Algeria, FAIRMAIRE, p. 120, Bull. Soc. ent. France, 1897, n. sp.

CISTELIDÆ.

- [*Cf.* CHAMPION (163), FAIRMAIRE (305, 308, 309), KOLBE (601).]
 Catalogue of the *Cistelidæ* published since the issue of the Munich Catalogue, to the end of 1896, CHAMPION, Mem. Soc. ent. Belgique, vi.
- Allecula poplitis*, p. 136, *puberula*, p. 137, W. Africa, FAIRMAIRE, Ann. Soc. ent. France, 1897, n. spp.
- Asticostena*, n. g., near *Allecula*, for *A. alternata*, n. sp., Trichinopoly, FAIRMAIRE, p. 228, Notes Leyden Mus. xix.
- Borboresthes*, n. g., near *Allecula*, for *B. fuliginosus*, n. sp., Szé-tchouen, and *A. cruralis*, Mars., FAIRMAIRE, p. 253, Notes Leyden Mus. xix.
- Cistelampra*, n. g. for *C. purpurina*, n. sp., Madagascar, FAIRMAIRE, p. 386, Ann. Soc. ent. Belgique, xli, n. sp.
- Ectenostoma brevicornis*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 251, n. sp.

- Heliotaurus*; notes on, PIC, p. 297, Bull. Soc. ent. France, 1897.
Isomira morosa, Madagascar, FAIRMAIRE, p. 385, Ann. Soc. ent. Belgique, xli, n. sp.
Mycetocharina (= *Caristela*, Fairm.), BEDEL, p. 36, Abeille, xxix.
Nesiotaurus fuscimembris, Madagascar, FAIRMAIRE, p. 385, Ann. Soc. ent. Belgique, xli, n. sp.

PYTHIDÆ.

- Lissodema rosti*, Circassia, REITTER, p. 125, Wien. ent. Zeit. xvi, n. sp.
Rhinosimus fascipennis, Talysch, REITTER, p. 125, t. c., n. sp.
Salpingus dromioides, Madagascar, FAIRMAIRE, p. 386, Ann. Soc. ent. Belgique, xli, n. sp.

MELANDRYIDÆ, OTHNIIDÆ.

[Cf. BLACKBURN (79), CASEY (162), REITTER (920).]

- Ababa*, n. g., p. 653, *Othniida*, for *O. crinita*, n. sp., Texas, p. 654, CASEY, Ann. N. York Ac. ix.
Dircea subtilis, Galicia, REITTER, p. 246, Deutsche ent. Zeitschr. 1897, n. sp.
Ncogonus hampei, Ordubad, p. 221, *minos*, Greece, p. 222, REITTER, Deutsche ent. Zeitschr. 1897, n. sp.
Paromarteon, n. g., p. 94, aberrant *Melandryid*, for *P. mutabile*, n. sp., Victoria, p. 95, BLACKBURN, Tr. R. Soc. S. Austral. xxi.
Tetratoma baudueri (= *Phlæophilus flavopictus*, Fairm.), BEDEL, p. 36, Abeille, xxix.

LAGRIIDÆ.

- Casonideia collaris*, E. Africa, FAIRMAIRE, p. 145, Ann. Soc. ent. France, 1897, n. sp.
Chlorophila basipennis, Tibet, p. 229, *nitidicollis*, Darjeeling, p. 230, *immarginata*, Tibet, p. 231, FAIRMAIRE, Notes Leyden Mus. xix, n. spp.
Derostira, n. g., near *Mesostira*, for *D. crenulipennis*, n. sp., Madagascar, FAIRMAIRE, p. 388, Ann. Soc. ent. Belgique, xli, n. sp.
Lagria pubens, p. 140, *scapulata tenella*, *metallina*, p. 141, *semivestita dissimilis*, p. 142, *zonaria*, *nodulosa*, p. 143, Africa, FAIRMAIRE, Ann. Soc. ent. France, 1897, n. spp.
Ncmostira rufulicollis, p. 114, *atrifrons*, p. 115, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli; *N. morosa*, *geniculata*, *apicicornis*, p. 387, *basicrus*, *ruficollis*, p. 388, Madagascar, FAIRMAIRE, t. c.; *N. cribricollis*, *gracillima*, W. Africa, FAIRMAIRE, p. 144, Ann. Soc. ent. France, 1897 : n. spp.

ANTHICIDÆ, PEDILIDÆ.

[Cf. CHOBOUT (175), FAIRMAIRE (305, 306), LEA (660), PIC (840, 842, 844, 846, 853, 854, 855, 858, 859, 861, 863, 864).]

- Supplement to catalogue of *Anthicida*, PIC, pp. 212–224 and 343 & 344, Ann. Soc. ent. Belgique, xli.
 Notes on Pic's sections of *Anthicus*, CASEY, p. 683, Ann. N. York Ac. ix.
 Carnivorous habits, CHOBOUT, pp. 74–78, Bull. Soc. ent. France, 1897. PIC, p. 266, t. c.
Amblyderus aspericollis, Madagascar, FAIRMAIRE, p. 116, Ann. Soc. ent. Belgique, xli, n. sp.

- Anthicus*: synonymical notes, PIC, pp. 75–77, *Miscell. ent. v.* *A. insignis*, characters, var. n., PIC, p. 50, *Echange*, 1897. *A. formicarius*, and allies, synonymy, HAMILTON, p. 35, *Ent. News Philad.* 1897.
- A. globipennis*, *leuthneri*, Syria, PIC, p. 120, *Feuille Natural.* xxvii; *A. (Aulacoderus) sulcatus*, Corfu, *alitiensis*, Abyssinia, PIC, p. 27, *Miscell. ent. v*; *A. (Aulacoderus) martini*, S. Africa, PIC, p. 170, *Naturaliste*, 1897; *A. vagepictus*, *inanis*, *trinotatus*, Madagascar, FAIRMAIRE, p. 117, *Ann. Soc. ent. Belgique*, xli; *A. antennatus*, Caracas, *A. (Ishcyropalpus) albifasciatus*, Australia, PIC, p. 49, *Naturaliste*, 1897; *A. (Lappus) distinctus*, *A. flohri*, Mexico, p. 142, *A. (Acanthinus) nitidiceps*, Brazil, p. 156, *A. dilaticeps*, S. Africa, p. 157, PIC, *Naturaliste*, 1897 : n. spp.
- Eurygeniomorphus*, n. g., *Nematoplini*, for *E. rugosus*, n. sp., N. S. Wales, PIC, p. 25, *Naturaliste*, 1897.
- Eurygenius africanus*, Tanga, KOLBE, *Deutsch-Ost-Afrika*, iv, Col. p. 263, n. sp.
- Formicomus bangi*, var. n., *latior*, PIC, p. 49, *Naturaliste*, 1897.
- F. bituberculatus*, Benul, PIC, p. 25, *Naturaliste*, 1897; *F. corbetti*, Burma, PIC, p. 75, *Miscell. ent. v*; *F. (Anthelephilus) truncatipennis*, p. 61, *hauseri*, p. 62, Central Asia, PIC, *t. c.*; *F. tuberculifer*, S. Africa, *bispilifasciatus*, Obock, PIC, p. 134, *Naturaliste*, 1897; *F. bergrothii*, p. 115, *fortipes*, p. 116, Madagascar, FAIRMAIRE, *Ann. Soc. ent. Belgique*, xli : n. spp.
- Leptaleus brevior*, Madagascar, FAIRMAIRE, p. 116, *Ann. Soc. ent. Belgique*, xli, n. sp.
- Macratrìa substriata*, E. Africa, KOLBE, *Deutsch-Ost-Afrika*, iv, Col. p. 264; *M. hovana*, *anthicoides*, Madagascar, FAIRMAIRE, p. 389, *Ann. Soc. ent. Belgique*, xli; *M. nigripennis*, Ceylon, *major*, *crassipes*, Borneo, PIC, p. 182, *Naturaliste*, 1897 : n. spp.
- Mecynotarsus latior*, Algeria, PIC, p. 6, *Echange*, 1897, n. sp.
- Olotelus reitteri*, Caucasus, PIC, p. 81, *Bull. Soc. zool. France*, 1897, n. sp.
- Pseudeuglenes*, subg. n., Type *E. 5-tomus*, Th., PIC, p. 81, *t. c.*
- Scraptiã subapicata*, p. 389, *impressicollis*, *pulex*, p. 390, Madagascar, FAIRMAIRE, *Ann. Soc. ent. Belgique*, xli; *S. lunulata*, Queensland, BLACKBURN, p. 95, *Tr. R. Soc. S. Austral.* xxi : n. spp.
- Tomoderus donckieri*, *crassicornis*, Sumatra, PIC, p. 167, *Bull. Soc. zool. France*, 1897, n. spp.
- Trotomma brevithorax*, S. Africa, PIC, p. 6, *Echange*, 1897, n. sp.
- Xylophilide*: list of Australian, LEA, p. 589, *P. Linn. Soc. N. S. Wales*, 1897.
- Xylophilus femoratus*, Port Elizabeth, FAIRMAIRE, p. 140, *Ann. Soc. ent. France*, 1897; *X. eucalypti*, W. Australia, LEA, p. 589, *P. Linn. Soc. N. S. Wales*, 1897; *X. maculicollis*, *X. (? Olotelus)*, *pubens*, p. 62, *X. (? Pseudariotus) bifasciatus*, p. 63, Mexico, PIC, *Miscell. ent. v* : n. spp.

MORDELLIDÆ and RHIPIPHORIDÆ.

[Cf. CHOBOUT (176), FAIRMAIRE (305, 306), KOLBE (601).]

- Metæcus paradoxus*, notes on habits, CHAPMAN, p. 321, *Ent. Record*, 1897, and TUCK, p. 59, *Ent. Mag.* xxxiii.
- Mordella aurocaudata*, p. 145, *polyspila*, p. 146, W. Africa, FAIRMAIRE, *Ann. Soc. ent. France*, 1897, n. spp.
- Mordellistena iridescens*, *montana*, E. Africa, KOLBE, *Deutsch-Ost-Afrika*, iv, Col. p. 254; *M. suturella*, p. 390, *sinuata*, *canellina*, p. 391, Madagascar, FAIRMAIRE, *Ann. Soc. ent. Belgique*, xli : n. spp.
- Pentaria* (sub. *Anaspis*) *gracilis*, Schilsky (= *reitteri*, Chob.), *P. defarguesi* (= *pictipennis*, Reitt. = *oberthuri*, Champ.), CHOBOUT, p. 133, *Bull. Soc. ent. France*, 1897.
- P. bleusei*, Algeria, CHOBOUT, p. 133, *t. c.*, n. sp.

CANTHARIDÆ and CEPHALOIDÆ.

[Cf. BALBI (46), CASEY (162), CHOBAUT (177), ESCHERICH (296, 297, 299), FAIRMAIRE (306, 313), JAKOWLEW (543), KOLBE (601), REITTER (912), THOMAS (1081, 1082).]

- Characters of the family *Cephaloidæ*, CASEY, p. 649, Ann. N. York Ac. ix.
The classification of *Meloidæ* discussed; revision of the palæarctic forms of the subfam. *Zonitides*, ESCHERICH, pp. 96-133, Verh. Ver. Brunn, xxxv.
- Apalus asiaticus*, Turkestan, pp. 119 & 128; *montanus*, Asia Minor, p. 121, *A. (Stenoria) tristis*, Ural, pp. 124 & 129, *A. (Sitaris) emiliae*, Syra, pp. 125 & 130, ESCHERICH, Verh. Ver. Brunn, xxxv, n. spp.
- Cantharis bifoveiceps*, E. Africa, FAIRMAIRE, p. 147, Ann. Soc. ent. France, 1897, n. sp.
- Cephaloon*: position, palæarctic forms, ESCHERICH, pp. 96-100, Verh. Ver. Brunn, xxxv.
- C. versicolor*, p. 651, *ornatum*, p. 652, N. America, CASEY, Ann. N. York Ac. ix, n. spp.
- Ceroctis vespina*, p. 501, *vellerosa*, *rufimembris*, p. 502, E. Africa, THOMAS, Ann. Nat. Hist. xix, n. spp.
- Ctenopus nudus*, p. 114, *roseni*, pp. 116 & 128, Transcaspian, ESCHERICH, Verh. Ver. Brunn, xxxv, n. spp.
- Decatoma argentifera* (= *henoni*, Fairm. infra), PIC, p. 150, Bull. Soc. ent. France, 1897.
- D. henoni*, Algeria, FAIRMAIRE, p. 121, Bull. Soc. ent. France, 1897; *D. regis*, Angola, THOMAS, p. 503, Ann. Nat. Hist. xix : n. spp.
- Deridea*: characters and position, THOMAS, p. 389, Ann. Nat. Hist. xix.
- D. notata*, Adon, *id. l. c.* n. sp.
- Epicauta arrighii*, Congo, FAIRMAIRE, p. 147, Ann. Soc. ent. France, 1897, n. sp.
- Lydoceras bilineatus*, E. Africa, THOMAS, p. 501, Ann. Nat. Hist. xix, n. sp.
- Lytta mozabita*, Algeria, CHOBAUT, p. 171, Bull. Soc. ent. France, 1897, n. sp.
- Megatrachelus foveicollis*, China, FAIRMAIRE, p. 231, Notes Leyden Mus. xix, n. sp.
- Meloe ruficornis*, Piedmont, BALBI, p. 94, Natural. Sicil. n. s. ii; *M. (Proscarabæus) tarsalis*, p. 249, *bellus*, p. 250, *semenowi*, p. 251, *tenuipes*, p. 252, E. Siberia, JAKOWLEW, Horæ Soc. ent. Ross. xxxi; *M. centripubens*, Mongolia, REITTER, p. 223, Deutsche ent. Zeitschr. 1897; *M. monticola*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 256: n. spp.
- Nemognatha longiceps*, Cazamanca, FAIRMAIRE, p. 146, Ann. Soc. ent. France, 1897, n. sp.
- Ælosimus viridissimus*, var. n. *intermedius*, PIC, p. 42, Miscell. ent. v.
- Synhoria*, n. g. for *Horia* auct., *S. fischeri*, E. Africa, n. sp., KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 256.
- Zonabris fusca*, var. n. *galatiensis*, ESCHERICH, p. 39, Ent. Zeit. Stettin, lviii. *Z. calida*, var. n. *bijuncta*, *paykulli*, var. n. *mozabita*, PIC, p. 2, Miscell. ent. v.
- Z. munda*, Asia Minor, ESCHERICH, p. 38, Ent. Zeit. Stettin, lviii; *Z. wartmanni*, PIC, PIC, p. 124, Rev. Sci. Bourbon. 1897 : n. spp.
- Zonitis microcephalus*, Asia Minor, ESCHERICH, p. 46, Ent. Zeit. Stettin, lviii; *Z. hauseri*, Turkestan, pp. 107 & 127, *Z. (Uzonitis) maculiceps*, Samarkand, p. 110, ESCHERICH, Verh. Ver. Brunn, xxxv : n. spp.

ÆDEMERIDÆ.

- Ananca helvola*, ♂ characters, FAIRMAIRE, p. 118, Ann. Soc. ent. Belgique, xli.
A. trivittata, p. 118, *griseus*, p. 119, Madagascar, FAIRMAIRE, t. c. n. spp.
Asclera sanguinicollis, var. n. *impressithorax*, PIC, p. 42, Miscell. ent. v.
A. impressithorax, note, PIC, p. 128, t. c., also p. 240, Wien. ent. Zeit. xvi.
Nacerdes transmarina, Funafuti, RAINBOW, p. 92, Mem. Austral. Mus. iii, n. sp.
Ædemera barbara, var. n. *abdominalis*, PIC, p. 42, Miscell. ent. v.
Æ. deubeli, Siebenbürgen, GANGLBAUER, p. 570, Verh. Ges. Wien, 1897, n. sp.

STREPSIPTERA.

The anterior extremity of the adult female: nervous system of young female, NASSONOW, Zool. Anz. 1897, p. 65.

CURCULIONIDÆ.

- [*Cf.* BLACKBURN (79, 80), BRANCSIK (124), CASEY (162), DANIEL (230), DESBROCHERS (238, 239), DIETZ (241), ESCHERICH (298), FAIRMAIRE (305, 306, 312), FALL (316), FAUST (317-324), FUENTE (386), GUILLEBEAU (443, 444), HARTMANN (461, 462), HELLER (467, 468, 469), KOLBE (601), LEA (660, 661), LINELL (686, 688), MEYER (746), NÜSSLIN (793), OTTO (812), PIC (861, 862), RAINBOW (892), REITTER (900, 901, 903, 909, 911, 912, 916, 917), SCHULTZE (981-985), STIERLIN (1061), WASMANN (1165).]
- Acalles barbarus* and *teter*, distinctions, p. 208, *brevis*, characters, p. 211, MEYER, Wien. ent. Zeit. xvi.
A. kabylianus, Algeria, DESBROCHERS, p. 33, Frelon, vi, n. sp.
Acallodes saltoides, Minnesota, DIETZ, p. 416, Tr. Amer. ent. Soc. xxiii, n. sp.
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Anthonomus armicrus, Madagascar, FAIRMAIRE, p. 169, Ann. Soc. ent. Belgique, xli; *A. xanthoxyli*, p. 49, *brevirostris*, *testaceo squamosus*, p. 50, N. America, LINELL, J. N. York ent. Soc. v : n. spp.
Aochetus roseus, Camaroons, FAUST, p. 75, Ent. Zeit. Stettin, lviii, n. sp.
Apion lanciferum, n. n. for *lancirostre*, Chev. p. 9, DESBROCHERS, Frelon, vi.
A. græcum, Attica, p. 4, *syriacum*, Syria, p. 6, *parviclava*, Asia Minor, *sculpticolle*, Samarkand, p. 8, *sefrense*, Algeria, *akbesianum*, Syria, p. 10, *longiclava*, Spain, p. 12, *montandoni*, Wallachia, *inapertum*,

- Armenia, p. 13, *fossulatum*, Asia Minor, p. 15, *hartmanni*, Spain, *eppelsheimi*, Bavaria, p. 17, *reysi*, Pyrenees, p. 19, *tereticolle*, Syria, p. 22, *subfarinosum*, p. 23, *mus*, p. 24, Turkestan, *konigi*, p. 25, *coniceps*, Caucasus, *subtrapezicolle*, Syria, p. 27, DESBROCHERS, Frelon, vi; *A. circumscriptum*, p. 82, *tanganum*, p. 83, *minosæ*, *constrictum*, p. 84, *atricolor*, p. 85, E. Africa, HARTMANN, Deutsche ent. Zeitschr. 1897; *A. symbolum*, Fergusson island, FAUST, p. 178, Ent. Zeit. Stettin, lviii : n. spp.
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- C. sequensi*, Croatia, STIERLIN, p. 479, Mt. Schweiz. ent. Ges. ix; *C. curvistriatus*, Bosnia, p. 496, *apfelbecki*, p. 497, *cinnamomeus*, Roumelia, *puerulus*, Bosnia, p. 498, SCHULTZE, Wiss. Mitt. Bosnien, v; *C. speiseri*, Hungary, p. 313, *curvistriatus*, Bosnia, p. 315, *lederi*, Armenia, p. 316, *cognatus*, Caucasus, p. 317, *apfelbecki*, Burgas, p. 318, *cinnamomeus*, Slivno, p. 319, *puerulus*, Bosnia, p. 320, *præclarus*, Roumelia, p. 321, *transsylvanicus*, Siebenburgen, p. 322, *sareptanus*, Sarepta, p. 324, SCHULTZE, Deutsche ent. Zeitschr. 1897; *C. affluentus*, p. 421, *seriesetosus*, *isolatus*, p. 422, *consanguineus*, *disturbatus*, p. 423, *ovipennis*, p. 428, *ætatus*, p. 431, *bolteri*, p. 432, *hirticollis*, *armatus*, p. 433, *pollinosus*, p. 434, *hornii*, *nodipennis*, p. 435, *adjunctus*, p. 436, *mutabilis*, p. 437, *ovalis*, *intermedius*, p. 438, *numulus*, p. 439, *hamiltoni*, p. 440, *adpersulus*, p. 441, *pauvillus*, p. 442, *anthonomoides*, p. 444, *oregonensis*, p. 445, *siculus*, p. 446, *persimilis*, p. 447, *albopilosulus*, p. 448, *erythropus*, p. 450, *morosus*, *atriculus*, p. 451, N. America, DIETZ, Tr. Amer. ent. Soc. xxiii : n. spp.
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- Pseudobaris*, n. g., near *Baris*, for *P. bourgeoisii*, n. sp., Madagascar, FAIRMAIRE, p. 184, t. c.
- Ptochus noxius*, *ovulum*, p. 353, *horridulus*, p. 354, India, FAUST, Deutsche ent. Zeitschr. 1897, n. spp.
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SCOLYTIIDÆ.

[*Cf.* BLANDFORD (416), CHOBOUT (174), ESCHERICH (302), FAIRMAIRE (305), HUBBARD, (516, 517), MENEGAUX & COCHON (738), REITTER (918), SCHAUFUSS (961, 962), VEEN (1120, 1122).]

Table for determining injurious German *Scolytidae*, ESCHERICH (302).

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- Eulytocerus*, n. g., near *Dryotomus*, for *E. championi*, n. sp. Panama, pl. vi, fig. 19, p. 161, BLANDFORD, t. c.
- Hexacolides*, new group connecting *Tomicides* with *Hylesinides*, BLANDFORD, p. 173, Biol. Centr.-Amer. Col. iv, 6.
- Hexacolus setosus*, *melanocephalus*, pl. vii, fig. 5, p. 181, *unipunctatus*, p. 182, *piceus*, p. 183, Central America, BLANDFORD, t. c., n. spp.
- Hylastes incomptus*, Mexico, *variegatus*, Panama, BLANDFORD, p. 145, t. c., n. spp.
- Hyloscyllus*, n. g., pp. 218, 220, for *H. exsculptus*, *loricatus*, p. 218, *radens*, p. 219, n. spp. Madagascar, SCHAUFUSS, Tijdschr. Ent. xl.
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- Microborus*, n. g., *Hexacolides*, for *M. boops*, n. sp. Guatemala, pl. vii, fig. 1, p. 175, BLANDFORD, t. c.
- Mitosoma planum*, *excisum*, *acciratum*, Madagascar, SCHAUFUSS, p. 224, Tijdschr. Ent. xl, n. spp.
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Xylechinus irrasus, pl. vi, figg. 17, 18, p. 157, *scabiosus*, *fuliginosus*, p. 158, *tessellatus*, *marmoratus*, p. 159, Central America, BLANDFORD, *t. c.*, n. spp.
Xylocleptes ambitiosus, Gaboon, SCHAUFUSS, p. 109, Berlin. ent. Zeitschr. 1897, n. sp.

BRENTHIDÆ.

[*Cf.* FAIRMAIRE (305), KOLBE (601), SENNA (1004, 1005).]

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Arrhenodes vampyrus, S. America, SENNA, p. 230, *t. c.*, n. sp.
Bolbocranius, n. g. (?), with *B. mandibularis*, p. 284, *cribriceps*, p. 285, E. Africa, n. spp., KOLBE, Deutsch-Ost-Afrika, Col. iv.
Brenthus festivus, Chiriqui and Colombia, p. 232, *maculipennis*, Ecuador, p. 233, SENNA, Ann. Soc. ent. Belgique, xli, n. spp.
Cerobates rectestriatus, Madagascar, FAIRMAIRE, p. 195, Ann. Soc. ent. Belgique, xli, n. sp.
Cyphagogus bipunctatus, N. S. Wales, SENNA, p. 227, Ann. Soc. ent. Belgique, xli, n. sp.
Estenorhynchus formosus, p. 231, *4-fasciatus*, p. 232, Colombia, SENNA, *t. c.*, n. spp.
Eupsalis brevirostris, *taruensis*, *callosoguttis*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. n. spp.
Heteroplites celebicus, Celebes, SENNA, p. 242, Ann. Soc. ent. Belgique, xli, n. sp.
Ithystenus hebridarum, New Hebrides, SENNA, p. 235, *t. c.*, n. sp.
Miolispa novæguineensis, var. n., *antennata*, SENNA, p. 229, Ann. Soc. ent. Belgique, xli; *M. australiana*, Victoria, *id.*, p. 228, *t. c.*; *M. tuberculatipennis*, p. 237, *intermedia*, p. 239, Celebes, SENNA, Ann. Soc. ent. Belgique, xli : n. spp.
Paryphobrenthus, n. g., near *Ceocephalus*, for *P. beringei*, n. sp., E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, col. p. 287.
Prodictor laminatus, ♀ (= *Achrionota setigera* Sen.), SENNA, p. 237, Ann. Soc. ent. Belgique, xli.
P. fruhstorferi, Celebes, SENNA, p. 241, *t. c.* n. sp.
Schizotrachelus metallicus, Celebes, SENNA, p. 240, Ann. Soc. ent. Belgique, xli, n. sp.
Spatherinus gabonicus (= *juvenilis*, Kolbe), p. 229, *S. eupsaloides* ♂, p. 230, SENNA, Ann. Soc. ent. Belgique, xli.
S. stuhlmanni, E. Africa, pl. iii, fig. 37, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 286, ? n. sp.
Stereodermus raapi, Batu, SENNA, p. 543, Ann. Mus. Genova, xxxviii, n. sp.
Storeosomus sansibaricus, Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 287, n. sp.
Zemioses striolatus, Madagascar, FAIRMAIRE, p. 187, Ann. Soc. ent. Belgique, xli, n. sp.

ANTHRIBIDÆ.

[*Cf.* FAIRMAIRE (305), JORDAN (557, 558), KOLBE (601), REITTER (919).]

- Acorynus transiens*, p. 627, *clathratus*, p. 628, *fenestratus*, p. 629, *sulcicollis*, p. 630, Sumatra, *mentawensis*, Mentawai island, *enganensis*, Engano, *trivittatus*, p. 631, *discicollis*, p. 632, Mentawai, *obliquus*, p. 633, Sumatra, JORDAN, Ann. Mus. Genova, xxxviii, n. spp.
- Amecus*, n. g., near *Platyrrhinus*, for *A. viridans*, n. sp., Madagascar, FAIRMAIRE, p. 190, Ann. Soc. ent. Belgique, xli.
- Aneurrrhinus fasciatus*, Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col., p. 290, n. sp.
- Apatenia scelestia*, *angulicollis*, subsp. n., JORDAN, p. 177, Nov. Zool. iv.
- A. batjanensis*, Batchian, JORDAN, p. 176, t. c., n. sp.
- Apolecta enganensis*, Engano, p. 640, *guttifera*, Sumatra, p. 641, JORDAN, Ann. Mus. Genova, xxxviii, n. spp.
- Arachnocaulus*, n. g., near *Caranistes*, for *A. filitarsis*, n. sp., Madagascar, FAIRMAIRE, p. 189, Ann. Soc. ent. Belgique, xli.
- Aræocerus fasciculatus*, metamorphoses, CHITTENDEN, p. 36, Bull. Dep. Agric. Ent. viii.
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- Basitropis tuberculata*, Madagascar, FAIRMAIRE, p. 192, t. c.; *B. brevis*, Engano, JORDAN, p. 642, Ann. Mus. Genova, xxxviii : n. spp.
- Brachytarsus alternatus*, life-history, QUAINANCE, pp. 1-3, pl. i, Ent. News Philad. 1897.
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- Dendrotrogus hypocrita*, subsp. n. *enganensis*, JORDAN, p. 642, Ann. Mus. Genova, xxxviii.
- Diastatropis rugatulus*, *tessellatus*, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli, n. spp.
- Gymnognathus germaini*, Bolivia, p. 173, *daguanus*, Colombia, p. 174, *vitticollis*, Bolivia, *femoralis*, Colombia, p. 175, JORDAN, Nov. Zool. iv, n. spp.
- Hypselotropis rosenbergi*, Colombia, JORDAN, p. 173, Nov. Zool. iv, n. sp.
- Hypseus frenatus*, Sumatra, JORDAN, p. 637, Ann. Mus. Genova, xxxviii, n. sp.
- Ischnocerus tuberosus*, Nossi-Bé, FAIRMAIRE, p. 189, Ann. Soc. ent. Belgique, xli, n. sp.
- Litocerus plagifer*, p. 634, *crassus*, Sumatra, *mentawensis*, Mentawai, p. 635, JORDAN, Ann. Mus. Genova, xxxviii, n. spp.
- Mecocerus assimilis*, subsp. n., *sumatranus*, JORDAN, p. 624, t. c.
- M. tuberifer*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 288, n. sp.
- Phrynoidius*, n. g., between *Brachytarsus* and *Aræocerus* for *P. raffrayi*, n. sp., Madagascar, FAIRMAIRE, p. 194, Ann. Soc. ent. Belgique, xli.
- Physopterus sumatranus*, p. 624, *biplagiatus*, p. 625, Sumatra, JORDAN, Ann. Mus. Genova, xxxviii, n. spp.
- Sintor affinis*, Sumatra, *lineatus*, Engano, JORDAN, p. 626, t. c. n. spp.
- Straboscopus armatus*, Colombia, JORDAN, p. 176, Nov. Zool. iv, n. sp.
- Tophoderes longirostris*, Madagascar, FAIRMAIRE, p. 187, Ann. Soc. ent. Belgique, xli, n. sp.
- Tropideres coquerelii*, *tessellatus*, referred to *Basitropis*, FAIRMAIRE, p. 192, Ann. Soc. ent. Belgique, xli.
- T. exul*, p. 190, *amænus*, *minor*, *grisescens*, p. 191, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli; *T. enganensis*, Engano, JORDAN, p. 636, Ann. Mus. Genova, xxxviii : n. spp.
- Urodon albescens*, Bukhara, *albosuturatus*, Araxes Valley, *densatus*, Amasia, p. 245, *fulvipes*, Transcaspian, p. 246, REITTER, Deutsche ent. Zeitschr. 1897, n. spp.
- Xenocerus enganensis*, Engano, p. 638, *ornatus*, p. 639, *scutellaris*, p. 640, Sumatra, JORDAN, Ann. Mus. Genova, xxxviii, n. spp.

BRUCHIDÆ.

Spermophagus robiniaæ, habits, BRITTON, p. 173, Ent. News Philad. 1897.

CERAMBYCIDÆ.

[*Cf.* AURIVILLIUS (39), BELON (64, 65), BLACKBURN (79, 80), BRANCSIK (124), ESCHERICH (299), FAIRMAIRE (306, 308, 309, 311, 312), GAHAN (390), HELLER (467, 468), HEYDEN (477), JAKOWLEW (542, 544), JORDAN (1028), KOLBE (601, 602), LINELL (686), PIC (847, 851, 857, 865), REITTER (904, 912, 915), RITSEMA (930, 934), SEMENOW (1003), SHARP (1007), THÉRY (1075), XAMBEU (1198).]

Notes and generalities on the larvæ of Longicorns, XAMBEU (1198).

Cerambycidae of Canada, WICKHAM, pp. 81, etc., Canad. Ent. xxix.

Acanthophorus beringei, *nyansanus*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 352, n. spp.

Acmaeops daghestanica, Caucasus, PIC, p. 262, Natural. 1897, n. sp.

Ægosoma ossea, Borneo, AURIVILLIUS, p. 242, Ent. Tidskr. 1897, n. sp.

Afrocomis, n. g., near *Litopus*, for *A. bennigseni*, n. sp., E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 352.

Agnia pubescens, Palawan, AURIVILLIUS, p. 247, pl. iii, fig. 3, Ent. Tidskr. 1897, n. sp.

Alphitopola sulphurea, Gaboon, AURIVILLIUS, p. 248, pl. iii, fig. 3, *t. c.*, n. sp.

Anatragus, n. g., *Sternotomini*, for *A. ornatus*, n. sp., Ugogo, KOLBE, Deutsch-Ost-Afrika, Col. iv, p. 312.

Ancylistes lacteopictes, *gibbicollis*, *impunctatus*, p. 398, *zebrinus*, *pictidorsis*, p. 399, *picticornis*, *pacificus*, p. 400, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli, n. spp.

Anisogaster nigrostrigatus, p. 393, *transversus*, *longulus*, p. 394, Madagascar, FAIRMAIRE, *t. c.*, n. spp.

Anthophilax attenuatus, oviposition, YOUNGS, p. 192, Ent. News Philad. 1897.

Aphelogaster, n. g., for *Haplogaster*, K., KOLBE, p. 299, *A. emini*, fig., pl. iv, fig. 42, Deutsch-Ost-Afrika, Col. iv.

Apomecyna fauveli, Seychelles, THÉRY, p. 66, Bull. Soc. ent. France, 1897; cf. ALLUAUD, *t. c.* p. 151; n. sp.

Aromia coreana, Séoul, FAIRMAIRE, p. 232, Notes Leyden Mus. xix, n. sp.

Arrhenotus pauli, Celebes, HELLER, p. 35, Abh. Mus. Dresden, vi, No. 10, n. sp.

Astathes kukenthali, *humeralis*, Borneo, HEYDEN, p. 578, Abh. Senckenb. Ges. xxiii, n. spp.

Auxa parvidens, p. 396, *lineolata*, *scriptidorsis*, p. 397, Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli, n. spp.

Batocera timorlautensis, Timor Laut, HELLER, p. 6, Abh. Mus. Dresden, vi, No. 11, n. sp.

Belodera amæna, Natal, FAIRMAIRE, p. 153, Ann. Soc. ent. France, 1897, n. sp.

Cantharocnemus modestus, E. Africa, FAIRMAIRE, p. 150, Ann. Soc. ent. France, 1897, n. sp.

Cantharoctenus fischeri, minor, *gravidus*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 293, n. spp.

Chariesthes marmorata, Madagascar, FAIRMAIRE, p. 403, Ann. Soc. ent. Belgique, xli, n. sp.

Chlidones albostrigatus, *insignicollis*, Madagascar, FAIRMAIRE, p. 396, *t. c.*, n. spp.

- Chreonoma weisi*, Celebes, HEYDEN, p. 577, Abh. Senckenb. Ges. xxiii, n. sp.
- Clytus* (*Xylotrechus*) *deyrollei*, Trebizond, PIC, p. 219, Bull. Soc. ent. France, 1897, n. sp.
- Cædomæa* (= *Tigranesthes* Fairm.), FAIRMAIRE, p. 197, Ann. Soc. ent. Belgique, xli.
- C. rufina*, *longula*, Madagascar, FAIRMAIRE, p. 196, t. c., n. spp.
- Coptops infirmus*, Madagascar, FAIRMAIRE, p. 195, t. c., n. sp.
- Cortodera flavimana*, varr. n., GANGLBAUER, p. 52, Ent. Zeit. Stettin, lviii.
- Cubilia*, n. g., *Niphoniinae*, p. 453, for *C. smithi*, n. sp., E. Africa, p. 454, JORDAN (1028).
- Cyrtionops?* *nigropunctatus*, Tranquebar, AURIVILLIUS, p. 243, pl. iii, fig. 6, Ent. Tidskr. 1897, n. sp.
- Demagogus donaldsoni*, E. Africa, JORDAN (1028), p. 452, n. sp.
- Derolophodes*, n. gen. near *Saphanus*, for *D. tuberosus*, n. sp., Nossi-Bé, pl. iv, fig. 18, BRANCSIK, p. 125, Jahresh. Ver. Trencsen. xix.
- Diadelia rufostrigosa*, Madagascar, FAIRMAIRE, p. 402, Ann. Soc. ent. Belgique, xli, n. sp.
- Dichostates tabularis*, E. Africa, KOLBE, p. 97, pl., fig. 9, Mt. Mus. Hamburg, xiv; *D. tabularis*, Bagamoyo, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 317 : n. spp.
- D. eugenius*, New Guinea, HELLER, p. 5, Abh. Mus. Dresden, vi, No. 11; *D.* (sub *Monohammus*) *rarus* (= *eugenius* Hell.), HELLER, p. 194, Notes Leyden Mus. xix : n. sp.
- Dorcadion* (*Compsodorcadion*), revision, JAKOWLEW, pp. 675-681, Horæ Soc. ent. Ross. xxxi.
- D.* (*C.*) *ganglbaueri*, p. 677, *arietinum*, p. 678, Turkestan, JAKOWLEW, t. c.; *D. koenigi*, Caucasus, JAKOWLEW, p. 245, t. c.; *D.* (*Compsodorcadion*) *politipenne*, Altai, PIC, Miscell. ent. v, p. 94; *D. nigrosuturatum*, Armenia, REITTER, p. 236, Deutsche ent. Zeitschr. 1897; *D. escherichi*, p. 54, *egregium*, p. 56, *angorense*, p. 57, Asia Minor, GANGLBAUER, Ent. Zeit. Stettin, lviii : n. spp.
- Enoplocerus armillatus*, pupa, GOELDI, Bol. Mus. Para. ii, p. 64, pls.
- Epepeotes gigas*, Borneo, AURIVILLIUS, p. 246, pl. iii, fig. 1, Ent. Tidskr. 1897, n. sp.
- Eugraphus longehamatus*, Madagascar, FAIRMAIRE, p. 394, Ann. Soc. ent. Belgique, xli, n. sp.
- Eumimetes sparsuticollis*, Madagascar, FAIRMAIRE, p. 401, t. c., n. sp.
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- E. argodi*, Bolivia, BELON, p. 342, t. c., n. sp.
- Formicomimus*, n. g., near *Pseudocephalus*, for *F. mirabilis*, n. sp., N. S. Wales, AURIVILLIUS, p. 244, Ent. Tidskr. 1897.
- Frea flavoscapulata*, Zanzibar, FAIRMAIRE, p. 154, Ann. Soc. ent. France, 1897, n. sp.
- Galactesthes*, n. g., near *Prosopocera*, for *G. nivosus*, n. sp., Africa, FAIRMAIRE, p. 152, t. c.
- Gaurotinus*, n. g., near *Gaurotes*, for *G. tenuelineatus*, n. sp., Madagascar, FAIRMAIRE, p. 392, Ann. Soc. ent. Belgique, xli.
- Glenea*: structure of claws, sexual dimorphism, numerous synonymy, GAHAN, pp. 473-493, Ann. Nat. Hist. xix.
- Glenea zalinensis*, Tenasserim, *aluensis*, Solomon islands, p. 478, *subsimitis*, India, p. 479, *propinqua*, Singapore, p. 480, *siamensis*, Siam, *albofasciata*, Java, p. 481, *wallacei*, Sarawak, p. 482, *lineata*, Oshima, p. 483, *assimilis*, p. 484, *gratiosa*, p. 485, Sylhet, *griscoguttata*, Macassar, p. 485, *papuensis*, New Guinea, p. 486, *calestina*, Java, p. 487, *suturalis*, Penang, *chlorospila*, Oshima, p. 488, *signatifrons*,

- p. 489, Java, GAHAN, Ann. Nat. Hist. xix; *G. keili*, Sumatra, RITSEMA, p. 133, Notes Leyden Mus. xix; *G. centroguttata*, Tibet, FAIRMAIRE, p. 232, Notes Leyden Mus. xix : n. spp.
- Goephanes virgulifer*, *bipartitus*, Madagascar, FAIRMAIRE, p. 401, Ann. Soc. ent. Belgique, xli, n. spp.
- Hebestola annulipes*, Bolivia, BELON, p. 186, Bull. Soc. ent. France, 1897, n. sp.
- Heteroglenea*, n. g., for *Glenea nigromaculata* and *glechoma*, GAHAN, p. 490, Ann. Nat. Hist. xix.
- Hypatium semiopacum*, Somaliland, FAIRMAIRE, p. 151, Ann. Soc. ent. France, 1897, n. sp.
- Hypocrites discors*, E. Africa, FAIRMAIRE, p. 150, Ann. Soc. ent. France, 1897, n. sp.
- Hypostilbus*, n. g., Cerambycides, near *Tetropium*, for *H. griseus*, n. sp., Nossi-Bé, pl. iv, fig. 19, BRANCSIK, p. 126, Jahresh. Ver. Trencsen. xix.
- Hystatus bouchardi*, Sumatra, FAIRMAIRE, p. 38, Bull. Soc. ent. France, 1897, n. sp.
- Ischnoberea*, n. g.?, *Amphionychides* or *Tetraopsides*, for *I. elongata*, n. sp., Nossi-Bé, pl. iv, fig. 21, BRANCSIK, p. 128, Jahresh. Ver. Trencsen. xix.
- Jonthophana*, n. g., near *Nemophas*, for *J. annulicornis*, n. sp., New Guinea, HELLER, p. 4, Abh. Mus. Dresden, vi, No. 11.
- Lasiocercis albicollis*, Madagascar, FAIRMAIRE, p. 400, Ann. Soc. ent. Belgique, xli, n. sp.
- Leptocera aldabrensis*, Aldabra island, LINELL, p. 701, P. U. S. Mus. xix, n. sp.
- Leucographus alluaudi*, Madagascar, FAIRMAIRE, p. 197, Ann. Soc. ent. Belgique, xli, n. sp.
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- Mallosia brevipes*, Persia, PIC, p. 188, Bull. Soc. zool. France, 1897, n. sp.
- Marmaroglypha fasciata*, Borneo, AURIVILLIUS, p. 248, pl. iii, fig. 2, Ent. Tidskr. 1897, n. sp.
- Mecothyrea*, n. g., for *Mecosaspis*, Th., KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 300.
- Nastocerus*, n. g., near *Neomarius*, for *N. maculicornis*, n. sp., Madagascar, FAIRMAIRE, p. 391, Ann. Soc. ent. Belgique, xli.
- Nenenia thoracica*, p. 37, *virgata*, p. 38, Australia, BLACKBURN, Tr. R. Soc. S. Austral. xxi, n. spp.
- Neodorcadion*, table of Central Asian species, REITTER, pp. 177-184, Ent. Nachr. xxiii.
- N. oreadis*, p. 179, *egregium*, p. 180, *miraculum*, p. 182, Centr. Asia, *id. t. c.* n. spp.
- Nicarete impressipennis*, Madagascar, FAIRMAIRE, p. 402, Ann. Soc. ent. Belgique, xli, n. sp.
- Næmia* (= *Nithinus*, Fairm.), FAIRMAIRE, p. 197, Ann. Soc. ent. Belgique, xli.
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- Pachystola griseotincta*, Usambara, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 316, n. sp.
- Parozodes*, n. g., near *Ozodes*, for *P. erythrocephalus*, n. sp., Bahia, AURIVILLIUS, Ent. Tidskr. 1897.
- Pelargoderus trigonalis*, Halmahera, HEYDEN, p. 573, Abh. Senckenb. Ges. xxiii, n. sp.
- Penthea mastersi*, N. W. Australia, BLACKBURN, p. 97, Tr. R. Soc. S. Austral. xxi, n. sp.
- Philagathes bipartitus*, E. Africa, JORDAN (1028), p. 452, n. sp.
- Phyllocnema pedatrix*, *nigricollis*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 302, n. spp.
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- P. albertisi*, Honolulu, SHARP, p. 12, Ent. Mag. xxxiii, n. sp.
- Plocederus benigneni*, *cribrithorax*, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. p. 297, n. spp.
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- Pyrrhidium sanguineum*, devouring gelatine, LÉVEILLÉE, p. 122, Bull. Soc. ent. France, 1897.
- Rhagium (Allorrhagium) schtschukini*, Caucasus, SEMENOW, p. 601, Horæ Soc. ent. Ross. xxxi, n. sp.
- Rhamnusium*, varr. n., BEDEL, pp. 43, 44, Abeille, xxix.
- Rhaphidopsis nigroscripta*, East Africa, FAIRMAIRE, p. 155, Ann. Soc. ent. France, 1897; *R. guttata*, E. Africa, JORDAN (1028), p. 453 : n. spp.
- Rhytidodera integrifrons*, Celebes, HELLER, p. 36, Abh. Mus. Dresden, vi, No. 10, n. sp.
- Rhytiphora spenceri*, Centr. Australia, BLACKBURN, p. 38, Tr. R. Soc. S. Austral. xxi, n. sp.
- Spiloprionus*, n. g., *Orthosomides*, for *S. sericeomaculatus*, n. sp., Bolivia, AURIVILLIUS, p. 241, pl. iii, figg. 7 & 8, Ent. Tidskr. 1897.
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- Synelasma baramensis*, Borneo, HEYDEN, p. 578, Abh. Senckenb. Ges. xxiii, n. sp.
- Teinotus*, n. g., near *Hesperophanes*, for *T. cinereus*, n. sp. Madagascar, pl. iv, fig. 20, BRANCSIK, p. 127, Jahresh. Ver. Trencsen. xix.
- Tetartanus*, n. g., near *Tritomicrus*, for *T. cribricollis*, n. sp. Madagascar, FAIRMAIRE, p. 393, Ann. Soc. ent. Belgique, xli.
- Tetrops hauseri*, Thian-Schan, REITTER, p. 225, Deutsche ent. Zeitschr. 1897, n. sp.
- Tithoes falcatus*, *gularis*, p. 350, *gnatho*, *sulcicornis*, *reichardi*, *longicornis*, p. 351, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Col. n. spp.
- Tritomicrus dorsopictus*, Natal, FAIRMAIRE, p. 153, Ann. Soc. ent. France, 1897, n. sp.
- Xanthopiodus*, n. g., near *Logisticus*, for *X. angulicollis*, n. sp. Madagascar, FAIRMAIRE, Ann. Soc. ent. Belgique, xli, p. 395.
- Zipoetes*, n. g., near *Cleptometopus*, for *Z. grisescens*, n. sp. E. Africa, FAIRMAIRE, p. 154, Ann. Soc. ent. France, 1897.
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- [Cf. ABEILLE (2), BLACKBURN (79), BRANCSIK (124), CHITTENDEN (172), ESCHERICH (299), FAIRMAIRE (305), FALL (316), GANGLBAUER (1205), GERMAIN (397), GESTRO (398-401, 403, 404), GUILLEBEAU (444,

445), HEYDEN (477), JACOBSON (530, 531), JACOBY (533-538), KOLBE (601, 602, 605), LINELL (687), PIC (845, 848), REITTER (912), VERHOEFF (1126), WEISE (1179, 1182, 1183).]

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Aulacophora tenuicincta, Batu, JACOBY, p. 406, Ann. Mus. Genova, xxxviii, n. sp.

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Batusia, n. g., near *Ochralea*, for *B. raapi*, n. sp., Batu, JACOBY, p. 409, Ann. Mus. Genova, xxxviii.

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Botryonopa helleri, Borneo, HEYDEN, p. 579, Abh. Senckenb. Ges. xxiii; *B. nitidicollis*, p. 44, *crassicornis*, p. 45, *nobilis*, p. 46, *tobæ*, p. 47, Sumatra, GESTRO, Ann. Mus. Genova, xxxviii: n. spp.

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C. quadricollis, p. 113, *loxia*, p. 114, *scutellaris*, p. 115, India, *curta*, Perak, p. 116, WEISE, Deutsche ent. Zeitschr. 1897; *C. splendidula*, Borneo, GESTRO, p. 116, Ann. Mus. Genova, xxxviii; *C. fulva*, Mentawai isld., GESTRO, p. 41, *t. c.*: n. spp.

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Ceratispa biroi, New Guinea, GESTRO, p. 451, Termes. Fuzetek, xx, n. sp.

Chaetocnema semicerulea (= *Plectroscelis meridionalis*, All.); *C. obesa*, Boield. (= *P. meridionalis*, Foudr.), BEDEL, p. 36, Abeille, xxix.

C. gahani, Mashonaland, p. 560, *antennata*, *subquadrata*, p. 561, *semiregulata*, p. 562, *mashona*, p. 563, JACOBY, P. Zool. Soc. London, 1897; *C. nana*, Grenada, JACOBY, p. 269, Tr. ent. Soc. London, 1897: n. spp.

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- Chaleophana impressipennis*, p. 169, *boliviana*, p. 170, *elongata*, p. 193, *viridi-basalis*, p. 194, Bolivia, *punctatissima*, Ecuador, *abdominalis*, p. 195, *fulvocincta*, p. 216, *oberthuri*, Bolivia, *longicornis*, Amazons, p. 217; *C.?* *duodecimpunctata*, Peru, p. 218, JACOBY, Entomologist, 1897, n. spp.
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Cymbachus formosus, Burma, GORHAM, p. 460, pl. xxxii, fig. 1, *t. c.*, n. sp.

Encymon cinctipes, Burma, GORHAM, p. 459, pl. xxxii, fig. 4; *t. c.*, n. sp.

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BRACONIDÆ.

- MARSHALL (718) has commenced a supplementary volume to the *Braconidae* of Europe and Algeria.
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Cephaloplites, n. g. for *C. mocsaryi*, n. sp., Budapest, SZÉPLIGETI, p. 600, Termes. Füzetek, xx.
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- Cælothorax*, n. g. *Microgasterinæ*, ASHMEAD, p. 165, P. ent. Soc. Washington, iv.
- Dendrosoter flaviceps*, Italy, MARSHALL, p. 124, Spec. Hym. v, bis, n. sp.
- Hypomicrogaster*, n. g. *Microgasterinæ*, ASHMEAD, p. 166, P. ent. Soc. Washington, iv.
- Meteorus salicorniæ*, p. 189, *thuringiacus*, p. 190, *pachypus*, p. 207, Europe, SCHMIEDEKNECHT, Illustr. Wochenschr. ii; *M. nova-zealandicus*, New Zealand, CAMERON, p. 38, Mem. Manchester Soc. xlii : n. spp.
- Microplitis hyphantiæ*, Illinois, ASHMEAD, p. 164, P. ent. Soc. Washington, iv, n. sp.
- Monolexis fæsteri*, Thuringia, MARSHALL, p. 106, Spec. Hym. v, bis, n. sp.
- Pelecystoma eupoeyiæ*, N. America, ASHMEAD, p. 113, Canad. Ent. xxix, n. sp.
- Phænodus pallidipes*, Thuringia, MARSHALL, p. 96, Spec. Hym. v, bis, n. sp.
- Protapanteles*, n. g., *Microgasterinæ*, ASHMEAD, p. 166, P. ent. Soc. Washington, iv.
- P. ephyræ*, *tortricis*, N. America, ASHMEAD, p. 163, *t. c.*, n. spp.
- Protomicroplitis*, n. g., *Microgasterinæ*, ASHMEAD, p. 167, *t. c.*
- Pseudapanteles*, n. g., *Microgasterinæ*, ASHMEAD, p. 166, *t. c.*
- Rhogas hemipterus*, Tunis, MARSHALL, p. 137, Spec. Hym. v, bis, n. sp.
- Rhoptrocentrus*, n. g., p. 99, for *R. piceus*, n. sp., Italy, p. 100, MARSHALL, *t. c.*
- Sulydus*, n. g., near *Hedylus*, for *S. marshalli*, n. sp., Transvaal, pl. xi, fig. 1, BUYSSON, p. 354, Ann. Soc. ent. France, 1897.
- Vipio longicollis*, Transvaal, BUYSSON, p. 353, *t. c.*; *V. gestroi*, Australia, MONTERO, p. 119, Feuille Natural. xxvii : n. spp.
- Zombrus*, n. g., near *Bracon*, p. 10, for *Z. anisopus*, n. sp., Arabia, p. 12, MARSHALL, Spec. Hym. v, bis.

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- Megischus floridanus*, *canadensis*, N. America, DAVIS, p. 349, Tr. Amer. ent. Soc. xxiv, n. spp.
- Trigonalis sulcatus*, New Jersey, DAVIS, p. 349, Tr. Amer. ent. Soc. xxiv; *T. scutellaris*, p. 267, *maculifrons*, p. 268, *apicipennis*, p. 269, *flavonotata*, p. 270, *fasciatipennis*, p. 271, Mexico, *championi*, Guatemala, p. 273, CAMERON, Ann. Nat. Hist. xix : n. spp.

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- Wide distribution of parasites of *Coccidæ*, HOWARD, pp. 135 & 136, P. ent. Soc. Washington, iv.
- Parasites of Hessian flies, MARCHAL (707).
- Synonymy and orthography of numerous genera, cf. DALLA TORRE, Wien. ent. Zeit. xvi, pp. 83-88.
- Alaptus fuscus*, habits, ENOCK, p. xvii, P. ent. Soc. London, 1897.
- Archenomus*, n. g., *Aphelininæ*, for *A. bicolor*, n. sp., bred from *Diaspis ostreæformis*, HOWARD, p. 136, P. ent. Soc. Washington, iv.
- Arrhenophagus chionaspidis*, ♂, HOWARD, p. 135, *t. c.*
- Ascodes albitarsis*, figg., ? a quaternary parasite, HOWARD, p. 40, Bull. Dep. Agric. ent. Tech. v.
- Azotus*, n. g., *Aphelininæ*, for *A. marchali*, n. sp., bred from *Diaspis ostreæformis*, HOWARD, p. 138, P. ent. Soc. Washington, iv.
- Bæotomus coxalis*, France, from Hessian fly, ASHMEAD, p. 135, Psyche, viii, n. sp.

- Bootania*, n. n. for *Metamorphia*, Walk. nec Hubn., DALLA TORRE, p. 86, Wien. ent. Zeit. xvi.
- Bubekia*, n. n. for *Brachycrepis*, Ashm. nec Lec., DALLA TORRE, p. 84, t. c.
- Cameronella*, n. n. for *Panthalis*, Cam., DALLA TORRE, p. 87, t. c.
- Chalcis ovata*, habits, HOWARD, p. 25, Bull. Dep. Agric. ent. Tech. v.
- Coccophagus fletcheri*, Canada, HOWARD, p. 63, Bull. Dep. Agric. Ent. vii, n. sp.
- Cratotechus smerintheta*, N. America, ASHMEAD, p. 158, P. ent. Soc. Washington, iv, n. sp.
- Destefania*, n. n. for *Sternodes*, Dest., DALLA TORRE, p. 88, Wien. ent. Zeit. xvi.
- Dibrachys boucheanus*, habits, figg., HOWARD, p. 35, Bull. Dep. Agric. ent. Tech. v.
- Elachistus cidarix*, Massachusetts, ASHMEAD, p. 157, P. ent. Soc. Washington, iv.
- Elasmus meteori*, Illinois, ASHMEAD, p. 128, P. ent. Soc. Washington, iv; *E. atratus*, N. America, HOWARD, pp. 56, 40, figg., Bull. Dep. Agric. ent. Tech. v : n. spp.
- Encyrtus thyreodontis*, Massachusetts, ASHMEAD, p. 156, P. ent. Soc. Washington, iv, n. sp.
- Eulophus incongruus*, Massachusetts, ASHMEAD, p. 158, t. c., n. sp.
- Eupelminus*, n. n. for *Urocryptus*, Westw. nec Temn., DALLA TORRE, p. 85, Wien. ent. Zeit. xvi.
- Eupelmus limnerix*, N. America, HOWARD, p. 56 & p. 39, fig., HOWARD, Bull. Dep. Agric. ent. Tech. v, n. sp.
- Færsterella*, n. n. for *Hypirbius*, Först. nec Stål, DALLA TORRE, p. 86, Wien. ent. Zeit. xvi.
- Ganahlia*, n. g. for part of *Derostenus*, DALLA TORRE, p. 85, Wien. ent. Zeit. xvi.
- Habrocytus phycidis*, N. America, ASHMEAD, p. 157, P. ent. Soc. Washington, iv, n. sp.
- Halidayella*, n. n. for *Halidea*, Först., DALLA TORRE, p. 85, Wien. ent. Zeit. xvi.
- Holcæus cecidomyiæ*, France, from Hessian-fly, ASHMEAD, p. 136, Psyche, viii, n. sp.
- Howardia*, n. g. for *Bothriothorax peckhamii*, Ashm., DALLA TORRE, p. 86, Wien. ent. Zeit. xvi.
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- Myrmecomimesis*, n. n. for *Myrmecopsis*, Walk., DALLA TORRE, p. 87, Wien. ent. Zeit. xvi.
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- Oophthora*, n. g., p. 250, *Trichogrammatinae*, for *O. semblidis*, n. sp., Sweden, in eggs of *S. lutarius*, p. 253, pl. v, AURIVILLIUS, Ent. Tidskr. 1897.
- Perilampus mexicanus*, p. 265, *antennatus*, p. 266, Mexico, CAMERON, Ann. Nat. Hist. xix, n. spp.
- Polychromatium*, n. n. for *Polychroma*, Westw., DALLA TORRE, p. 88, Wien. ent. Zeit. xvi.
- Polyscelis*, n. n. for *Polycelis*, Thoms., DALLA TORRE, p. 87, t. c.
- Pteromalus cuproidens*, N. America, HOWARD, p. 55, Bull. Dep. Agric. ent. Tech. v, n. sp.
- Smicra ardens*, Mexico, p. 262, *divinatrix*, Honduras, p. 263, *fasciola*, *armillata*, Mexico, p. 264, CAMERON, Ann. Nat. Hist. xix, n. spp.
- Spilochalcis debilis*, figg., note, HOWARD, p. 33, Bull. Dep. Agric. ent. Tech. v.

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- Parasites of the Hessian-fly, MARCHAL (707).
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Hadronotus mesillæ, N. America, on eggs of *Hemiptera*, COCKERELL, p. 25, Canad. Ent. xxix, n. sp.
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- Commencement of monograph of European and Algerian *Cynipidæ*:
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Allotria ambrosiæ, Massachusetts, ASHMEAD, p. 156, P. ent. Soc. Washington, iv, n. sp.
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A. magretti, Smyrna, KIEFFER, p. 122, Bull. Soc. ent. France, 1897;
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- Biorhiza terminalis*, var. n. *mirbecki*, MARCHAL, p. 14, Mem. Soc. zool. France, x.
- Cynips kiefferi*, Barcelona, CABRERA, p. 25, Bull. Soc. ent. France, 1897;
C. stefanii, Sicily, *mayri*, S. Europe, KIEFFER, p. 8, Bull. Soc. ent. France, 1897 : n. spp.
- Gillettea*, n. g., near *Xestophanes*, for *G. taraxaci*, n. sp., Minnesota, ASHMEAD, p. 69, Psyche, viii.
- Gonaspis*, n. g. for *Diastrophus scutellaris*, Gill., ASHMEAD, p. 68, *t. c.*
- Ibalia schirmeri*, characters, KIEFFER, p. 123, Bull. Soc. ent. France, 1897.
- Parateras*, n. g., *Cynipinae*, for *P. hubbardi*, n. sp., Michigan, ASHMEAD, p. 262, Canad. Ent. xxix.
- Phylloteras*, n. g. for *Biorrhiza rubinus*, ASHMEAD, p. 67, Psyche, viii.
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- Xanthoteras*, n. g., type *Biorrhiza forticornis*, ASHMEAD, p. 262, Canad. Ent. xxix.
- Xystoteras*, n. g., *Cynipinae*, for *X. volutellæ*, n. sp., Kansas, ASHMEAD, p. 260, *t. c.*
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For discussions on synonymy of numerous European species reference should be made to KONOW (612, 613, 614); this synonymy not being given below.

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- Critical synonymical remarks on *Tenthredinidæ*, described by Geoffroy, Fabricius, Schrank and Villers, KONOW (612).
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 Descriptions of larvæ of numerous N. American *Tenthredinidæ*, DYAR, pp. 18-30, J. N. York Ent. Soc. v.
- Allantus marginellus*, habits, THURAU, p. 196, Ent. Nachr. xxiii.
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- Megalodontes imperialis*, hab.? p. 5, *kohli*, Asia Minor, p. 6, *medius*, S. Russia, p. 9, *laticeps*, Mehadia, p. 10, KONOW, Ann. Hofmus. Wien, xii, n. spp.
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- Mogerus caryicolus*, New Jersey, DYAR, p. 193, J. N. York Ent. Soc. v, n. sp.
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- Neurotoma*, n. g., p. 18; with *Gongylocorsia*, subg. n., p. 19, for part of *Lyda*, KONOW, Ann. Hofmus. Wien, xii.
- Pachynematus vagus*, Fab. (= *leucogaster*, Hart.), KONOW, p. 5, Wien. ent. Zeit. xvi.
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- T. churchevillei*, Nantes, KONOW, p. 145, Bull. Soc. Ouest France, 1897; *T. nigrescens*, Armenia, KONOW, p. 375, Ent. Nachr. xxiii : n. spp.
- Trichiocampus nubilus*, Irkutsk, KONOW, p. 173, Wien. ent. Zeit. xvi, n. sp.
- Trichiosoma sikkimensis*, India, KONOW, p. 138, t. c., n. sp.
- Tristactus*, n. g., *Lydini*, for *judaicus* Lep., KONOW, p. 12, Ann. Hofmus. Wien, xii.

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- Classification of the Order, TUTT (1104).
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- P. roepstorffi*, Andamans, MOORE, p. 54, pl. 207, fig. 2, Lep. Ind. iii; *P. thesaurinus*, Santa Cruz Is., SMITH, p. 177, Ann. Nat. Hist. xix : n. spp.
- Passirona*, n. g., type *Euthalia amisa*, MOORE, p. 84, Lep. Ind. iii.
- Penthema gallorum*, Tonkin, OBERTHÜR, p. 175, Bull. Soc. ent. France, 1897, n. sp.

- Prepona pylene*, and *antimache*, n. subsp. of, FRUHSTORFER, pp. 221 & 222, Ent. Nachr. xxiii.
P. garleppiana, p. 355, *laertides*, p. 356, Bolivia, STAUDINGER, Deutsche ent. Zeitschr. Lep., n. spp.
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Sephisia dichroa, pupa, MACKINNON, pl. u, fig. 6, p. 369, J. Bombay Soc. xi.
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- Morpho achillæna*, var. n. *bahiana*, FRUHSTORFER, p. 253, Ent. Nachr. xxiii.
Tenaris melanops, New Guinea, SMITH, p. 177, Ann. Nat. Hist. xix; *T. mailua*, New Guinea, SMITH, p. 313, Nov. Zool. iv : n. spp.

SATYRIDÆ.

- Callerebia megalops*, figure, ALPHÉRAKY, pl. ix, fig. 2, Romanoff Mem. ix.
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Cænonympha tiphon, varr., MORTON, p. 28, Ent. Mag. xxxiii. *C. tiphon*, var. n. *viluensis*, figure, ALPHÉRAKY, p. 197, pl. xiv, fig. 4, Romanoff Mem. ix. *C. tiphon*, var. n., *mixturata*, ALPHÉRAKY, p. 326, t. c. *C. haydenii*, ♀, SKINNER, p. 156, Canad. Ent. xxix.
Debis creola, Louisiana, SKINNER, p. 236, Ent. News Philad. 1897, n. sp.
Epinephele intermedia, var. n. *collina*, RÖBER, p. 267, Ent. Nachr. xxiii.
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Lasiophila regia, Bolivia, STAUDINGER, pl. v, fig. 11, p. 136, Deutsche ent. Zeitschr. Lep. x, n. sp.
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L. (Kerrata) lynceus, Sikkim, p. 544, pl. i, fig. 8, NICÉVILLE, J. Asiat. Soc. Bengal, lxvi, n. sp.
Lymanopoda marianna, Venezuela, pl. v, fig. 6, p. 146, *galactea*, fig. 12, p. 147, Bolivia, STAUDINGER, Deutsche ent. Zeitschr. Lep. x, n. spp.

- Manerebia*, n. g. for *M. cyclopina*, pl. v, fig. 4, p. 139, *cyclopella*, p. 141, *cyclops*, *typhlops*, p. 142, *thlyphosella*, p. 143, n. spp., Bolivia, STAUDINGER, Deutsche ent. Zeitschr. Lep. x.
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- E. verdanda*, Central Asia, STAUDINGER, p. 349, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Oxeoschistus opalinus*, Venezuela, STAUDINGER, pl. v, fig. 10, p. 145, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Patala yama*, early stages, MACKINNON, p. 216, pl. v, fig. 4, J. Bombay Soc. xi.
- Pedaliodes phæaca*, Venezuela, pl. vi, fig. 1, p. 123, *phæina*, Bogotá, p. 124, *thiemei*, Colombia, p. 126, *antonia*, fig. 3, p. 127, *anina*, p. 128, *hewitsoni*, pl. vi, fig. 6, *illimania*, p. 129, *subtangula*, fig. 2, p. 130, *apicalis*, fig. 4, *pronoë*, fig. 8, p. 132, *phrasa*, *porrima*, fig. 5, p. 134, *emma*, fig. 7, p. 135, Bolivia, STAUDINGER, Deutsche ent. Zeitschr. Lep. x, n. spp.
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- Ypthima megalia*, Burma, NICÉVILLE, p. 546, pl. i, fig. 5, J. Asiat. Soc. Bengal, lxvi, n. sp.

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- Abisara tyrannus*, ♂, figg. 7 & 8, ♀, fig. 9, *satraps*, ♂, ♀, figg. 10-12, figured, SMITH & KIRBY, Rhop. exot. Dicallaneura, i.
- Bruasa borneensis*, figg. 4-6, figured, SMITH, Rhop. exot. iii, Elymnias, ii.
- Dicallaneura ostrina*, ♂, figg. 1 & 2, *princessa*, figg. 3 & 4, *semirufa*, figg. 5 & 6, figured, SMITH & KIRBY, Rhop. exot. Dicallaneura, i.
- Dodona eugenes*, larva, pupa, MACKINNON, pl. v, fig. 12, J. Bombay Soc. xi.
- D. dracon*, Burma, NICÉVILLE, p. 555, pl. ii, fig. 14, J. Asiat. Soc. Bengal, lxvi; *D. fruhstorferi*, Java, RÖBER, p. 5, Ent. Nachr. xxiii: n. spp.
- Dyctis viridescens*, var. n. *kakarona*, HAGEN, p. 78, Jahrb. Nassau. Ver. 1.
- Elymnias cybele*, pl. xviii, figg. 6 & 7, PAGENSTECHE, Abh. Senckenb. Ges. xxiii.
- E. melanthes*, Woodlark island, SMITH, p. 178, Ann. Nat. Hist. xix, ♂, ♀, figg. 1-3, figured, SMITH, Rhop. exot. iii: n. sp.
- Lemonias eudocia*, Mexico, GODMAN & SALVIN, p. 244, Tr. ent. Soc. London, 1897, n. sp.

- Stiboges calycoides*, Java, FRUHSTORFER, p. 62, Ent. Nachr. xxiii, n. sp.
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- Amblypodia fruhstorferi*, Java, RÖBER, p. 6, Ent. Nachr. xxiii, n. sp.
Arrhopala rama, larva, pupa, MACKINNON, pl. v, fig. 14, p. 382, J. Bombay Soc. xi.
A. sangira, Sangir, p. 202, *brahma*, *ijanensis*, p. 203, *gunongensis*, p. 205, Perak, BETHUNE-BAKER, Ent. Mag. xxxiii; *A. strophe*, New Guinea, *clarissa*, Celebes, SMITH, p. 366, Nov. Zool. iv : n. spp.
Bullis, n. g. for *Britomartis buto*, Nicev. and *Tajuria valentia*, Swinh., figured, pl. iii, figg. 17 & 18, NICÉVILLE, p. 559, J. Asiat. Soc. Bengal, lxvi.
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Camena deva, larva, pupa, MACKINNON, pl. v, fig. 16, p. 385, J. Bombay Soc. xi.
Candalides, Hübn., to be used for *Philiris xanthospilos* and allies, II. II. DRUCE, p. 14 Ann. Nat. Hist. (6) xix.
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Deramas livens, var. n. *livescens*, FRUHSTORFER, p. 62, Ent. Nachr. xxiii.
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Horaga onyx, larva, MACKINNON, pl. v, fig. 18, p. 387, J. Bombay Soc. xi.
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Hypochrysops antiphon, New Guinea, SMITH, p. 367, Nov. Zool. iv, n. sp.
Hypolycæna danisoides, Ké islands, NICÉVILLE, p. 558, pl. iii, fig. 21, J. Asiat. Soc. Bengal, lxvi, n. sp.

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- Jalmenus myrsilus*, life-history, HILL, p. 118, Victorian Nat. xiii. *J. dameli* (= *illidgei*, Loc.), LOWER, p. 25, P. Linn. Soc. N. S. Wales, xxii.
- Lampides eclectus*, figg. 12-14, *allectus*, figg. 15 & 16, pl. xi, fig. 3, pl. xii, SMITH & KIRBY, Rhop. exot. ii, Lycænidae (Oriental). *L. amphissina*, ♂, ♀, pl. xii, figg. 7-9, figured, SMITH, Rhop. exot. iii, Lycæn. (orient.).
- L. paralectus*, New Ireland, p. 7, pl. xi, fig. 17, and xii, figg. 1 & 2, SMITH & KIRBY, t. c.; *L. epilectus*, Fergusson island, SMITH, p. 179, Ann. Nat. Hist. xix, figured, pl. xii, figg. 4-6, SMITH, Rhop. exot. iii, n. spp.
- Lycæna eros*, var. n. *amorata*, ALPHÉRAKY, p. 113, Romanoff Mem. ix. *L. pheretiades*, var. n. *tekessana*, ALPHÉRAKY, p. 234, pl. xii, fig. 3, t. c. *L. orbitulus*, var. *wosnesenskii*, figure, ALPHÉRAKY, p. 317, pl. xiv, fig. 5, t. c. *L. argus* and *ægon*, the distinctions supposed specific, Vos, pp. 229-236, pls. 9 & 10, Tijdschr. Ent. xl, SNELLEN, t. c., p. 286. *L. minima*, variation, MORTON, p. 43, Ent. Mag. xxxiii.
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- Nacaduba narovona*, Solomon islands, SMITH, p. 518, Ann. Nat. Hist. xx, n. sp.
- Pentila cloetensi*, Congo, AURIVILLIUS, p. 214, Ent. Tidskr. 1897, n. sp.
- Philiris theleos*, Amboyna, *speirion*, Fergusson island, *mneia*, Batchian, H. H. DRUCE, p. 15, Ann. Nat. Hist. xix, n. spp.
- Phytala hyettina*, p. 214, *intermixta*, p. 215, W. Africa, AURIVILLIUS, Ent. Tidskr. 1897, n. sp.
- Plebeius (Lampides) daonides*, Java, RÖBER, p. 100, Ent. Nachr. xxiii, n. sp.
- Polyommatus virgaureæ*, var. n. *aureomicans*, HEYNE, p. 9, Soc. ent. xii.
- Poritia geta*, Birma, FAWCETT, p. 112, Ann. Nat. Hist. xx, n. sp.
- Pseudonotis milo*, figg. 1 & 2, *humboldti*, figg. 3-5, *florinda*, figg. 10 & 11, SMITH & KIRBY, Rhop. exot. Lycæn. orient. xi.
- Rapala ranta*, p. 409, *testa*, p. 410, India, SWINHOE, Ann. Nat. Hist. xix; *R. albapex*, Borneo, NICÉVILLE, p. 560, pl. iii, fig. 23, J. Asiat. Soc. Bengal, lxvi : n. spp.
- Tajuria discalis*, Lombok, FRUHSTORFER, p. 49, Soc. ent. xii, n. sp.
- Tarucus theophrastus* and allies, distinctions, WATSON, p. 609, NICÉVILLE p. 611, J. Asiat. Soc. Bengal, lxvi.
- Thecla damon*, var. n. *discoidalis*, SKINNER, p. 156, Canad. Ent. xxix. *T. pruni*, life-history, TUTT, p. 73, pl. ii, Ent. Rec. 1897.
- Thysonotis phroso*, ♀ figured, SMITH, Rhop. exot. iii, Lycæn. orient. xii, figg. 10 & 11.
- T. phroso*, New Guinea, SMITH, p. 313, Nov. Zool. iv; *T. albula*, New Guinea, SMITH, p. 368, t. c.; *T. lampros*, Trobriand islands, H. H. DRUCE, Ann. Nat. Hist. xix, p. 16; *T. lygia*, Samarai island, p. 516, *hengis*, New Guinea, p. 517, SMITH, Ann. Nat. Hist. xx : n. spp.
- Waigeum coruscans*, New Guinea, SMITH, p. 367, Nov. Zool. iv, n. sp.
- Zephyrus birupa*, larva, pupa, MACKINNON, pl. v, fig. 15, p. 384, J. Bombay Soc. xi.

HESPERIIDÆ.

Revision of Oriental and European, ELWES & EDWARDS, Tr. Zool. Soc. London, xiv, pp. 101-324, pls. xviii-xxvii. We give only the new

- genera and species contained in this work: the synonymy and numerous changes of generic position must be sought in the work itself. Many of the species are distinguished by the male genitalia, and many of the figures refer to these structures.
- Notes on habits, times of appearance and metamorphoses of 56 Indian species, DAVIDSON, BELL & AITKEN, J. Bombay Soc. xi, pp. 22-63, pls. vii & viii. Those figured are specially recorded below.
- Notes, critical and synonymical, on the species described by Fabricius from Danish collections, AURIVILLIUS, pp. 151-174, Ent. Tidskr. 1897.
- Abraximorpha*, n. g. for *Pterygospidea davidi*, male, ELWES & EDWARDS, p. 123, Tr. Zool. Soc. London, 1896.
- Acerbas nitidifusciata*, Labuan, pl. xx, fig. 9, p. 216, ELWES & EDWARDS, t. c., n. sp.
- Achalarus nepos*, var. n. *frater*, ALPHÉRAKY, p. 115, Romanoff Mem. ix.
- Achlyodes triangulus*, Bolivia, MABILLE, p. 198, Ann. Soc. ent. France, 1897, n. sp.
- Æromachus propinquus*, W. China, ALPHÉRAKY, p. 118, Romanoff Mem. ix; *Æ. chinensis*, China, p. 189, *dubius*, Travancore, pl. xix, fig. 10, p. 190, *javanicus*, W. Java, fig. 24, p. 191, ELWES & EDWARDS, Tr. Zool. Soc. London, xiv : n. spp.
- Ampittia maro*, early stages, DAVIDSON, BELL & AITKEN, p. 54, pl. viii, fig. 10, J. Bombay Soc. xi.
- Ancyloxypha nitedula* (= *Thymelicus tucumanus*, Plötz), BERG, p. 253, An. Mus. Buenos Aires, v.
- A. longleyi*, Chicago, FRENCH, p. 80, Canad. Ent. xxix, n. sp.
- Anisochoria superior*, *minorella*, Bolivia, MABILLE, p. 199, Ann. Soc. ent. France, 1897, n. spp.
- Apaustus lascivia*, life-history, WATERHOUSE, p. 244, P. Linn. Soc. N. S. Wales, xxii.
- Astictopterus cynone* (= *Pamphila gracilis*, Tepp.), LOWER, p. 26, P. Linn. Soc. N. S. Wales, xxii.
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- Augiades majuscula*, China, p. 249, pl. xix, fig. 21, ELWES & EDWARDS, Tr. Zool. Soc. London, xiv, n. sp.
- Baoris oceia*, pl. vii, fig. 6, p. 57, *colaca*, fig. 7, p. 59, DAVIDSON, BELL & AITKEN, J. Bombay Soc. xi.
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- Bibasis uniformis*, Java, *sambavana*, Sambawa, ELWES & EDWARDS, p. 305, Tr. Zool. Soc. London, xiv, n. spp.
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- Caprona ransonnetii*, early stages, DAVIDSON, BELL & AITKEN, J. Bombay Soc. xi, p. 30, pl. viii, fig. 4.
- Carrhenes andræmon*, Colombia, MABILLE, p. 195, Ann. Soc. ent. France, 1897, n. sp.
- Celænorrhinus ambaresa*, pl. viii, fig. 1, *fusca*, fig. 2, early stages, p. 37, DAVIDSON, BELL & AITKEN, J. Bombay Soc. xi.
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- Cogia helenus*, Brazil, p. 184, *troilus*, Bolivia, p. 185, MABILLE, Ann. Soc. ent. France, 1897, n. spp.
- Coladenia sobrina*, pl. xviii, fig. 12, p. 126, Sumatra, *semperi*, Philippines, *agnoides*, Naga hills, p. 128, ELWES & EDWARDS, *t. c.*, n. spp.
- Ctenoptilum chinensis*, Ningpo, ELWES & EDWARDS, Tr. Zool. Soc. London, xiv, n. sp.
- Cyclopides xanthometis*, Centr. Africa, MABILLE, p. 218, Ann. Soc. ent. France, 1897, n. sp.
- Cyclosemia metallica*, p. 193, *myris*, S. America, *gratiosa*, Chiriqui, p. 194, MABILLE, *t. c.*, n. spp.
- Diphoridas silvia*, Bolivia, MABILLE, p. 196, *t. c.*, n. sp.
- Eantis agylla*, Bolivia, MABILLE, p. 201, pl. ix, fig. 1, *t. c.*, n. sp.
- Ebrietas undulatus*, var. n. *evanidus*, MABILLE, p. 200, *t. c.*
- E. livius*, Bolivia, MABILLE, *l. c.*, n. sp.
- Echelatus diversus*, S. America, MABILLE, p. 195, *t. c.*, n. sp.
- Entheus*; the sexual distinctions, and consequent synonymy, MABILLE, pp. 185–190, *t. c.*
- E. cramerianus*, p. 187, *sirius*, Guyana, *dius*, Brazil, p. 188, MABILLE, *t. c.*, n. spp.
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- Falga*, n. g. for *F. jeconia*, Butl. (n. sp.?), Bolivia, MABILLE, p. 211, Ann. Soc. ent. France, 1897.
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- Gingla æqualis*, figured, DRUCE, p. 393, pl. lxxvii, fig. 13, Biol. Centr.-Amer. Heter. ii.
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NOCTUIDÆ, CYMATOPHORIDÆ, DELTOLIDIDÆ.

[Cf. ALPHÉRAKY (16-21), BARRETT (54), DOGNIN (258, 259, 260), HAMPSON (450), HAWTHORNE (464), HOLLAND (1028), KALCHBERG (561), KUNCKEL (644), LOWER (691, 693), MABILLE (701), MEYRICK (749),

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- Anarta cordigera*, var. *carbonaria*, figure, pl. xiv, fig. 10, ALPHÉRAKY, Romanoff Mem. ix.
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- Arachnognatha metascotia*, India, HAMPSON, p. 451, *t. c.*, n. sp.
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- Hecatera mohosa*, Ecuador, DOGNIN, p. 412, Ann. Soc. ent. Belgique, xli, n. sp.
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- Jaspidia jankowskii*, Amur, ALPHÉRAKY, p. 160, pl. xi, fig. 6, *t. c.*, n. sp.
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- Luperina malitiosa*, figure, ALPHÉRAKY, pl. ii, fig. 5, *t. c.*
- L. ? inutilis*, Korea, ALPHÉRAKY, p. 171, pl. xii, fig. 10, *t. c.*, n. sp.
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- Metopoplus fixseni*, figure, ALPHÉRAKY, pl. viii, fig. 6, Romanoff Mem. ix.
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- Mimoruza pictalis*, India, HAMPSON, p. 450, J. Bombay Soc. xi, n. sp.
- Moma (Diphthera) champa*, figure, ALPHÉRAKY, pl. xiii, fig. 4, Romanoff Mem. ix.
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- Mythimna pectinata*, referred to *Monostola*, figure, ALPHÉRAKY, p. 32, pl. ii, fig. 4, Romanoff Mem. ix.
- Namangana cretacea*, figure, pl. viii, fig. 10, ALPHÉRAKY, t. c.
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- Oligia insipida*, Ecuador, DOGNIN, p. 409, Ann. Soc. ent. Belgique, xli, n. sp.
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- P. grammatistis*, Queensland, *id. l. c.*, n. sp.
- Prorocopsis*, n. g., *Plusiades*, for *P. melanochora*, n. sp., W. Australia, MEYRICK, p. 373, *t. c.*
- Pseudohadena pugnav*, figure, ALPHÉRAKY, pl. ii, fig. 10, Romanoff Mem. ix.
- Pseudophia gentilis*, Palestine, STAUDINGER, p. 300, pl. ix, fig. 21, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Raddea digna*, figure, ALPHÉRAKY, pl. iii, fig. 5, Romanoff Mem. ix.
- Raparna ferrilineata stigmatilis*, India, HAMPSON, p. 461, J. Bombay Soc. xi, n. spp.
- Remigia crinigera*, Gilolo, SWINHOE, p. 168, Ann. Nat. Hist. xix, n. sp.
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- Risoba diphtheroides*, India, HAMPSON, p. 453, J. Bombay Soc. xi, n. sp.
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- Tathodelta ustata*, India, HAMPSON, p. 448, J. Bombay Soc. xi, n. sp.
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- Thalpochares siticulosa*, var. n. *albina*, STAUDINGER, p. 293, pl. iv, fig. 25, Deutsche ent. Zeitschr. Lep. x.
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- Thermesia nigripalpis*, India, HAMPSON, p. 456, J. Bombay Soc. xi, n. sp.
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- Trisuloides glauca*, India, HAMPSON, p. 455, J. Bombay Soc. xi, n. sp.
- Ulochlena superba*, figure, pl. i, fig. 7, ALPHÉRAKY, Romanoff Mem. ix.
- Valeria malzeuxi*, Ecuador, DOGNIN, p. 413, Ann. Soc. ent. Belgique, xli, n. sp.
- Xanthoptera fusciterminata, fissistigma*, India, HAMPSON, p. 446, J. Bombay Soc. xi, n. spp.

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GEOMETRIDÆ, EPIPLEMIDÆ.

(For *Uraniidæ* see *Bombyces*.)

[The titles indicated by the following names and numbers refer to *Geometridæ* and *Epiplemidæ*, viz.:—ALPHÉRAKY (16–19), BASTELBERGER (56), DOGNIN (258, 259), GROTE (437), HOLLAND (1028), KALCHBERG (561), KERSHAW (571), KIRBY (587), KNAUTH (599), LEECH (664), LOWER (691, 692, 693), MABILLE (701), MEYRICK (748, 749), OBERTHÜR (797), PAGENSTECHER (817), PEYRON (835, 836), PÜNGELER (884), ROTHSCHILD (948, 949), SCHAUS (963), STAUDINGER (1050, 1053, 1054), SWINHOE (1067), THIERRY-MIEG (1078), TUTT (1106), WARREN (1149–1152).]

The wing-nervures of *Geometridæ*, GROTE, Illustr. Wochenschr. pp. 405 & 593.

The *Geometridæ* of Amurland contains many notes of characters, varieties, and dates, STAUDINGER, Deutsche ent. Zeitschr. Lep. x, pp. 1–122, pls. i–iii.

Hybrid Geometridæ, see *Biston*.

Abraxas marginata, var. n. *mediofasciata*, HÖFNER, p. 168, Jahrb. Mus. Karnten, xxiv. *A. picaria*, varr. n. *tortuosaria*, *grisearia*, *nebularia*, LEECH, p. 446, Ann. Nat. Hist. xix. *A. sylvata*, varr., TUTT, p. xlix, P. ent. Soc. London, 1897.

A. punctisignaria, pl. vii, fig. 13, p. 447, *flavobasalis*, *punctaria*, p. 448, *reticularia*, *curvilinearis*, fig. 12, p. 449, China, LEECH, Ann. Nat. Hist. xix; *A. semiturpis*, China, WARREN, p. 396, Nov. Zool. iv; *A. discata*, Pulo Laut, p. 86, *invasata*, Borneo, *moniliata*, Celebes, *pleniguttata*, Lazon, p. 87, WARREN, t. c. : n. spp.

Acadra fulvisparsa, Niger, WARREN, p. 104, Nov. Zool. iv, n. sp.

Acidalia divisaria, figure, ALPHÉRAKY, pl. vii, fig. 10, Romanoff Mem. ix; *A. niveata*, pl. xx, fig. 12, PAGENSTECHER, Abh. Senckenb. Ges. xxiii.

A. detritaria, Syria, STAUDINGER, p. 180, pl. iv, fig. 14, Deutsche ent. Zeitschr. Lep. x; *A. consecrata*, pl. iv, fig. 29, p. 305, *improbata*, fig. 30, p. 307, *A. ? uniformis*, fig. 33, p. 308, *A. allongata*, fig. 33, p. 308, *flaccata*, pl. ix, fig. 22, p. 309, Palestine, STAUDINGER, t. c.; *A. saluberraria*, pl. i, fig. 5, p. 13, *amænaria*, fig. 9, p. 14, *crinitaria*, fig. 11, p. 17, *A. ? muscularia*, fig. 13, p. 18, Amurland, STAUDINGER, t. c.; *A. propinquaria*, *acutaria*, China, *satsumaria*, Japan, p. 91, *bimacularia*, p. 92, *rivularia*, *proximaria*, p. 93, *modicaria*, *fulsaria*, p. 94, *arenaria*, p. 95, *nivearia*, *majoraria*, Japan, p. 96, *sedataria*, China, p. 97, *pulveraria*, Japan, p. 98, *marcidaria*, *lutearia*, p. 99, *mendicaria*, *centrofasciaria*, *farinaria*, p. 100, China, *gnophosaria*, Tibet, *infuscaria*, China and Japan, p. 101, *obfuscaria*, *tectaria*, China, *cineraria*, China and Japan, p. 102, *promiscuaria* (*Eois*), p. 105, Korea, *obtectaria*, Japan, p. 106, LEECH, Ann. Nat. Hist. xx : n. spp.

Acidalina, n. g. for *A. decolor*, n. sp., Algeria, pl. iv, fig. 5, STAUDINGER, p. 269, Deutsche ent. Zeitschr. Lep. x.

Acrosemia ochrolaria, Jalapa, SCHAUS, p. 163, J. N. York Ent. Soc. v; *A. undilinea*, Costa Rica, WARREN, p. 486, Nov. Zool. iv, n. spp.

- Acrotomodes nigripuncta*, Venezuela, WARREN, p. 486, Nov. Zool. iv, n. sp.
Actenochroma ochrea, referred to *Hypochroma*, WARREN, p. 207, t. c.
Adeixis, n. g., *Enochrominæ*, for *A. insignata*, n. sp., Australia, WARREN, p. 27; t. c.
Ætheolepis papillosa, ♀, WARREN, p. 68, t. c.
Agathia confusata, Sierra Leone, WARREN, p. 32, Nov. Zool. iv; *A. obsoleta*, Java, WARREN, p. 208, pl. v, fig. 4, t. c.; *A. succedanea*, Borneo, WARREN, p. 388, t. c. : n. spp.
Agnibesa venusta, Sikkim, WARREN, p. 65, t. c., n. sp.
Agraptochlora nigricornis, Mombasa island, WARREN, p. 208, pl. v, fig. 14, t. c., n. sp.
Agraptochlora modesta, p. 32, *rubriplaga*, p. 33, S. Africa, WARREN, t. c., n. spp.
Alcis contortilinea, pl. v, fig. 16, p. 245, Congo, *faustinata*, China, p. 246, WARREN, t. c., n. spp.
Allaxithea, n. g., *Deiliniinæ*, type, *purpurascens*, Moore, WARREN, p. 237, t. c.
Almodes subrufa, Jamaica, WARREN, p. 417, t. c., n. sp.
Amaurinia chrysocraspedata, p. 446, *consocia*, *xanthoptera*, p. 447, Bolivia, WARREN, t. c., n. spp.
Amphidasis strataria, var. n. *breigneti*, BRASCASSAT, p. lxxvii, C.R. Soc. Bordeaux, 1897.
Amygdalopteryx, n. g., type *Larentia dulciferata*, Wlk., WARREN, p. 451, Nov. Zool. iv.
Anaitis paludata, variation and distribution, SOMMER, pp. 253-262, Deutsche ent. Zeitschr. Lep. x. *A. plagiata*, var. SCHOPFER, p. 158, Deutsche ent. Zeitschr. Lep. x.
A. brunnearia, China, LEECH, p. 553, Ann. Nat. Hist. xix, n. sp.
Anisephyra aurata, Celebes, WARREN, p. 47, Nov. Zool. iv, n. sp.
Anisodes laudanata, W. Africa, MABILLE, p. 227, Ann. Soc. ent. France, 1897; *A. superflua*, Venezuela, WARREN, p. 431, Nov. Zool. iv; *A. calavera*, Ecuador, DOGNIN, p. 31, Ann. Soc. ent. Belgique, xli : n. spp.
Anisogamia albilauta, New Guinea, *albimacula*, p. 33, *curvigutta*, *dentata*, *moniliata*, p. 34, Queensland, *muscosa*, Fergusson island, *nigrimaculata*, New Guinea, *undilinea*, Queensland, p. 35, WARREN, Nov. Zool. iv, n. spp.
Anisogonia deusta, n. varr., WARREN, p. 486, t. c.
Anisographe, n. g., *Ennominæ*, for *A. dissimilis*, pl. v, figg. 1 & 2, n. spp., Queensland, WARREN, t. c., p. 254.
Anisoperas subfulvata, Costa Rica, WARREN, p. 487, t. c., n. sp.
Anisopteryx chaoticaria, Centr. Asia, ALPHÉRAKY, p. 55, pl. ii, fig. 8, Romanoff Mem. ix, n. sp.
Anonychia diversilinea, p. 101, *pallida*, p. 102, N. India, WARREN, Nov. Zool. iv; *A. latifasciaria*, p. 225, *præditaria*, p. 226, pl. vi, fig. 4, China, LEECH, Ann. Nat. Hist. xix : n. spp.
Anthyperythra ? *illitirata*, S. E. Africa, WARREN, p. 255, Nov. Zool. iv, n. sp.
Anthyria metriopis, Pulo Laut, MEYRICK, p. 70, Tr. ent. Soc. London, 1897, n. sp.
Antitrygodes dentilinea, Sierra Leone, WARREN, p. 47, Nov. Zool. iv, n. sp.
Apericallia, n. g., near *Pericallia*, for *A. bilinearia*, n. sp., W. China, LEECH, p. 211, Ann. Nat. Hist. xix.
Aplochlora invisibilis, Niger, WARREN, p. 76, Nov. Zool. iv, n. sp.
A. flavifimbria, Colombia, *rufilineata*, Surinam, WARREN, p. 423, t. c.; *A. fringillata*, Parana, SCHAUS, p. 161, J. N. York Ent. Soc. v : n. spp.
Apligompha, n. g., *Palyadinæ*, type *Fidonia lafayi*, Dogn., WARREN, p. 459, Nov. Zool. iv.

- Apostates*, n. g., *Sterrhinæ*, for *A. albiclathrata*, n. sp., Merv, WARREN, p. 214, *t. c.*
- Arcina*, systematic position, WARREN, p. 124, *t. c.*
- Arctoscelia*, n. g., *Selidoseminæ*, p. 102, for *A. onusta*, n. sp., Luzon, p. 103, WARREN, *t. c.*
- Argyrotome ferruginea*, p. 459, *tenebrosa*, p. 460, Bolivia, WARREN, *t. c.*, n. spp.
- Arichanna interruptaria*, *similaria*, p. 434, *clavaria*, *diffusaria*, p. 435, *confusaria*, *fluvovenaria*, p. 437, *flavomacularia*, *undularia*, *lateraria*, p. 438, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Arycanda*, Wlk. = (*Panæthia*, Gn.), WARREN, p. 82, Nov. Zool. iv.
- Arycanda absorpta*, Borneo, p. 82, *discata*, Natuna islds., *omissa*, *subfumosa*, Borneo, p. 83, WARREN, *t. c.*, n. spp.
- Asaphodes siris*, New Zealand, HAWTHORNE, p. 283, Tr. N. Zealand Inst. xxix, n. sp.
- Ascotis selenaria*, var. n. *fasciata*, WARREN, p. 92, Nov. Zool. iv.
- Aspilates tricolor*, Natal, WARREN, p. 99, *t. c.*; *A. candidata*, Parana, *plurilineata*, Bolivia, WARREN, p. 474, *t. c.* : n. spp.
- Aspilatopsis*, n. g., near *Hebdomophruda*, for *A. punctata*, n. sp., Natal, WARREN, p. 100, *t. c.*
- Aspilonaxa*, n. g., p. 386, near *Naxa*, for *A. lineata*, n. sp., China, p. 387, WARREN, *t. c.*
- Asthena ochrifasciaria*, Japan, p. 84, *conditaria*, *A. ? octomacularia*, China, p. 85, LEECH, Ann. Nat. Hist. xx, n. spp.
- Astrapephora romanovi*, figure, pl. iii, fig. 11, ALPHÉRAKY, Romanoff Mem. ix.
- Atyriodes crenulata*, Peru, WARREN, p. 419, Nov. Zool. iv, n. sp.
- Auophylla*, n. g., p. 423, *Geometrinæ*, for *A. multiplagiata*, n. sp., Paraguay, p. 424, WARREN, *t. c.*
- Auzeodes nigroseriata*, ♀, WARREN, p. 255, *t. c.*
- Azata flexilinea*, W. China, *luteiceps*, Celebes, WARREN, p. 251, *t. c.*, n. spp.
- A. mutabilis*, Borneo, p. 104, *sororcula*, Zomba, p. 105, WARREN, *t. c.* : n. spp.
- Azelina paranaria*, *jonesaria*, Parana, SCHAUS, p. 162, J. N. York Ent. Soc. v; *A. constrictifascia*, Mapiri, p. 487, *infantilis*, Onoribo, *maculicosta*, Colombia, WARREN, p. 488, *t. c.* : n. spp.
- Azelinopsis brunnea*, Niger, WARREN, p. 115, *t. c.*, n. sp.
- Bapta candidaria*, Japan, *nigropunctaria*, China, LEECH, p. 198, Ann. Nat. Hist. xix; *B. longipennis*, Khasia hills, WARREN, p. 237, Nov. Zool. iv; *B. argentea*, Jamaica, *hebetior*, Parana, *nubimargo*, Bolivia, WARREN, p. 462, *t. c.* : n. spp.
- Baptia nigrilinearia*, China, LEECH, p. 89, Ann. Nat. Hist. xx, n. sp.
- Barrama*, n. g., *Orthostixinæ*, near *Rambara*, for *B. impunctata*, n. sp., Natal, WARREN, p. 28, Nov. Zool. iv.
- Biston hüinii*, hybrid of *pomonarius*, ♂ and *hirtarius*; *B. pilzii*, Gub., figures; heredity; C. OBERTHÜR, pp. 256–259, Bull. Soc. ent. France, 1897. *B. betularius*, var. n. *fumosarius*, ALPHÉRAKY, p. 140, Romanoff Mem. ix. *B. robustum*, var. n. *parva*, p. 323, *B. invenustaria*, var. n. *sinicaria*, p. 324, LEECH, Ann. Nat. Hist. xix.
- B. emarginaria*, p. 322, pl. vii, fig. 8, *serratilinearia*, p. 323, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Boarmia fortunata*, var. *buchlei*, KILIAN, p. 41, Soc. ent. xii. *B. conjungens*, figure, ALPHÉRAKY, pl. iv, fig. 4, Romanoff Mem. ix. *B. plumigeraria*, sexes, larva, COQUILLET, p. 64, Bull. Dep. Agric. Ent. vii. *B. cinctaria*, larva, BROWN, C.R. Soc. Bordeaux, 1896, p. xliii.
- B. sidemiata*, pl. ii, fig. 35, p. 51, *dissimilis*, fig. 36, p. 52, *amænaria*, pl. iii, fig. 38, p. 56, Amurland, STAUDINGER, Deutsche ent. Zeitschr. Lep. x; *B. leptoptera*, China, ALPHÉRAKY, p. 141, pl. x, fig. 4, Romanoff Mem.

- ix; *B. koreanã*, Korea, ALPHÉRAKY, p. 180, *t. c.*; *B. farracearia* with var. *fuliginaria*, p. 340, *nigrilinearia*, *lenticularia*, p. 341, *recurvaria*, *decoraria*, p. 342, *tripartaria*, China, *opertaria*, Japan, p. 342, *tristaria*, *conjunctaria*, p. 344, *dilectaria*, p. 345, *columbinaria*, p. 348, China, LEECH, Ann. Nat. Hist. xix; *B. jejunaria*, p. 416, *montanaria*, p. 418, *corticaria*, p. 419, *stolidaria*, China, *majuscularia*, *pryeraria*, Japan, p. 420, *sinicaria*, p. 421, *subochrearia*, *bilinearia*, *punctimarginaria*, p. 422, *B.?* *nigrofasciaria*, *B. divisaria*, p. 423, *decoloraria*, p. 424, pl. vii, fig. 4, *approximaria*, *dolosaria*, *incongruaria*, p. 425, *punctilinearia*, *olivacearia*, p. 426, *projectaria*, *mirandaria*, p. 427, *insolitaria*, *moupinaria*, *flavimacularia*, p. 428, China, LEECH, Ann. Nat. Hist. xix; *B. caritaria*, Peru, *orizabaria*, Mexico, *dukinfeldia*, Parana, p. 164, *sapulena*, Petropolis, *luciararia*, W. Indies, *aztecaria*, Mexico, *frankia*, Parana, p. 165, *nebularia*, S. Brazil, p. 166, SCHAUS, J. N. York Ent. Soc. v : n. spp.
- Bociraza reversa*, Obi, WARREN, p. 28, Nov. Zool. iv, n. sp.
- Bordeta longimacula*, Palawan, WARREN, p. 83, *t. c.*, n. sp.
- Brabira plicataria*, China, LEECH, p. 72, Ann. Nat. Hist. xx, n. sp.
- Brachycola*, n. g. for pt. of *Anisodcs*, with *B. niveopuncta*, Australia, *B.?* *minorata*, Tenimber, n. spp., WARREN, p. 48, Nov. Zool. iv: *B. decolorata*, Lifu, *flavareata*, Penang, p. 215, *B.?* *inornata*, Banda islds., *samoana*, Apia, p. 216, WARREN, *t. c.*, n. spp.
- Brachyprota*, n. g., *Sterrhinæ*, for *B. abnormipennis*, n. sp., Surinam, WARREN, p. 432, *t. c.*
- Bryoptera?* *ustifumosa*, Paraguay, WARREN, p. 466, *t. c.*, n. sp.
- Bursada alboguttata*, description, figure, PAGENSTECHEER, p. 457, pl. xviii, fig. 9, Abh. Senckenb. Ges. xxiii.
- B. adaucta*, Celebes, *B.?* *puncticarpus*, pl. v, fig. 18, Centr. Africa, p. 240, *B. rotundimacula*, fig. 26, Luzon, p. 241, WARREN, Nov. Zool. iv; *B. septemnotata*, Borneo, *trispilata*, New Guinea, WARREN, p. 84, *t. c.* : n. spp.
- Buzura nephclistis*, Talaut, MEYRICK, p. 77, Tr. ent. Soc. London, 1897; *B. analiplaga*, Niger, *annulata*, Bali, *atomaria*, Celebes, WARREN, p. 244, Nov. Zool. iv : n. spp.
- Bylazora nigropunctaria*, China, LEECH, p. 333, Ann. Nat. Hist. xix, n. sp.
- Caberodes russulata*, p. 226, *hemigrammata*, p. 227, Comoro islds., MABILLE, Ann. Soc. ent. France, 1897, n. spp.
- Calichodes foveata*, Penang, WARREN, p. 246, Nov. Zool. iv, n. sp.
- Cambogia conspicuaria*, China, LEECH, p. 88, Ann. Nat. Hist. xx; *C. aurata*, Surinam, *ferruginata*, Jamaica, p. 447, *lineolata*, Colombia, *nigriplaga*, Parana, *C.?* *semipicta*, Petropolis, p. 448, *tessellata*, Jamaica, p. 449, WARREN, Nov. Zool. iv : n. spp.
- Camptogramma monacmaria*, W. Africa, p. 229, *polyacmaria*, W. Africa and Mayotte isld., p. 230, MABILLE, Ann. Soc. ent. France, 1897; *C. constellata*, Mauritius, WARREN, p. 233, Nov. Zool. iv; *C. erebata*, Parana, WARREN, p. 451, *t. c.* : n. spp.
- Canonistis*, n. g., *Monocteniadæ*, for *rectilineata*, Gn., MEYRICK, p. 74, Tr. ent. Soc. London, 1897.
- Capnophylla*, n. g., *Epiplemidæ*, near *Gathynia*, p. 410, for *C. albiceps*, n. sp., Brazil, p. 411, WARREN, Nov. Zool. iv.
- Carbia*, characters, MEYRICK, p. 69, Tr. ent. Soc. London, 1897.
- Carige flavidaria*, China, LEECH, p. 552, Ann. Nat. Hist. xix, n. sp.
- Cartaletis flexilimes*, Niger, WARREN, p. 28, Nov. Zool. iv, n. sp.
- Catascia?* *pulverulenta*, Borneo, WARREN, p. 250, *t. c.*, n. sp.
- Cataspilates*, n. g., near *Aspilates*, for *C. grisescens*, Bogota, *C.?* *arenosa*, São Paulo, n. spp., WARREN, p. 474, *t. c.*
- Caustoloma oberthuri*, figure, ALPHÉRAKY, p. 143, Romanoff Mem. ix, n. sp.

- Cenoctenucha*, n. g., near *Odontopera*, type *similaria*, Moore with *C. imitata*, n. sp., Khasia hills, WARREN, p. 115, Nov. Zool. iv.
- Ceranchia ansorgei*, Uganda, ROTHSCHILD, p. 309, pl. vii, fig. 5, *t. c.*, n. sp.
- Certima unilineata*, Bolivia, WARREN, p. 418, *t. c.*, n. sp.
- Cheimatobia brumata*, *boreata*, distinctions, life-histories, PEYRON, pp. 81-94, pl. ii, Ent. Tidskr. 1897.
- Chiasmia radiata*, Khasia hills, WARREN, p. 82, Nov. Zool. iv, n. sp.
- Chloroclystis grisea*, Mombasa isld., *minima*, Queensland, WARREN, p. 227, *t. c.*; *C. aristias*, New Zealand, MEYRICK, p. 385, Tr. ent. Soc. London, 1897; *C. brunneoviridis*, São Paulo, WARREN, p. 449, Nov. Zool. iv : n. spp.
- Chloroglyphica maculata*, p. 208, pl. v, fig. 23, *aureofulva*, fig. 20, p. 209, Khasia hills, WARREN, *t. c.*, n. spp.
- Chloromachia divapala rufimargo*, subsp. n., WARREN, p. 209, *t. c.*
- Chloromma persimilis*, Niger, WARREN, p. 36, *t. c.*, n. sp.
- Chloroplintha*, n. g., near *Chloroclystis*, for *C. velutina*, n. sp., Celebes, WARREN, p. 69, *t. c.*
- Chlorostrota*, n. g., *Geometrinæ*, for *C. marginata*, Niger, p. 36, *præampla*, Khasia hills, p. 37, n. spp., WARREN, *t. c.*; *C. discata*, Borneo, WARREN, p. 389, *t. c.*, n. sp.
- Chogada betularia*, S. Africa, WARREN, p. 93, *t. c.*; *C. lacteata*, New Britain, *marmorata*, Mauritius, WARREN, p. 247, *t. c.* : n. spp.
- Chorodnodes*, n. g., *Semiothisinæ*, for *C. rothi*, n. sp., Niger, WARREN, p. 106, *t. c.*
- Christophia*, n. g. for *Abraxas festinaria*, Christ., fig. pl. i, fig. 17, STAUDINGER, p. 25, Deutsche ent. Zeitschr. Lep. x.
- Chrysocraspeda marginata*, Khasia hills, WARREN, p. 392, Nov. Zool. iv; *C. proximaria*, Moupin, LEECH, p. 106, Ann. Nat. Hist. xx; *C. orgalea*, Pulo Laut, MEYRICK, p. 71, Tr. ent. Soc. London, 1897; *C. aurimargo*, Cooktown, WARREN, p. 216, Nov. Zool. iv : n. spp.
- Chrysolene*, n. g., near *Chrysocraspeda*, type *Hyria deviararia*, Wlk. with *C. cruoraria*, Cooktown, *dilucida*, Borneo, n. spp., WARREN, p. 49, *t. c.*
- Cidaria oxybiaria*, var. n. *pseudoguliata*, pl. iv, fig. 38, STAUDINGER, p. 317, Deutsche ent. Zeitschr. Lep. x. *C. lugubrata*, var. n. *albidior*, ALPHÉRAKY, p. 344, Romanoff Mem. ix. *C. picata*, habits, GAUCKLER, p. 394, Deutsche ent. Zeitschr. Lep. x. *C. reticulata*, habits, MOSS, p. 99, Ent. Mag. xxxiii.
- C. multipunctata*, Palestine, STAUDINGER, p. 316, Deutsche ent. Zeitschr. Lep. x; *C. minimata*, p. 86, pl. iii, fig. 53, *ablegata*, fig. 60, p. 96, *nymphæata*, fig. 61, p. 99, *musculata*, pl. iv, fig. 3, *parvulata*, pl. iii, fig. 62, p. 100, *tenera*, fig. 64, p. 102, *evanescens*, fig. 66, p. 104, Amurland, STAUDINGER, *t. c.*; *C. viperata*, p. 72, *interrogata*, p. 80, Centr. Asia, ALPHÉRAKY, Romanoff Mem. ix; *C. proserpina*, Korea, ALPHÉRAKY, p. 183, pl. x, fig. 5, *t. c.*; *C. ? lamæ*, China, ALPHÉRAKY, p. 145, *t. c.*; *C. fulgidaria*, p. 641, *albipunctaria*, p. 642, *ochracearia*, p. 643, *latifasciaria*, p. 644, *postalbaria*, p. 645, *fervidaria*, p. 646, *subochraria*, p. 647, *literataria*, p. 648, *fumataria*, *bipartaria*, p. 649, *fasciaria*, p. 650, China, *erectaria*, p. 651, *angularia*, p. 652, Japan, *aridaria*, *ambustaria*, p. 653, China, *nigrozonaria*, Japan, p. 654, *fuscaria*, China, p. 655, LEECH, Ann. Nat. Hist. xix : n. spp.
- Cimicodes subapicata*, Bolivia, WARREN, p. 489, Nov. Zool. iv, n. sp.
- Cithecia*, n. g. for *C. macrocheila*, n. sp., Amurland, pl. iii, fig. 79, STAUDINGER, p. 121, Deutsche ent. Zeitschr. Lep. x.
- Cleora fulvitincta*, La Plata, WARREN, p. 466, Nov. Zool. iv, n. sp.
- Clepsimelea*, n. g., p. 261, *Prosoplophinae*, for *C. phryganeoides*, n. sp., New Guinea, pl. v, fig. 22, p. 262, WARREN, *t. c.*
- Cœlura*, n. g., *Epiplemidæ*, for *C. transversata*, n. sp., Rio de Janeiro, and including *Erosia omana*, Druce, WARREN, p. 411, *t. c.*

- Collesis*, n. g., near *Euchloris*, for *C. mimica*, n. sp., Zambesi, pp. 37 & 210, WARREN, t. c.
- Comibæna subscripta*, Venezuela, WARREN, p. 424, t. c., n. sp.
- Comostola pallidaria*, Parana, SCHAUS, p. 161, J. N. York Ent. Soc. v, n. sp.
- Comostolodes consobrina*, Cooktown, WARREN, p. 210, Nov. Zool. iv, n. sp.
- Conchocometa javensis*, Bandong, WARREN, p. 216, t. c., n. sp.
- Conchylia smithii*, E. Africa, HOLLAND (1028), p. 419, pl. fig. 12, n. sp.
- Cophophlebia*, n. g., *Ennominae*, for *C. olivata*, n. sp., Zomba, WARREN, p. 116, Nov. Zool. iv.
- Corymica immaculata*, Sikkim, WARREN, p. 116, t. c., n. sp.
- Cosmogonia*, n. g. for *Thalerura decorata*, Warr., WARREN, p. 210, t. c.
- Cosymbia unocula*, E. Africa, WARREN, p. 217, t. c., n. sp.
- Craspedia abornata*, n. varr., WARREN, p. 432, Nov. Zool. iv.
- C. aggravata*, Khasia hills, *bigeminata*, *bonaventura*, S. Africa, p. 50, *castissima*, Cooktown, *deserta*, *dissonans*, p. 51, S. Africa, *lævipennis*, W. Africa, *nigrinotata*, Zomba, *melliflua*, p. 52, *sanguinisecta*, Natal, *subperlaria*, *sufficiens*, W. Africa, p. 53, WARREN, t. c.; *C. acentra*, S. Africa, *atriscata*, Khasia hills, p. 217, *discata*, Solomon islands, *furfurata*, Simla, *ossicolor*, Sierra Leone, *pallidilinea*, Java, p. 218, *sagittilinea*, Mombasa isld., *uninotata*, Sierra Leone, p. 219, WARREN, t. c.; *C. densicornis*, Sumba, p. 392, *dohertyi*, Celebes, p. 393, WARREN, t. c.; *C. albidulata*, São Paulo, p. 432, *ambagifera*, Venezuela, *atomaria*, Jamaica, *deiliniata*, p. 433, *infota*, *radiata*, Bolivia, *sticticata*, Paraguay, p. 434, WARREN, t. c. : n. spp.
- Craspedosis albigutta*, New Guinea, WARREN, p. 241, t. c., n. sp.
- Crocallis? jordanaria*, Palestine, STAUDINGER, p. 310, pl. iv, fig. 37, Deutsche ent. Zeitschr. Lep. x; *C. acutaria*, p. 221, *C.? acuminaria*, p. 222, China, LEECH, Ann. Nat. Hist. xix : n. spp.
- Crocinis atricostaria*, Madagascar, MABILLE, p. 229, Ann. Soc. ent. France, 1897, n. sp.
- Crocota? punctaria*, Tibet, LEECH, p. 319, Ann. Nat. Hist. xix, n. sp.
- Cryptoloba olivaria*, Shillong, SWINHOE, p. 165, Ann. Nat. Hist. xix; *C. rivularia*, China, LEECH, p. 550, Ann. Nat. Hist. xix : n. spp.
- Cusiala malescripta*, Celebes, WARREN, p. 90, Nov. Zool. iv, n. sp.
- Cyclomia costipuncta*, Venezuela, p. 489, *jaspidea*, Jamaica, p. 490, WARREN, t. c., n. spp.
- Cyllopoda angusta*, Bolivia, *hypocyanea*, Colombia, p. 419, *latimargo*, Demerara, *obtusimacula*, Loja, *semidivisa*, Parana, p. 420, WARREN, t. c., n. spp.
- Cymatophora mutabilis*, Jamaica, WARREN, p. 466, Nov. Zool. iv, n. sp.
- Dalima gigantea*, India, SWINHOE, p. 166, Ann. Nat. Hist. xix; *D. variaria*, p. 215, *obliquaria*, p. 216, *ochrearia*, *acutaria*, p. 217, *columbinaria*, p. 218, China, LEECH, Ann. Nat. Hist. xix : n. spp.
- Darisa differens*, China, WARREN, p. 398, Nov. Zool. iv; *D.? dissimilis*, Mauritius, pl. v, figg. 17, 19, p. 247, WARREN, t. c. : n. spp.
- Decetia numicusaria*, var. n. *sinelinea*, WARREN, p. 24, Nov. Zool. iv.
- D. violacearia*, China, *argentilinearia*, Yesso, p. 183, *lilacinaria*, China, p. 184, LEECH, Ann. Nat. Hist. xix, n. spp.
- Decetiodes*, n. g., *Epiplemidæ*, for *D. fallax*, n. sp., Venezuela, WARREN, p. 412, Nov. Zool. iv.
- Dectochilus brunnea*, Chili, WARREN, p. 490, t. c., n. sp.
- Deilinia chlorochroa*, Pulo Laut, MEYRICK, p. 78, Tr. ent. Soc. London, 1897; *D. sericea*, Bogota, WARREN, p. 462, Nov. Zool. iv : n. spp.
- Derxena discata*, New Guinea, WARREN, p. 206, Nov. Zool. iv, n. sp.
- Diastictis inceptaria*, early stages, SLINGERLAND, p. 49, pl. iii, Canad. Ent. xxix.
- D. microdoxa*, Pulo Laut, MEYRICK, p. 75, Tr. ent. Soc. London, 1897, n. sp.

- Dichromatopodia argentipuncta, olivaceonotata*, Venezuela, WARREN, p. 435, Nov. Zool. iv, n. spp.
- Dierna? timandra*, Korea, ALPHÉRAKY, p. 179, pl. xi, fig. 7, Romanoff Mem. ix, n. sp.
- Dilinia conspersaria*, Japan, p. 315, *rufofasciaria*, China, p. 316, LEECH, Ann. Nat. Hist. xix, n. spp.
- Dilophodes conspicuaria*, Japan, LEECH, p. 454, Ann. Nat. Hist. xix, n. sp.
- Diplodesma olivata*, Sandakan, WARREN, p. 389, Nov. Zool. iv, n. sp.
- Diplurodes indentata*, Borneo, WARREN, p. 93, *t. c.*, n. sp.
- Dirades acutilinea, columbaris*, Penang, p. 384, *lactea*, S. Africa, p. 385, WARREN, *t. c.*; *D. exangulata*, Borneo, *integra*, Lombok, p. 200, *pygmeata*, Batchian, p. 201, WARREN, *t. c.* : n. spp.
- Discoreba simplex*, var. *punctaria*, LEECH, p. 319, Ann. Nat. Hist. xix.
- Docephora pilosa*, Costa Rica, WARREN, p. 449, Nov. Zool. iv, n. sp.
- Dryadopsis*, n. g., p. 424, type *Nemoria morbilliata*, Feld., WARREN, *t. c.*
- Dysephyra commaculata*, Demerara, p. 435, *lunifera*, Colombia, p. 436, WARREN, *t. c.*, n. spp.
- Eariodes*, n. g., *Deiliniinae*, for *E. variomacula*, n. sp., Parana, WARREN, Nov. Zool. iv.
- Ectropis nigripunctata*, Niger, p. 93, *sabulosa*, Amboyna, pp. 94 & 248, WARREN, Nov. Zool. iv; *E. macariata*, Cooktown, p. 248, *E.? tenuis*, India, p. 249, WARREN, *t. c.*; *E. petras*, Pulo Laut, MEYRICK, p. 75, Tr. ent. Soc. London, 1897 : n. spp.
- Emmesomia [bilinearis, altered, p. 110, op. cit. xx, to] parallelaria*, China, LEECH, p. 546, Ann. Nat. Hist. xix, n. sp.
- Enconista exustaria*, Palestine, STAUDINGER, pl. iv, fig. 36, p. 315, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Endropia? hedemanni*, Amurland, STAUDINGER, pl. i, fig. 23, p. 33, *t. c.*, n. sp.
- Eois exquisita*, Centr. Africa, pl. v, fig. 10, p. 219, *E.? perspersata*, Timor, p. 220, WARREN, Nov. Zool. iv; *E. alternifascia*, São Paulo, p. 436, *E.? cambogiata*, Brit. Guiana, *E. cruorata*, Venezuela, *quadrirubrata*, Petropolis, *rhodariata*, p. 437, *rubrisuffusa*, p. 438, Parana, WARREN, *t. c.*; *E. procrossa*, Sambawa, MEYRICK, p. 71, Tr. ent. Soc. London, 1897; *E. iodesma*, Brisbane, MEYRICK, p. 376, *t. c.* : n. spp.
- Ephoria*, n. g. for *Epione arenosa*, Butler, STAUDINGER, p. 66, Deutsche ent. Zeitschr. Lep. x.
- Ephoria xanthocolona*, Borneo, MEYRICK, p. 78, Tr. ent. Soc. London, 1897, n. sp.
- Ephyra pendulinaria*, metamorphoses, SCUDDER, p. 103, Psyche, viii.
- E. brunnearia*, China, LEECH, p. 107, Ann. Nat. Hist. xx, n. sp.
- Epicosymbia*, n. g., near *Cosymbia*, for *E. perrufa*, n. sp., Natal, WARREN, p. 54, Nov. Zool. iv.
- Epione cinerea*, Rio Jalapa, SCHAUS, p. 163, J. N. York Ent. Soc. v, n. sp.
- Epiplema instabilata*, var. *n. fuscata*, WARREN, p. 385, Nov. Zool. iv. *E. instabilata semifulva*, subsp. n., WARREN, p. 25, *t. c.* *E. himala*, var. *n. evanescens*, ALPHÉRAKY, p. 139, Romanoff Mem. ix.
- E. amygdalipennis*, Apia, p. 201, *delicatula*, Khasia hills, pl. v, fig. 7, *discata*, Celebes, *lugens*, Apia, p. 202, *nictitans*, Malay penins., *rhombifera*, Timor, p. 203, *ruptifascia*, Bali, p. 204, WARREN, Nov. Zool. iv; *E. morataria*, p. 185, *nubifasciaria*, p. 186, China, LEECH, Ann. Nat. Hist. xix; *E. caesia, niveipuncta*, Manilla, p. 25, *paradeicta*, Celebes, p. 26, WARREN, Nov. Zool. iv; *E. albiocellata*, Onoribo, p. 412, *draco, intervenata*, Bolivia, p. 413, WARREN, *t. c.* : n. spp.
- Epipristis minimaria*=(*oxycyma*, Meyr.), LOWER, p. 30, P. Linn. Soc. N. S. Wales, xxii.
- Epirranthis obfirmaria*, life-history, FYLES, p. 258, Canad. Ent. xxix.

- Epirrhoë latigrisea*, Zomba, WARREN, p. 72, Nov. Zool. iv; *E. crepuscularia*, Mindoro, WARREN, p. 234, t. c. *E. ? gelatina*, Mapiri, WARREN, p. 452, t. c. : n. spp.
- Episothalma marginata, semigrisea*, W. Africa, WARREN, p. 38, Nov. Zool. iv, n. spp.
- Erilyces solilucis*, var. n. *subintrusa*, WARREN, p. 421, t. c., n. sp.
- Erosia sigillata*, Madagascar, MABILLE, p. 228, Ann. Soc. ent. France, 1897, n. sp.
- Erosina foingi*, Ecuador, DOGNIN, p. 30, Ann. Soc. ent. Belgique, xli, n. sp.
- Eubolia cinigeraria*, Centr. Asia, ALPHÉRAKY, p. 59, pl. ii, figg. 15 & 16, Romanoff Mem. ix; *E. similaria*, China, LEECH, p. 554, Ann. Nat. Hist. xix : n. spp.
- Eubyja crenulata*, Natal, p. 90, *grisea*, Zomba, *subpunctata, trisecta*, Natal WARREN, p. 91, Nov. Zool. iv, n. spp.
- Euchlæna pyrotoca*, Talaut, MEYRICK, p. 79, Tr. ent. Soc. London, 1897, n. sp.
- Euchloris citrolimbaria*=(*Iodis illidgei*, Luc.), *E. metaspila*=(*I. eucalypti*, Luc.), *E. vertumnaria*=(*subalpina*, Luc.), LOWER, p. 29, P. Linn. Soc. N. S. Wales, xxii.
- E. ? viridifrons*, Amu Daria, WARREN, p. 389, Nov. Zool. iv; *E. ochrea*, E. Africa, WARREN, p. 210, pl. v, fig. 21, t. c. *E. oleagina*, Natal, WARREN, p. 38, t. c.; *E. insolitaria*, p. 236, *argentataria, nigromacularia, ornataria*, p. 237, China, *obsoletaria*, Japan, p. 238, *incomptaria, simplicitaria, striataria*, p. 239, China, LEECH, Ann. Nat. Hist. xx; *E. (Iodis) hypoleucus*, Queensland, LOWER, p. 263, P. Linn. Soc. N. S. Wales, xxii : n. spp.
- Eucrostes rubridisca*, E. Africa, WARREN, p. 38, Nov. Zool. iv; *E. impunctata*, Mombasa Is., pl. v, fig. 15, *nanula*, Cooktown, WARREN, p. 211, t. c.; *E. ? pruinosa*, Palestine, STAUDINGER, p. 303, Deutsche ent. Zeitschr. Lep. x : n. spp.
- Eudule costata*, Brazil, WARREN, p. 456, Nov. Zool. iv, n. sp.
- Eudulophasia*, n. g., *Eudulina*, type *Ameria invaria*, Wlk., WARREN, p. 456, t. c.
- Euephyra albidiscata*, Costa Rica, WARREN, p. 438, t. c., n. sp.
- Eugnesia*, n. g., *Deiliniina*, p. 76, for *E. correspondens*, Luzon, *E. ? aurantiaca*, Queensland, p. 77, *E. sanguinata*, New Guinea, p. 78, n. spp., WARREN, t. c.
- E. intensa*, Celebes, WARREN, p. 396, t. c., n. sp.
- Eulygris*, n. g., p. 82, for *E. declinans*, n. sp., p. 81, pl. iii, fig. 52, Amurland, STAUDINGER, Deutsche ent. Zeitschr. Lep. x.
- Eulype ? disparata*, Uganda, WARREN, p. 234, Nov. Zool. iv, n. sp.
- Eumelea ludovicata cupreata*, subsp. n., *E. sanguinata australiensis*, subsp. n., WARREN, p. 29, t. c.
- E. albimacula*, Obi, *semirosea*, Halmaheira, WARREN, p. 29, Nov. Zool. iv; *E. unilineata*, Borneo, WARREN, p. 387 : n. spp.
- Euomæa*, n. g., near *Prosopolopha*, for *E. unilineata*, n. sp., Zomba, WARREN, p. 124, Nov. Zool. iv.
- Euphia propinqua*, China, WARREN, p. 234, Nov. Zool. iv, n. sp.
- Eupithecia hyperboreata*, habits, distinctions, THURAU, Ent. Nachr. xxiii, pp. 145-147.
- E. carpophilata*, pl. iii, fig. 69, p. 108, *gigantea*, fig. 70, p. 109, *bohatschi*, fig. 73, p. 111, *suboxydata*, fig. 74, p. 112, *bella*, fig. 75, p. 115, *detritata*, fig. 77, p. 119, *subbreviata*, fig. 78, p. 120, Amurland, STAUDINGER, Deutsche ent. Zeitschr. Lep. x; *E. consortaria*, China, p. 66, *pryeriaria*, Japan, p. 67, *sinicaria*, China, *niphonaria*, p. 68, *carearia, costumaculata*, p. 69, Japan, *obliquaria, brevifasciaria*, p. 70, *mandarinaria*, p. 71, China, LEECH, Ann. Nat. Hist. xx : n. spp.

- Eurymene subpurpuraria*, W. China, LEECH, p. 227, Ann. Nat. Hist. xix, n. sp.
- Eurytaphria minorata*, Bali, WARREN, p. 255, Nov. Zool. iv, n. sp.
- Eurythecodes*, n. g., near *Spilopera*, for *E. nigricola*, *straminea*, Niger, n. spp., WARREN, p. 117, *t. c.*
- Eusarca*? *parallelaria*, Bogota, p. 490, *E. subfasciata*, Costa Rica, p. 491, WARREN, *t. c.*, n. spp.
- Eustenophasma*, n. g., near *Mychonia*, for *E. galeopsis*, n. sp., São Paulo, WARREN, p. 491, *t. c.*
- Eustroma exsecuta*, var. n. *latifasciaria*, LEECH, p. 568, Ann. Nat. Hist. xix.
- E. fractifasciaria*, p. 563, *propriaria*, p. 564, *pulchraria*, p. 566, *angularia*, p. 569, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Eutomopepla maculata*, S. America, WARREN, p. 492, Nov. Zool. iv, n. sp.
- Euxena insulsata*, Luzon, WARREN, p. 39, *t. c.*, n. sp.
- Exelis quadripuncta*, Parana, WARREN, p. 467, *t. c.*, n. sp.
- Falcinodes*? *rufula*, Bolivia, WARREN, p. 414, *t. c.*, n. sp.
- Fascellina deflavata*, Selangore, WARREN, p. 256, *t. c.*; *F. aurifera*, Borneo, WARREN, p. 118, *t. c.*, n. spp.
- Fidonia pratana*, var. n. *mortuaria*, STAUDINGER, p. 314, Deutsche ent. Zeitschr. Lep. x. *F. piniaria*, ravages and parasites, KNAUTH (599).
- F. strigosata*, Luzon, WARREN, p. 100, Nov. Zool. iv; *F. flavinigra*, Venezuela, WARREN, p. 475, *t. c.* : n. spp.
- Gandaritis reduplicata*, China, WARREN, p. 235, Nov. Zool. iv; *G. flavomacularia*, China, p. 678, LEECH, Ann. Nat. Hist. xix : n. spp.
- Gathynia albibasis*, var. n. *seminigra*, WARREN, p. 204, Nov. Zool. iv.
- G. fasciaria*, Korea, LEECH, p. 187, Ann. Nat. Hist. xix; *G. divaricata*, Celebes, WARREN, p. 26, Nov. Zool. iv; *G. lignata*, Bali, WARREN, p. 204, Nov. Zool. iv; *G. orbifera*, Amazons, WARREN, p. 414 : n. spp.
- Gelasma albidata*, Costa Rica, *munda*, La Plata, WARREN, p. 425, Nov. Zool. iv, n. spp.
- Genusa simplex*, Sulu arch., WARREN, p. 88, *t. c.*, n. sp.
- Glaucopteryx subalbata*, Sikkim, WARREN, p. 235, Nov. Zool. iv, n. sp.
- Gnophos exculta*, Butl. (sub *Tephrosia*), var. n. *brunnearia*, LEECH, p. 333, Ann. Nat. Hist. xix. *G. crassipunctata*, figure, ALPHÉRAKY, pl. viii, fig. 3, Romanoff Mem. ix.
- G. agnitaria*, Amurland, STAUDINGER, p. 62, pl. iii, fig. 40, Deutsche ent. Zeitschr. Lep. x; *G. subvariegata*, pl. iv, fig. 34, p. 311, *adjectaria*, fig. 35, p. 312, Palestine, STAUDINGER, *t. c.*; *G. approximaria*, p. 327, *minutaria*, p. 328, *lentiginosaria*, p. 329, *incolaria*, p. 330, *mandarinaria*, *punctivenaria*, p. 331, China, LEECH, Ann. Nat. Hist. xix : n. spp.
- Goniopteroloba conjuncta*, pl. v, fig. 9, p. 230, *fuscata*, fig. 8, p. 231, Philippines, WARREN, Nov. Zool. iv, n. spp.
- Gonodela perconfusa*, ♀, WARREN, p. 252, Nov. Zool. iv.
- G. commixta*, Niger, *distinguenda*, p. 106, *duplicilinea*, Natal, *impar*, Niger, p. 107, *multistrigata*, Natal, p. 108, WARREN, *t. c.*; *G. abbreviata*, Bali, WARREN, p. 251, *t. c.* : n. spp.
- Gonophaga*, n. g., *Ennominæ*, for *G. subpulchra*, n. sp., Queensland, WARREN, p. 400, *t. c.*
- Gonophylla ophiopa*, New Zealand, MEYRICK, p. 387, Tr. ent. Soc. London, 1897, n. sp.
- Grammicheila*, n. g. for *Metrocampa admirabilis*, Oberth., STAUDINGER, p. 3, Deutsche ent. Zeitschr. Lep. x.
- Gubaria fluidata*, Borneo, p. 108, *umbrata*, Natal, p. 109, WARREN, Nov. Zool. iv, n. spp.
- Gymnoscelis coquina*? var. n. *semiviridis*, WARREN, p. 228, *t. c.*

- G. albicaudata*, p. 228, *cristata*, India, *grisea*, Fergusson island, *perangusta*, Borneo, p. 229, WARREN, *t. c.*; *G. coquina*, Cooktown, p. 69, *pallidirufa*, Celebes, p. 70, WARREN, *t. c.* : n. spp.
- Gynopteryx* = (*Lissostolodes*, Warr.), WARREN, p. 493, *t. c.*
- G. ennomaria*, Paraguay, p. 492, *immaculata*, San Domingo, p. 493, WARREN, *t. c.* : n. spp.
- Hæmalea bimacula*, Demerara, p. 438, *delicata*, Jamaica, p. 439, WARREN, Nov. Zool. iv, n. spp.
- Halterophora fulgurata*, New Guinea, WARREN, p. 39, *t. c.*, n. sp.
- Hammaptera aurea*, Bogota, *pallidipars*, Colombia and Costa Rica, p. 452, *sublivescens*, Paraguay and Costa Rica, WARREN, p. 453, *t. c.*, n. spp.
- Hazis cyanoptera*, description figure, PAGENSTECHER, p. 458, Abh. Senckenb. Ges. xxiii.
- Hebdomophrua*, n. g., p. 100, near *Prosopolopha*, for *H. apicata*, *curvilinea*, n. spp., Natal, p. 101, WARREN, Nov. Zool. iv.
- Helicopage? velata*, Woodlark island, WARREN, p. 390, *t. c.*, n. sp.
- Hemerophila grummi*, figure, ALPHÉRAKY, pl. viii, fig. 4, Romanoff Mem. ix.
- H. conjunctaria*, pl. vii, fig. 9, *obscuraria*, p. 431, *latimarginaria*, p. 432, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Hemipogon*, n. g., *Sterrhinae*, for *H. narrata*, Tenimber, p. 54, *velutina*, Batchian, p. 55, n. spp., WARREN, Nov. Zool. iv.
- Hemistola flavitincta*, Khasia hills, WARREN, p. 211, *t. c.*, n. sp.
- Hemithea albistrigulata*, *approximans*, p. 39, *atridisca*, *malescripta*, *unilinea*, S. Africa, *simplex*, Java, p. 40, *vermiculata*, Niger, p. 41, WARREN, *t. c.*; *H. unilinearis*, p. 232, *mundaria*, p. 233, China, LEECH, Ann. Nat. Hist. xx : n. spp.
- Herbita? transversata*, Costa Rica, WARREN, p. 493, Nov. Zool. iv, n. sp.
- Hesperomiza*, n. g., p. 493, *Ennominae*, for *H. jaspidea*, n. sp., São Paulo, p. 494, WARREN, *t. c.*
- Heterephyra rubida*, Venezuela, WARREN, p. 439, *t. c.*, n. sp.
- Heterocallia*, n. g., near *Pericallia*, for *H. truncaria*, n. sp., Moupin, LEECH, p. 212, pl. vi, fig. 1, Ann. Nat. Hist. xix.
- Heterochasta lasioplaca*, Brisbane, LOWER, p. 14, P. Linn. Soc. N. S. Wales, xxii, n. sp.
- Heteroctenis*, n. g., *Sterrhidae*, p. 71, for *H. dracontias*, *tigrina*, n. spp., Borneo, p. 72, MEYRICK, Tr. ent. Soc. London, 1897.
- Heterolocha spurcata*, Natal, WARREN, p. 118, Nov. Zool. iv; *H. indiscretaria*, Madagascar, MABILLE, p. 227, Ann. Soc. ent. France, 1897; *H. latifasciaria*, p. 228, *fuscifasciaria*, *rosearia*, p. 230, *marginaria*, *quadraria*, pl. vi, fig. 8, p. 231, China, LEECH, Ann. Nat. Hist. xix : n. spp.
- Heteromiza unilinea*, Celebes, WARREN, pp. 118 & 256, Nov. Zool. iv, n. sp.
- Heterostegane indularia*, var. n. *calidata*, WARREN, p. 78, Nov. Zool. iv.
- H. aridata*, Natal, WARREN, p. 78, *t. c.*, n. sp.
- Heterusia albata*, p. 456, *flavipectus*, *funebri*, Bogota, *flavocellata*, p. 457, *particolor*, p. 458, Bolivia, WARREN, *t. c.*, n. spp.
- Hybernia leucophæaria*, var. SCHOPFER, p. 157, Deutsche ent. Zeitschr. Lep. x. *H. leucophæaria*, var. *nigrilinearia*, LEECH, p. 320, Ann. Nat. Hist. xix.
- H. verecundaria*, Japan, LEECH, p. 320, *t. c.*, n. sp.
- Hydatocapnia fumosa*, Niger, WARREN, p. 78, Nov. Zool. iv, n. sp.
- Hydrelia plenaria*, p. 77, *marmoraria*, *ochrearia*, p. 78, *straminearia*, *albidaria*, p. 79, *distinctaria*, *punctilinearia*, p. 80, *electaria*, p. 81, China, *angularia*, Japan, p. 82, LEECH, Ann. Nat. Hist. xx; *H. subrosea*, Bali, WARREN, p. 226, Nov. Zool. iv : n. spp.
- Hydriomena furcata*, notes on, PROUT, pp. 84, etc., Ent. Rec. 1897.
- H. hemizona*, New Zealand, MEYRICK, p. 385, Tr. ent. Soc. London, 1897, n. sp.

- Hylemera flavibasis*, Cameroons, WARREN, p. 241, Nov. Zool. iv; *H. nummulifera*, Congo, *renifera*, Sierra Leone, WARREN, p. 397, *t. c.* : n. spp.
- Hymenocharta*, n. g., near *Agirpa*, for *H. triplagiata*, n. sp., E. Africa, WARREN, p. 84, *t. c.*
- Hymenomima extersaria*, p. 467, *minuta*, Colombia, *semialba*, Amazons, p. 468, WARREN, *t. c.*, n. spp.
- Hyostomodes*, n. g., near *Tephрина*, for *H. nubilata*, n. sp., E. Africa, pl. v, fig. 11, WARREN, p. 252, *t. c.*
- Hyperplema*, n. g., p. 414, *Epiplemidæ*, for *H. rudis*, n. sp., Onoribo, p. 415, WARREN, *t. c.*
- Hypnochlora olvidaria*, Parana, SCHAUS, p. 161, J. N. York Ent. Soc. v, n. sp.
- Hypochrosis annulata*, description, figure, PAGENSTECHE, p. 456, pl. xviii, fig. 3, Abh. Senckenb. Ges. xxiii.
- Hypocæla*, n. g., near *Tanaorhinus*, for *H. subfulva*, n. sp., Niger, WARREN, p. 41, Nov. Zool. iv.
- Hyposidra variabilis*, var. n. *siccifolia*, WARREN, p. 119, *t. c.*
- H. cæsia*, Penang, *linearis*, Natal, *nivitacta*, Bonthain, p. 257, *unimacula*, Palawan, p. 258, WARREN, *t. c.*; *H. albifurcata*, Sulu islands, *prunicolor*, New Guinea, WARREN, p. 119, *t. c.* : n. spp.
- Idiodes(?) pyrrhopa*, Sydney, LOWER, p. 264, P. Linn. Soc. N. S. Wales, 1897, n. sp.
- Induna*, n. g., *Sterrhinæ*, for *I. rufisalsa*, n. sp., Natal, WARREN, p. 55, Nov. Zool. iv.
- Iodis dentifascia*, Japan, *micra*, Bali, WARREN, p. 212, *t. c.*; *I. languescens*, Paramaribo, WARREN, p. 425, *t. c.* : n. spp.
- Iridopsis perstrigata*, Bolivia, WARREN, p. 469, Nov. Zool. iv, n. sp.
- Isandria*, n. g., *Ascotinæ*, type *Tephrosia ineffectaria*, Wlk., WARREN, p. 469, *t. c.*
- Isoplenia*, n. g., p. 55, *Sterrhinæ*, for *I. trisinuata*, n. sp., Natal, p. 56, WARREN, *t. c.*
- Jankowskia confusa* (= *Boarmia superans*, Græs.), Amurland, STAUDINGER, p. 47, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Krananda lucidaria*, China, LEECH, p. 305, pl. vi, fig. 10, Ann. Nat. Hist. xix, n. sp.
- Kuldscha oberthuri*, figure, ALPHÉRAKY, pl. iv, fig. 8, Romanoff Mem. ix.
- Lampadopteryx*, n. g., *Palyadinæ*, p. 75, for *L. scintillans*, n. sp., Borneo, p. 76, WARREN, Nov. Zool. iv.
- Larentia plurilinearia*, p. 655, *nitidaria*, p. 657, *fractifasciaria*, *torpidaria*, p. 658, *rotundaria*, p. 659, *erebiaria*, p. 660, *confusaria*, p. 661, *nigri-fasciaria*, *nudaria*, p. 662, *perplexaria*, *variaria*, p. 663, *inconspicuararia*, p. 664, China, *punctilinearia*, Japan, *promiscuararia*, p. 665, *tripunctaria*, p. 666, *L.? intersectaria*, *costipunctaria*, p. 667, *bimaculararia*, p. 669, *costinotaria*, p. 670, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Lassaba subdecorata*, China, WARREN, p. 398, Nov. Zool. iv, n. sp.
- Lepiodes ocellata*, Zambesi, WARREN, p. 94, *t. c.*, n. sp.
- Leptacme*, n. g., p. 56, *Sterrhinæ*, for *L. malescripta*, n. sp., Natal, p. 57, WARREN, *t. c.*
- Leucomicra*, n. g., type *Erosia leucospilaria*, Wlk., WARREN, p. 494, *t. c.*
- Leuconotha*, n. g., *Epiplemidæ*, for *L. venosa*, n. sp., Venezuela, WARREN, p. 415, *t. c.*
- Leucula nana*, São Paulo, WARREN, p. 464, *t. c.*, n. sp.
- Ligdia interrupta*, Natal, WARREN, p. 88, *t. c.*; *L. japonaria*, pl. vii, fig. 1, p. 449, *ciliaria*, p. 450, Japan, LEECH, Ann. Nat. Hist. xix : n. spp.
- Lipomelia striata*, Niger, WARREN, p. 220, Nov. Zool. iv; *L. divaricata*, Venezuela, *subtincta*, Bolivia, WARREN, p. 439, *t. c.* : n. spp.
- Lobocraspeda*, n. g., *Braccinæ*, for *L. cæruleostriga*, n. sp., New Guinea, WARREN, p. 242, pl. v, fig. 3, *t. c.*

- Lobogonia parallelaria*, p. 550, *conspicuaris*, *fasciaria*, p. 551, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Lobophora exportata*, Amurland, STAUDINGER, p. 73, pl. iv, fig. 2, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Lophodes sinistraria*, metamorphoses, FROGGATT, p. 136, cuts, Agric. Gaz. N. S. W. 1897.
- Loxaspilates fixseni*, figured, ALPHÉRAKY, p. 62, pl. iv, fig. 6, Romanoff Mem. ix.
- L. straminearia*, p. 234, *nigromaculata*, *L. ? trilinearia*, p. 235, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Luxiaria taniata*, Niger, WARREN, p. 109, Nov. Zool. iv; *L. consimilaria*, China, LEECH, p. 304, Ann. Nat. Hist. xix; *L. ditrota*, Sambawa, MEYRICK, p. 76, Tr. ent. Soc. London, 1897 : n. spp.
- Lycauges acuta*, Natal, *concurrans*, Loangwa, *extremata*, Niger, WARREN, p. 57, Nov. Zool. iv, n. spp.
- Lygranoa sinuosaria*, p. 548, *grisearia*, p. 549, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Macaria normata*, pl. iv, fig. 2, *anomalata*, fig. 3, figured, ALPHÉRAKY, Romanoff Mem. ix.
- M. cataleucaria*, Zanzibar, MABILLE, p. 229, Ann. Soc. ent. France, 1897; *M. intermaculata*, Amurland, STAUDINGER, pl. i, fig. 28, p. 41, Deutsche ent. Zeitschr. Lep. x; *M. intermediaria*, p. 307, *monticolaria*, *elongaria*, pl. vi, fig. 14, p. 308, *intersectaria*, *ornataria*, p. 310, China, LEECH, Ann. Nat. Hist. xix : n. spp.
- Magida distincta*, Amazons, WARREN, p. 494, Nov. Zool. iv, n. sp.
- Medasina javensis*, Java, WARREN, p. 95, *t. c.*, n. sp.
- Megalochlora mandarinaria*, China, LEECH, p. 235, Ann. Nat. Hist. xx, n. sp.
- Megatheca*, n. g., near *Chloroclystis*, for *M. purpurea*, n. sp., Penang, WARREN, p. 230, Nov. Zool. iv.
- Melanchroia aterea notata*, subsp. n., WARREN, p. 463, *t. c.*
- Mesoglypta*, n. g., *Epiplemidæ*, for *M. fleximargo*, n. sp., Lombok, WARREN, p. 205, *t. c.*
- Mesomima*, n. g., near *Agirpa*, for *M. albifrons*, n. sp., Congo, WARREN, p. 85, *t. c.*
- Mesoptila anthracias*, Victoria, LOWER, p. 12, P. Linn. Soc. N. S. Wales, xxii, n. sp.
- Mesotype undata*, Amurland, STAUDINGER, pl. iii, fig. 44, p. 70, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Metabraxas luridaria*, *rufonotaria*, p. 451, *incompositaria*, p. 452, *M. ? nigromarginaria*, p. 453, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Metallochloa differens*, Tenimber, WARREN, p. 41, Nov. Zool. iv, n. sp.
- Metrocampa biplaga* = (*glaucias*, Meyr.), LOWER, p. 29, P. Linn. Soc. N. S. Wales, xxii.
- M. ferruginaria*, Comoro islds., MABILLE, p. 231, Ann. Soc. ent. France, 1897, n. sp.
- Miantonota integra*, Petropolis, WARREN, p. 425, Nov. Zool. iv, n. sp.
- Microdes typhopa*, S. Australia, LOWER, p. 50, Tr. R. Soc. S. Austral. xxi; *M. epicryptis*, New Zealand, MEYRICK, p. 384, Tr. ent. Soc. London, 1897 : n. spp.
- Microgonia apidania*, var. n. *bicolor*, p. 495, *M. olivacea*, var. n. *straminea*, p. 496, WARREN, Nov. Zool. iv.
- M. affinis*, S. America, *chalybeata*, São Paulo, p. 495, *lilacina*, Guiana p. 496, WARREN, *t. c.*, n. spp.
- Micrologia*, n. g., *Prosoplophinae*, p. 124, for *M. dolosa*, n. sp., Cape Good Hope, p. 125, WARREN, *t. c.*
- Microloxia ? pallida*, Canaries, WARREN, p. 390, Nov. Zool. iv, n. sp.
- M. ruficornis*, *M. ? serraticornis*, Natal, WARREN, pp. 42 & 212, *t. c.*; *M. bistriata*, S. Brazil, WARREN, p. 426, Nov. Zool. iv : n. spp.

- Micronidia simplicata*, var. n. *mediofusca*, WARREN, p. 238, *t. c.*
Microxena, n. g., near *Peratophyga*, for *M. invalida*, n. sp., Bali, WARREN, p. 238, *t. c.*
Milionia flavotogata, description, figure, PAGENSTECHEER, p. 457, pl. xix, fig. 5, Abh. Senckenb. Ges. xxiii. *M. flavotogata*, Pag., referred to *Bociraza*, and is *B. recurvata*, Wlk., *M. cyanifera* (= *auriflamma*, Th.-Mieg.), var. n. *gilolensis*, ROTHSCHILD, p. 512, Nov. Zool. iv. *M. rawakensis*, variation, etc., THIERRY-MIEG, p. 44, Bull. Soc. ent. France, 1897.
M. auriflamma, Batchian, THIERRY-MIEG, p. 44, Bull. Soc. ent. France, 1897; *M. dohertyi*, New Guinea, ROTHSCHILD, p. 313, pl. vii, fig. 11, Nov. Zool. iv; *M. dulitana*, Sarawak, *assimilis*, New Hanover, *rona*, p. 510, *dubiosa*, New Guinea, *websteri*, New Hanover, p. 511, *meforana*, New Guinea, p. 512, ROTHSCHILD, *t. c.* : n. spp.
Mimogonodes? squamata, Bolivia, WARREN, p. 497, Nov. Zool. iv, n. sp.
Mixochlora alternata, Luzon, WARREN, p. 42, Nov. Zool. iv, n. sp.
Mnesampela petrochroa, S. Australia, LOWER, p. 15, P. Linn. Soc. N. S. Wales, xxii, n. sp.
Mnesigea, n. g., *Ascotinae*, for *M. sinuata*, S. Australia, n. sp., WARREN, p. 95, *t. c.*
Mnesithetis inobtrusa, Celebes, *ochrea*, Woodlark island, WARREN, p. 393, *t. c.*, n. sp.
Molybdogompha, n. g., *Palyadinae*, p. 460, for *M. biseriata*, n. sp., Paraguay, p. 461, WARREN, *t. c.*
Momonipta, n. g., *Cylopodinae*, for *M. albiplaga*, n. sp., Colombia, WARREN, p. 421, *t. c.*
Monoctenia polyspila, Queensland, LOWER, p. 263, P. Linn. Soc. N. S. Wales, xxii, n. sp.
Myrteta sinensaria, pl. vi, fig. 13, *tripunctaria*, p. 195, *argentaria*, p. 196, China, LEECH, Ann. Nat. Hist. xix, n. spp.
Nadagara albovenaria, Japan, LEECH, p. 302, Ann. Nat. Hist. xix, n. sp.
Nadagarodes turpis, Bali, WARREN, p. 253, Nov. Zool. iv, n. sp.
Naxa margaritaria, *angustaria*, p. 545, *contraria*, *montanaria*, *obliquaria*, p. 546, China, LEECH, Ann. Nat. Hist. xix, n. spp.
Neagathia, n. g., type *Nemoria corruptata*, Feld., WARREN, p. 426, Nov. Zool. iv.
Nelo flora, Bolivia, p. 463, *satellitica*, Costa Rica, p. 464, WARREN, *t. c.*, n. spp.
Nemora masonaria, Jalapa, SCHAUS, p. 161, J. N. York Ent. Soc. v, n. sp.
Nemoria chlorinaria, Madagascar, p. 230, *viridellaria*, Mauritius, *aequaria*, Madagascar and Comoro islands, p. 231, MABILLE, Ann. Soc. ent. France, 1897; *N. rectilineararia*, China, LEECH, p. 241, Ann. Nat. Hist. xx : n. sp.
Neochorista, n. g., type *Paida transpecta*, Hub., WARREN, p. 440, Nov. Zool. iv.
Neodora, n. g., near *Sabulodes*, for *N. costinotata*, Colombia, n. sp., WARREN, p. 497, *t. c.*
Neolythria djrouchiaria, var. n. *montana*, pl. vii, fig. 11, *N. abraxaria*, var. n. *confinaria*, LEECH, p. 460, Ann. Nat. Hist. xix.
N. consimilaria, *oberthuri*, pl. vii, fig. 6, p. 461, China, *nubiferaria*, Tibet, p. 462, LEECH, Ann. Nat. Hist. xix, n. spp.
Nepheloleuca acuta, Cuba, WARREN, p. 498, Nov. Zool. iv, n. sp.
Nephodia albinigra, Bolivia, WARREN, p. 464, *t. c.*, n. sp.
Neromia, n. g. for *Nemoria jodisata*, n. sp., Palestine, pl. iv, fig. 28, STAUDINGER, p. 304, Deutsche ent. Zeitschr. Lep. x.
Nesalcis, n. g. for *Alcis? fuscibrunnea*, WARREN, p. 96, Nov. Zool. iv.
Neurotoea, n. g., near *Euchloris*, for *N. notata*, n. sp., E. Africa, WARREN, p. 43, *t. c.*

- Nobilis obliterata*, Borneo, WARREN, p. 220, *t. c.*; *N. nebulosa*, Amboyna, WARREN, p. 58, *t. c.*, n. spp.
- Noreia muricolor*, Natal, WARREN, p. 30, *t. c.*; *N. albifimbria*, Celebes, WARREN, p. 206, *t. c.*; *N. papuensis*, New Guinea, WARREN, p. 387, *t. c.* : n. spp.
- Nothabraxas*, n. g., near *Negeta*, for *N. commaculata*, n. sp., E. Africa, WARREN, p. 88, *t. c.*
- Nothomiza costalis*, var. n. *intensa*, WARREN, p. 120, *t. c.*
- N. binotata*, *nana*, Khasia hills, WARREN, p. 239, Nov. Zool. iv, n. spp.
- Notoreas isoleuca*, New Zealand, MEYRICK, p. 386, Tr. ent. Soc. London, 1897, n. sp.
- Numeraria pulveraria*, var., BASTELBERGER, p. 216, Ent. Zeit. Stettin, lviii.
- Nychiodes gigantaria*, Amurland, STAUDINGER, pl. i, fig. 32, p. 48, Deutsche ent. Zeitschr. Lep. x.
- Nyctibadistes*, n. g., p. 415, *Epiplemidæ*, near *Gathynia*, for *N. informis*, n. sp., Amazons, p. 416, WARREN, Nov. Zool. iv.
- Obeidia gigantearia*, *conspurcata*, China, LEECH, p. 458, Ann. Nat. Hist. xix, n. spp.
- Ochyria dispar*, Luzon, WARREN, p. 72, Nov. Zool. iv, n. sp.
- Odontopera? ochraceata*, Amurland, STAUDINGER, p. 34, pl. iv, fig. 1, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Odontoptila*, n. g., *Sterrhinæ*, for *O. brunnea*, p. 440, São Paulo, *cubitata*, *margarita*, Venezuela, p. 441, n. spp., WARREN, Nov. Zool. iv.
- Enochroma simplex*, W. Australia, WARREN, p. 206, *t. c.*, n. sp.
- Enoptila*, n. g., *Selidoseminæ*, type *Oxydia mixtata*, Gn., WARREN, p. 475, Nov. Zool. iv, *Æ. rubra*, Jamaica, p. 476, *id. t. c.*, n. sp.
- Enospila flavilinea*, Cooktown, WARREN, p. 212, *t. c.*, n. sp.
- Enothalia*, n. g., *Selidoseminæ*, p. 475, type *alexonaria*, Wlk. with *Æ. subochrea*, n. sp., Demerara, p. 476, WARREN, *t. c.*
- Oligopleura aulæata*, var. n. *diversicolor*, WARREN, p. 449, *t. c.*
- Omiza tortuosa*, Congo, WARREN, p. 258, pl. v, fig. 24, *t. c.*; *O. chlorophora*, Wetter, *informis*, Sylhet, WARREN, p. 120, *t. c.*; *O. sublimbaria*, Borneo, WARREN, p. 401, *t. c.* : n. spp.
- Onycodes rubra*, Queensland, WARREN, p. 27, *t. c.*, n. sp.
- Oospila*, n. g., p. 426, for *O. hyalina*, Colombia, *marginata*, *violacea*, Brit. Guiana, n. spp., p. 427, WARREN, *t. c.*
- Ophthalmodes ruficornis*, Celebes, WARREN, p. 249, *t. c.*; *O. subpicaria*, China, LEECH, p. 335, Ann. Nat. Hist. xix : n. spp.
- Opisthoxia nitidisquama*, Demerara, WARREN, p. 461, Nov. Zool. iv, n. sp.
- Oporabia? productaria*, China, LEECH, p. 671, Ann. Nat. Hist. xix, n. sp.
- Organopoda subbrunnea*, Celebes, WARREN, p. 393, Nov. Zool. iv, n. sp.
- Oricia biplagiata*, Bolivia, WARREN, p. 421, Nov. Zool. iv, n. sp.
- Orthocabera conspicua*, Celebes, WARREN, p. 79, *t. c.*, n. sp.
- Ortholitha erschoffi*, Centr. Asia, ALPHÉRAKY, p. 65, Romanoff Mem. ix, n. sp.
- Ourapteryx convergens*, Simla, *incaudata*, Kina Balu, WARREN, p. 75, Nov. Zool. iv, n. spp.
- Oxydia yema*, Ecuador, DOGNIN, p. 30, Ann. Soc. ent. Belgique, xli, n. sp.
- Ozola pulverulenta*, Weenen, WARREN, p. 30, Nov. Zool. iv; *O. decolorata*, Bali, WARREN, p. 207, *t. c.*; *O. sinuata*, Sumba, WARREN, p. 387, *t. c.*; *O. spilotis*, Sambawa, MEYRICK, p. 74, Tr. ent. Soc. London, 1897 : n. spp.
- Pachycopsis*, n. g., *Geometrinæ*, for *P. tridentata*, n. sp., Paramaribo, WARREN, p. 428, Nov. Zool. iv.
- Pachythalia*, n. g., p. 220, near *Perixera*, for *P. rotundata*, n. sp., Penang, p. 221, WARREN, *t. c.*
- Pamphlebia*, n. g., *Geometrinæ*, type *rubrolimbaria*, Gn., WARREN, p. 213, *t. c.*

- Panæthia maculosa*, Sumatra, KIRBY (587), v, p. 239, pl. cxlviii, fig. 4, n. sp.
Parabraxas, n. n. for *Oberthuria*, Leech, (cf. ante, p. 212), LEECH, p. 110, Ann. Nat. Hist. xx.
Parachoreutes subpurpurea, British Guiana, WARREN, p. 417, Nov. Zool. iv, n. sp.
Paracomistis subtractata, Surinam, WARREN, p. 498, *t. c.*, n. sp.
Paracrocota, n. g., *Ennominae*, for *P. epionata*, p. 258, Niger, *perviata*, Madagascar, p. 259, n. spp., WARREN, *t. c.*
Paradirades maculata, Bali, WARREN, p. 205, *t. c.*, n. sp.
Paragonia maculata, Costa Rica, WARREN, p. 498, *t. c.*, n. sp.
Paralæa maritima, S. Australia, LOWER, p. 51, Tr. R. Soc. S. Austral. xxi, n. sp.
Parametrodes, n. g., near *Petelia*, for *P. dispar*, n. sp., Cooktown, WARREN, p. 250, Nov. Zool. iv.
Paraprasina, n. g., *Geometrinae*, for *P. discolor*, n. sp., S. Africa, WARREN, p. 43, *t. c.*
Parasyngia convergens, Khasia hills, WARREN, p. 79, *t. c.*; *P. nigriclavata*, Khasia hills, WARREN, p. 80, *t. c.*; *P. nigrifrons*, Bonthain, WARREN, p. 239, *t. c.* : n. spp.
Pareuchloris? salsa, Sierra Leone, WARREN, p. 43, *t. c.*, n. sp.
Paromphacodes, n. g., p. 428, *Geometrinae*, for *P. rubrimargo*, São Paulo, *rubristellata*, Bogotà, n. spp., p. 429, WARREN, *t. c.*
Parrhesia, n. g., *Nephodiinae*, for *P. illineata*, *nigrivena*, n. spp., Bogotà, and including *cissa*, *claelia*, *philyra*, Druce, WARREN, p. 465, *t. c.*
Pellonia grumaria, figure, ALPHÉRAKY, pl. iv, fig. 1, Romanoff Mem. ix.
Pelurga straminea, Argentina, WARREN, p. 454, Nov. Zool. iv, n. sp.
Peratostega, n. g., near *Stegania*, for *P. coctata*, n. sp., Borneo, WARREN, p. 80, *t. c.*
Percnia longimacula, Kulu; WARREN, p. 89, *t. c.*; *P. grisearia*, *fumidaria*, China, LEECH, p. 455, Ann. Nat. Hist. xix : n. spp.
Pergama albivena, S. America, *lignata*, p. 499, *plagodiata*, Venezuela, *uniformis*, Parana, p. 500, WARREN, Nov. Zool. iv, n. spp.
Pericallia marmorataria, p. 207, pl. vi, fig. 15, *productaria*, *olivaria*, p. 208, *crenularia*, *latimarginaria*, *variaria*, p. 209, China, LEECH, Ann. Nat. Hist. xix, n. spp.
Peridela, n. g., near *Gonodela*, for *P. crassata*, *curvifascia*, Loangwa, *interrupta*, Natal, p. 100, *triumbrata*, Penang, p. 101, n. spp., WARREN, Nov. Zool. iv.
Perissopteryx, n. g., near *Thysanopyga*, for *P. delusa*, n. sp., Costa Rica, WARREN, p. 477, *t. c.*
Perixera mediusta, referred to *Brachycola*, WARREN, p. 392, Nov. Zool. iv, *P. confiniscripta rubripuncta*, subsp. n., *id.*, p. 394.
P. imbuta, Khasia hills, *transversata*, N. Queensland, WARREN, p. 58, *t. c.*; *P.? radiata*, Bonthain, *P. rufannularia*, Apia, WARREN, p. 222, *t. c.*; *P. subsimilis*, Celebes, *P.? pleniluna*, Penang, WARREN, p. 394, *t. c.*; *P. homostola*, Talaut, MEYRICK, p. 72, Tr. ent. Soc. London, 1897 : n. spp.
Perizoma fasciolata, Paraguay, WARREN, p. 454, Nov. Zool. iv, n. sp.
Perusia elegans, *pulverosa*, Bolivia, p. 501, *sticta*, Colombia, p. 502, WARREN, *t. c.*, n. spp.
Petelia strigata, Natal, p. 103; *P. furva*, Celebes, p. 398, *P. interrupta*, Parana, p. 476, WARREN, Nov. Zool. iv, n. spp.
Petrodava olivata, E. Africa, WARREN, p. 253, Nov. Zool. iv; *P.? nigripuncta*, Australia, WARREN, p. 111, Nov. Zool. iv : n. spp.
Phaselia? dentilinea, S. Africa, pl. v, fig. 5, p. 245, WARREN, Nov. Zool. iv, n. sp.
Phellinodes conifera, Paramaribo, p. 417, *nigrimacula*, Bolivia, p. 418, WARREN, *t. c.*, n. spp.

- Phibalapteryx tersata*, var. n. *chinensis*, LEECH, p. 561, Ann. Nat. Hist. xix.
P. macularia, *flavovenata*, China, LEECH, p. 562, Ann. Nat. Hist. xix,
 n. spp.
Phigalia sinuosaria, Japan, LEECH, p. 321, *t. c.*, n. sp.
Phorodesma pustulata, larval habits, AULD, p. 301, Entomologist, 1897.
P. pulchra, Palestine, STAUDINGER, p. 302, pl. iv, fig. 27, Deutsche ent.
 Zeitschr. Lep. x; *P. ? nemoriata*, Amurland, STAUDINGER, p. 9, *t. c.* :
 n. spp.
Photoscotosia funebris, ♀, WARREN, p. 235, Nov. Zool. iv. *P. leechi*,
 figure, ALPHÉRAKY, pl. iv, fig. 7, Romanoff Mem. ix.
P. fasciaria, Tibet, p. 672, *albomacularia*, p. 673, *pallifasciaria*, p. 674,
rectilinearis, p. 675, *apicinatoria*, p. 675, *propugnataria*, p. 676, China,
 LEECH, Ann. Nat. Hist. xix : n. spp.
Phrissosceles argyromma, var. n. *heterospila*, WARREN, p. 222, Nov. Zool. iv.
Phrudocentra pupillata, Demerara, WARREN, p. 429, *t. c.*, n. sp.
Phyletis silonaria, characters, the genus, WARREN, p. 222, *t. c.*
Phyllabraxas, n. g., near *Arichanna*, for *P. curvaria*, pl. vii, fig. 3, *similaria*,
 p. 441, *exoletaria*, p. 442, with var. *divisaria*, *conspicuaris*, p. 443,
 n. spp., China, LEECH, Ann. Nat. Hist. xix.
Phyllodonta ustanalis, São Paulo, WARREN, p. 502, Nov. Zool. iv, n. sp.
Physetobasis heliocoma, Sambawa, MEYRICK, p. 70, Tr. ent. Soc. London,
 1897, n. sp.
Physocleora, n. g., near *Hymenomima*, type *punctilla*, Schaus, with *P.*
pauper, Surinam, p. 469, *pusilla*, Venezuela, p. 470, n. spp., WARREN,
 Nov. Zool. iv.
Pingasa subpurpurea, Borneo, WARREN, p. 31, *t. c.*, n. sp.
Pisoraca punctata, Cooktown, WARREN, p. 222, *t. c.*, n. sp.
Pitthea fractimacula, Stanley Pool, WARREN, p. 242, *t. c.*, n. sp.
Platycerota crinita, Luzon, WARREN, p. 120, *t. c.*, n. sp.
Plemyria hastata, var. n. *chinensis*, LEECH, p. 570, Ann. Nat. Hist. xix.
P. parvularia, *fatuaria*, p. 571, *castaria*, p. 572, *bellaria*, p. 573, China,
 LEECH, *t. c.*, n. spp.
Plerocymia albiclauca, Natal, *nigrocellata*, Uganda, pl. v, fig. 6, WARREN,
 p. 236, Nov. Zool. iv, n. spp.
Pleuroprucha ochrea, Venezuela, *roseipuncta*, Paramaribo, WARREN, p. 442,
t. c., n. spp.
Plutodes hilaropa, Pulo Laut, MEYRICK, p. 75, Tr. ent. Soc. London, 1897,
 n. sp.
Pœcitalcis subtinctoria, Luzon, WARREN, p. 96, Nov. Zool. iv, n. sp.
Pogonopygia nigralbata, subsp. n. *attenuata*, WARREN, p. 240, *t. c.*
Polygraphodes, n. g., *Sterrhina*, for *P. boarmiata*, n. sp., Petropolis,
 WARREN, p. 442, *t. c.*
Polystroma, n. g., near *Melitulias*, p. 236, for *P. subspissata*, n. sp., Natal,
 p. 237, WARREN, *t. c.*
Pomasia albolinearia, China, LEECH, p. 679, Ann. Nat. Hist. xix; *P.*
euryopis, p. 69, *gelastis*, p. 70, Pulo Laut, MEYRICK, Tr. ent. Soc.
 London, 1897 : n. spp.
Potera albiquadrata, Batchian, WARREN, p. 89, Nov. Zool. iv, n. sp.
Prasinocyma, n. g., near *Thalassodes*, for *P. rufitincta*, Lifu, *unipunctata*,
 Natal, n. spp., WARREN, p. 44, *t. c.*
P. albipunctata, Sumba, WARREN, p. 390, *t. c.*, n. sp.
Pristostegania, n. g., near *Stegania*, type *trilineata*, Moore, for *P. ? bilineata*,
 Borneo, *P. flavata*, Natal, n. spp., WARREN, *t. c.*, p. 81.
Problepsis auriculifera, Singapore, *digammata*, Natal; *hemicyclata*, Kei
 Toeal, WARREN, p. 59, *t. c.*; *P. craspediata*, New Guinea, WARREN, p.
 222, *t. c.*, n. spp.
Probosceles, n. g. for *quadrinotata*, Butl., MEYRICK, p. 73, Tr. ent. Soc.
 London, 1897.

- P. pallidicincta*, Java, WARREN, p. 213, Nov. Zool. iv, n. sp.
Prochærodes pilosa, Colombia, WARREN, p. 502, *t. c.*, n. sp.
Prochasma, n. g., near *Stegania*, for *P. mimica*, n. sp., Khasia hills, WARREN, p. 81, *t. c.*
Procypha, n. g., near *Proboloptera*, for *P. maculosata*, n. sp., Cape Good Hope, WARREN, *t. c.*, p. 121.
Progonodes, n. g., p. 429, for *Racheospila stagonata*, Feld., WARREN, *t. c.*
Psaliodes confusa, Jamaica, WARREN, p. 454, *t. c.*, n. sp.
Pseudalcis, n. g., near *Medasina*, p. 96, for *P. catoriata*, *cinerascens*, Pulo Laut, *P. ? pectinata*, Niger, n. spp., pp. 97 & 249, WARREN, *t. c.*
Pseudasthena sordida, Timor, WARREN, p. 223, *t. c.*, n. sp.
Pseudopanthera iogramma, W. Australia, MEYRICK, p. 377, Tr. ent. Soc. London, 1897, n. sp.
Pseudoterpna koreana, Korea, ALPHÉRAKY, p. 181, pl. x, fig. 6, Romanoff Mem. ix; *P. singularis*, Victoria, KERSHAW, p. 104, pl., Victorian Natural. xiv : n. spp.
Psilocambogia undulosaria, Amboyna, WARREN, p. 227, Nov. Zool. iv, n. sp.
Psilocerea, referred to *Ennominae*, *P. apicata* = (*P. apiciata*, Warr.), WARREN, p. 402, *t. c.*
P. apicata, Natal, *nigromaculata*, Madagascar, WARREN, p. 98, *t. c.*; *P. apiciata*, S. Africa, WARREN, p. 259, *t. c.* (cf. supra) : n. spp.
Psilopora, n. g., *Ascotinae*, type *thesea*, Schaus, WARREN, p. 470, *t. c.*
Psilotaphria viridulata, Khasia hills, WARREN, p. 259, *t. c.*, n. sp.
Psyra rufolinearia, W. China, LEECH, p. 212, Ann. Nat. Hist. xix, n. sp.
Ptochophyle ephyrata, Tenimber, *P. ? pulverulenta*, Perak, WARREN, p. 60, Nov. Zool. iv, n. spp.
Ptychopoda semisericea, Khasia hills, p. 60, *nigrosticta*, Natal, p. 61, WARREN, *t. c.*; *P. angustipennis*, Cooktown, *carneola*, Penang, p. 223, *crinipes*, Queensland, *exilnota*, Natal, p. 224, WARREN, *t. c.*; *P. ? amplimargo*, Petropolis, *jamaicensis*, Jamaica, *P. limitata*, Venezuela, p. 443, *percrinita*, S. Brazil, *rosea*, Paramaribo, *subpilosa*, Venezuela, p. 444, *subvestita*, Petropolis, *triangularis*, São Paulo, p. 445, *P. ? virginea*, Paramaribo, p. 446, WARREN, *t. c.* : n. spp.
Racheospila arpata, Rio Janeiro, SCHAUS, p. 161, J. N. York Ent. Soc. v; *R. concentrata*, Jamaica, *dentilinea*, *R. ? jaspidata*, Demerara, p. 430, *R. rosipara*, Venezuela, p. 431, WARREN, Nov. Zool. iv : n. spp.
Racotis boarmiaria rufaria, subsp. n., WARREN, p. 98, *t. c.*
Ratiaria citrina, Jamaica, WARREN, p. 459, *t. c.*, n. sp.
Remodes ? confusidentata, Natal, *denigrata*, Perak, WARREN, p. 66, *t. c.*; *R. cirrhigera*, Woodlark Is., WARREN, p. 395, *t. c.*; *R. curticornis*, Borneo, p. 231, *contorta*, Penang, *pallidiplaga*, Java, p. 232, WARREN, *t. c.* : n. spp.
Rhinodia ? sordidata, Natal, WARREN, p. 111, *t. c.*, n. sp.
Rhodophthitus ? simplex, Lake Nyassa, WARREN, p. 89, *t. c.*, n. sp.
Rhodostrophia muricolor, Simla, WARREN, p. 61, *t. c.*; *R. subrufa*, Simla, WARREN, p. 224, *t. c.*; *R. farinosa*, Tibet, WARREN, p. 394, *t. c.*; *R. ? sinuosaria*, China, LEECH, p. 108, Ann. Nat. Hist. xx : n. spp.
Rhomborista, n. g., near *Ænospila*, type *deverata*, Wlk., p. 44, with *R. semipurpurea*, n. sp., Chittagong hills, p. 45, WARREN, Nov. Zool. iv.
R. undiferata, Wlk. (sub *Comibaena*), characters and variation, WARREN, p. 391, *t. c.*
Rhopatista, n. g., *Hydriomeninae*, type *ignifera*, Mieg, with *R. fulvifusa*, n. sp., Costa Rica, WARREN, *t. c.*, p. 455.
Rhynchobapta flavicostaria, China, LEECH, p. 303, Ann. Nat. Hist. xix, n. sp.
Rumia trimaculata, pl. vi, fig. 9, *inornataria*, China, LEECH, p. 298, *t. c.*, n. spp.

- Sabulodes? bilineata*, Colombia, WARREN, p. 503, Nov. Zool. iv, n. sp.
Sauris nigrilinearia, nanaria, Japan, LEECH, p. 76, Ann. Nat. Hist. xx, n. spp.
Scardamia maculata, E. Africa, WARREN, p. 240, Nov. Zool. iv; *S. obliquaria*, Korea, LEECH, p. 202, Ann. Nat. Hist. xix : n. spp.
Scioglyptis lithina, Queensland, *semifascia*, New Guinea, WARREN, p. 99, Nov. Zool. iv, n. spp.
Scotopterix lignicolor, Borneo, WARREN, p. 90, t. c., n. sp.
Scotosia multilinearia, bipunctularia, p. 555, *fasciaria*, p. 557, *grisearia*, p. 558, *marmoraria*, p. 559, *interruptaria*, p. 560, China, LEECH, Ann. Nat. Hist. xix, n. spp.
Selenia sordidaria, p. 205, *S.? crenularia, bilinearia*, p. 206, China, LEECH, Ann. Nat. Hist. xix, n. spp.
Seleniopsis grisearia, Moupin, LEECH, p. 224, t. c., n. sp.
Selidoscma catotæniaria, var. *restrictaria*, LEECH, p. 336, t. c.
S. cremnopa, Auckland, MEYRICK, p. 387, Tr. ent. Soc. London, 1897, n. sp.
Semiothisa emersaria and *translineata*, Wlk. are one, WARREN, p. 399, Nov. Zool. iv.
S. parallacta, Zomba, WARREN, pp. 112, 399, t. c.; *S. masonata*, Jalapa, *paranaria*, Castro, SCHAUS, p. 163, J. N. York Ent. Soc. v; *S. collineata*, Amazons, *crepuscularia*, São Paulo, p. 478, *debiliata*, Venezuela, *fidelis*, Costa Rica, p. 479, *impicta*, Colombia, *inexcisa*, Trinidad, *nigropunctata*, Venezuela, p. 480, *nitidata*, Amazons, *occultata*, p. 481, *senescens, subclathrata*, p. 482, Brazil, *subvalida*, Paraguay, *trigonata*, Petropolis, p. 483, WARREN, Nov. Zool. iv : n. spp.
Siculodopsis, n. g., *Epiplemidæ*, for *S. flaviceps*, n. sp., S. Brazil, WARREN, p. 416, Nov. Zool. iv.
Sicya inquinata, Venezuela, WARREN, p. 503, t. c., n. sp.
Sicyodes ocellata, Natal, WARREN, p. 260, t. c., n. sp.
Simopteryx subflavata, Bolivia, WARREN, p. 503, t. c., n. sp.
Simotricha, n. g., p. 395, near *Chloroclystis*, for *S. conversa*, n. sp., Khasia hills, p. 396, WARREN, t. c.
Sirinopteryx rufivinctata, var. n. *interfuscata*, WARREN, p. 122, t. c.
Somatina figurata, Natal, WARREN, p. 61, t. c., n. sp.
Spilocraspeda? canisquama, S. circumscripta, Colombia, p. 504, *innotata*, Venezuela, *S.? nigripunctata*, Bolivia, p. 505, WARREN, t. c., n. spp.
Spiloctenia, n. g., *Heterusiinæ*, for *S. ocellata*, n. sp., Reyes, WARREN, p. 458, t. c.
Spilopera angularia, p. 300, *crenularia, S.? roseimarginaria*, p. 301, China, LEECH, Ann. Nat. Hist. xix, n. spp.
Stegania irroraria, Japan and China, LEECH, p. 203, Ann. Nat. Hist. xix, n. sp. [but *op. cit.* xx, p. 245 said to be *hyriaria*, Warr.].
Steirophora, n. g., near *Sauris*, for *S. auratisquama*, Java, *punctatissima*, Celebes, n. spp., and including *Phthonoloba olivacea*, Warr., WARREN, p. 67, Nov. Zool. iv.
Stenalcidia, n. g., *Ascotinæ*, p. 470, type *quisquiliaria*, Gu., with *S. differens*, Paraguay, *farinosa*, Venezuela, p. 471, *fusca, pulverosa*, Paraguay, p. 472, WARREN, t. c., n. spp.
Stenocharta picaria, New Guinea, WARREN, p. 397, t. c., n. sp.
Stenoplastis trimacula, Colombia, WARREN, p. 422, t. c., n. sp.
Sterrho associata, obliquiscripta, picta, p. 62, *punctilineata*, p. 63, Natal, WARREN, t. c.; *S. rhodocosma*, S. Australia, LOWER, p. 14, P. Linn. Soc. N. S. Wales, xxii; *S.? baptata*, Apia, WARREN, p. 224, Nov. Zool. iv : n. spp.
Stibaroma hemadelpa, N. S. Wales, LOWER, p. 265, P. Linn. Soc. N. S. Wales, 1897, n. sp.
Strophoptila, n. g., *Sterrhinæ*, for *S. informis*, n. sp., Khasia hills, WARREN, p. 225, Nov. Zool. iv.

- Symmacra carnearia*, Borneo, WARREN, p. 63, *t. c.*, n. sp.
Syncosmia, n. g., near *Chloroclystis*, p. 70, for *S. patinata*, n. sp., Khasia hills, p. 71, WARREN, *t. c.*
Syndromodes, n. g., near *Lasiochlora*, for *S. punctilineata*, *unicolor*, n. spp., S. Africa, WARREN, p. 45, *t. c.*
S. rubridentata, E. Africa, WARREN, p. 213, *t. c.*, n. sp.
Synecta, n. g., near *Hymenomima*, p. 472, for *S. cuneifuscia*, *griseola*, n. spp., Mapiri, p. 473, WARREN, *t. c.*
Synegia rosearia, China, LEECH, p. 204, Ann. Nat. Hist. xix, n. sp. [but *op. cit.* xx, p. 245 is said to be *purpurascens*, Warr.]
Synopsia? *octopunctata*, Natal, WARREN, p. 92, Nov. Zool. iv; *S. austerraria*, China, LEECH, p. 430, Ann. Nat. Hist. xix : n. spp.
Syntaracta limitata, China, WARREN, p. 396, Nov. Zool. iv, n. sp.
Syrrhizodes, n. g., p. 505, *Ennominae*, for *S. deludens*, n. sp., Amazons, p. 506, WARREN, *t. c.*
Syrtodes zofra, Ecuador, DOGNIN, p. 247, Ann. Soc. ent. Belgique, xli, n. sp.
Tachyphyle janeira, Rio Janeiro, SCHAUS, p. 162, J. N. York Ent. Soc. v, n. sp.
Teniphila, n. g. for *Acidalia unio*, Oberth. (= *askoldaria*, Christ.), STAUDINGER, p. 21, Deutsche ent. Zeitschr. Lep. x.
Tanaostyla, n. g., *Cylopodinae*, for *T. dilucida*, Colombia, p. 422, *unimacula*, Bolivia, p. 423, n. spp., WARREN, Nov. Zool. iv.
Tasta chalybeata, Celebes, WARREN, p. 76, *t. c.*, n. sp.
Taxeotis goniogramma, p. 376, *pelopa*, p. 377, Australia, MEYRICK, Tr. ent. Soc. London, 1897, n. spp.
Tephрина deerraria, Wlk., var. n. *dissocia*, WARREN, p. 112, Nov. Zool. iv.
T. antennata, E. Africa, WARREN, p. 399, *t. c.*; *T. furcata*, p. 112, *geminata*, *inconspicua*, p. 113, Natal, WARREN, *t. c.*; *T. subcurvaria*, W. Africa, MABILLE, p. 228, Ann. Soc. ent. France, 1897; *T. verecundaria*, W. China, LEECH, p. 312, Ann. Nat. Hist. xix : n. sp.
Tephrinopsis congener, Luzon, p. 113, *marmorata*, Natal, p. 114, WARREN, Nov. Zool. iv; *T. semipallida*, Nov. Friborgo, WARREN, p. 483, Nov. Zool. iv : n. sp.
Tephroclystia sagittata, Natal, WARREN, p. 71, Nov. Zool. iv; *T. ruficorpus*, Khasia hills, WARREN, p. 230, *t. c.*; *T. longicorpus*, Bolivia, *longifimbria*, São Paulo, p. 450, *truncatipennis*, Petropolis, p. 451, WARREN, *t. c.* : n. spp.
Tephronia cremiaria, mode of hibernation, DEMAISON, p. 295, Bull. Soc. ent. France, 1897.
Tephrosia crepuscularia and *biundularia*, distinctions, ROBSON, p. 77, Ent. Mag. xxxiii. *T. bistortata* and *crepuscularia*, distinctions, TUTT, pp. 6, etc., etc., Ent. Record, 1897. *T. bistortata* and *crepuscularia*, results of crossing, TUTT (1106). *T. bistortata*, *crepuscularia*, hybrids, TUTT, p. xlix, P. ent. Soc. London, 1897.
T. pygmaearia, *brunnearia*, China, LEECH, p. 339, Ann. Nat. Hist. xix, n. spp.
Terpna ruficoloraria, Borneo, WARREN, p. 32, Nov. Zool. iv; *T. ? ocellata*, Khasia hills, WARREN, p. 207, pl. v, fig. 25, *t. c.*; *T. subradiata*, Penang, WARREN, p. 388, *t. c.* : n. spp.
Tetracis edmondsi, var. n. *impunctata*, WARREN, p. 506, *t. c.*
T. rivulata, Costa Rica, WARREN, *l. c.*, n. sp.
Thalassodes nigripunctata, Cameroons, WARREN, p. 46, *t. c.*; *T. albifimbria*, Centr. Africa, *flavicosta*, Queensland, WARREN, p. 215, *t. c.*; *T. viridicaput*, Celebes, WARREN, p. 391, *t. c.*; *T. parallelaria*, p. 241, *inconcinnaria*, *submacularia*, China, p. 242, LEECH, Ann. Nat. Hist. xx; *T. phrixopa*, Sambawa, MEYRICK, p. 73, Tr. ent. Soc. London, 1897 : n. spp.

- Thalera lacerataria*, figure, pl. i, fig. 4, p. 11, STAUDINGER, Deutsche ent. Zeitschr. Lep. x.
- T. tenuilinea*, Korea, ALPHÉRAKY, p. 182, pl. x, fig. 7, Romanoff Mem. ix;
T. sinuosaria, China, p. 244, *colataria*, Japan and China, p. 245, LEECH, Ann. Nat. Hist. xx : n. spp.
- Thamnonoma angulata*, Jamaica, *ochrifascia*, Bermudas, WARREN, p. 484, Nov. Zool. iv, n. spp.
- Thysanopyga pygaria*, var. n. *ochrilinea*, WARREN, p. 478, t. c.
- T. nigristicta*, Costa Rica, WARREN, l. c., n. sp.
- Tigridoptera monochrias*, p. 76, *ptochopis*, p. 77, Sangir, MEYRICK, Tr. ent. Soc. London, 1897; *T. radiolata*, Palawan, WARREN, p. 85, Nov. Zool. iv : n. spp.
- Timandra obsoleta*, p. 63, *ruptilinea*, p. 64, Khasia hills, WARREN, t. c., n. spp.
- Traminda nigripuncta*, Liberia, WARREN, p. 225, t. c.; *T. falcata*, Natal, *glauca*, Sierra Leone, p. 64, *rufa*, Natal, p. 65, WARREN, t. c. : n. spp.
- Trichogompha*, n. g., *Palyadinæ*, type *Fidonia opulenta*, Mieg, WARREN, p. 461, t. c.
- Trichopterigia costipunctaria*, Japan, LEECH, p. 73, Ann. Nat. Hist. xx; *T. nigrisculpta*, Darjiling, WARREN, p. 68, Nov. Zool. iv : n. spp.
- Trichopteryx olivaria*, Japan, LEECH, p. 75, Ann. Nat. Hist. xx, n. sp.
- Trimetopia ætheraria*, Gu., characters, WARREN, p. 233, Nov. Zool. iv.
- Triorisma*, n. g., type *genuflexus*, Hmpsn., WARREN, p. 395, t. c.
- T. ? violacea*, Sikkim, WARREN, p. 226, t. c., n. sp.
- Triphosa amdoensis*, Centr. Asia, ALPHÉRAKY, p. 67, Romanoff Mem. ix;
T. corrasata, Khasia hills, WARREN, p. 73, Nov. Zool. iv : n. spp.
- Triprrora*, n. g. for *Hexeris trizonata*, Saalm. (= *Hyposidra linearis*, Warren, supra), WARREN, p. 401, t. c.
- Trisyndeta*, n. g., *Ennominae*, for *T. subspersa*, n. sp., Uganda, WARREN, p. 260, t. c.
- Turckheimeria argentiplaga*, *rubriplaga*, W. Africa, WARREN, p. 243, t. c., n. spp.
- Tycoonina natalensis*, Natal, WARREN, p. 114, t. c., n. sp.
- Uliocnemis delicatior*, Japan, WARREN, p. 391, t. c., n. sp.
- Uliolepis*, n. g., *Enochrominae*, p. 385, for *U. pilosa*, n. sp., Afghanistan, p. 386, WARREN, t. c.
- Urapteryx latimarginaria*, p. 190, *costistrigaria*, p. 191, *similaria*, p. 192, pl. vi, fig. 2, China, LEECH, Ann. Nat. Hist. xix, n. spp.
- Venilia disparata*, Amurland, STAUDINGER, pl. ii, fig. 27, p. 39, Deutsche ent. Zeitschr. Lep. x; *V. flavaria*, China, pl. vi, fig. 12, *V. ? invenustaria*, Korea, p. 233, LEECH, Ann. Nat. Hist. xix : n. spp.
- Venusia undularia*, China, LEECH, p. 83, t. c., n. sp.
- Victoria*, n. g., *Geometrinae*, for *V. albipicta*, n. sp., S. Africa, WARREN, p. 46, Nov. Zool. iv.
- Xandrames sericea*, *latiferaria*, distinguished, LEECH, p. 326, Ann. Nat. Hist. xix.
- X. angustaria*, China, id. t. c., p. 327, n. sp.
- Xantheliodes*, n. g., *Orthostixinae*, p. 30, for *X. uniformis*, n. sp., Zomba, p. 31, WARREN, Nov. Zool. iv.
- Xanthomima*, n. g., near *Tigridoptera*, for *X. seminigra*, n. sp., Kei Toeal, WARREN, p. 86, t. c.
- X. cyanoxantha pallida*, subsp. n., WARREN, p. 243, t. c.
- Xanthorrhoe dissociata*, p. 73, with varr. *nigrimedia*, *ruptifascia*, Luzon, *everetti*, Borneo, p. 74, WARREN, t. c.; *X. picticolor*, Jamaica, WARREN, p. 456, t. c.; *X. lophogramma*, New Zealand, MEYRICK, p. 386, Tr. ent. Soc. London, 1897 : n. spp.
- Xenochlorodes*, n. g., *Geometrinae*, for *X. pallida*, n. sp., Beirut, WARREN, p. 47, Nov. Zool. iv.

- Xenoecista*, n. g., near *Semiothisa*, for *X. pallidata*, S. America, p. 484, *subdiversa*, Bogota, *triconjuncta*, Petropolis, p. 485, n. spp., WARREN, t. c.
- Xenographia manifesta*, Khasia hills, WARREN, p. 402, t. c., n. sp.
- Xenoprora*, n. g., *Sterrhinæ*, for *X. parallela*, n. sp., Lifu, WARREN, p. 226, t. c.
- Xylolocha linearis*, Bolivia, WARREN, p. 507, t. c., n. sp.
- Xyloscia biangularia*, China, LEECH, p. 210, pl. vi, fig. 5, Ann. Nat. Hist. xix, n. sp.
- Zamarada auratisquama*, *flavicosta*, *nasuta*, p. 122, *protrusa*, *undimarginata*, *vulpina*, p. 123, Niger, WARREN, Nov. Zool. iv; *Z. ansorgei*, E. Africa, *latimargo*, Congo, WARREN, p. 261, t. c. : n. spp.
- Zanclopera straminearia*, China, LEECH, p. 306, Ann. Nat. Hist. xix, n. sp.
- Zanclopteryx floccosa*, Berg-en-Daal, *subsimilis*, Venezuela, p. 418, *venata*, Amazons, p. 419, WARREN, Nov. Zool. iv, n. spp.
- Zethenia contiguaria*, China, LEECH, p. 223, Ann. Nat. Hist. xix, n. sp.
- Ziridava xylinaria subrubida*, subsp. n., WARREN, p. 71, Nov. Zool. iv.
- Zomia innotata*, Penang, WARREN, p. 402, t. c., n. sp.
- Zonosoma quercimontaria*, Germany, BASTELBERGER, p. 120, metamorphoses, p. 220, Ent. Zeit. Stettin, lviii, n. sp.

PYRALIDÆ, &c. (incl. THYRIDIDÆ).

- [Cf. DISTANT (250), DOGNIN (259), GENTHE (396), HAMPSON (451, 452, 453), HOFMANN (489), KALCHBERG (561), LATASTE (654), LOWER (691), MATSUMURA (725), MEYRICK (748, 749), MURTFELDT (777), PAGENSTECHER (817), SWINHOE (1067), WARREN (1149–1152).]
- Thyrididæ*: classification and revision, HAMPSON, pp. 603–633, P. Zool. Soc. London, 1897.
- Chrysauginæ*: classification and revision, HAMPSON, pp. 633–692, P. Zool. Soc. London, 1897.
- Hydrocampinæ* and *Scopariinæ*, classification and revision of, HAMPSON, pp. 127–240, Tr. ent. Soc. London, 1897. The synonymy of this and the following memoirs is not transferred to our pages.
- Trophi of numerous species, GENTHE (396).
- Abæra metallica*, *chalcea*, Brazil, *rubiginea*, Dominica, HAMPSON, p. 642, P. Zool. Soc. London, 1897, n. spp.
- Actenia beatalis*, Syria, KALCHBERG, p. 183, Deutsche ent. Zeitschr. Lep. x, n. sp.
- Addea rectisetæ*, Amboyna, WARREN, p. 19, Nov. Zool. iv, n. sp.
- Ambia oculalis*, Australia, *picalis*, Brazil, p. 160, *tenella*, Peru, *rhabdotalis*, p. 161, *interstrigalis*, *atristrigalis*, p. 162, Amboyna, *semilunalis*, Brazil, *fulvitinctalis*, Peru, p. 163, *trichostylalis*, Celebes, p. 164, *aulacophora*, Fergusson island, *albomaculalis*, W. Africa, *tigridalis*, Pulo Laut, p. 165, *metalophota*, Jamaica, *cataclystalis*, Pulo Laut, p. 166, HAMPSON, Tr. ent. Soc. London, 1897, n. spp.
- Angenora subochracea*, Natal, WARREN, p. 125, Nov. Zool. iv, n. sp.
- Antiptilotis*, n. g., *Galleriadae*, for *A. rubicunda*, n. sp., Sangir, MEYRICK, Tr. ent. Soc. London, 1897.
- Aporodes escherichi*, p. 234, *nepticulalis*, p. 236, Asia Minor, HOFMANN, Deutsche ent. Zeitschr. Lep. x, n. spp.
- Argyractis*, n. g., p. 135, *Hydrocampinæ*, for *A. argentilinealis*, Brazil, *niphoplagiialis*, Dominica, p. 136, n. spp., HAMPSON, Tr. ent. Soc. London, 1897.
- Aripana macrotis*, Talaut, MEYRICK, p. 87, Tr. ent. Soc. London, 1897, n. sp.
- Arta seriulalis*, Brazil, HAMPSON, p. 669, P. Zool. Soc. London, 1897, n. sp.

- Arxama atralis*, Malay penins., HAMPSON, p. 138, Tr. ent. Soc. London, 1897, n. sp.
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TORTRICIDÆ.

- [*Cf.* GENTHE (396), HOFMANN (489), KALCHBERG (561), MEYRICK (749), WALSINGHAM (1139, 1140), WALSINGHAM & DURRANT (1142).]
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TINEIDÆ.

- [The titles indicated by the following names and numbers refer to *Tineidæ*, viz.:—CHAPMAN (166), GENTHE (396), HOFMANN (487, 488, 489), HÖFNER (490), JOANNIS (553), LOWER (691, 692, 693), MEYRICK, (747, 749), SLINGERLAND (1022), SNELLEN (1040), TURNER (1100), WALSINGHAM (1139, 1140, 1141), WALSINGHAM & DURRANT (1142), WERNICKE (1184).]
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- Pogonias*? *leucoma*, Queensland, LOWER, p. 59, *t. c.*, n. sp.
- Polyhimno laterestriata*, *sciurella*, St. Thomas, WALSINGHAM, p. 78, P. Zool. Soc. London, 1897, n. spp.
- Procometes phlæodes*, *melanthes*, p. 29, *acompsa*, p. 30, Queensland, TURNER, Ann. Queensland Mus. No. 4, n. spp.
- Prodoxus coloradensis*, varr. n. *lautus*, *confluens*, COCKERELL, p. 142, Psyche, viii.
- Prophylactis*, n. g., *Elachistidæ*, for *P. aglaodora*, *chalcopetala*, *argochalca*, n. spp., Australia, MEYRICK, p. 408, P. Linn. Soc. N. S. Wales, 1897.
- Psecadia*; cf. *Ethmia*, supra.
- Pseliastis*, n. g., p. 406, *Elachistidæ*, for *P. spectropa*, *trizona*, *xanthodisca*, n. spp., Tasmania, p. 407, MEYRICK, P. Linn. Soc. N. S. Wales, 1897.
- Pseudanaphora noctivaga*, Grenada, WALSINGHAM, p. 174, P. Zool. Soc. London, 1897, n. sp.
- Pseudoprotasis*, n. g., p. 44, *Ecophoridae*, for *P. canariella*, n. sp., W. Africa, p. 45, pl. ii, fig. 7, WALSINGHAM, Tr. ent. Soc. London, 1897.
- Psoricoptera*? *hirsutella*, referred to *Scalidomia*, WALSINGHAM, p. 65, *t. c.*
- P. melanoptila*, N. S. Wales, LOWER, p. 272, P. Linn. Soc. N. S. Wales, 1897, n. sp.
- Ptilochares melanoma*, Victoria, LOWER, p. 274, P. Linn. Soc. N. S. Wales, 1897, n. sp.
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- Pyroderces chryselectra*, *schismatias*, p. 344, *leucombra*, p. 345, *ceraunia hierarcha*, *cyanogramma*, p. 346, *arimaspiæ*, *mesoptila*, p. 347, *anaclastis*, p. 348, *pyrrhodes*, p. 349, *sphenosema*, *charisia*, p. 350, *promacha*, *oxysema*, p. 351, *oxytoma*, *tetradesima*, p. 352, *argyrostrepta*, *bathrosema*, *trivincta*, p. 353, *nesophora*, *bryomima*, p. 354, *pileata*, p. 355, *eumelæna*, *semnostola*, *exodroma*, p. 356, Australia, MEYRICK, P. Linn. Soc. N. S. Wales, 1897, n. spp.
- Reuttia*, n. g. for *Ptocheuusa subocellea*, HOFMANN, p. 228, Deutsche ent. Zeitschr. Lep. x.
- Rhadinastis*, n. g., *Elachistidæ*, for *R. microlychna*, p. 311, *sideropa*, p. 312, n. spp., Australia, MEYRICK, P. Linn. Soc. N. S. Wales, 1897.
- Scieropepla* (?) *photinoides*, S. Australia, LOWER, p. 21, P. Linn. Soc. N. S. Wales, xxii; *S. argoloma*, Victoria, LOWER, p. 271, *t. c.* : n. spp.
- Scythris rhabducha*, *pleonectis*, p. 423, *ceratocosma*, *crypsigramma adelopa*, p. 424, *sporadica*, *paredra*, *plocanota*, p. 425, Australia, MEYRICK, P. Linn. Soc. N. S. Wales, 1897, n. spp.
- Semiocosma balanophora*, New Zealand, MEYRICK, p. 389, Tr. ent. Soc. London, 1897, n. sp.
- Setomorpha grenadella*, West Indies, WALSINGHAM, p. 168, P. Zool. Soc. London, 1897, n. sp.
- Simaethis equatoris*, Congo, WALSINGHAM, p. 53, pl. iii, fig. 19, Tr. ent. Soc. London, 1897, n. sp.

- Spanioptila*, n. g., near *Gracilaria*, for *S. spinosum*, n. sp., St. Thomas, WALSINGHAM, p. 148, P. Zool. Soc. London, 1897.
- Spuleria*, n. g. for *Chrysoclista aurifrontella*, HOFMANN, p. 230, Deutsche ent. Zeitschr. Lep. x.
- Stathmopoda triselena*, *chalcotypa*, *acontias*, p. 318, *cyanopla*, Australia, *cephalæa*, p. 319, *mesombra*, Tasmania, *astrapeis*, *hyposcia*, p. 320, *pantarches*, *melanochroa*, p. 321, *desmoteles*, *lethonoa*, *chalybeis*, p. 322, *iodes*, *doratias*, *xanthoma*, p. 323, *ischnotis*, *crocophanes*, p. 324, *megathyma*, p. 325, *liporrhœa*, *canonica*, p. 326, Australia, MEYRICK, P. Linn. Soc. N. S. Wales, 1897, n. spp.
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- Tamarrha*, Walk., valid, but restricted to *nivosella*, WALSINGHAM, p. 114, P. Zool. Soc. London, 1897.
- Thaumatographa*, n. g. for *Hilarographa zapyra*, Meyr., WALSINGHAM, p. 52, Tr. ent. Soc. London, 1897.
- Theatrocopia*, n. g., near *Cryptolechia*, for *T. roseoviridis*, pl. ii, fig. 6, p. 43, *elegans*, p. 44, pl. iii, fig. 14, n. spp., W. Africa, WALSINGHAM, t. c.
- Tinagma leucanthes*, Sydney, MEYRICK, p. 422, P. Linn. Soc. N. S. Wales, 1897, n. sp.
- Tinea pellionella* is the type of *Tinea*, WALSINGHAM & DURRANT, p. 40, Ent. Mag. xxxiii. *T. ruricolella*, var. (= *cochylidella*, Stn.), BANKES, p. 79, Ent. Mag. xxxiii.
- T. brevistrigata*, *reduplicata diluticornis*, p. 159, *scythropiella*, *cretella*, *umbraticostella*, p. 160, *tischeriella*, *solenobiella*, *fragilella*, p. 161, *tetraonella*, p. 162, *pumiliella*, *nigrovitta*, p. 163, *frontestrigata*, *auro-maculata*, *divisa*, p. 164, West Indies, WALSINGHAM, P. Zool. Soc. London, 1897, n. spp.
- Tineola infuscatella*, Algeria, in silken tubes on fallen horns, JOANNIS, pp. 110 & 119, cuts, Bull. Soc. ent. France, 1897; *T. uterella*, West Indies, WALSINGHAM, p. 165, P. Zool. Soc. London, 1897 : n. spp.
- Tiquadra lichenea*, Congo, WALSINGHAM, p. 66, pl. iii, fig. 26, Tr. ent. Soc. London, 1897, n. sp.
- Tischeria unicolor*, *pulverea*, W. Indies, WALSINGHAM, p. 145, P. Zool. Soc. London, 1897, n. spp.
- Tortyra fulgens*, larval habits, WALSINGHAM, p. 121, t. c.
- Trachydora*, n. g., p. 390, *Elachistidæ*, for the following n. spp. from Australia, *thyrsophora*, *aphrocoma*, p. 392, *chalybanthes*, *actinia*, p. 393, *peroneta*, *psammodes*, p. 394, *drosorodes*, *nomodoxa*, p. 395, *corysta*, *oxyzona*, p. 396, *illustris*, p. 397, *musæa*, *leucura*, p. 398, *chlorozona*, *stephanopa*, p. 399, *placophanes*, p. 400, *astragalota*, p. 401, MEYRICK, P. Linn. Soc. N. S. Wales, 1897.
- Trichostibas fumosa*; suspended cocoons, WALSINGHAM, p. 114, P. Zool. Soc. London, 1897.
- T. ? pallidicostella*, Jamaica, *id. t. c.*, p. 115, n. sp.
- Trichotaphe tegulella*, Grenada, WALSINGHAM, p. 83, P. Zool. Soc. London, 1897, n. sp.
- Uzucha borealis*, Queensland, TURNER, p. 28, Ann. Queensland Mus. No. 4, n. sp.
- Xylesthia australis*, Hayti, WALSINGHAM, p. 166, P. Zool. Soc. London, 1897, n. sp.

- Xylorycta molybdina*, *neomorpha*, *tapeina*, p. 13, *melaleuca*, p. 14, Queensland, TURNER, Ann. Queensland Mus. No. 4; *X. chrysomela*, Queensland, LOWER, p. 270, P. Linn. Soc. N. S. Wales, 1897, n. spp.
Ypsolophus basistriatus, W. Africa, WALSINGHAM, p. 41, pl. iii, fig. 13, Tr. ent. Soc. London, 1897; *Y. dryinodes*, Brisbane, LOWER, p. 58, Tr. R. Soc. S. Austral. xxi; *Y. juventellus*, Jamaica, p. 86, *Y. ? striatellus*, Trinidad, p. 87, WALSINGHAM, P. Zool. Soc. London, 1897 : n. spp.

PTEROPHORIDÆ and ORNEODIDÆ.

[*Cf.* GENTHE (396), WALSINGHAM (1139, 1140), WALSINGHAM & DURRANT (1142), WERNICKE (1184).]

Trophi of numerous species, GENTHE (396).

The types of *Alucita* and *Pterophorus*, and the names of families *Pterophoridae* and *Orneodidae*, WALSINGHAM & DURRANT, Ent. Mag. xxxiii, p. 41.

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Platyptilia tesseradactyla, food-plants, BARRETT, p. 62, Ent. Mag. xxxiii.

Pterophorus inquinatus, Z. = (*ambrosiæ*, Mrt.), p. 59, *agraphodactylus*, Walk. = (*aspilodactylus*, Walk.), *P. bipunctatus*, characters, p. 61, WALSINGHAM, P. Zool. Soc. London, 1897.

P. montis-christi, p. 59, *ossipellis*, p. 60, W. Indies, WALSINGHAM, *t. c.*, n. spp.

Sphenarches caffer, Z. = (*P. diffusalis*, Walk.), WALSINGHAM, p. 56, *t. c.*

Stenoptilia tenuis, F. & R. = (*gilvidorsis*, Z.), WALSINGHAM, p. 59, *t. c.*

(D.) DIPTERA.

[The titles indicated by the following names and numbers refer to *Diptera*, viz.:—ADENSAMER (7), BECKER (59, 60), BENGTSSON (66), BEZZI & DE-STEFANI (75), BLANCHARD (82), BROWN (136), BRÜEL (137), CALL (153), CHITTENDEN (170), COQUILLETT (218), CORTI (219), DAHL (227), FELT (330), FROGGATT (373), GIRSCHNER (413, 414), HOWARD (510), HUNTER (519), JOHNSON (554), KAHL (560), KERTÉSZ (572, 573), KIEFFER (577), KINCAID (581), KUNTZE (645), LALLIER (647), MARCHAL (707, 708, 711), MEADE (733, 734, 735), MEUNIER (740, 742, 743), MIALI & SHELFORD (750), MIK (751–754), OSTEN SACKEN (808–811), PANTEL (819, 820), PATTON (821), PETIT (832), PRATT (881), RAINBOW (892), RODZIANKO (941), SCHNEIDEMÜHL (972), SHARP (1009), SINTENIS (1015, 1016), SLINGERLAND (1023, 1025), STEIN (1057, 1058, 1059), STEINHEIL (1060), STROBL (1065), THALHAMMER (1070), TOWNSEND (1085–1090), TUBEUF (1099), VOSSELER (1137), WANDOLLECK (1143–1147), WHEELER (1186), WILLISTON (1193), WULP (416, 1196, 1197).]

Classification of the *Brachycera*, with 3 new superfamilies, *Tromoptera*, *Energopoda*, and *Mydaidæ*, to form with *Eremochæta* the suborder *Orthorrhapha Brachycera*; OSTEN SACKEN (810).

Phylogeny of the divisions, morphology of trophi, etc.; BENGTSSON (66).

Calypta, *Calyptera*, *tegula*, *squama*, etc., historical and functional note; OSTEN SACKEN, Berlin. ent. Zeitschr. 1896, pp. 328–338.

The use of the terms *alulæ*, *calyptæ*, etc.; MEADE (733), SHARP (1009).

The parts at the base of the wing, comparative anatomy; GIRSCHNER (413).

Anatomy and development of sexual passages and copulatory organs in *Calliphora erythrocephala*; BRÜEL (137).

Brief note on flies with peculiar head and scutellum; WANDOLLECK (1147).

Diptera in the alimentary canal of man; LALLIER (647).

CECIDOMYIIDÆ.

Parasites of the Hessian fly; ASHMEAD (34).

Antennal setæ and filaments in *Diplosis*; FELT, Psyche, viii, pp. 3–5, pl. i.

Discussion of Rübsaamen's views as to arched filaments, etc.; KIEFFER, (579).

Galls on *Scrophularia chrysanthemifolia*; MIK, p. 293, Wien. ent. Zeit. xvi; on *Ulmus campestris*, *id. t. c.*, p. 294; on *Kochia prostrata*, *id. t. c.*, pp. 294–296, pl. iv.

Asphondylia punica, Tunis, MARCHAL, p. 20, Mem. Soc. zool. France, x, n. sp.

Cecidomyia destructor, *avenæ*, habits, generations, parasites, MARCHAL (707). *C. kellneri*, galls, TUBEUF (1099). *C. pseudococcus*, the "houses" of, MIK, pp. 288–290, Wien. ent. Zeit. xvi. *C. baccarum*, Wachtl, and *hypogæa*, Löw., referred to *Rhopalomyia*, KIEFFER, p. 261, Bull. Soc. ent. France, 1897.

- C. cocciferæ*, Algeria, MARCHAL, p. 19, Mem. Soc. zool. France, x, n. sp.
Cecidomyia-celtis, n. g. for *C. deserta*, n. sp., Connecticut, PATTON, p. 247, Canad. Ent. xxix.
Diplosis pirivora, natural history, GUERCIO, pp. 17-23, Bull. Soc. ent. Ital. xxix. *D. resinicola*, an European ally of, MIK, p. 37, Wien. ent. Zeit. xvi. *D. pini-rigidæ*, probable European ally of, MIK, p. 290, t. c. *D. tritici*, *mosellana*, *equestris*, natural history, MARCHAL (707).
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MYCETOPHILIDÆ, CHIRONOMIDÆ.

- Ceratopogon geniculatus*? (not *Metriocnemus fuscipes*) larva and pupa, MORLEY, pp. 49, cuts and 90, Ent. Mag. xxxiii.
Dynatosoma inæquale, Siebenbürgen, STROBL, p. 13, Verh. Siebenb. Ver. xlv, n. sp.
Eugnoriste, Coq., systematic position, MIK, p. 39, Wien. ent. Zeit. xvi.
Æcacta furens, noticed, TOWNSEND, p. 17, Ann. Nat. Hist. xix.

BLEPHAROCERIDÆ, SIMULIIDÆ, BIBIONIDÆ.

- Snowia*, *Curupira*, synonymical note, WILLISTON, p. 12, Kansas quart. vi.
Simulium indicum, note on, NICÉVILLE, p. 54, Indian Mus. Notes, iv.
Simulium tamaulipense, Texas, TOWNSEND, p. 171, J. N. York Ent. Soc. v, n. sp.
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 Ventral nerve cord, sense organs on antennæ, ovaries, KINCAID, p. 145, Ent. News Philad. 1897.
Psychoda pacifica, p. 143, *elegans*, *olympia*, p. 144, Washington, KINCAID, Ent. News Philad. 1897; *P. punctatella*, Mexico, TOWNSEND, p. 19, Ann. Nat. Hist. xx : n. spp.

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- Cylindrotomina*: critical bibliography of the literature of the early stages, OSTEN SACKEN, pp. 362-366, Tr. ent. Soc. London, 1897.
Olbiogaster tæniatus, noticed; TOWNSEND, p. 21, Ann. Nat. Hist. xx.
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STRATIOMYIIDÆ.

- Acanthomyia* (= *Exodontha*, Rond.), MIK, p. 40, Wien. ent. Zeit. xvi.
Blastocera atra, St. Cruz, WANDOLLECK, p. 216, Wien. ent. Zeit. xvi, n. sp.
Sargus, sp., Mexico, description, TOWNSEND, p. 18, Ann. Nat. Hist. xix.

TABANIDÆ.

- Mouth and method of suction of *Tabanus*, STEINHEIL (1060).
Chrysops costatus, description, TOWNSEND, p. 18, Ann. Nat. Hist. xix.
C. ceras, p. 38, *facialis*, p. 39, New Mexico, TOWNSEND, Psyche, viii, n. spp.
Dicrania cervus, male, GIGLIO-TOS, Boll. Mus. Torino, 1897, No. 276.
Hadrus lepidotus, description, TOWNSEND, p. 19, Ann. Nat. Hist. xix.
Tabanus mexicanus, var. n. *limonus*, TOWNSEND, p. 21, Ann. Nat. Hist. xx.
T. gilanus, p. 92, *intensivus*, p. 93, New Mexico, TOWNSEND, Psyche, viii;
T. campechianus, p. 197, *yucatanus*, p. 198, Centr. America, TOWNSEND,
 Canad. Ent. xxix : n. spp.

NEMESTRINIDÆ, BOMBYLIIDÆ and CYRTIDÆ.

- Acrocera* and *Paracrocera*: instability of nervuration; *Paracrocera*, superfluuous, OSTEN SACKEN, pp. 323-326, Berlin. ent. Zeitschr. 1896.
Anthrax sinuosa, larva noticed, PACKARD, p. 113, J. N. York Ent. Soc. v.
Atriadops, n. n. for *Colax*, Wied., WANDOLLECK, p. 245, Ent. Nachr. xxiii.
A. africana, W. Africa, *id. t. c.*, p. 248, n. sp.
Atriadops (sub *Colax*) *vespertilio*, Lw. (= *africana*, Wand. supra), WANDOLLECK, p. 213, Wien. ent. Zeit. 1897.
Colax and *Trichopsidea*, systematic position, characters, WANDOLLECK, pp. 241-245, Ent. Nachr. xxiii. [Cf. *Atriadops* supra.]
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Trichopsidea dohrni, Sumatra, WANDOLLECK, p. 251, *t. c.*, n. sp.

ASILIDÆ, THEREVIDÆ.

- Nusa abdominalis, similis*, New Mexico, BROWN, p. 103, Kansas quart. vi, n. spp.
Psilocephala laticornis, ♂, ♀, KERTÉSZ, p. 614, Termes. Fuzetek, xx.

LEPTIDÆ and XYLOPHAGIDÆ.

- Chrysopila griffithi*, N. Carolina, JOHNSON, p. 119, Ent. News Philad. 1897, n. sp.
Dialysis elongata and *rufithorax*, variation in wing-nervures, p. 117, *D. fasciventris*, characters, p. 118, JOHNSON, *t. c.*
Lampromyia miki, Tunis (with metamorphoses and habits), MARCHAL, p. 10, pl. i, Mem. Soc. zool. France, x, n. sp.
Leptogaster clavipes, n. n. for the Jamaican *L. longipes*, JOHNSON, p. 120, Ent. News Philad. 1897.
Phycus nitidus, Ceylon, WULF, p. 137, Termes. Fuzetek, xx, n. sp.
Rhachicerus nigrinus, Sumatra, WANDOLLECK, p. 290, Ent. Nachr. xxiii, n. sp.
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EMPIDÆ.

- Brachystoma vesiculosum*, sexual distinctions, MIK, p. 36, cut, Wien. ent. Zeit. xvi.
Elaphropeza fulvithorax, Ceylon, WULP, p. 138, Termes. Fuzetek, xx, n. sp.
 [*Hemerodromia*: entries under this were misplaced last year in *Musc. acalypt.*, cf. Zool. Rec. xxxiii, 1896, p. 291.]
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DOLICHOPODIDÆ.

- Note on fossil, MEUNIER (742).
Allæoneurus and *Liancalus*, note, OSTEN SACKEN, p. 327, Berlin. ent. Zeitschr. 1897.
Aphrosylus; larva, marine habits, WHEELER, p. 150, pl. iv, fig. 14, P. Calif. Ac. (3), i.
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PIPUNCULIDÆ.

- Monograph of European, BECKER, Berlin. ent. Zeitschr. 1897, pp. 25-100, pl. ii.
Pipunculus melanostolus, Pavia, p. 40, *horridus*, Dalmatia, p. 41, *elephas*, Gastein, p. 42, *roseri*, Europe, p. 45, *discoidalis*, Sarepta, p. 46, *kowarzi*, Silesia, p. 48, *montium*, St. Moritz, p. 50, *pannonicus*, Herkulesbad, p. 51, *holosericeus*, Mori, p. 55, *sulcatus*, Dalmatia, *coloratus*, Silesia, p. 57, *thomsoni*, Europe, p. 67, *seminitidus*, Dalmatia, p. 73, *zermattensis*, Switzerland, p. 77, *mutatus*, Ober-Aeg, p. 85, *littoralis*, North Sea, p. 86, *frontatus*, Transylvania, p. 87, *semimaculatus*, Silesia, p. 91, BECKER, Berlin. ent. Zeitschr. 1897 : n. spp.

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- Syrphidæ*. Notes on the genera and their characters, GIRSCHNER, pp. 569-571, 586-589, 603-607, Illustr. Wochenschr. ii.
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B. tropicalis, Texas, TOWNSEND, J. N. York Ent. Soc. v, n. sp.
Brachypalpus inarmatus, Idaho, HUNTER, p. 142, Canad. Ent. xxix, n. sp.
Ceria willistoni, Kansas, KAHL, p. 141, Kansas Quart. vi, n. sp.
Chilosia verralliana, Lower Austria, MIK, p. 116, Wien. ent. Zeit. xvi;
C. alaskensis, p. 124, *plutonia*, p. 125, *gracilis*, p. 126, pl. v, fig. 3, *pacifica*, p. 127, *punctulata*, p. 128, N. America, HUNTER, Canad. Ent. xxix : n. spp.
Chrysotoxum arcuatum, var. n. *angustifasciatum*, MIK, p. 115, Wien. ent. Zeit. xvi.
Eristalis meigenii (= *brousi*, Will.), HUNTER, p. 133, Canad. Ent. xxix.
E. ornatus, Mexico, TOWNSEND, p. 21, Ann. Nat. Hist. xix, n. sp.
Eristalodes, n. g. for part of *Eristalis*, MIK, p. 114, Wien. ent. Zeit. xvi.
Eurinyomyia, n. n. for *Eurymyia*, Big., MIK, p. 115, t. c.
Helophilus latus (= *aureopilis*, Towns.), HUNTER, p. 139, Canad. Ent. xxix.
H. latitarsis, p. 134, *dychei*, p. 136, *pilosus*, p. 137, N. America, HUNTER, Canad. Ent. xxix, n. spp.

- Lathyrrophthalmus*, n. g. for part of *Eristalis*, MIK, p. 114, Wien. ent. Zeit. xvi.
- Leucozona lucorum* and allies, generic position, MIK, p. 62, t. c.
- Meromacrus crucigerus*, description, TOWNSEND, p. 22, Ann. Nat. Hist. xix.
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APHANIPTERA (SIPHONAPTERA).

[Cf. C. ROTHSCHILD (945, 946), STOKES (1062), WAGNER (1138).]

Structure of pygidium of flea, STOKES (1062).

The genera discussed, *Typhlopsylla* (in sense of Taschenberg), cannot be maintained; figures of male copulatory structures; WAGNER, pp. 555 & 556, Horæ Soc. ent. Ross. xxxi.

Pulex and *Ceratophyllus*, defined and limited, WAGNER, pp. 557 & 575, *t. c.*

Ceratophyllus consimilis, p. 562, *dubius*, p. 563, *tesquorum* (on *Spermophilus musicus*), p. 564, *mustela* (on *Putorius vulgaris*), p. 565, *lagomys* (on *L. rutilus*), p. 567, *uralensis*, p. 571, *pinnatus* (on *Mus* sp.), p. 573, *silantiewi* (on *Arctomys bobac*), p. 575, Russia, WAGNER, *t. c.*, n. spp.

Ceratopsylla variabilis (on *Vesperugo nathusii*), Russia, p. 582, with var. *decimpilata*, p. 583, *jubata*, Crimea, *obscura* (on *Vesperugo discolor*), p. 584, *subobscura* (on *Vesperugo noctula*), p. 586, Russia, WAGNER, *t. c.*, n. spp.

Otenopsylla taschenbergi, Russia, p. 577, *sibirica*, N. Siberia, p. 578, WAGNER, *t. c.*, n. spp.

Sarcopsylla penetrans in Africa, JOHNSTON, p. 368, Brit. Centr. Africa.

Typhlopsylla: spines, etc. described, WAGNER, pp. 588 & 589, *t. c.*

T. uncinata (on *Putorius vulgaris*), p. 590, *orientalis* and *setosa* (on *Spermophilus* sp.), p. 591, Russia, WAGNER, *t. c.*; *T. pentacanthus*, England, ROTHSCHILD, p. 55, Ent. Record, 1897; *T. dasyncnemus*, England, *id. t. c.*, p. 159; *T. silvatica*, Denmark, MEINERT, p. 192, Ent. Meddel. v [omitted last year] : n. spp.

(E.) *RHYNCHOTA.*

HEMIPTERA-HETEROPTERA.

[The titles indicated by the following names and numbers refer to *Hemiptera-Heteroptera*, viz.:—ASHMEAD (35), BERGROTH (68, 69), BREDDIN (126, 127), CHAMPION (416), HANDLIRSCH (454-457), HORVÁTH (504, 505, 506), HUEBER (518), JONCK (556), KARAWAIEW (563), KIRKALDY (588, 589, 590), KIRKLAND (591), LÉON (669), MARTIN (720, 721), MEUNIER (744), MONTANDON (760-770), MONTGOMERY (771), NOELLI (789, 790, 791), NOUALHIER (792), REUTER (921, 922), SHARP (1008), UHLER (1107).]

Morphology of the labium, LÉON (669).

Spermatogenesis in *Pentatoma*, MONTGOMERY, Zool. Anz. 1897, pp. 457-460.

PENTATOMIDÆ.

Agatharchus tritaenia, Syria, HORVÁTH, p. 81, Rev. Ent. franc. 1897, n. sp.
Asolenidium, n. g. for *Sphærocoris unicolor*, Dall., BREDDIN, p. 339, Ent. Nachr. xxiii.

Brachyplatys raffrayi, New Guinea, p. 444, *humeralis*, India, p. 446, MONTANDON, Ann. Soc. ent. France, 1896, n. spp.

Cantharodes jaspiciens (= *tibialis*), MONTANDON, p. 436, Ann. Soc. ent. France, 1896.

C. bouvieri, Congo, MONTANDON, p. 438, t. c., n. sp.

Capnoda caucasica, Daghestan, HORVÁTH, p. 83, Rev. Ent. franc. 1897, n. sp.

Carpocoris varius, var. *maculicollis* (= *Pentat. arabica*, Stål), HORVÁTH, p. 92, t. c.

Coptosoma amyoti, Pondicherry, p. 448, *bifarium*, p. 450, *bituminatum*, p. 452, China, *medians*, Grand Bassam, p. 454, *verrucosum*, Mou-Pin, p. 456, *rabieri*, p. 458, *davidi*, p. 460, *breviculum*, p. 461, China, *ordinatum*, Madagascar, p. 462, MONTANDON, Ann. Soc. ent. France, 1896, n. spp.

Demoleus haglundi, Paraguay, p. 2, *lethierryi*, Monte Video, p. 3, MONTANDON, Boll. Mus. Torino, No. 219, n. spp.

Dendrocoris contaminatus, Arizona, UHLER, p. 390, Tr. Maryland Ac. 1897, n. sp.

Eurydema cognatum, var. n. *apicale*, NOUALHIER, p. 77, Rev. Ent. franc. 1897. *E. festivum* (= *E. decoratum*, var. *putonia*, Antess.), HORVÁTH, p. 92, Rev. Ent. franc. 1897.

Euschistus politus, N. America, UHLER, p. 117, Canad. Ent. xxix; *E. conspersus*, California, UHLER, p. 388, Tr. Maryland Ac. 1897 : n. spp.

Hymenarcys crassa, Arizona, UHLER, p. 387, t. c., n. sp.

Oplomus punctatus, Argentina, MONTANDON, Boll. Mus. Torino, x, No. 219, p. 5, n. sp.

Peribalus breviceps, E. Siberia, HORVÁTH, p. 81, Rev. Ent. franc. 1897, n. sp.

- Plataspis guirali*, Congo, MONTANDON, p. 442, Ann. Soc. ent. France, 1896, n. sp.
Podisus placidus, description, UHLER, pp. 116 & 160, Canad. Ent. xxix.
P. crocatus, Oregon, etc., p. 384, *mucronatus*, Cuba and Florida, p. 386, UHLER, Tr. Maryland Ac. 1897; *P. borellii*, Argentina, MONTANDON, Boll. Mus. Torino, x, No. 219, p. 5 : n. spp.
Sciocoris sideritidis, valid species, characters, HORVÁTH, p. 91, Rev. Ent. franc. 1897.
Solenotichus, n. g., p. 263, *Scutellerinæ*, for *S. brevipes*, n. sp., Australia, p. 264, MARTIN, Bull. Soc. ent. France, 1897.
Stibaropus lævicollis, Tunis, MONTANDON, p. 97, Rev. Ent. franc. 1897, n. sp.
Tetyra robusta, Arizona and Mexico, UHLER, p. 383, Tr. Maryland Ac. 1897, n. sp.
Tholagmus flavolineatus, var. *strigatus* (= *Stiraspis sardoa*, Costa), HORVÁTH, p. 91, Rev. Ent. franc. 1897.
Thyreocoris borellii, Paraguay, MONTANDON, Boll. Mus. Torino, No. 219, p. 1, n. sp.

COREIDÆ.

- Coreidæ* of Belgium, JONCK (556).
Agraphopus femoralis, France and Turkestan, HORVÁTH, p. 84, Rev. Ent. franc. 1897, n. sp.
Archimerus camposi, Ecuador, MONTANDON, Bull. Soc. Bucarest, 1897, No. 3, p. 3, n. sp.
Capaneus rubropictus, Ecuador, MONTANDON, *op. cit.* p. 4, n. sp.
Ceraleptus obtusus (= *squalidus*, Costa), HORVÁTH, p. 92, Rev. Ent. franc. 1897.
Spartocera ortonedai, Ecuador, MONTANDON, Bull. Soc. Bucarest, 1897, No. 3, p. 6, n. sp.
Stenocephalus putoni, Syria, HORVÁTH, p. 84, Rev. Ent. franc. 1897, n. sp.
Vilga spinosula, Costa Rica, p. 3, *serrulata*, Brazil, p. 4, MONTANDON, Bull. Soc. Bucarest, vi, 1897, No. 2, n. spp.

BERYTIDÆ.

- Cardopostethus lineatus*, Jak., referred to *Megalomerium*, HORVÁTH, p. 92, Rev. Ent. franc. 1897.

LYGÆIDÆ, PYRRHOCORIDÆ.

- Embryology of *Pyrrhocoris*, KARAWAIEW (563).
Aphanus phæniceus, var. n. *autrani*, HORVÁTH, p. 86, Rev. Ent. franc. 1897. *A. lethierryi* is a var. of *A. consors* not of *Graptopeltus validus*, HORVÁTH, p. 92, *t. c.*
Bergidia, n. g., *Pachymerini*, for *P. polychromus*, Spin., BREDDIN, p. 6, Magalha. Reise.
Dacerla, Sign., removed from *Pyrrhocoridae* to *Capsidae*, BERGROTH, p. 95, Ent. News Philad. 1897.
Drymus assimilis, Tunis, HORVÁTH, p. 87, Rev. Ent. franc. 1897, n. sp.
Emblethis brachynotus, Hungary, HORVÁTH, p. 86, *t. c.*, n. sp.
Hyalochilus dolosus, East Europe, HORVÁTH, p. 85, *t. c.*, n. sp.
Leptomelus dorstatus, Jak. (= *Pezocoris reuteri*, Mont.), HORVÁTH, p. 92, *t. c.*
Lygæus cruciger, Motsch. (= *marginatus*, Jak., *elegans*, Dist., *jakowleffi*, Leth. & Šev.), HORVÁTH, p. 92, *t. c.*
Nysius irroratus, var. n. *melancholicus*, BREDDIN, p. 4, Magalha. Reise.

- Oncopeltus bucanus*, var. n., BREDDIN, p. 341, Ent. Nachr. xxiii.
Stenophthalmicus mixtus, Tunis, MONTANDON, p. 98, Rev. Ent. franc. 1897,
 n. sp.
Tropistethus majusculus, distinguished from *sabuleti*, HORVÁTH, p. 92, Rev.
 Ent. franc. 1897.

TINGITIDÆ.

- Acanthochila armigera*, figure, pl. ii, fig. 19, p. 28, CHAMPION, Biol. Cent.-
 Amer. Rhynch. ii.
Amblystira fuscitarsis, pl. ii, fig. 21, *opaca*, fig. 23, p. 30, *atrinervis*, fig. 24,
laevifrons, fig. 25, p. 31, Centr. America, CHAMPION, t. c., n. spp.
Catoplatus critinus, Samarcand, HORVÁTH, p. 89, Rev. Ent. franc. 1897,
 n. sp.
Corythaica monacha (= *Typonotus planaris*, Uhler), *C. carinata*, figure, pl. i,
 fig. 11, CHAMPION, p. 9, Biol. Centr.-Amer. Rhynch. ii.
C. unifasciata, pl. i, fig. 8, p. 7, *setosa*, fig. 10, p. 8, Centr. America, CHAM-
 PION, t. c., n. spp.
Dicysta, n. g., *Tingitini*, for *D. vitrea*, n. sp., Panama, pl. i, fig. 4, p. 5,
 CHAMPION, t. c.
Galeatus, synopsis of specific characters, HORVÁTH, p. 455, Termes.
 Fuzetek, xx.
G. colpochilus, Spain, *id.* p. 459, t. c.; *G. syrmiensis*, Hungary, HORVÁTH,
 p. 88, Rev. Ent. franc. 1897 : n. sp.
Gargaphia panamensis, pl. i, fig. 14, *iridescens*, pl. ii, fig. 1, Central America,
 CHAMPION, p. 10, Biol. Centr.-Amer. Rhynch. ii, n. spp.
Kalama theryi, Algeria, MONTANDON, p. 99, Rev. Ent. franc. 1897, n. sp.
Lasiotropis amplicosta, Algeria, MONTANDON, p. 100, Rev. Ent. franc. 1897,
 n. sp.
Leptobyrsa latipennis, pl. ii, fig. 13, p. 25, *translucida*, fig. 14, *plicata*, fig.
 15, p. 26, *chiriquensis*, fig. 16, *nigriceps*, fig. 17, p. 27, Central America,
 CHAMPION, Biol. Centr.-Amer. Rhynch. ii, n. spp.
Leptodictya cretata, Guatemala, pl. ii, fig. 11, p. 23, *circumcincta*, Panama,
 fig. 12, p. 24, CHAMPION, t. c., n. spp.
Leptopharsa unicarinata, Panama, CHAMPION, p. 21, pl. ii, fig. 7, t. c., n. sp.
Leptophya binotata, pl. ii, fig. 27, *brevicornis*, fig. 28, Central America,
 CHAMPION, t. c., n. spp.
Leptostyla vesiculosa, pl. i, fig. 15, *longipennis*, fig. 16, p. 13, *tumida*, fig. 17,
setigera, fig. 18, p. 14, *fimbriata*, fig. 19, *fuscofasciata*, fig. 20, p. 15,
elata, fig. 21, p. 16, *lineata*, fig. 22, *gracilentata*, fig. 23, *angustata*, fig.
 24, p. 17, *tenuis*, fig. 25, *dilatocollis*, pl. ii, fig. 2, p. 18, *bifasciata*, fig. 3,
divisa, fig. 4, p. 19, *furculata*, fig. 5, *constricta*, fig. 6, p. 20, Central
 America, CHAMPION, t. c., n. spp.
Macrotingis, n. g., near *Leptostyla*, for *M. biseriata*, pl. ii, fig. 8, Panama,
uniseriata, fig. 9, Guatemala, n. spp., CHAMPION, p. 22, t. c.
Megalocysta, n. g., p. 5, *Tingitini*, for *M. pellucida*, n. sp., Panama, pl. i,
 fig. 5, p. 6, CHAMPION, t. c.
Monosteira minutula, Algeria, MONTANDON, p. 101, Rev. Ent. franc. 1897,
 n. sp.
Phatnoma marmorata, pl. i, fig. 1, p. 3, *annulipes*, fig. 2, *ovata*, fig. 3, p. 4,
 Centr. America, CHAMPION, Biol. Centr.-Amer. Rhynch. ii, n. spp.
Stenocysta, n. g., p. 28, for *S. pilosa*, n. sp., Panama, pl. ii, fig. 18, p. 29,
 CHAMPION, t. c.
Tigava pulchella, Central America, CHAMPION, pl. ii, fig. 26, p. 32, t. c.,
 n. sp.

PHYMATIDÆ.

- Phymatidæ*, monograph, HANDLIRSCH, pp. 127–230, pls. iv–ix, Ann. Hofmus. Wien, xii. We give only the new genera and species, for all else refer to the work itself.
- Agreucoris*, n. g., p. 217, for *A. noualhierii*, n. sp., Mexico, p. 218, HANDLIRSCH, *t. c.*
- Amblythyreus stali*, p. 209, *intermedius*, p. 210, India, *gestroi*, Carin Chebà, p. 211, HANDLIRSCH, *t. c.*, n. sp.
- Carcinochelis binghami*, Burma, SHARP, p. 35, Ent. Mag. xxxiii, n. sp.
- Carcinocoris*, n. g., near *Carcinochelis*, for *C. crinaceus*, *castetsi*, Burma (n. spp. not described), HANDLIRSCH, p. 23, Verh. Ges. Wien, 1897.
- Carcinocoris castetsi*, description and figure, HANDLIRSCH, p. 220, pl. vi, fig. 1, Ann. Hofmus. Wien, xii.
- Cnizocoris*, n. g., p. 213, for *C. davidi*, Mou-Pin, pl. vi, fig. 8, *stenocephalus*, Darjiling, p. 214, n. spp., HANDLIRSCH, *t. c.*
- Glossopelta*, n. g., p. 215, for *G. acuta*, pl. vi, fig. 4, Malay penins., etc., *montandoni*, Borneo, p. 216, *harmandi*, Cochin China, p. 217, pl. vi, fig. 5, n. spp., HANDLIRSCH, *t. c.*
- Macrocephalus reuteri*, p. 190, *crassus*, p. 191, *vesiculosus*, pl. vii, fig. 3, *parvulus*, fig. 2, p. 192, S. America, *gracilis*, N. America, p. 193, *bergrothi*, Venezuela, fig. 4, p. 194, *stali*, Mexico, p. 195, *mopsus*, Brazil, p. 196, HANDLIRSCH, *t. c.*, n. spp.
- Phymata vicina*, Florida, p. 150, *albopicta*, N. America and Mexico, p. 151, pl. iv, fig. 2, *reticulata*, p. 152, *laciniata*, Colombia, *noualhierii*, pl. iv, fig. 3, N. and Centr. America, p. 153, *distanti*, Jamaica, pl. iv, fig. 9, p. 157, *maculipennis*, Brazil, p. 158, *armata*, *karschii*, p. 174, *phyllo-morpha*, p. 176, *scabrosa*, p. 177, Brazil, HANDLIRSCH, Ann. Hofmus. Wien, xii, n. spp.

HYDROMETRIDÆ.

- Cylindrostethus* to be used in place of *Hydrobates*, KIRKALDY, p. 258, Entomologist, 1898.
- Halobatopsis beginii*, Canada, ASHMEAD, p. 56, Canad. Ent. xxix, n. sp.
- Rheumatobates*; affinities, etc., HEIDEMANN, p. 50, P. ent. Soc. Washington, iv.
- Velia currens*, var. n. *maderensis*, NOUALHIER, p. 77, Rev. Ent. franc. 1897.

REDUVIIDÆ and PHIMOPHORIDÆ.

- Chondrolophus comptus*, Madagascar, BERGROTH, p. 201, Bull. Soc. ent. France, 1897, n. sp.
- Harpactor americanus*, California, BERGROTH, p. 96, Ent. News Philad. 1897.
- Nabis camerani*, Piedmont, NOELLI, Boll. Mus. Torino, 1897, No. 272; also Ann. Acc. Agric. Torino, xl, p. 16 (sep. copy), n. sp.
- Pantoleistes rex*, Cameroons, BREDDIN, p. 341, Ent. Nachr. xxiii, n. sp.
- Phimophoridaæ*, n. fam., between *Aradidæ* and *Phymatidæ*, for *Phimophorus spissicornis*, Bergr., HANDLIRSCH, pp. 408–410, Verh. Ges. Wien, 1897; p. 558, *t. c.*, considered doubtfully distinct from *Reduviidæ*.
- Phorticus parvulus*, Algeria, MONTANDON, p. 104, Rev. Ent. franc. 1897, n. sp.
- Pirates hybridus*, racial variation, synonymy, HORVÁTH, p. 93, *t. c.*
- Putoniella*, n. g., p. 102, near *Holoptilus*, for *P. vaulogeri*, n. sp., Tunis, p. 103, MONTANDON, Rev. Ent. franc. 1897.

ANTHOCORIDÆ, SALDIDÆ, CIMICIDÆ.

- Acanthia trybomi* in Novaia Zemlaia, BIANCHI, p. 362, *Annuaire Mus. St. Petersb.* 1897.
Erianotus madagascariensis, Madagascar, MARTIN, p. 274, *Bull. Soc. ent. France*, 1897, n. sp.
Leptopus marmoratus (= *bertkaui*, Verh.), HORVÁTH, p. 93, *Rev. Ent. franc.* 1897.
Piezostethus obliquus, Costa sub *Xylocoris* (= *signatus*, Jak.), HORVÁTH, p. 93, *Rev. Ent. franc.* 1897.

CAPSIDÆ.

- The characters of the palæarctic genera of the division *Capsaria*, REUTER, *Ofv. Finska Forh.* xxxviii, pp. 156–171.
Capsidæ of Germany, Div. *Miraria*, HUEBER (518).
Actinonotus, n. g., type *Capsus pulcher*, H. Sch., REUTER, p. 164, *Ofv. Finska Forh.* xxxviii.
A. ruber, Thuringia, REUTER, p. 197, *Wien. ent. Zeit.* xvi, n. sp.
Adelphocoris, n. g., type *Cimex seticornis*, Fab., REUTER, p. 168, *Ofv. Finska Forh.* xxxviii.
Calocoris fokkeri, Amasia, REUTER, p. 198, *Wien. ent. Zeit.* xvi, n. sp.
Camptozygum, n. g., type *Phytocoris pinastri*, REUTER, p. 160, *Ofv. Finska Forh.* xxxviii.
Capsus cinctus, varr., REUTER, p. 200, *Wien. ent. Zeit.* xvi.
Dacerla (= *Myrmecopsis*, Uhl.) and is a Capsid, BERGROTH, p. 95, *Ent. News Philad.* 1897.
Halticus bractatus, ♂ ♀, figg., pl. x, habits, pp. 209 & 210, WEBSTER, *Ent. News Philad.* 1897.
Irbisia, Reut. and *Thyrillus*, Uhl., synonymous, REUTER, p. 157, *Ofv. Finska Forh.* xxxviii.
Megaloceræa erratica, ♀, dimorphic, SAUNDERS, p. 15, *Ent. Mag.* xxxiii.
Phytocoris miridioides, ♀, brachypt., REUTER, p. 200, *Wien. ent. Zeit.* xvi.
Pæcilonotus, n. g., type *picturatus*, Reut. (= *Calocoris hedenborgi*, Reut. nec Fieb.), REUTER, p. 167, *Ofv. Finska Forh.* xxxviii.
Trichophoroncus, n. g., type *Calocoris albonotatus*, Jak., REUTER, p. 168, *t. c.*

HYDROCORISÆ.

- Notes on the fossil Hydrocorisæ of the Teyler Museum, MEUNIER (744).
 Structure of the lower lip in several forms, LÉON, *Zool. Anz.* 1897, pp. 73–76.
Ambrysus acutangulus, Corrientes, p. 126, *fraternus*, Goyaz, p. 128, *geayi*, Darien, p. 129, MONTANDON, *Bull. Mus. Paris*, 1897; *A. crenulatus*, New Grenada, p. 13, *oblongulus*, Costa Rica, p. 14, *attenuatus*, Brazil, p. 15, *pulchellus*, Guatemala, p. 16, *parviceps*, Mexico, p. 17, *californicus*, S. California, p. 18, *bergi*, Buenos Ayres, p. 19, *mexicanus*, p. 21, *hybridus*, p. 22, Mexico, MONTANDON, *Verh. Ges. Wien*, 1897 : n. spp.
Aneurocoris, n. g., p. 436, *Laccocorinæ*, for *A. insolitus*, n. sp., Tanganyika, p. 437, MONTANDON, *Verh. Ges. Wien*, 1897.
Aptinocoris, n. g., p. 64, for *A. papuus*, n. sp., New Guinea, p. 65, MONTANDON, *Ann. Soc. ent. Belgique*, xli.
Belostoma americanum, etc., eggs, habits, WEED (1178), pp. 3–10.
Cheirochela: characters, MONTANDON, p. 367, *Ann. Mus. Genova*, xxxvii.
C. birmaniensis, p. 369, *feana*, p. 370, Burma, *id. t. c.*, n. sp.
Corixa and *Corisa*: synonymical notes, KIRKALDY, pp. 259 & 260, *Entomologist*, 1897. *C. ovivora*, Westw., referred to *Sigara* and described,

- KIRKALDY, p. 238, Entomologist, 1897. *C. australis*, description, *C. spp.*, bibliographic notes, pp. 55 & 56, *C. caledonica*, n. n. for *cognata*, D. & S., p. 56, KIRKALDY, Ann. Nat. Hist. xx. *C. quadrata*, dimorphism, BREDDIN, p. 13, Magalha. Reise.
- C. denseconscripta*, Buenos Ayres, *id. t. c.* p. 16; *C. eurynome*, S. Australia, KIRKALDY, p. 54, Ann. Nat. Hist. xx; *C. serrulata*, p. 391, Mexico to California, *acuminata*, Texas, p. 392, *kennicottii*, N. America, p. 393, UHLER, Tr. Maryland Ac. 1897: n. spp.
- Cryphocricus macrocephalus*, Vera Paz, MONTANDON, p. 125, Bull. Mus. Paris, 1897, n. sp.
- Ctenipocoris*, n. g., p. 373, *Laccocorinæ*, for *C. asiaticus*, n. sp., Burma, p. 374, MONTANDON, Ann. Mus. Genova, xxxvii.
- Deinostoma*, n. n. for *Serphus*, Stål, KIRKALDY, p. 258, Entomologist, 1897.
- Diaphorocoris*, n. g. for *D. notatus*, n. sp., Ceylon, MONTANDON, p. 61, Ann. Soc. ent. Belgique, xli.
- D. punctatissimus*, Kirb. (= *notatus*, Mont. infra), MONTANDON, p. 445, Verh. Ges. Wien, 1897.
- Diaprepocoris*, n. g., p. 52, for *D. barycephala*, n. sp., Australia and Tasmania, p. 53, KIRKALDY, Ann. Nat. Hist. xx.
- Gelastocoris*, n. n. for *Galgulus*; the family also becoming *Gelastocoridae*, KIRKALDY, p. 258, Entomologist, 1897.
- Gestroiella*, n. g., *Cheirochelinae*, for *G. limnocoroides*, n. sp., Burma, MONTANDON, p. 371, Ann. Mus. Genova, xxxvii.
- Heleocoris tabidulus*, characters, MONTANDON, p. 59, Ann. Soc. ent. Belgique, xli.
- H. breviceps*, India, p. 55, *obscuratus*, Sumatra, p. 56, *naucoroides*, Madagascar, p. 57, *elongatus*, India, p. 59, MONTANDON, *t. c.*; *H. strabus*, Tenasserim, MONTANDON, p. 372, Ann. Mus. Genova, xxxvii; *H. spinipes*, New Friburg, p. 447, *læviceps*, Tenasserim, p. 448, *indicus*, Bellary, p. 450, *ovatus*, Lakhon, p. 451, *bergrothi*, E. India, p. 452, MONTANDON, Verh. Ges. Wien, 1897: n. spp.
- Idiocarus*, n. g., near *Cryptocricus*, for *I. elongatus*, n. sp., New Guinea, MONTANDON, p. 8, *t. c.*
- Laccocoris staudingeri*, p. 440, *horvathi*, p. 442, Borneo, *discus*, Cameroons, p. 443, MONTANDON, *t. c.*; *L. aurivillii*, Namaquamin, p. 50, *nervicus*, Sumatra, p. 52, *marginatus*, Borneo, p. 54, MONTANDON, Ann. Soc. ent. Belgique, xli: n. spp.
- Limnocoris borellii*, p. 3, *stali*, p. 4, *ovatulus*, *pauper*, S. America, *signoreti*, Mexico, p. 5, *pectoralis*, S. America, *virescens*, S. and Centr. America, p. 7, *pusillus*, New Friburg, p. 8, MONTANDON, Boll. Mus. Torino, 1897, No. 297, n. spp.
- Macrocoris convexus*, Niger, MONTANDON, p. 63, Ann. Soc. ent. Belgique, xli, n. sp.
- Micronecta*, n. n. for *Sigara*, Fab., KIRKALDY, p. 260, Entomologist, 1897.
- Mononyx serratus*, Burma, MONTANDON, p. 365, Ann. Mus. Genova, xxxvii, n. sp.
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- N. montezuma*, Mexico, p. 402, *handlirschi*, Australia, p. 408, KIRKALDY, Tr. ent. Soc. London, 1897; *N. montandoni*, China, p. 56, *lactitans*, Guinea, *uhleri*, N. America, p. 58, KIRKALDY, Ann. Nat. Hist. xx: n. spp.
- Pelocoris politus*, p. 8, *minutus*, p. 9, Paraguay, MONTANDON, Boll. Mus. Torino, x, No. 219, n. spp.
- Peloriididae*, n. fam., near *Pelogonidae*?, p. 10, for *Peloridium hammoniorum*, n. g. et spec., p. 12, pl., fig. 4, Navarin Is., BREDDIN, Magalha. Reise.

Peloridium, n. g., cf. supra.

Pseudambrysus, n. g., p. 9, for *P. fairmairei*, n. sp., Madagascar, p. 10, MONTANDON, Verh. Ges. Wien, 1897.

Sigara siva, n. n. for *striata*, Fieb., *S. m-notata*, n. n. for *lineata*, Fieb., KIRKALDY, p. 240, Entomologist, 1897.

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[Cf. BAKER (42-45), BALL (47), DISTANT (244-247, 253), FABRE (303), FOWLER (416), HORVÁTH (506), MELICHAR (737), NOUALHIER (792), OSBORN & BALL (806), OSBORN (807), POTTER (876), SCHWARZ (988), THEN (1071), WEBSTER (1177): also *Aphididæ* and *Coccidæ*.]

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Baturia rubricata, *loriæ*, p. 382, *viridicata*, p. 383, New Guinea, DISTANT, t. c., n. spp.

Calcagninus marginatus, Burma, DISTANT, p. 19, Ann. Nat. Hist. xx, n. sp.

Cicada septendecim, broods v, xiii, in Iowa, OSBORN, P. Iowa Ac. iii, pp. 195-201, map; *C. septendecim*, distribution of brood xv, in Ohio in 1897, with notes on broods xxii & viii, WEBSTER, pp. 225-229, pl. viii, Canad. Ent. xxix. *C. mærens*, etc., habits, KERSHAW, p. 119, Victorian Natural. xiii.

C. operculissima, Lombok, DISTANT, p. 369, Ann. Nat. Hist. xx, n. sp.

Cosmopsaltria velitaris, Burma, DISTANT, p. 18, Ann. Nat. Hist. xx; *C. loriæ*, p. 378, *mimica*, p. 379, *atra*, p. 380, New Guinea, DISTANT, Ann. Mus. Genova, xxxvii : n. spp.

Huechys incarnata, var. b, DISTANT, p. 370, Ann. Nat. Hist. xx.

Lembeja papuensis, New Guinea, DISTANT, p. 382, Ann. Mus. Genova, xxxvii; *L. fruhstorferi*, Celebes, DISTANT, p. 371, Ann. Nat. Hist. xx : n. spp.

Monomatapa, n. g., *Tibiceninæ*, for *M. insignis*, n. sp., Mashunaland, DISTANT, p. 129, Ann. Nat. Hist. xix.

Muda, n. g., near *Rustia*, for *M. concolor*, n. sp., Mentawai island, DISTANT, p. 384, Ann. Mus. Genova, xxxvii.

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Pæcilopsaltria furva, Transvaal, p. 126, *marshalli*, Zambesi, p. 127, DISTANT, Ann. Nat. Hist. xix; *P. handlirschi*, Madagascar, DISTANT, p. 282, t. c.; *P. watsoni*, Burma, DISTANT, p. 18, *op. cit.* xx : n. spp.

Pomponia cuneata, Burma, DISTANT, p. 19, *op. cit.* xx; *P. gigantea*, Port Moresby, DISTANT, p. 380, Ann. Mus. Genova, xxxvii : n. spp.

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Delphax lepidus, Boh., referred to *Conomelus*, HORVÁTH, p. 94, t. c.

- D. minuscula*, p. 622, *palliceps*, p. 623, *mocsaryi*, p. 624, Hungary, HORVÁTH, Termes. Fuzetek, xx, n. spp.
- Dictyophora europæa*, var. n. *rosea*, MELICHAR, p. 72, Wien. ent. Zeit. xvi.
- Eurysa clypeata*, Hungary, HORVÁTH, p. 621, Termes. Fuzetek, xx, n. sp.
- Hysteropterum difforme* (= *camelus*, Costa), HORVÁTH, p. 94, Rev. Ent. franc. 1897.
- H. fauveli*, Madeira, NOUALHIER, p. 79, pl. i, fig. 3, t. c., n. sp.
- Kelisia henschii*, Hungary, HORVÁTH, p. 620, Termes. Fuzetek, xx, n. sp.
- Liburnia albifrons*, ♀, MELICHAR, p. 188, Wien. ent. Zeit. xvi.
- L. stigmatica*, Dalmatia, MELICHAR, p. 69, t. c., n. sp.
- Mycterodus longiceps* is a valid species, MELICHAR, p. 148, t. c.
- Paropioxys bellus*, Nyassaland, DISTANT, p. 130, Ann. Nat. Hist. xix, n. sp.
- Peltonotellus melichari*, Eur. cent., HORVÁTH, p. 89, Rev. Ent. franc. 1897, n. sp.
- Plagiopsis scotti*, p. 17, *bergi*, p. 18, S. Patagonia, BREDDIN, Magalha. Reise, n. spp.
- Stiroma montana*, Hungary, HORVÁTH, p. 625, Termes. Fuzetek, xx, n. sp.
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- T. sororcula*, Hungary, HORVÁTH, p. 91, t. c., n. sp.
- Trypetimorpha fenestrata* and *psyllipennis* are forms of one, HORVÁTH, p. 94, t. c.

CERCOPIDÆ.

- FOWLER commences the enumeration and illustration of the Central American *Cercopidæ*, Biol. Centr.-Amer. Rhynchot. Homopt. ii, pp. 174 et seqq.
- Aphrophora lævior*, pl. xii, fig. 7, *perdubia*, *grisea*, fig. 8, Central America, FOWLER, p. 194, Biol. Centr.-Amer. Rhynchot. Homopt. ii, n. spp.
- Cephisus siccifolius*, figure, pl. xii, fig. 3, p. 192, FOWLER, t. c.
- Clastoptera*: species, characters and variation, BALL, P. Iowa Ac. iii, pp. 182-194, pls. xi-xiv.
- C. globosa*, pl. xii, fig. 16, *compta*, fig. 17, p. 200, Mexico, FOWLER, Biol. Centr.-Amer., n. spp.
- Eicissus*, n. g., *Ptyelinæ*, for *E. decipiens*, n. sp., pl. xii, fig. 13, p. 198, Central America, FOWLER, t. c.
- Epicranion*, n. g., *Ptyelinæ*, for *E. championi*, n. sp., Panama, p. 197, pl. xii, fig. 12, FOWLER, t. c.
- Lepyronia coleoptrata*, var. n. *obscura*, MELICHAR, p. 72, Wien. ent. Zeit. xvi.
- Locris rendalli*, *junoti*, S. Africa, DISTANT, p. 131, Ann. Nat. Hist. xix, n. spp.
- Microsargane*, n. g., *Ptyelinæ*, for *M. vittata*, n. sp., Nicaragua, pl. xii, fig. 11, FOWLER, p. 196, Biol. Centr.-Amer. Rhynchot. Homopt. ii.
- Næenus*, n. g., *Ptyelinæ*, for *N. varius*, n. sp., Mexico, pl. xii, figg. 1 & 2, FOWLER, Biol. Centr.-Amer. Rhynchot. Homopt. ii.
- Paraphrophora*, n. g. for *P. simplex*, n. sp., Guatemala, pl. xii, fig. 9, FOWLER, p. 195, Biol. Centr.-Amer. Rhynchot. Homopt. ii.
- Philænus fuscovarius*, and var. figured, pl. xii, figg. 5 & 6, p. 193, FOWLER, t. c.
- P. americanus*, N. America, BAKER, p. 112, Canad. Ent. xxix, n. sp.
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Aconura quadrum (= *putoni*, Leth.), HORVÁTH, p. 95, Rev. Ent. franc. 1897.
A. pallifrons, *margaritacea*, Hungary, HORVÁTH, p. 630, Termes. Fuzetek, xx, n. spp.
Agallia insularis, varr., fig., BREDDIN, p. 20, Magalha. Reise.
A. mutilata, Valparaiso, *id. l. c.*, n. sp.
Athysanus schenckii (= *zetterstedti*, Mel.), HORVÁTH, p. 95, Rev. Ent. franc. 1897.
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- Dicraneura sinuata*, p. 112, *incisa*, p. 115, Austria, THEN, Mt. Ver. Steiermark, xxxiii, n. spp.
- Doratura paludosa*, Monfalcone, MELICHAR, p. 70, Wien. ent. Zeit. xvi; *D. impudica*, Hungary, HORVÁTH, p. 629, Termes. Fuzetek, xx : n. spp.
- Dorycephalus platyrhynchus*, figg., habits, OSBORN & BALL, pp. 185-188, P. Iowa Ac. iv.
- Dorydiella*, n. g. for *D. floridana*, n. sp., N. America, BAKER, p. 159, Canad. Ent. xxix.
- Grypotes illyricus*, referred to *Athysanus* (= *A. pellucidus*, Fieb.), MELICHAR, p. 189, Wien. ent. Zeit. xvi.
- Idiocerus stali* (= *bicolor*, Mcl.), MELICHAR, p. 14, t. c.
- I. humilis*, Hungary, HORVÁTH, p. 625, Termes. Fuzetek, xx, n. sp.
- Koebelia*, n. g., subfam. n., *Koebeliinae*, for *K. californica*, n. sp., Placer County, BAKER, p. 76, Psyche, viii.
- Ledra perdita*, note on, GODING, p. 245, Canad. Ent. xxix, and OSBORN, p. 89, t. c. *L. perdita*, referred to *Centruchus*, or *Centruchoides*, BAKER, Canad. Ent. xxix, pp. 38 & 39.
- Macropsis scutellaris*, var. n. *purpurata*, HORVÁTH, p. 626, Termes. Fuzetek, xx.
- Parabolocratus arenarius*, Hungary, HORVÁTH, p. 627, t. c., n. sp.
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- Paraphlepsius*, n. g., near *Psegmatus*, for *P. ramosus*, n. sp., New York, BAKER, p. 158, Canad. Ent. xxix.
- Pediopsis nassata* is var. of *virescens*, HORVÁTH, p. 94, Rev. Ent. franc. 1897.
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- Phlepsius altus*, p. 228, pl. xxvi, fig. 5, *majestus*, fig. 6, p. 229, *decorus*, fig. 7, p. 230, Iowa, OSBORN & BALL, P. Iowa Ac. iv, n. spp.
- Platymetopius acicularis* (= *albolimbatus*, Kb.), HORVÁTH, p. 95, Rev. Ent. franc. 1897.
- P. cinereus*, Iowa, OSBORN & BALL, p. 193, pl. xxvi, fig. 1, P. Iowa Ac. iv, n. sp.
- Selenocephalus pallidus* (= *stenopterus*, Sign.), HORVÁTH, p. 95, Rev. Ent. franc. 1897.
- Spangbergiella lynchii* and *vulnerata*, distinguished, BAKER, p. 157, Canad. Ent. xxix.
- S. mexicana*, Vera Cruz, BAKER, p. 157, t. c., n. sp.
- Termitopsyllus*, n. g., *purpureus*, n. sp., Madagascar, in nests of *Eutermes canaliculatus*, WASMANN, p. 169, Abh. Senckenb. Ges. xxi.
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- Typhlocyba ficaria*, Hungary, HORVÁTH, p. 636, Termes. Fuzetek, xx, n. sp.
- Zygina versuta*, Dalmatia, MELICHAR, p. 71, Wien. ent. Zeit. xvi; *Z. orchroleuca*, p. 637, *dorsalis*, Hungary, *discolor*, Croatia, p. 638, HORVÁTH, Termes. Fuzetek, xx : n. spp.
- Zyginella albifrons*, Hungary, HORVÁTH, p. 637, t. c., n. sp.

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- List of *Psyllidæ* of France with the plants they affect, DUBOIS, pp. 360-365, Bull. Soc. Nord France, xii.
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- Cardiaspis*, n. g. for *C. artifex*, n. sp., S. Australia, SCHWARZ, p. 72, P. ent. Soc. Washington, iv.
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- [*Cf.* BUCKTON (139), CHOLODKOVSKY (181–184), LOWE (690), MORDWILKO (774), STORMENT (1063), WEED (1178).]
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- [*Cf.* BLANCHARD (83), BRECHER (125), BRIONES (132), COCKERELL (189–198), COOLEY (217), FLETCHER (342), FORBES (348), FROGGATT (372), FULLER (387), GIARD (405, 406, 408), GREEN (422), HOWARD (509), KING (583), KING & COCKERELL (585), LATASTE (652, 653, 655), MASKELL, (722, 723), MAYET (730, 731), NEWSTEAD (782, 783), PÉREZ CANTO (823), SILVA (1014), SULC (1066), TOWNSEND (1091).]
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D. subg. n., cf. *Erium*, infra.
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Diaspis rosæ, var. n. *spinosa*, MASKELL, p. 241, Ent. Mag. xxxiii. *D. calyptroides*, varr. (= *cacti*, *opunticæ*, *opunticola*), MASKELL, p. 299, Tr. N. Zealand Inst. xxix.
D. fallax (= *ostreæformis*, Sign. nec Curt.), HORVÁTH, p. 95, Rev. Ent. franc. 1897; *D. persimilis*, Mexico, COCKERELL, p. 267, Canad. Ent. xxix : n. spp.
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- I. fossilis*, W. Australia, MASKELL, p. 308, pl. xx, figg. 1-4, Tr. N. Zealand Inst. xxix, n. sp.
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- Lecanium ficus, globulosum*, China, *notatum*, Japan, MASKELL, p. 243, Ent. Mag. xxxiii; *L. mirificum*, Australia, MASKELL, p. 312, pl. xx, figg. 7-14, Tr. N. Zealand Inst. xxix; *L. flaveolum*, N. America, (greenhouse), COCKERELL, p. 52, Psyche, viii; *L. parvicorne*, Florida, COCKERELL, p. 90, Psyche, viii; *L. turgidum*, Florida, COCKERELL, p. 152, Psyche, viii; *L. (Eulecanium) perditum*, p. 267, *L. chilaspidis*, p. 268, Mexico, COCKERELL, Canad. Ent. xxix : n. spp.
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(F.) NEUROPTERA.

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The trophi of numerous species, comparison with *Microlepidoptera*, GENTHE (396).

Buccal glands, HENSEVAL (473).

Pairing between *Halesus guttatipennis* and *Chaetopteryx villosa*, PORRITT, p. 15, Ent. Mag. xxxiii.

Anabolia lombarda, Pavia, RIS, p. 434, Mt. Schweiz. ent. Ges. ix; *A. unicolor*, Washington, BANKS, p. 27, Tr. Amer. ent. Soc. xxiv : n. spp.

Berecia nigritta, New York, BANKS, p. 31, Tr. Amer. ent. Soc. xxiv, n. sp.

Chaetopteryx gessneri, characters, RIS, p. 440, Mt. Schweiz. ent. Ges. ix.

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Glossosoma americana, New Hampshire, BANKS, p. 31, t. c., n. sp.

Halesus antennatus, characters, RIS, pp. 436 & 437, cuts, Mt. Schweiz. ent. Ges. ix.

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Macronema sansibarica, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Netzfl. p. 39, n. sp.

Microptila, n. g., near *Oxyethira*, p. 416, for *M. minutissima*, n. sp., p. 417, Switzerland, RIS, Mt. Schweiz. ent. Ges. ix.

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Oxyethira tristella, early stages, KLAPÁLEK, t. c., p. 11, figg.

O. simplex, p. 420, *sagittifera*, p. 421, *felina*, p. 422, Switzerland, RIS, Mt. Schweiz. ent. Ges. ix, n. spp.

Polycentropus signatus, *affinis*, p. 30, *canadensis*, p. 31, N. America, BANKS, Tr. Amer. ent. Soc. xxiv, n. spp.

Silo pallidus, New York, BANKS, p. 29, t. c., n. sp.

Stactobia fuscicornis, characters, RIS, p. 418, cuts, Mt. Schweiz. ent. Ges. ix.

NEUROPTERA-PLANIPENNIA.

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Macronemurus striola, p. 21, *tinctus*, p. 22, pl., fig. 7, *interruptus, lepidus*, p. 23, E. Africa, KOLBE, Deutsch-Ost-Afrika, iv, Netzfl., n. spp.

Myrmeleon nigradorsis, p. 18, *kituanus*, p. 19, *rapax*, p. 20, E. Africa, KOLBE, t. c., n. spp.

Osmylus africanus, Zanzibar, KOLBE, t. c., p. 33, pl., fig. 9, n. sp.

Palpares interioris, p. 9, *submaculatus*, p. 10, pl., fig. 5, *nyicanus*, p. 11, fig. 6, *stuhlmanni*, p. 12, fig. 1, East Africa, KOLBE, t. c., n. spp.

Phalascusa, n. g. for *P. hildebrandti*, n. sp., E. Africa, KOLBE, t. c., p. 31, pl., fig. 3.

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Tomatares citrinus, var. n. *vinacea*, KOLBE, t. c., p. 14.

MANTISPIDÆ.

Mantispa apicipennis, Massailand, KOLBE, Deutsch-Ost-Afrika, iv, Netzfl. p. 36; *M. floridana, sayi*, Florida, BANKS, p. 23, Tr. Amer. ent. Soc. xxiv: n. spp.

PSEUDO-NEUROPTERA.

MALLOPHAGA.

Trichodectes quadraticeps, fig. 1, p. 185, from a fox, *californicus*, fig. 2, p. 186, from a pocket mouse, California, CHAPMAN, Ent. News Philad. 1897, n. spp.

TERMITIDÆ.

[Cf. BLANDFORD (84), GRASSI & SANDIAS (421), CZERWINSKI (226), FROGGATT (370, 371), HAVILAND (463), JACK (539), KING (584), PORTER (875), SAVILLE-KENT (957, 958), SJÖSTEDT (1017, 1018, 1019), WASMANN (1153).]

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EMBIIDÆ.

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Oligotoma insularis, habits and early stages, PERKINS, p. 56, Ent. Mag. xxxiii.

PSOCIDÆ.

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PERLIDÆ.

[Cf. BANKS (48), Klapálek (593).]

Structure of the reproductive organs in numerous genera; morphology of abdomen, Klapálek, SB. Ak. Wien, cv, Abth. i, pp. 683-738, 5 pls.

Production of sound by male *Perlida*, BRIGGS, p. 207, Ent. Mag. xxxiii.

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EPHEMERIDÆ.

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ODONATA.

[Cf. BORDAS (111), CARPENTER (159, 160), FÖRSTER (354-357), GARBINI (393), KIRBY (586), MACLACHLAN (704), NEEDHAM (780, 781), RIS (928), SELYS (1000).]

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Cyclophylla calverti, Amazons, KIRBY, p. 613, pl. xii, fig. 2, Ann. Nat. Hist. xix, n. sp.

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- Gomphus umbratus*, New York, NEEDHAM, p. 184, *Canad. Ent.* xxix, n. sp.
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Ladona, n. g. for *Libellula exusta*, Say, p. 146, habits, nymph described, p. 144, NEEDHAM, *t. c.*
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Ophiogomphus johannus, p. 182, *carolus*, p. 183, New York, NEEDHAM, *Canad. Ent.* xxix, n. spp.
Orcus, n. g. (see *Arigomphus*, supra), type *pallidus*, Ramb., NEEDHAM, p. 167, *Canad. Ent.* xxix.
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Selysiotthemis, n. g., p. 47, for *Urothemis nigra*, Selys, sp. fully described, pp. 48 & 49, RIS, *Ann. Soc. ent. Belgique*, xli.
Stylurus, n. g., type *plagiatus*, Selys, NEEDHAM, p. 167, *Canad. Ent.* xxix.
S. segregans, Illinois, NEEDHAM, p. 185, *t. c.*, n. sp.
Thaumatoneura, n. g., near *Amphipteryx*, p. 130, for *T. inopinata*, n. sp., China or Japan?, p. 131, McLACHLAN, *Ent. Mag.* xxxiii.
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Urothemis: revision of the four subgenera, SELYS, pp. 68-86, *Ann. Soc. ent. Belgique*, xli.
Zyxomma multinervis, New Guinea, CARPENTER, p. 435, pl. xvi, figg. 1-4, *P. Dublin Soc.* viii, n. sp.

THYSANOPTERA.

[*Cf.* BEACH (58), JABLONOWSKI (527), OSBORN (805).]

Phlæothrips statices and others, attacks on corn, characters, JABLONOWSKI (527).

P. verbasci, Iowa, OSBORN, p. 228, *P. Iowa Ac.* iii, n. sp.

Sericothrips? perplexa, Iowa, BEACH, p. 216, *P. Iowa Ac.* iii, n. sp.

Thrips maidis, p. 219, *variabilis*, p. 220, *inequalis*, p. 223, *lactuceæ*, p. 224, *pallida*, p. 226, Iowa, BEACH, *t. c.*, n. spp.

(G.) APTERA.

- [The titles indicated by the following numbers relate to *Aptera*, viz.:—
BANKS (51), BOUVIER (120), CALL (153), CARPENTER (158), CLAYPOLE (185), GIARD (407), HEYMONS (478, 480), MADDOX (705), MATTHEW (726), POPPE & SCHÄFFER (874), SCHÄFFER (959, 960), SCHÖTT (977), UZEL (1110, 1111), VIRÉ (1133), WILLEM (1189), WILLEM & SABBÉ (1191).]
- Gastrotheoidea*, n. suborder for *Gastrotheus*, CASEY, COOK, p. 53, P. ent. Soc. Washington, iv.
- Table of the genera of *Apterygota*, SCHÄFFER, pp. 32–40, Magalha. Reise.
- Development and morphology of *Thysanura* (*Lepisma saccharina*); relation to other Orders, HEYMONS, Zeitschr. wiss. Zool. lxii, pp. 583–631.
- Structure of the alimentary canal in various forms of *Thysanura* and *Collembola*, HEYMONS (480).
- Resemblance between European and Patagonian *Aptera*, GIARD (407).
- New supposed Thysanuran from Silurian of New Brunswick, MATTHEW (726).
- Structure of scales of *Seira buskii* and *Lepidocyrtus*, MADDOX (705).

THYSANURA.

- Embryology of *Campodea* and *Lepisma*, UZEL (1110). Embryology of *Campodea*: morphology of trophi and abdominal appendages, UZEL, Zool. Anz. 1897, pp. 232–237.
- Campodea staphylinus*, the cavernicolous forms, VIRÉ, pp. 89–95, Bull. Mus. Paris, 1897.
- Japyx bidentatus*, Valparaiso, SCHÄFFER, p. 30, Magalha. Reise, n. sp.
- Lepisma rubro-violacea*, p. 190, *reticulata*, p. 192, California, SCHÖTT, P. Calif. Ac. vi, n. spp.
- Lepismina poly poda*, mode of feeding, JANET (545).
- L. bifida*, Valparaiso, SCHÄFFER, p. 27, Magalha. Reise, n. sp.
- Machilis aurantiacus*, California, SCHÖTT, p. 188, P. Calif. Ac. vi, n. sp.
- Maindronia*, n. g. for *M. mascatensis*, n. sp., Mascat, BOUVIER, p. 23, Bull. Soc. ent. France, 1897.
- Trinemophora*, n. g. for *T. michaelsoni*, n. sp., Valparaiso, SCHÄFFER, p. 29, Magalha. Reise.

COLLEMBOLA.

- Monograph of the *Collembola* of Hamburg, with numerous critical and synonymical notes, SCHÄFFER (960).
- Collembola* of Bremen with notes on habits, POPPE & SCHÄFFER (874).
- Structure of eyes: histology and function of post-antennal organ, WILLEM (1189).
- Cephalic and salivary glands; function of ventral tube, WILLEM & SABBÉ, p. 130, Ann. Soc. ent. Belgique, xli.
- Peculiar cleavage in development in egg of *Anurida*: phylogenetic importance, CLAYPOLE (185).

- Achorutes spinifer*, Berlin, SCHÄFFER, p. 174, pl., fig. 51, Mt. Mus. Hamburg, xiii, n. sp.
- Anurida clavata*, Tierra del Fuego, SCHÄFFER, p. 7, Magalha. Reise, n. sp.
- Anurophorus*; validity, SCHÖTT, p. 186, P. Calif. Ac. vi.
- Aphorura neglecta*, Hamburg, SCHÄFFER, p. 162, figg. 15 & 16, Mt. Mus. Hamburg, xiii; *A. trisetosa*, p. 5, *sexpunctata*, p. 6, Chili, SCHÄFFER, Magalha. Reise, n. spp.
- Cremastocephalus*, n. g., near *Campylothorax*, for *C. trilobatus*, n. sp., Mexico, SCHÖTT, p. 175, P. Calif. Ac. vi.
- Cyphoderus martelli*, Ireland, CARPENTER, p. 228, pl. ii, figg. 6–10 (p. 257 said to be *Seira cavernarum*), n. sp.
- Entomobrya orcheselloides*, Germany, SCHÄFFER, p. 196, Mt. Mus. Hamburg, xiii; *E. cavicola*, Kentucky, BANKS, p. 380, pl. x, fig. 2, Amer. Natural. 1897; *E. caeca*, *binoculata*, p. 178, *sexoculata*, p. 180, *atrocincta*, p. 181, *triangularis*, p. 182, California, SCHÖTT, P. Calif. Ac. vi; *E. pulchra*, Tierra del Fuego, p. 21, *virescens*, Valparaiso, p. 23, SCHÄFFER, Magalha. Reise : n. spp.
- Isotoma lacustris*, n. n. for *litoralis*, Schött, SCHÖTT, p. 185, P. Calif. Ac. v, 1.
- Isotoma minor*, p. 182, fig. 65, *tridenticulata*, p. 183, figg. 75 & 76, *nivea*, p. 184, figg. 77 & 78, *notabilis*, p. 187, fig. 81, *grisescens*, p. 188, fig. 87, *longidens*, p. 188, figg. 88, 90, *denticulata*, figg. 95 & 96, *monstrosa*, figg. 97–99, p. 189, Germany, SCHÄFFER, Mt. Mus. Hamburg, xiii; *I. georgiana*, S. Georgia and Tierra del Fuego, p. 16, *silvatica*, Rio Grande, *fulva*, p. 18, *obtusicauda*, Valparaiso, *conjungens*, Tierra del Fuego, p. 19, SCHÄFFER, Magalha. Reise : n. spp.
- Lepidocyrtus parkardi* (sic), *fulvus*, Lower California, SCHÖTT, p. 173, P. Calif. Ac. vi, n. spp.
- Lepidophorella*, n. g., near *Tomocerus*, for *L. flava*, n. sp., Valparaiso, SCHÄFFER, Magalha. Reise, p. 25.
- Lipura wrightii*, characters, CARPENTER, p. 230, Irish Natural. vi.
- Odontella*, n. g., *Poduride*, for *O. loricata*, n. sp., Valdivia, SCHÄFFER, p. 9, Magalha. Reise.
- Polyacanthella*, n. g., near *Friesea*, for *P. brevicaudata*, n. sp., Rio Grande, SCHÄFFER, p. 15, Magalha. Reise.
- Schottella*, n. g., near *Achorutes*, p. 175, *S. parvula*, figg. 61, 35, *corticicola*, figg. 62, 34, *poppei*, figg. 63, 64, 36, n. spp., Germany, p. 176, SCHÄFFER, Mt. Mus. Hamburg, xiii.
- S. subcrassa*, Rio Grande, SCHÄFFER, p. 13, Magalha. Reise, n. sp.
- Sinella cavernicola*, referred to *Templetonia*, CARPENTER, p. 229, Irish Natural. vi.
- S. hofti*, Hamburg, SCHÄFFER, p. 192, Mt. Mus. Hamburg, xiii, n. sp.
- Sira variabilis*, Tierra del Fuego, SCHÄFFER, p. 23, Magalha. Reise, n. sp.
- Smynthurus*, aquatic sp., copula, FOLSOM, p. 12, Psyche, viii.
- S. penicillifer*, p. 211, *atratus*, p. 212, Germany, SCHÄFFER, Mt. Mus. Hamburg, xiii; *S. clavatus*, p. 33, *macgillivrayii*, p. 34, New York, BANKS, J. N. York Ent. Soc. v; *S. mammouthia*, Kentucky, BANKS, p. 381, pl. x, fig. 1, Amer. Natural. 1897; *S. longicornis*, California, SCHÖTT, p. 170, P. Calif. Ac. vi; *S. serratus*, Navarin, p. 26, *uschuaiensis*, Rio Grande, p. 27, SCHÄFFER, Magalha. Reise : n. spp.
- Templetonia quadrioculata*, California, SCHÖTT, p. 183, P. Calif. Ac. vi, n. sp.
- Tomocerus americanus*, San Francisco, SCHÖTT, p. 172, P. Calif. Ac. vi, n. sp.
- Triacanthella*, n. g., near *Friesea*, for *T. michaelsoni*, n. sp., Patagonia, SCHÄFFER, p. 14, Magalha. Reise.
- Xenylla affinis*, Punta Arenas, SCHÄFFER, p. 10, Magalha. Reise, n. sp.

(H.) ORTHOPTERA.

[The following titles relate to *Orthoptera*, viz.:—BOLIVAR (93-98), BORDAGE (100, 101, 102), BORDAS (104-111), BRANCSIK (122, 123), BRINDLEY (131), BRONGNIART (134, 135), BURR (141, 142), CUÉNOT (223), DENNY (236), DOLBEAR (261), DOMINIQUE (264), DUBOSCQ (269), FABRE (303), FINOT (336, 337), GIARDINA (409), GIGLIO-TOS (411, 412), GRIFFINI (425, 426, 427), HEYMONS (479), HUTTON (521), INGENITZKY (523, 524), KIMAKOWICZ (580), KŁAPÁLEK (597), KREJČI (637), PANTEL (819), PAVLOWA (822), PIERS (869), RAINBOW (890, 891), RODZIANKO (940-943), SAJÓHELYI (955), DE SAUSSURE (416), SCUDDER (993-998), SNOW & HUNTER (1044), ZABRISKIE (1200), ZUBOWSKY (1203, 1204).]

Anatomy of the alimentary canal of 80 forms; classification into *Colotasia* and *Acolotasia* based thereon; BORDAS (104). Division of the Order into two suborders *Acolotasia* (= *Forficulidæ* and *Phasmidæ*) and *Colotasia* (= the other families) in conformity with digestive organs; BORDAS (107).

Sympathetic nervous system; BORDAS (110).

Anatomy and development of *Bacillus rossii*; HEYMONS (479).

The salivary glands; BORDAS (111).

A species with wingless males, winged females; BOLIVAR (96).

Synoptic tables of *Orthoptera* of the Iberian peninsula; BOLIVAR (95).

Orthoptera of Bohemia; KREJČI (637).

Account in Russian of the *Orthoptera* of St. Petersburg; ZUBOWSKY (1203).

The genera and classification of N. American *Orthoptera*; SCUDDER (998).

FORFICULIDÆ.

The anomalous *Dyscritina longisetosa*, Westw., is young of a Forficulid, GREEN, p. 205, Ent. Mag. xxxiii.

List of *Forficulidæ* of S. America, FINOT, Act. Soc. Chili, vi, pp. 3-10.

Flight, use of the forceps; KIMAKOWICZ (580).

Larva of *Raselia antiqua*, parasitic in *Forficulidæ*, RODZIANKO, p. 72, Horæ Soc. ent. Ross. xxxi.

Anisolabis? kirbyi, Java, BURR, p. 311, Ann. Nat. Hist. xx, n. sp.

Brachylabis bifoveolata, India, BOLIVAR, p. 285, pl. x, fig. 1, Ann. Soc. ent. France, 1897, n. sp.

Carcinophora castetsi, India, BOLIVAR, p. 284, t. c., n. sp.

Chelisoche melanocephalus, n. var., BURR, p. 315, Ann. Nat. Hist. xx.

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Echinosoma bolivari, Madagascar, RODZIANKO, p. 154, Wien. ent. Zeit. xvi, n. sp.

Forcipula, n. g. for *Labidura quadrispinosa*, Dohrn, with var. n. *lurida*, BOLIVAR, Ann. Soc. ent. France, 1897, p. 283.

Labia dolicha, Celebes, p. 311, *fruhstorferi*, Lombok, p. 312, BURR, Ann. Nat. Hist. xx, n. spp.

Labidura distincta, Transcaucasus, RODZIANKO, p. 153, Wien. ent. Zeit. xvi, n. sp.

- Neolobophora asiatica*, India, BOLIVAR, p. 285, pl. x, fig. 2, Ann. Soc. ent. France, 1897, n. spp.
Opisthocosmia forcipata, n. var., BURR, p. 316, Ann. Nat. Hist. xx.
Spongophora bormansi, Bahia, p. 313, *guttulata*, Lombok, p. 314, BURR, t. c., n. spp.

HEMIMERIDÆ.

Hemimerus: habitat, COOK, p. 53, P. ent. Soc. Washington, iv.

BLATTIDÆ.

- Catalogue of *Blattidæ* of South and Central America, FINOT (336).
 Development and morphology of ovipositor of *Periplaneta*, DENNY (236).
 Regeneration of legs: occurrence of four-jointed tarsi; natural history; proportions of sexes, BRINDLEY, P. Zool. Soc. London, 1897, pp. 903-916.
- Aphlebidea*, n. g., *Ectobiidæ*, for *A. brunneri*, n. sp., Australia, p. 56, pl. i, fig. 1, BRANCSIK, Jahresh. Ver. Trencsen. xix.
Blabera anisitsi, Paraguay, BRANCSIK, p. 60, pl. i, fig. 5, t. c., n. sp.
Blatta marginata, India, BOLIVAR, p. 288, Ann. Soc. ent. France, 1897, n. sp.
Calolampra depolita, Australia, BRANCSIK, p. 57, Jahresh. Ver. Trencsen. xix, n. sp.
Ceratinoptera (*Allacta*) *crassivenosa*, p. 290, *C. induta*, p. 291, India, BOLIVAR, Ann. Soc. ent. France, 1897, n. spp.
Chorisoneura argentina, La Plata, BRANCSIK, p. 57, Jahresh. Ver. Trencsen. xix, n. sp.
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Ectobia livida and other *Blattidæ*, notes, RODZIANKO, pp. 112-115, Zapiski Kiev. Obsch. xiv.
E. tasmanica, Tasmania, BRANCSIK, p. 244, pl. vii, fig. 1, Jahresh. Ver. Trencsen. xvii, n. sp.
Epilampra sculpturata, p. 297, *lineaticollis*, p. 298, India, BOLIVAR, Ann. Soc. ent. France, 1897; *E. caizana*, Bolivia, GIGLIO-TOS, p. 10, Boll. Mus. Torino, 1897, No. 302: n. spp.
Hemithyrocera suspecta, India, BOLIVAR, p. 288, Ann. Soc. ent. France, 1897, n. sp.
Heterogamia roseni, Transcaspian, BRANCSIK, p. 59, pl. i, fig. 2, Jahresh. Ver. Trencsen. xix, n. sp.
Homalopteryx patinifera, p. 295, *biplagiata*, *cariniceps*, India, BOLIVAR, Ann. Soc. ent. France, 1897, n. spp.
Loboptera laurenziana, Argentina, p. 2, *borellii*, Bolivia, p. 3, GIGLIO-TOS, Boll. Mus. Torino, 1897, No. 302, n. spp.
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- Heterecous*, n. g., near *Podoscirtus*, for *H. auditor*, Panama, pl. xiii, figg. 33 & 34, p. 283, *smithianus*, Mexico, fig. 35, p. 284, n. spp., DE SAUSSURE, *t. c.*
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Anchotatus camposi, Peru, BOLIVAR, p. 215, Bull. Soc. ent. France, 1897,
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 p. 4, n. sp.
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 No. 302, n. sp.
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 SCUDDER, p. 75, Canad. Ent. xxix.
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 Amer. Ac. xxxii.
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 n. spp., Australia, p. 73, BRANCSIK, Jahresh. Ver. Trencsen. xix.
Bruneria not *Brunneria*, McNEILL, p. 71, Psyche, viii.
Bucephalacris borellii, Bolivia, GIGLIO-TOS, p. 32, Boll. Mus. Torino, 1897,
 No. 302, n. sp.
Campylacantha, n. g. for four species from N. America and Mexico, SCUDDER,
 pp. 198 & 204, P. Amer. Ac. xxxii.
Caryanda pulchra, N. Guinea, BRANCSIK, p. 74, pl. iii, fig. 17, Jahresh.
 Ver. Trencsen. xix, n. sp.
Catantops speciosus, p. 77, *papuanus*, p. 78, New Guinea, BRANCSIK, *t. c.*,
 n. spp.

- Cephalocæma caizana*, Bolivia, *obtusa*, *magna*, p. 20, *gigantea*, p. 21, Argentina, GIGLIO-TOS, Boll. Mus. Torino, 1897, No. 302, n. spp.
- Cephalotettix*, n. g. for a species from Mexico, SCUDDER, pp. 197 & 204, P. Amer. Ac. xxxii.
- Chortoizetes yorketownensis*, Australia, BRANCSIK, p. 249, pl. viii, fig. 2, Jahresh. Ver. Trencsen. xvii; *C. jungi*, p. 70, *frater*, p. 71, Australia, BRANCSIK, *op. cit.* xix : n. spp.
- Chrotogonus hemipterus*, subsp. n., *intermedius*, GRIFFINI, p. 10, Boll. Mus. Torino, 1897, No. 290.
- Cirphula jungi*, Australia, BRANCSIK, p. 255, Jahresh. Ver. Trencsen. xvii, n. sp.
- Conalcæa*, n. g. for three species from Mexico and New Mexico, SCUDDER, pp. 196 & 204, P. Amer. Ac. xxxii.
- Cyclocercus*, n. g. for three species from Mexico and Texas, SCUDDER, pp. 197 & 204, *t. c.*
- Dericorys millierei*, var. n. *carthagonovæ*, BOLIVAR, p. 171, Act. Soc. Espan. 1897.
- Eotettix*, n. g., for a species from Florida, SCUDDER, pp. 198 & 204, P. Amer. Ac. xxxii.
- Epacromia lurida*, Zambesi, BRANCSIK, p. 250, Jahresh. Ver. Trencsen. xvii, n. sp.
- Eumecistes*, n. g., near *Coryphistes*, for *E. gratiosus*, n. sp., Australia, BRANCSIK, p. 253, *t. c.*
- Eupnigodes*, n. n. for *Pnigodes*, infra, McNEILL, p. 71, Psyche, viii.
- Euryphymus xanthocnemis*, p. 78, *squamipennis*, p. 79, pl. iii, fig. 20, S. Africa, BRANCSIK, Jahresh. Ver. Trencsen. xix, n. spp.
- Exarna despecta*, Australia, BRANCSIK, p. 77, pl. iii, fig. 19, *t. c.*, n. sp.
- Goniæa nigropunctata*, p. 254, pl. viii, fig. 6, *distincta*, fig. 7, p. 255, Australia, BRANCSIK, *op. cit.* xvii, n. spp.
- Gonyacantha cultrifer*, Zambesi, BRANCSIK, p. 252, *t. c.*, n. sp.
- Gymnoscirtetes*, n. g., for a species from Florida, SCUDDER, p. 195 & 204, P. Amer. Ac. xxxii.
- Hisychius festæ*, Darien, GIGLIO-TOS, Boll. Mus. Torino, 1897, No. 301, n. sp.
- Hyalopteryx gracilis*, Argentina, GIGLIO-TOS, p. 22, Boll. Mus. Torino, 1897, No. 302, n. sp.
- Inusia*, n. g., p. 30, near *Leptisma*, for *I. gracillima*, n. sp., Bolivia, p. 31, GIGLIO-TOS, *t. c.*
- Jodacris*, n. g. for *Anniceris ferrugineus*, Gigl.-T., GIGLIO-TOS, p. 32, *t. c.*
- Macrotona lineola*, Australia, BRANCSIK, p. 256, Jahresh. Ver. Trencsen. xvii, n. sp.
- Masyntes borellii*, Paraguay, GIGLIO-TOS, p. 17, Boll. Mus. Torino, 1897, n. sp.
- Melanoplus*: table of the species, SCUDDER (995).
- Mestobregma*, Sc. (= *Trachyrhacis*, Sc.), SCUDDER, p. 75, Canad. Ent. xxix.
- Metaleptea minor*, Argentina, GIGLIO-TOS, p. 23, Boll. Mus. Torino, 1897, No. 302, n. sp.
- Monistria bolivari*, Australia, BRANCSIK, p. 251, pl. ix, fig. 1, Jahresh. Ver. Trencsen. xvii, n. sp.
- Netrosoma*, n. g. for two species from Mexico, SCUDDER, pp. 195 & 204, P. Amer. Ac. xxxii.
- Oedaleonotus*, n. g. for *Melanoplus collaris*, Sc., SCUDDER, pp. 203 & 206, *t. c.*
- Oedipoda fuscocincta*, var. *iberica*, BOLIVAR, p. 169, Act. Soc. Espan. 1897.
- O. variabilis*, habitat and variation, DELMAS, p. 13, Echange, 1897.
- Osmiliola*, n. g., p. 32, near *Vilerna*, for *O. aurita*, n. sp., Bolivia, p. 33, GIGLIO-TOS, Boll. Mus. Torino, 1897, No. 302.
- Ossa viridis*, Argentina, GIGLIO-TOS, p. 27, *t. c.*, n. sp.

- Paradichroplus bilobus*, p. 34, *fusiformis*, p. 35, Argentina, GIGLIO-TOS, Boll. Mus. Torino, 1897, No. 302, n. spp.
- Paratettix borellii*, Argentina, GIGLIO-TOS, p. 28, *t. c.*, No. 302, n. sp.
- Phædotettix*, n. g. for a species from Mexico and Texas, SCUDDER, pp. 196 & 204, P. Amer. Ac. xxxii.
- Phaulotettix*, n. g. for a species from Mexico, SCUDDER, pp. 197 & 204, *t. c.*
- Philocleon*, n. g. for *Melanoplus nigrovittatus*, St., SCUDDER, pp. 203 & 206, *t. c.*
- Phlibostroma*, Sc. (= *Beta*, Brunn.), SCUDDER, p. 76, Canad. Ent. xxix.
- Phlæoba mossambicensis*, Africa, BRANCSIK, p. 249, pl. viii, fig. 1, Jahresh. Ver. Trencsen. xvii, n. sp.
- Phætalotes*, n. g. for *Melanoplus nebrascensis*, Thom., SCUDDER, pp. 202 & 205, P. Amer. Ac. xxxii.
- Plectrotettix*, n. n. for *Plectrophorus*, supra, MCNEILL, p. 71, Psyche, viii.
- Pæcilochroma*, n. g., p. 75, near *Copiocera*, for *P. jucunda*, n. sp., New Guinea, p. 76, pl. iii, fig. 18, BRANCSIK, Jahresh. Ver. Trencsen. xix.
- Pæcilotettix*, n. g. for *Melanoplus picticornis*, Th., SCUDDER, pp. 203 & 206, P. Amer. Ac. xxxii.
- Rhabdotettix*, n. g. for three species from Mexico and Texas, SCUDDER, pp. 197 & 204, *t. c.*
- Schistocerca americana* in Canada, WALKER, p. 89, Canad. Ent. xxix.
- Sinaloa*, n. g. for a Mexican species, SCUDDER, pp. 197 & 204, P. Amer. Ac. xxxii.
- Stauronotus kraussi*, S. Russia, INGENITZKY, p. 63, pl. vii, Horw Soc. ent. Ross. xxxi, n. sp.
- Staurorhæctus*, n. g., p. 25, near *Pseudostauronotus*, for *S. longicornis*, n. sp., Argentina, p. 26, GIGLIO-TOS, Boll. Mus. Torino, 1897, No. 302.
- Stenoxypus aurantiacus*, New Guinea, BRANCSIK, p. 74, pl. iii, fig. 16, Jahresh. Ver. Trencsen. xix, n. sp.
- Stethophyma*, *Arcyptera*, *Ramburia*, characters, BOLIVAR, p. 168, Act. Soc. Espan. 1897.
- Stirapleura*, Sc. (= *Pseudostauronotus*, Brunn.), SCUDDER, p. 76, Canad. Ent. xxix.
- Tetanorhynchus humilis*, *borellii*, Argentina, GIGLIO-TOS, p. 18, Boll. Mus. Torino, 1897, No. 302, n. spp.
- Thericles jallæ*, Zambesi, GRIFFINI, p. 7, Boll. Mus. Torino, 1897, No. 290, n. sp.
- Thrinicus aridus* and *californicus*, referred to *Heliastus*, SCUDDER, p. 75, Canad. Ent. xxix.
- Tylotropidius gracilipes*, Zambesi, BRANCSIK, p. 256, pl. viii, fig. 8, Jahresh. Ver. Trencsen. xvii, n. sp.
- Tytthotyle*, n. g. *Eremobiens*, for *Thrinicus maculatus*, Brun., SCUDDER, p. 74, Canad. Ent. xxix.
- Xiphocera menyharthi*, Zambesi, BRANCSIK, p. 252, pl. viii, fig. 3, Jahresh. Ver. Trencsen. xvii, n. sp.

XIV. ECHINODERMA.

(For 1896 and 1897.)

BY

F. A. BATHER.

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INTRODUCTION.

I. TITLES. The larger bulk of the present list is due to three factors. First, the obvious one that it is the Record for 1896 as well as for 1897. Second, the actual increase in output of Echinoderm literature, there being 13 more titles for 1896 than there were for 1891 which was an exceptionally heavy year; 1897 too is well above the average. Third, the multiplication of Reviews, such as the *Revue critique de paléozoologie* and the *Rivista italiana di Paleontologia*, many of which contain critical notices of much value.

The list is thus composed: No date (circa 1896), 1 title; 1885, 1;

1888, 1; 1889, 2; 1890, 1; 1891, 9; 1893, 3; 1894, 6; 1895, 19; 1896, 168; 1897, 147: Total, 358. This number is known to be incomplete, as some authors and societies persist in hiding their light under a bushel. The list also contains eight titles marked as unseen, for which fact apologies are tendered. For these and various obscure titles the Recorder has to thank the Concilium Bibliographicum at Zurich, to whose minute accuracy he is glad to bear witness. No-one would expect to find new species of Echinoids described under the title, "Os Molluscos dos terrenos terciarios da Patagonia," especially when the author of the paradox is so esteemed a zoologist as VON IHERING. The number of titles (358) is far from representing the actual number of works herein referred to, such as translations or second editions of works already recorded and analysed, as well as numerous reviews and abstracts that have appeared during the years dealt with.

It was not thought that MAYER-EYMAR's paper (244) demanded more than one number, although it appeared in no less than seven different forms (all of which, nevertheless, are referred to). H. L. CLARK's work on *Synapta vivipara*, however, has already necessitated four entries and will need another next year when the complete work is dealt with. Fortunately for the Recorder all authors do not multiply their papers in this alarming ratio. The trouble caused by a paper is no index of its value, as may further be seen by contrasting the entries under LUDWIG (203) and (210). *A propos* of trouble the repaging nuisance is even worse than wrong dating.

It is very doubtful whether the above analysis according to years is quite correct. Every attempt has been made to give the date of each paper with absolute accuracy, but this is not always possible. It is, however, believed that the dates assigned in the present Record are correct, especially where they differ from the apparent dates. The tendency of authors and societies is to pre-date, of publishers to post-date. As an example may be mentioned the *Sitzungsberichte* of the *Nieder-rheinische Gesellschaft*, for the true dates of which the Recorder is indebted to Prof. W. Voigt.

Catch-numbers to the divisions of the Subject-Index are, as before, inserted in square brackets at the end of each title. Those referring to the Systematic portion [IV, A—K] are inserted only when some question of definite importance to the systematist is dealt with in the work.

II. BIOLOGY. Slight improvements have been made in the arrangement of this section, so as to harmonise its subdivisions still further (see CONTENTS).

The papers dealt with are not only numerous but comprise many of importance. A year that saw the issue of LUDWIG's wholly admirable monograph on Mediterranean starfish (210) and the three big volumes that represent the twenty years' work by WACHSMUTH & SPRINGER on North American Crinoidea Camerata (336) will ever be memorable to students of Echinoderma.

A. Among general evolutionary writings those of HAECKEL (116–118), though wild, are often suggestive. Valuable work based on actual examination of specimens has been done by JACKSON (139) & TORNQUIST (171) on *Palechinoidea*, by GREGORY on *Echinothuridae* (108) and *Plesiocidaroida* (110), and by LAHILLE on Scutellidae (176).

B. Anatomical researches are most abundant in the Holothurians. Here the first place is due to GEROULD's careful study of *Caudina arenata* (100). ÖSTERGREN has begun what seems likely to prove a long series of valuable papers, chiefly on *Synallaotinae* (253–255). CLARK's work on *Synapta* would be more welcome if less scattered (53). Here also may be mentioned the notes of BARTHELS (18), IVANZOFF (138), and KOEHLER (170). DENDY, working under difficulties, has begun the study of New

Zealand species. In *Echinoidea* the only work of importance has been done on fossils, especially by GREGORY (108, 109, 110), JACKSON & JAGGAR (139, 140), and TORNQUIST (326, 327). The writings of LAMBERT also contain many valuable notes. A small contribution to the anatomy of the generative organs in *Asteroidea* is made by LEIPOLDT (186); but for this group a storehouse of information is afforded by LUDWIG (198, 210), whose monograph is an admirable example of thorough work and lucid arrangement. The anatomy of fossil *Crinoidea* is fully described in WACHSMUTH & SPRINGER (336); BATHER (24) gives a detailed account of *Uintacrinus*; and WELLER & DAVIDSON (341) introduce too briefly a new type of arm-structure in their genus *Petalocrinus*. Among *Cystidea*, more details are needed concerning WHITEAVES' strange genus *Asterocystis* (345) now called *Steganoblastus*. The monograph of HAECKEL (119) on this Class adds little to our knowledge of their structure. Under *Blastoidea* there is little of importance except OEHLERT'S (250) restored diagram of *Pentremitidea*.

Considerable attention is paid by many authors to variation, but the only paper specially dealing with the subject is LAHILLE'S careful study of *Monophora darwini* (176).

c. The chief paper of a purely physiological nature is that by STONE (321) on the pyloric caeca of *Asterias*.

d. Observations on Bionomics are numerous but scattered. MONTICELLI (242) has studied the autotomy of *Cucumaria*; SCHIEMENZ (295) tells us how starfish open oysters; ÖSTERGREN (255) proves the locomotion of Holothurians by their anchors; MORTENSEN (244) has discovered an alga that eats the test of an Ophiurid; and LUDWIG (206) has found a new Gastropod in a *Chiridota*. WALTHER (338) discourses charmingly on the life of fossils.

e. The chief paper of Embryological interest is undoubtedly MACBRIDE'S (212) on *Asterina*; this will soon be supplemented by GOTO (see 102). ZIEGLER (355) has notes on the development of *Ophiothrix*, and CLARK (53) on that of *Synapta*. It is pleasing to see the increasing amount of attention paid to post-larval changes. Under this head are important papers by ARNAUD (15), JACKSON (139), LAHILLE (176), LAMBERT (178), MITSUKURI (238) and MORTENSEN (244); but the importance of this method of research is obvious to other workers.

Echinoderms continue as heretofore to furnish numerous data for the study of developmental mechanics. Special reference may be made to the observations of HAMMAR (123), MACBRIDE (213), ANDREWS (7 & 8) and THEEL (325), all of which show the pseudopodial activities of cells and the intimate connection between them.

III. a. The study of faunas is continued by the Prince of Monaco, and much has been done in the N. Atlantic. See KOEHLER & PERRIER. The Echinoderms of the Indian Ocean, dredged by H.M.S. 'Investigator' are in the hands of KOEHLER (167), who, it is stated, will keep all duplicates. Funafuti has not contributed much of interest (see WHITELEGGE 346). MITSUKURI (240) finds *Sphaerothuria* off Japan.

b. Under Geological distribution we note a supposed *Palechinus* from the Silurian of New South Wales (MITCHELL 236); *Hapalocrinus* from the Silurian of Victoria, *Merocrinus* from the Ordovician of England, and *Uintacrinus* from the Cretaceous of England (BATHER 30, 20, 25): NOETLING (248) introduces Maestrichtian Echinoids from Baluchistan; CREMA (59) additions to the Muschelkalk fauna; OEHLERT (250) studies a Devonian fauna from Spain; and POMPECKJ, the Cambrian Cystids of Tejšovic & Skrej in Bohemia.

IV. That the amount of systematic work has been considerable may be judged from the fact that we here record the proposal of 512 new species and 82 new genera, distributed as follows:—

	Genera			Species	
	new	hypothetical, doubtful or new names only		new	doubtful or unnamed
Holothurioidea ...	5	1	...	26	0
Echinoidea	19	2	.....	112	11
Asteroidea.....	4	0	.....	19	1
Ophiuroidea	8	0	.....	71	2
Crinoidea	13	0	.....	249	3
Cystidea	18	12	.....	13	4
Blastoidea.....	0	0	.....	1	0

There are also many new subgenera, new varieties, and doubtful new forms. But perhaps the most valuable piece of systematic work is that by LUDWIG on the Starfish of the Mediterranean (210), though not a single new species is described therein.

The preceding numbers are no doubt fairly correct, but the Recorder cannot be blamed if he has occasionally missed one of the numerous new names casually introduced in footnotes, reviews, and the like obscure places. The otherwise admirable papers of LAMBERT, SCHLUETER, & TORNQUIST, were particularly troublesome. The chance of error would be avoided if authors would but give a list of all new names proposed in each paper. So far is this from the case that it is sometimes quite impossible to tell whether a name is new or no.

In the matter of figuring new species the conscience of authors is awakening. Reference to such figure has been given consistently in the Systematic Index. That Index contains a reference to every definite statement made concerning a genus or species in the papers dealt with. When the name of the species is followed by no remark, it probably alludes to a statement of locality or horizon only.

Among general works ZITTEL'S Grundzüge (356) and the translation by EASTMAN (357) are of value, while HÆCKEL (116) is suggestive. The *Holothurioidea* are studied by DENDY (63) in New Zealand and ÖSTERGREN (253, 254) in Norway, while R. PERRIER (265) has valuable material from N. Atlantic, and notes of importance are furnished by KOEHLER (170) and MITSUKURI (238, 239). Recent *Echinoidea* are studied by KOEHLER (164, 168); the papers of GREGORY (108, 109), JACKSON (139), MEYER-EYMAR (224) and TORNQUIST (326, 327) on fossil *Echinoidea* have important taxonomic bearings; and detailed work is done by COTTEAU (56), GAUTHIER (98), LAMBERT (179, 180), DE LORIOI (193, 194), NOETLING (248) and SCHLUETER (296, 297). Recent *Asteroidea* are studied by DOEDERLEIN from Amboina, by FARQUHAR (83) from New Zealand, by PERRIER (263) from Bay of Biscay, and notably by LUDWIG (210); the fossils are added to by DEL PRATO (271). Recent *Ophiuroidea* are described by DOEDERLEIN (68) as above, and KOEHLER (169, 164) from Indian Ocean and Bay of Biscay; a classification of the Palæozoic genera is proposed by GREGORY (111). Fossil *Crinoidea* are largely added to by MILLER & GURLEY (232-235), while systematic work of higher order is done by WACHSMUTH & SPRINGER (336). Here also comes valuable information from JAEKEL (144), DE LORIOI (194), OEHLERT (250), and WELLER (340, 341). The *Cystidea* are dealt with by HÆCKEL (118), while POMPECKJ (268) and WHITEAVES (345), add new genera.

It will be seen from the preceding summary that progress is active in all directions, while the amount of really thorough work augurs hopefully for the future. What we all want, but especially Recorders, is more study, less publication, and better arrangement of what is published.

Any further personal remarks by the Recorder are placed, as heretofore, in square brackets.

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 2. ALLEN, E. J. Notes on Dredging and Trawling Work during the latter half of 1895. J. Mar. Biol. Soc. iv, pp. 164-166. (Feb. 1896.) [III, A, ii.]
— See also SCHIEMENZ, P. (295).
 3. ALMERA, J. Étude stratigraphique du massif Crétacé du littoral de la province de Barcelone. Bull. Soc. geol. France (3) xxiii, pp. 564-571. (Feb. 1896; received in London Sept. 1896.) [III, B, iii, b, 2.]
 4. AMI, H. M. Notes on some of the Fossil Organic Remains comprised in the Geological Formations and Outliers of the Ottawa Palaeozoic Basin. Tr. R. Soc. Canada (2 ser.), ii, pp. 151-158. (1896.) [III, B, iv, g & h.]
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 6. ANDREWS, E. A. Some activities of polar bodies. Johns Hopkins Univ. Circ. xvii, pp. 14-16. (Nov. 1897.) [II, F, iv, d.]
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Abstract in J. R. Micr. Soc. 1898, p. 182 (April).
 7. —. Hammar's Ectoplasmic layer. Amer. Natural. xxxi, pp. 1027-1032. (Dec. 1897.) [II, F, iv.]
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Abstracts: in Amer. Natural. xxxi, pp. 242-245 (March); Nature, iv, p. 615 (29 April, 1897); J. R. Micr. Soc. 1897, p. 211 (June); LUDWIG, Zool. Jahresber. 1897.
 9. ANGELIS D'OSSAT, G. DE & LUZZI, G. F. I Fossili dello Schlier di San Severino (Marche). Boll. Soc. geol. Ital. xvi, pp. 61-68. (July, 1897.) [III, B, ii, d.]
Abstract in Riv. ital. Pal. iii, fasc. 3 & 4, p. 4 (Aug. 1897).
 10. ANON. The Association of Species. Nat. Sci. viii, pp. 148-150. (March, 1896.) [II, D, iii.]
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(9) Nervous system of *Caudina arenata* fully described, with neural canals; GEROULD (100) pp. 137–146.—Papillæ in *Stichopus mollis*; WHITELEGGE (347).

(10) Body-wall, connective tissue, and muscles of *Caudina arenata*; GEROULD (100) pp. 129–137.—Muscles of *Holothuria tubulosa* and *Stichopus regalis*, figured; IWANZOFF (138).

(12) Generative organs of *Caudina arenata* fully described, with notes on *Cucumaria frondosa*, *Thyone briareus*, and *Synapta girardi*; GEROULD (100) pp. 169–179.

(c) ECHINOIDEA.

(1) General accounts:—with ref. to fossils in British Museum; GREGORY (112) p. 90.—With tabular synopsis of chief Neozoic genera; KOKEN (171) p. 253.—With special reference to fossils; ZITTEL (356) and ZITTEL-EASTMAN (357).

(2) Term ‘lissactinic’ should be ‘lysactinic’; BELL (34) and GREGORY (110) p. 1001 foot-note.

(4) Stereom formation and absorption in pluteus of *Echinus miliaris*; THÉEL (325) p. 55.

(5) Skeleton:—general discussion; HÆCKEL (116) p. 475.—Apical system,—classificatory value discussed, growth-stages in *Hemicidaris crenularis* as example; LAMPERT (179) p. 491 and figg. [numbers 2 & 3 transposed]: perhaps homologous with anal pyramid of *Echinocystis* and *Cystidea*; GREGORY (109) p. 132.—Form of individual apical plates in spp. of *Salenia* from Cretaceous of S. W. France; ARNAUD (15).—Genital and ocular plates of *Melonites multiporus*; JACKSON & JAGGAR (140) p. 155.—Interambulacrals and ambulacrals, esp. imbrication, spines, buccal area, jaws, of *Archæocidaris* described and discussed; TORNQUIST (326).—Ambulacral and interambulacral plates of *Melonites multiporus*; JACKSON & JAGGAR (140) p. 138.—Ambulacra, classificatory value in *Echinometridæ* discussed; LAMBERT (179) p. 488.—Ambulacral plates in Echinothuridæ, “klasma-plates” new term; GREGORY (108) p. 115.—Pyramids of Echinoid jaw perhaps arose as modified ambulacrals; GREGORY (109) p. 132.—Plastron and its growth-stages discussed, passim, and specially for *Æropidæ* (p. 323); “Petalodesmic, Cyclodesmic, and Cyclopetalodesmic,” terms relating to fasciole (p. 324); LAMBERT (178).—Fossettes of *Echinoidea Endocyclica*, classificatory value discussed (p. 492); Tubercles, classificatory value in *Echinometridæ* discussed (p. 488); LAMBERT (179).—Spines of *Melonites multiporus*; JACKSON & JAGGAR (140) p. 136.

(6) Ambulacral system:—HÆCKEL (116) p. 480.—Stewart’s organs

in *Sperosoma grimaldi*, *Phormosoma atlanticum*, and *Asthenosoma hystrix*; KOEHLER (168) p. 307.—Polian and other vesicles connected with “lantern” of *Regular Ech.*, term “Polian” referred to interradianal vesicles above teeth-roots, so-called Stewart’s organs in *Echinothuridæ* are named “Sarasin’s” organs; UEXKÜLL (331).—Polian vesicles, their confusion with “zahn-blasen” and “gabel-blasen” in *Ech. regulares*, relations to the organs of Stewart and of Sarasin; LUDWIG (201).—Homologies and history of the various vesicles just mentioned; UEXKÜLL (332).

(7) Amœbocytes of cœlomic fluid in *Echinus esculentus* and *miliaris* form plasmodia, which may become reticular tissue; THÉEL (325) p. 50.

(8) Gut, pharynx and teeth; HÆCKEL (116) pp. 479 & 480.—Intestinal siphon in *Echinothuridæ*; KOEHLER (168) p. 307.—Relations of jaws in *Regular Ech.* to various vesicles; UEXKÜLL (331).—Amœbocytes in *Ech. gut*; SAINT-HILAIRE (287).

(10) Mesenterics and internal muscles of *Sperosoma* and *Phormosoma*; KOEHLER (168) p. 307.—Imbrication of plates,—in *Melonites multiporus*; JACKSON & JAGGAR (140) p. 154. See also TORNQUIST (171 & 327).—Due to diminished calcification consequent on deep-sea life; GREGORY (108) p. 120.—Rounded, as well as stellate, amœbocytes connected by protoplasmic threads; MACBRIDE (213).

(12) Genital system:—HÆCKEL (116) p. 481.

(d) ASTEROIDEA.

(1) General accounts:—with ref. to fossils in British Museum; GREGORY (112) p. 95.—With special reference to fossils; ZITTEL (356) and ZITTEL-EASTMAN (357).

(5) Skeleton:—general discussion; HÆCKEL (116) p. 498.—Morphological results of study of skeleton, pedicellaria, and appendages, in Mediterranean spp.; LUDWIG (210) p. 455. See also under spp. of which a list is given in III. A. ii. Mediterranean.—Different regions and their importance in classification; PERRIER (263) p. 12.—Madreporite, growth-stages in *Pentagonaster placenta*; KOEHLER (163) p. 455.—Superambulacrals in *Plutonaster subinermis* (p. 116), in *Hacelia attenuata* (p. 299); LUDWIG (210).—Calcareous bodies in peristomial integument of *Luidia ciliaris* and *L. sarsi* (pp. 84, 104); Spicules in podia, interbrachial septa, and gut-wall of *Plutonaster subinermis* (p. 116), of *Hacelia attenuata* (p. 299), of *Ophidiaster ophidianus* (p. 312); LUDWIG (210).

(6) Ambulacral system:—HÆCKEL (116) p. 501.—Podia in *Plutonaster subinermis* (p. 116), in *Pentagonaster placenta* (p. 178), in *Hacelia attenuata* (p. 299); Polian vesicles, Tiedemann’s bodies in *Plutonaster subinermis* (p. 116), in *Chaetaster longipes* (p. 156), in *Pentagonaster placenta* (p. 179), in *Palmipes membranacea* (p. 267); LUDWIG (210).—Papulæ; LUDWIG (198) p. 589.

(7) Blood-vascular system (p. 604); Pseudhæmal system and lacunar system of integument (p. 616); LUDWIG (198).—Lacunar system and ovoid gland, *Asterias rubens* and *Asterina gibbosa*; CUÉNOT (60).

(8) Gut; HÆCKEL (116) p. 500.—Stomach and cæca of *Pentagonaster placenta* (p. 178), of *Marginaster capreensis* (p. 206), of *Asterina gibbosa* (p. 241), of *Palmipes membranaceus* (p. 266), in *Ophidiaster ophidianus* (p. 312); stomach-cæca and anus in *Plutonaster subinermis* (p. 116); LUDWIG (210).

(10) Longitudinal muscles of body-wall in *Pentagonaster placenta* (p. 178); interbrachial septa in *P. placenta* (p. 178), in *Asterina gibbosa* (p. 242), in *Palmipes lobianci* (p. 271); LUDWIG (210).

(11) See CUÉNOT (60), under d 7.

(12) Genital system:—HÆCKEL (116) p. 501, & LUDWIG (198) p. 591.—Of *Luidia ciliaris* and *L. sarsi*, and its connection with side-paxillæ;

LUDWIG (210) pp. 84, 104.—Of *Plutonaster subinermis* (p. 116), of *Pentagonaster placenta* (p. 178), of *Marginaster capreensis* (p. 206), of *Asterina gibbosa* (p. 241), of *Palmipes membranaceus* (p. 266), of *P. lobianci* (p. 270), of *Ophidiaster ophidianus* (p. 313), of *Echinaster sepositus* (p. 343); LUDWIG (210).—Sexual differences in genital organs, esp. in *Asterias rugispina*; LEIPOLDT (186).

(e) *OPHIUROIDEA.*

(1) General accounts:—with ref. to fossils in British Museum; GREGORY (112) p. 97.—With special reference to fossils; ZITTEL (356) and ZITTEL-EASTMAN (357).

(5) Skeleton:—general discussion; HAECKEL (116) p. 491.—Madreporite of *Eucladia* and other palæozoic *Oph.* (p. 1041); “Syngnath,” nom. nov., “the united piece formed of mouth-frame and jaw, Mundeckstück” (p. 1032); structure of arm-skeleton, especially in Palæozoic *Oph.* (p. 1029); ventral arm-plates absent from *Furcaster* (pace Stürtz) (p. 1038); GREGORY (111).

(6) Ambulacral system:—HAECKEL (116) p. 493.—Migration of hydropore in phylogeny; GREGORY (111) p. 1041.

(8) Gut:—HAECKEL (116) p. 493.

(12) Genital system:—HAECKEL (116) p. 494.

(f) *CRINOIDEA.*

(1) General accounts:—with special reference to fossil specimens in British Museum; BATHER (28) p. 98.—With special reference to fossils; ZITTEL (356) and ZITTEL-EASTMAN (357).—With tabular synopsis of Mesozoic and Palæozoic genera; KOKEN (171) p. 273.

(2) Base, orientation of small unfused plate; WACHSMUTH & SPRINGER (336) p. 153.

(5) Skeleton:—general discussion; HAECKEL (116) p. 465.—Morphological classification of skeletal elements (p. 38), Primary plates, abactinal (p. 38), actinal (p. 88), Supplementary plates (p. 105), Their value in classification (p. 154), anals (p. 124); terminology of skeletal elements (pp. 32–37); WACHSMUTH & SPRINGER (336).—Skeletal elements of *Uintacrinus* described, specially arrangement of pinnules and syzygies, fixed pinnules, interbrachials, interdistichals, and interpinnulars, and structure of arms; BATHER (24).—Pores in test of Crinoids compared with pore-rhombs of Cystidea; HAECKEL (118) p. 22.—Base, mono- or di-cyclic, value in classification (p. 154); Basals and infra-basals (p. 52), law of W. & Sp. (p. 59); Radials, term restricted, compound RR discussed (pp. 68–73), value of the latter in classification (p. 154); Orals and their homologies (pp. 88–99), value in classification (p. 155); Arms, term defined, free and fixed, terminology of brachials, types of branching (pp. 73–88); WACHSMUTH & SPRINGER (336).—Arm-branching in *Taxocrinidae*; JAEKEL (144) p. 45.—Pinnules, value in classification (p. 155), their origin discussed (p. 160); primibrachs or costals, value in classification (p. 154); ambulacrals of arms and tegmen (p. 100); food-grooves and ambulacrals, value in classification (p. 155); Interradials, interbrachials, and interambulacrals, structure of tegmen (pp. 105–124), value of tegmen in classification (p. 154); anals and anal tube (pp. 124–139); pores in anal tube of *Fistulata* maintained (p. 114, pl. vii); WACHSMUTH & SPRINGER (336).—Summit-plates of anal tube of *Callicrinus*, sub nom. *Cryptodiscus*; WELLER (339 & 340).—Stem, and appendages (pp. 38–52); value in classification (p. 155); WACHSMUTH & SPRINGER (336).—Structure, and gradual loss of; BATHER (26) p. 298.—Convolute organ of Palæozoic *Crin.*; WACHSMUTH & SPRINGER (336) p. 142.

(6) Ambulacral system; HAECKEL (116) p. 467.—Ambulacra; WACHSMUTH & SPRINGER (336) p. 99.

(8) Gut; HAECKEL (116) p. 467.—Mouth; WACHSMUTH & SPRINGER (336) p. 99.—Gut of Pelmatozoa, coil dextral (“solar”) in most *Crinoidea*, but believed to be sinistral (“contrasolar”) in *Cladoidea* Jaekel (= Camerata), *Cystidea*, and *Blastoidea*; JAEKEL (142).—Anus, rectum, supposed respiration by pores (pp. 124–139); anus, value in classification (p. 155); convoluted organ (p. 142); WACHSMUTH & SPRINGER (336).

(9) Chambered organ and axial canals; *op. cit.* p. 140.

(10) Modes of union between plates; *op. cit.* pp. 81–84.—Articulation of brachials in *Uintacrinus*; BATHER (24) p. 989.—‘Syzygy’ defined and use of term ‘joint’ restricted; BATHER (21).—Syzygy in palæozoic and later *Crin.*; WACHSMUTH & SPRINGER (336) p. 81.—Irregular arrangement of syzygies in *Actinometra pulchella*; KOEHLER (163) p. 477.

(12) Genital system; HAECKEL (116) p. 468.

(g) CYSTIDEA.

(1) General,—short note; BATHER (28) p. 102.—Morphology of *Cystidea*; JAEKEL (143): of *Cystidea* and *Amphoridea*; HAECKEL (117): of *Amphoridea*; HAECKEL (116) p. 427.—General account; ZITTEL (356) and ZITTEL-EASTMAN (357).—Ditto, with synopsis of chief genera; KOKEN (171) p. 288.

(5) Skeleton,—of *Amphoridea*; HAECKEL (116) p. 425: of *Cystidea*, general discussion; HAECKEL (116) p. 445.—Theca of *Amphoridea*; HAECKEL (118) p. 13: of *Cystidea*; HAECKEL (118) p. 78.—Pores in plates of *Amphoridea* and *Cystidea*; HAECKEL (118) p. 19.—“Hydrophores palmées” referred to *Glyptocystidæ*; HAECKEL (118) pp. 48, 51, 53, 92–94, 152.—Number of arms of *Echinosphæra aurantium*; JAEKEL (143) p. 389.—Stem, evolution of pelmatozoan stem; BATHER (26) p. 296.—of *Mitrocystis* described; POMPECKJ (268) p. 504.

(6) Ambulacral system of *Amphoridea*; HAECKEL (118) p. 28: of *Cystidea*; HAECKEL (116) p. 449, (118) p. 89.

(7) Cœlomic cavities (p. 26) and blood-system (p. 27) of *Amphoridea*; ditto of *Cyst.* (p. 88); HAECKEL (118).

(8) Gut-system (p. 26) and subvective system (p. 24) of *Amphoridea*; HAECKEL (118).—Ditto of *Cystidea*; HAECKEL (116) pp. 448 & 449, and (118) pp. 85, 87.

(9) Nerve-system and sense organs of *Amphoridea* (p. 25); of *Cystidea* (pp. 86 & 87); HAECKEL (118).

(10) Muscles and Tegument of *Amphoridea* (p. 24); of *Cystidea* (pp. 85 & 86); HAECKEL (118).

(12) Genital system of *Amphoridea* (p. 27); of *Cystidea* (p. 88); HAECKEL (118).—Gonopore of *Cystidea*; HAECKEL (116) p. 448.

(h) BLASTOIDEA.

(1) General accounts; ZITTEL (356), ZITTEL-EASTMAN (357), KOKEN (171) p. 286.—Short note; BATHER (28) p. 102.

(5) Skeleton of *Blastoidea*, general discussion; HAECKEL (116) p. 453.—Restored diagram and account of structure in *Pentremitidea*; OEHLERT (250) p. 834.

(6) Ambulacral system of *Blastoidea*; HAECKEL (116) p. 457.

(8) Gut of *Blastoidea*, and subvective system; HAECKEL (116) p. 456.

(12) Genital system of *Blastoidea*, and hypothetical structure of genital organs; HAECKEL (116) p. 458.

(ii) Variation.

(a) In form:—of *Culcita acutispina* and *Anthenea acuta* due to imperfect preservation; WHITELEGGE (346) p. 159.

(b) In form and surface characters:—Complete study of, and measurements, as well as of jaws, in *Monophora darwini*, constituting 331·776 modes of variation; LAHILLE (176 & 177).—In spines of *Asterina regularis*; FARQUHAR (83) p. 196.—In spines on marginals of *Astropecten irregularis*; KOEHLER (163) p. 450.—In marginals and adambulacral spines of *Pentagonaster gosselini*; FERRIER (263) p. 45.—In spines and paxillæ of *Psilaster andromeda*; KOEHLER (163) p. 449.—In spines and buccal papillæ of *Ophiacantha rosea*; KOEHLER (163) p. 464.—In pedicellariæ of *Asteropsis*; FARQUHAR (83) p. 194.—Number and character of pedicellariæ in *Luidia ciliaris*; KOEHLER (163) p. 448.—In centrodorsal of *Antedon rhodanicus*; LORIOL (194) p. 123.—In spicules of *Holothuria roulei* (p. 481), *H. intestinalis* (p. 483), *Ankyroderma danielsseni* (p. 493), and *Echinocucumis typica* (p. 494); KOEHLER (163).

(c) In colour:—In life of many *Ech.*, *Ast.*, *Oph.*; PFEFFER (267).—In living *Ech.*; MEISSNER (229): *Ech.* and *Hol.*; WHITELEGGE (346).—In life and in alcohol of numerous *Ech.*, *Ast.*, *Oph.*, from G. of Rapallo; MARCHISIO (216).—In *Asterina calcar*, *Asterina sp.*, *Palmipes sp.*, and *Pentagonaster australis*; SAVILLE-KENT (290) Chromo-plate viii, pp. 243–245.

(d) Meristic variation:—(1) Variation from pentamerous symmetry,—In *Asterina gibbosa*; LUDWIG (210) p. 211.—6-, 7-, 8-rayed *Asterina regularis*, “several have more than one madreporite”; FARQUHAR (83) p. 196.—6-rayed Ophiurid, *O. annæ*, n. sp.; HONEYMAN (132) p. 265.—*Heliaster sp.*, with 20 or 24 arms; HARRINGTON & GRIFFIN (124) p. 156.

(2) Reduplication or absence of parts,—Variation in position of syzygies in *Actinometra pulchella*; KOEHLER (164) p. 100 & (163) p. 477.—In interambulacrum of *Melonites*; JACKSON & JAGGAR (140) p. 151: of *M. giganteus*; JACKSON (139) p. 182 footnote.—Madreporite divided into four unequal pieces in *Asthenosoma ijimai*; YOSHIWARA (352) p. 9.—Absence of genital pores in a small *Porocidaris elegans*; KOEHLER (163) p. 472, & (164) p. 89.—Absence of anal, and consequent variation in base of *Teleocrinus umbrosus*; WACHSMUTH & SPRINGER (336) p. 56.

(e) Abnormalities:—Incomplete calcification of apical plates in young *Salenia rejaudryi*; ARNAUD (15) p. 21.—Abnormal apex of *Catopygus fenestratus* with three genital pores, throws light on evolution of apex in *Echinolampidæ*; LAMBERT (180) p. 172.—Abnormal (? atavic) arrangement of oculars in two *Strongylocentrotus dræbachiensis*; OSBORN (252).—Pathologic atrophy and reduction of internal pores in one zone of each ambulacrum, in *Acrosalenia meslei*; GAUTHIER (98) p. 15.—A 6th ray as an abnormality, not true meristic variation, in *Ophiactis modesta* (p. 286); *Ophiothela danæ* with three arms atrophied (p. 298); DOEDERLEIN (68).—Abnormality in one ray of *Batocrinus*; MILLER & GURLEY (234) pp. 64 & 66, pl. iv.—Atrophied arm, *Cupressocrinus abbreviatus*; BEYER (38) p. 89.—Enlarged madreporite in young *Salenia rejaudryi*; ARNAUD (15) p. 22.—Anal tube, additional in *Batocrinus*, *Teleocrinus* and *Steganocrinus*, branching in *Eutrochocrinus*, *Macrocrinus*, *Aulocrinus*, starting from basals in *Batocrinus*; WACHSMUTH & SPRINGER (336) pp. 135, 136, 138.—Abnormality in tentacles and retractor muscle of *Colochirus ocnoides*; DENDY (63) p. 38.—Abnormal larvæ of *Asterina gibbosa* with right hydrocæl developed; MACBRIDE (212) p. 368.—Double, treble, and quadruple monsters of young *Synapta vivipara*; CLARK (53) p. 281.

(iii) Secondary Sexual Characters.

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(C.) PHYSIOLOGY.

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(iii) Respiration:—“Rôle de l'eau dans la physiologie des Échinodermes”; PERRIER (262) pp. 89–97.

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(b) By Pigments:—Blood-corpuses in *Caudina arenata*; GEROULD (100) pp. 166, 169.—Iron abounds in ambulacra of many Echinoderms and resp. trees of *Hol.*, and has respiratory function; SCHNEIDER (299) p. 213.

(iv) Alimentation and Digestion:—Absorption of food into lacunar system in *Asteroidea*; CUÉNOT (60).—Pyloric cæca of *Asterias vulgaris* have proteolytic, diastatic, and pancreatic (fat-splitting) ferments; STONE (321).—Amœbocytes in *Ech.* gut, *Toxopneustes lividus*, *T. drobachiensis*, *Arbacia aequituberculata*, *Sphærechinus granularis*; SAINT-HILAIRE (287).

(v) Excretion:—By wandering cells (ek-phorocytes) in *Asteria*; MASTERMAN (218) pp. 210, 212, 214.

(vi) Sensation:—Irritability of mesenchyme cells in *Echinus microtuberculatus*; DRIESCH (75).—Psychology of *Asteroidea* and *Ophiuroidea*, based on PREYER, 1886–1887; STERNE (318).

(vii) Miscellanea and Experimental Physiology:—Experiments on physical conditions of life in water; REGNARD (277).—Action of carbonic acid, of acetic acid, and of nicotin on *Regular Ech.*; UEXKÜLL (331).—Development of protein crystalloids of undetermined function in nuclei of amœbocytes of *Sphærechinus granularis*; LIST (189).—Functions of anchors and anchor-plates of *Hol.*; ÖSTERGREN (255).

(D.) BIONOMICS.

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(ii) Special habits:—Vacant.

(iii) Habitat:—Influence of conditions in Triassic sea of St Cassian on *Ech.*; GREGORY (110) p. 1004.—Association of spp. and genera of

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(iv) **Feeding**:—Algæ, crustaceans, and worms eaten by *Synapta vivipara*; CLARK (53) p. 282.—How starfish open oysters; HONEYMAN (131) p. 255.—*Astropecten* feeding on *Mollusca* by swallowing, *Asterias* on *Mollusca* and *Echinoidea* by extension of stomach and by pulling open shells by force; SCHIEMENZ (295).

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(b) Concealment,—*Hol.* cover themselves with sea-weed, held on by anchors, notably *Ankyroderma* and *Trochostoma*; ÖSTERGREN (255) p. 158.

(c) Protective coloration: *Stichopus mollis*; WHITELEGGE (347).—(Cf. II, B, ii, c & II, B, iii, b.)

(vi) **Locomotion**:—Of *Astropecten* and *Asterias* contrasted; SCHIEMENZ (295).—Regular movements of larvae in *Ophiothrix fragilis* and *Echinus microtuberculatus*, and relation to currents of water; ZIEGLER (355) p. 143.—Travelling under sand, *Amphidetus cordatus*; ROBERTSON (280).—Movement of *Antedon* specially described; BATHER (26) p. 301, with illustration; BATHER (29) p. 664.—Plankton character of *Uintacrinus*, compared with other unstalked, and possibly locomotive crinoids; BATHER (24) p. 995.—Unstalked crinoids, general physiological classification of BATHER (24) adopted (p. 222), but *Saccocoma* placed with true Plankton (p. 211), along with *Pelagothuria*, while *Uintacrinus* and *Marsupites* may be Nekton; ancestor of *Pelmatozoa* was of the Benthos (p. 219); some Carboniferous and Liassic *Crin.* (e.g. *Pentacrinus*) are Pseudoplankton (p. 227); WALTHER (338).—Locomotion and fixation of palæozoic *Crin.*; WACHSMUTH & SPRINGER (336) p. 48.—Supposed floating, and attachment by arm-branches of Carboniferous crinoids; SMITH (312).—Swimming in *Bathyploetes natans*, probably many other *Psychropotinae* and *Synallactinae*; ÖSTERGREN (253) p. 353.—Burrowing in sand, *Caulina arenata*; GEROULD (100), p. 128.—Locomotion and fixation by anchors in *Synapta* and other *Hol.*; ÖSTERGREN (255).—Sticking powers of *Synapta vivipara*; CLARK (53) p. 282.

(vii) **Autotomy and Regeneration**:—General principles of Autotomy, that of Echinoderms described; FRENZEL (90), see esp. pp. 196–198.—Autotomy due to parasitic *Myzostoma*, in *Asterias richardi* and *Stolasterias neglecta*; ANON (11), GIARD (101).—Cuvierian organs of *Holothuria poli*, mechanism of ejection; BARTHELS (18).—Multiplication by division in *Cucumaria plancki*, the autotomy effected by constriction,

torsion (most common), and stretching; artificial division ("mecotomy") by ligature or cutting, successful with normally autotomous *C. plani* but not with other spp. and genera; MONTICELLI (242).

(viii) **Parasites and Commensals**:—Commensal annelid *Ophiodromus* between arms of *Asterias* and coloured to match (p. 158), a scaly annelid, Polynoid, on *Holothuria californica* and *Dermaster* (pp. 161 & 164), numerous *Entoconchidæ* in *H. californica* (p. 162); HARRINGTON & GRIFFIN (124).—Gregarine, *Lithocystis schneideri*, in body-cavity of *Echinocardium cordatum*, relation to amœboid cells; LÉGER (184); ditto, with remarks on other Sporozoa parasitic in Echinoderms; LÉGER (185).—*Lichomolgus maximus*, copepod in *Echinus esculentus*, Firth of Forth; SCOTT (300).—Crab, *Pinnaxodes chilensis* in rectum of *Strongylocentrotus albus*; MEISSNER (228) p. 87.—Gastropods parasitic on *Linckia* and a Cidarid; KÜKENTHAL (175) pp. 47, 57.—*Myzostoma* causing autotomy in *Asterias*; ANON. (11).—*Dactylococcus*, an alga parasitic on *Ophioglypha texturata* and *O. albida*, absorbing stercom; MORTENSEN (244) p. 322.—*Stylifer* (?) on *Ophiomyxa brevispina*; DOEDERLEIN (68) p. 299.—Cysts on stem, palæozoic *Crin.*; WACHSMUTH & SPRINGER (336) p. 43.—Cysts of *Myzostoma* (?) on arms of *Agaricocr. conicus*; *op. cit.* p. 502.—*Platyceras* commensal with *Pterotocr.*; *op. cit.* p. 793.—Gastropod, ? aff. *Entoconcha*, in body-cavity of *Chiridota pisanii*; LUDWIG (206).—Calcareous sponge growing on *Synapta vivipara*; CLARK (53) p. 282.

(ix) **Echinoderms as food**:—Sea-urchin attacked by *Asterias*; SCHIEMENZ (295).—Echinoids as food of *Cestracion*; SAVILLE-KENT (290) p. 192.—*Uraster rubens* and *Solaster papposus* eaten by *Corvus cornix* in hard weather; GRABHAM (103).

(E.) MISCELLANEOUS.

(i) **Research and Instruction**:—

(a) **Preservation**,—and packing of Echinoderm specimens; BAVAY (32).—To preserve natural shape in dried starfish; WHITELEGGE (346) p. 159.—Preservation of Holothurians in extended state; HALY (121) p. 12.

(b) **Methods of research**:—Of fixing and staining segmenting ova; HAMMAR (123) p. 18.—Of studying larvæ of *Asterina*, osmic acid and Müller's fluid, also corrosive sublimate and glacial acetic acid, embed in celloidin, orientation of sections; MACBRIDE (212) p. 340. Röntgen rays in investigation of Asteroid anatomy; MEEK (226).—Muscles of *Hol.* behave to methylene-blue in same way as do nerves; IWANZOFF (138).—Stupefying, killing, and staining, for Histological preparations of *Caudina arenata*; GEROULD (100) p. 125.

(c) **Museum Exhibits and Collections**:—Fossil Echinoderma in British Museum; BATHER (28) and GREGORY (112).—Catalogue of Mazzetti coll., *Ech. foss.*; MAZZETTI (225).—Collections of American palæozoic *Crin.*; WACHSMUTH & SPRINGER (336) pp. 4–8, & 18–21.—Collection of fossil *Crin.*, many types; GURLEY (115).

(ii) **Economics**:—Damage to oysterbeds by Starfish; SCHIEMENZ (295).—Commercial value of *Hol.* as food; GRIEVE (114).

(iii) **Bibliography**:—Papers by F. B. Meek; WHITE (343).—Reference to lists of E. Scotland Echinoderms; SIM (308).—Subject-index to literature of Rhine-provinces and Westphalia, down to 1887, with entries under "Echinodermen, Echinoideen, Asteroideen, Ophiure, Crinoideen," and under generic names; RAUFF (273).—Literature of 1891, recent *Echinoderma*, MEISSNER (227).—Abstracts of various papers published in 1893

on Echinoderm palæontology; GAUTHIER (97).—Literature of *Echinoderma* for 1895, with abstracts; LUDWIG (200).—Ditto, for 1896; LUDWIG (211).—Reviews of various papers on segmentation and karyokinesis in *Echinoderma*; ERLANGER (79–82).—Account of recent English writings on experimental embryology; DRIESCH (74).—Literature of Developmental Mechanics, and Abstracts; MAYER (222 & 223).—Literature of Japanese *Hol.*; MITSUKURI (237) p. 405.—Bibliography of Holothurian anatomy with special reference to *Caudina arenata*; GEROULD (100) p. 183.—Bibliography of Palæozoic *Echinoids*; TORNQUIST (171) p. 726; JACKSON (139) p. 244.—Dates of Duncan "Revision of Genera...of Echinoidea" 31 Dec. 1889; of Pomel "Revue des Echinodermes" 1869; and of Desor "Echinologie helvétique"; LAMBERT (179) pp. 494, 495, 505.—Notice sur G. Cotteau; DESMAZIÈRES (65).—Literature of recent *Ast.*, with special reference to Mediterranean species; LUDWIG (216) p. 479.—Literature of *Ast.* of Chile and Magellan; MEISSNER (229) p. 107.—History of literature on *Crin.* esp. palæozoic; WACHSMUTH & SPRINGER (336) pp. 11–31.—Appreciation of C. Wachsmuth's work on palæozoic Crinoids; BATHER (23); and bibliography; KEYES (154).—Bibliography of *Cystidea*; HÆCKEL (118) p. 170.

(iv) **Historical, Popular notions, &c.**:—*Spatangus purpureus* known as Monk's eggs, i.e. eggs of *Squalus squatina*, at Scarborough; GRABHAM (103).

(F.) AUXOLOGY.

(i) **General Principles**:—ROULE (283).

(ii) **General Accounts**:—Embryology of *Echinoderma*; ROULE (283).—Echinoderm reproduction and development; BATHER (26) p. 314.—Nature of the metamorphosis of Echinoderma, the Pentactæa theory, ontogeny, &c.; HÆCKEL (116) pp. 349, 361.—Development of *Synapta vivipara*; CLARK (53) p. 280.

(iii) **Formation of Gonads**:—Sexes distinct in *Chirodota dunedinensis*; DENDY (63) p. 27.—Oogenesis in *Caudina arenata*, also in parts *Cucumaria frondosa* (pp. 172–178): Spermatogenesis in *Caudina arenata* (p. 178); GEROULD (100).—Development of ova in *Asterias rugispinosa*, peculiarities correlated with temporary brood-pouch; LEIPOLDT (186).

(iv) **Oviposition, Fertilisation, and Segmentation**:—Artificial fertilisation of *Echinus esculentus*; TURBYNE in CHOPIN (49).—Fertilisation of ovum and subsequent changes in *Echinus microtuberculatus*; LAUTENBACH (183).—Breeding-period of Mediterranean *Ast.* discussed (p. 439), as also in detail under the species (*vide Asterias, Asterina, Astropecten, Brisinga, Chætaster, Echinaster, Luidia, Palmipes*); LUDWIG (210).—Reproduction of *Asterina gibbosa*, no protandry, ?ever parthenogenetic; LUDWIG (210) p. 241.

General account of cellular physiology including references to Echinoderm ovum; WILSON (350).—Protoplasmic connection between cells of segmenting ovum of *Echinus miliaris*, and account of it as previously seen, though not recognised, in *Toxopneustes variegatus*, *T. lividus*, *Sphærechinus brevispinosus*, and other *Ech.*, *Ast.*, and *Oph.*; HAMMAR (123).—Comparison of HAMMAR (123) and later papers, and WILSON (350), with intercellular connection in Lamellibranch ova and that of the "*Echinus* common at Roscoff"; ANDREWS (7).—Pseudopodia of ova of *Arbacia*, *Echinus* [ought this not to be *Strongylocentrotus lividus*?], and two species of *Asterias*; ANDREWS (8).—Polar bodies in living blastula of *Asterias* common at Roscoff, connected by protoplasmic threads; ANDREWS (6) p. 14, f. 16.—

Structure of Echinoid ovum, its fertilisation and karyokinesis; REINKE (278).—Researches on fertilised *Ech.* ova; KOSTANECKI (173).—Centrosomes in fertilised Echinoid ovum; KOSTANECKI (174).—Development of unfertilised ovum in *Echinoidea*; HERTWIG (128).—Position of long axis of spindle in segmenting ovum; ZIEGLER (355).—Centrosome in *Toxopneustes*, *Arbacia*, and *Asterias* sperm-ovum; WILSON (351).

(v) **Larval Stages:—**

(b) Very early stages of (?) *Cucumaria frondosa* as plankton, off N. Greenland; BERGENDAL (37) p. 8.

(c) Larva of *Echinus microtuberculatus* and of *Sphærechinus granularis*, and bastard larva of *E. microtub.* ♂ and *S. gran.* ♀: a support of Seeliger (109), Zool. Rec. 1894, against Boveri (25), Zool. Rec. 1893 and (16) 1895; SEELIGER (303).—Larvæ and bastard larva of *Echinus microtuberculatus* and *Sphærechinus granularis*; SEELIGER (304).

(c & e) *Plutei* from Greenland, *Ech.* and *Oph.*; VANHOEFFEN (333) pp. 242, 275, pl. vi, figg. 8 & 9.

(d) Larvæ of Mediterranean *Ast.*, viz. *Asterias*, *Asterina*, *Astropecten*, *Echinaster*, *Luidia*; LUDWIG (210), pp. 339 & 340.—Development of larva and metamorphosis in *Asterina gibbosa*; MACBRIDE (212).—Development of *Asterias pallida*, orientation of larva; GOTO (102).—Paired lateral gut diverticula in Asterid larva, vestiges of notochordal rudiments; MASTERMAN (220) p. 134.

(e) Larval development of *Ophiothrix fragilis*; ZIEGLER (355), p. 136.

(vi) **Organogeny:—**

(a) *Echinoderma*:—(10) Origin of mesoblast compared with that in supposed typical Archicælomata; MASTERMAN (221) p. 330 footnote.

(12) Gonads:—peritoneal origin in all groups exc. *Crin.*; RUSSO (284).

(b) *Holothurioidea*:—(4) Stereom:—Development of spicules in *Chiridota contorta* as usual in the genus, concerning which Dendy's observations (63 p. 50) on *C. dunedinensis* are not new; LUDWIG (204).—Development of spicules in *Caudina arenata*; GÉROULD (100) p. 134.

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(8) Variations in length of radial stomach-cæca in *Luidia ciliaris* and *L. sarsi* according to age; LUDWIG (210) pp. 84, 104.—Development of stomach and its epithelium in *Asterina gibbosa*; MACBRIDE (212) p. 382.

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(vii) **Post-larval Growth-stages.**

(b) Change in spicules of *Stichopus japonicus* with advancing age;

MITSUKURI (238).—Brepheic *Chiridota contorta* in brood-pouch; LUDWIG (204).—Brepheic *Psolus antarcticus* in brood-pouch; LUDWIG (205).

(c) Growth-stages of Echinoids generally, and the possibility of inferring them from adult structure; exemplified by *Melonites giganteus* (p. 181), *Oligoporus coreyi* (p. 188), *Archæocidaris wortheni* (p. 219), also *Lepidechinus* (p. 228), the last compared with growth-changes in stems of *Pentacrinide*; JACKSON (139).—Growth of *Melonites multiporus* by intercalation and growth of plates; JACKSON & JAGGAR (140) p. 138.—Growth-stages of apex in *Toxaster* spp. compared with *Lampadaster*; LAMBERT (178).—Measurements of growth-stages in spp. of *Salenia* from Cretaceous of S. W. France, principles of measurement discussed and exemplified on pp. 2-4; ARNAUD (15).—Neanic *Monodiadema cotteau* with age-differences in ambulacral areas; GAUTHIER (98) p. 13.—Growth-stages of *Monophora darwini*; LAHILLE (176) p. 430.

(d) General relations of growth inferred from study of Mediterranean *Ast.*; LUDWIG (210) p. 455.—Growth-stages of madreporite in *Pentagonaster placenta*; KOEHLER (163) p. 455, & (164) p. 67.—Brepheic stages of Mediterranean *Ast.*; LUDWIG (210) p. 339, see also under *Asterias glacialis*, *A. richardi*, *Asterina gibbosa*, *Brisinga coronata*, *Chaetaster longipes*, *Echinaster sepositus*, *Hacelia attenuata*, *Luidia ciliaris*, *L. sarsi* (= *Astellia simplex*), *Marginaster capreensis*, *Palmipes membranaceus*, *Pentagonaster placenta*, *Plutonaster bifrons*, and *P. subinermis*.—Brepheic *Echinaster sepositus* of Phanerozoic appearance, gradual change to adult Cryptozoic stage; LUDWIG (207): for details, see LUDWIG (210).—Brepheic and Neanic stages of *Calycaster monæcus*; PERRIER (263) p. 28.—Neanic *Pentagonaster placenta* described as *P. minor*; KOEHLER (164) p. 61.—Neanic specimens of *Zoroaster trispinosus*; KOEHLER (163) p. 443 & (164) p. 43.

(e) Centrodorsals in young of *Ophioglypha imbecillis* and *Ophiomusium familiare*; KOEHLER (169) pp. 303 & 305.—Neanic *Amphiura angularis*; KOEHLER (166) p. 244.—Age of Ephebic *Ophioglypha texturata*, with table of measurements; MORTENSEN (244) p. 321.

(f) Ontogeny of *Platyser.*; WACHSMUTH & SPRINGER (336) p. 652.

(viii) **Developmental mechanics and Experimental Embryology**:—Account of English and American work; DRIESCH (74).—Reviews of various papers; ERLANGER (79-82).—Cell-mechanics and *Ech. ovum*; REINKE (278).—Effect of individual peculiarities in experimental embryology; DRIESCH (73).—Irritability of mesenchyme cells in developing *Echinus microtuberculatus*; DRIESCH (75).—Sperm-ovum segments into portion with spermatozoon nucleus and portion with ovum nucleus; ZIEGLER (355) p. 148.—Centrosome and central spindle in unfertilised but segmenting ova of *Asterias*; HERTWIG (127).—Ova of *Toxopneustes lividus* and *Echinus microtuberculatus* though unripe respond to approach of spermatozoa; SCHENK (294).

Echinus tuberculatus ♀ + *Strongylocentrotus lividus* ♂, study of karyokinesis; BOVERI (42).—Bastard-larvæ of *Echinus microtuberculatus* ♂ + *Sphærechinus granularis* ♀; SEELIGER (303).—*Asterias rubens* ♂ + *Echinus esculentus* ♀ and vice versa, ova lived 12 days, not stated if segmentation took place; TURBYNE in CHOPIN (49).

Restoration of balance in outer form of folded blastulæ of *Echinus* and *Asterias*, development of gut in deformed blastulæ and conditions which regulate it; DRIESCH (76).—Development of isolated blastomeres in *Strongylocentrotus lividus*; ZOJA (358).—Blastulæ of *Sphærechinus* and gastrulæ of *Asterias* chopped up to see where power of cells to form complete individuals stops; DRIESCH (72).—Cleavage of ovum under compression in *Echinus microtuberculatus*; ZIEGLER (354) p. 67.

Astrospheres induced in *Sphærechinus* ovum by adding salt to water; MORGAN (243).—Concentrated sea-water induces fragmentation of nucleus

without segmentation of ovum; LOEB (190).—Mitosis induced in ova of *Arbacia* by concentration with magnesium chloride; NORMAN (249).—Ova of *Toxopneustes lividus* treated with diluted sea-water, removal of egg-substance, nevertheless followed by development; RAWITZ (275).—Mesenchyme formation in gastrula of *Echinus microtuberculatus* checked by addition of 1% glycerine to sea-water; ZIEGLER (355) p. 137.—Narcotisation of *Ech.* ova, and study of karyokinesis; DOFLEIN (70).

III. DISTRIBUTION.

A. GEOGRAPHICAL.

(i) GENERAL.

Preponderance of Echinoderma in deep-sea dredgings as compared with shallow-water; MURRAY (246) p. 488, footnote.

(ii) ATLANTIC OCEAN AND ADJACENT SEAS.

Atlantic,—*Elasipoda*, dredged by "Travailleur" & "Talisman," 2 new genera, 10 n. spp.; PERRIER (265).

Norway,—*S. griegi*, n. sp., W. of Utvaer; ÖSTERGREN (254) p. 4.—Bukkenfjord, list of *Hol.*, *Ast.*, *Oph.*, *Ech.*, 39 spp. in all; GRIEG (113).—Bergen, Osterfjord, *Brisinga endecacnemos* (pp. 4 & 5); *Amphiura norwegica*, *Cucumaria hispida*, *Astropecten andromeda* (p. 5); *Holothuria tremula*, large specimen only 10 fathoms (p. 6); *Astrophyton lincki* on *Muricea* (p. 7); and general list of *Hol.*, *Ech.*, *Ast.*, *Oph.* (pp. 12 & 13); APPELLÖF (13).

Baltic,—plankton, Ophiurid *Pluteus*, not found E. of Fehmarn, no other *Echinoderma*; AURIVILLIUS (17).—*Asteracanthion* and *Ophioglypha* are the only Echinoderms; BRANDT (43).

Limfjord, Denmark, *Ech.*, *Ast.*, *Oph.*, immigrant since 1884; MORTENSEN (244) p. 315.

The German seas, general account of *Echinoderma*; MARSHALL (217).—Elbe mouth, *Echinus esculentus* and *Asteracanthion rubens*; DAHL (62) p. 172.

Coast of Belgium and Netherlands, list of *Hol.*, *Ech.*, *Ast.*, *Oph.*; MAITLAND (215).

Scotland, E. coast,—*Echinus norvegicus*, between the Long Forties and Gt. Fisher Banks, 100 miles N.E. by E. of Aberdeen, 85 miles E. of Buchan Ness, 60 fathoms; 70–80 miles off E. Shetland, 70–80 fathoms; and 70 miles E. of Aberdeen, 75 fathoms; SIMPSON (310).—Aberdeenshire, *Echinus acutus*; SIM (309).

England, E. coast,—Lindisfarne, *Hippasterias phrygiana* vel *Pentagonaster granularis*; SUTTON (322) and DISTANT (67).—Farn Is., *Ophiocoma nigra*; SUTTON (322).—Scarborough, *Ech.*, *Ast.*, *Oph.*; GRABHAM (103).—*Uraster*, *Solaster*, and *Ophiura texturata*, dredged off mouth of R. Colne; SORBY (315) p. 168.

English Channel,—Straits of Dover, dredgings, *Ech.*, *Oph.*, *Ast.*; SAUVAGE (289).—Eddystone, *Ophiactis balli*; Prawl Point, *O. balli* and *Ophiura affinis*; S. of Bolt Hd., *Echinocardium pennatifidum*; ALLEN (2) p. 165.—Plymouth pelagic fauna of two years contrasted, *Plutei* and *Bipinnariæ*; BROWNE (46) p. 170.

List of Echinoderma from Irish Sea; HERDMAN (125) p. 432.

Scotland, W. coast,—*Antedon bifida*, *Palmipes membranaceus*, *Echinus norvegicus*, with other *Oph.*, *Ast.*, *Ech.*, and *Hol.*; SCOTT (301) pp. 175, 189.—Cumbrae, *Amphiura chiajii*; CHOPIN (49).—*Brissopsis lyrifer*,

dredged in quantities; SMITH (314).—Moray Firth, *Luidia sarsi*; SCOTT (302).

Rockall Bank, *Crin.*, *Ast.*, *Oph.*, *Ech.*, *Hol.*; SLADEN (311).

Ireland,—Valencia Id., Co. Kerry, *Strongylocentrotus lividus*, *Holothuria nigra*, *Cucumaria cucumis*, *Ocnus brunneus*, and *O. lacteus*; GAMBLE (94).

French coasts, *Echinoderma*, popular; GRANGER (104).

Mediterranean *Ast.*, general discussion of horizontal distribution, both in Mediterranean and Atlantic (p. 441); bathymetric distribution (p. 446); and nature of habitat (p. 448); see also under the several spp. *Astropecten aurantiacus*, *A. bispinosus*, *A. spinulosus*, *A. pentacanthus*, et var. *serratus*, *A. jonstoni*, *Luidia ciliaris*, *L. sarsi*, *Plutonaster subinermis*, *P. bifrons*, *Odontaster mediterraneus*, *Chaetaster longipes*, *Pentagonaster placenta*, *P. hystricis*, *Marginaster capreensis*, *Asterina gibbosa*, *Palmipes membranaceus*, *P. lobianci*, *Hacelia attenuata*, *Ophidiaster ophidianus*, *Echinaster sepositus*, *Asterias tenuispina*, *A. glacialis*, *A. edmundi*, *A. richardi*, and *Brisinga coronata*; LUDWIG (210).—Fauna does not include *Echinaster dorie* and *E. tribulus*, which = *E. spinosus* of W. Atlantic coast (see IV D); LUDWIG (208).—Diagnoses of *Ast.*; LUDWIG (209).—G. of Rapallo, *Crin.*, *Ast.*, *Oph.*, *Ech.*, *Hol.*, with *Echinaster sepositus*, var. nov. *mediterraneus*; MARCHISIO (216).—Sea of Marmora, *Hol.*, *Ech.*, *Ast.*, *Oph.*, *Crin.*; OSTROUMOV (256) pp. 50 & 51 and passim.

B. of Biscay,—*Ophioglypha carnea*; between Pico and São Gorge, *Ophiactis abyssicola* and *Ophiacantha aristata*; Atlantic, *O. setosa*; Str. of Pico-Fayal, *Ophioconis forbesi*; and other Atlantic species of *Oph.* including n. spp. *Ophiocten longispinum*, *O. scutatum*, *Amphiura denticulata*, *A. longispina*; KOEHLER (165).—B. of Biscay, Echinoderms collected by the 'Caudan,' species new to locality, viz. Atlantic spp., *Odinia robusta*, *Coronaster antonii*, *Neomorphaster parfaiti*, *Pentagonaster perrieri*, *Astrogonium annectens*, *Dorigona arenata*, *D. subspinosa*, *Pontaster marionis*, *Ophioglypha jungmanni*, *Amphiura duplicata*, *Trigonocidaris albida*, *Phormosoma placenta*, *Rhizocr. rawsoni*, *Letmogone Wyvillethomsoni*; extra-Atlantic spp., *Ophioglypha irrorata*, *O. minuta*, *Ophiacantha rosea*, *Phormosoma luculentum*, *Ankyroderma danielsseni*; Arctic spp., *Ophiacantha bidentata*, *O. spectabilis*, *O. abyssicola*, *Ophiactis balli*, *Amphilepis norvegica*, *Echinus alexandri*, *Holothuria intestinalis*, *H. tremula*, *Echinocucumis typica*; Mediterranean spp., *Tethyaster subinermis*, *Pentagonaster placenta*; n. spp., *Zoroaster trispinosus*, *Cribrella biscayensis*, *C. caudani*, *Myxaster perrieri*, *Pentagonaster minor*, *P. kergroheni*, *Ophioglypha thouleti*, *Ophiocten ledanteci*, *Ophiactis corallicola*, *Ophioscolex relictus*, *Ophiacantha simulans*, *O. aristata*, *Ophiomitra globulifera*, *Astronyx locardi*, *Antedon flava*, *Holothuria roulei*, *Stichopus pallens*, *Benthogone rosea*, *Psolus tessellatus*; KOEHLER (163 & 164).

List of *Ast.* dredged by 'l'Hirondelle' in B. of Biscay, off Azores, and Newfoundland, with bathymetric distribution, and nature of bottom; PERRIER (263).—Azores, *Sperosoma*, n. g.; KOEHLER (168).

E. Atlantic,—Holothurians dredged by 'Princesse Alice'; HÉROUARD (126).—4020 metres, *Ophiomusium planum*; list of *Oph.* collected by 'Princesse Alice' including n. spp., *Ophiernus abyssalis*, *Amphiura richardi*, *A. grandis*, *Ophiacantha lineata*, *O. rufescens*, *O. cordifera*, and *Ophiotrema alberti*; KOEHLER (166).

Greenland, Karajak-Fjord, *Ech.*, *Ast.*, *Oph.*, *Hol.* (p. 235), and general list (p. 243); VANHOEFFEN (333).—N. Greenland, *Hol.*; BERGENDAL (37) pp. 8, 11.

Nova Scotia, list, with notes; HONEYMAN (131).—Grand Bank and B. of Fundy, *Crin.*, *Oph.*, *Ech.*; HONEYMAN (132).

Bermudas, *Hol.*, *Ast.*, *Oph.*, *Ech.*; BRISTOL (44).—Jamaica, *Hol.*; CLARK (52).—Kingston harbour, *Oreaster reticulata*, *Toxopneustes variegatus*, *Diadema setosum*, etc.; DUERDEN (77).

(iii) INDIAN OCEAN AND ADJACENT SEAS.

Oph. collected by 'Investigator,' preliminary note; KOEHLER (167): they include the following Atlantic spp., *Ophiomusium validum*, *O. planum*, *Ophiernus adspersus*, and *Ophiocamax fasciculata*; note also *Astronyx loveni* of Norway and Japan, also n. spp. of the following genera, *Ophiotypa*, *Ophiopyrgus*, *Ophiomastus*, *Ophioglypha*, *Ophiomusium*, *Ophiopyren*, *Ophiolypus*, *Ophioceramis*, *Ophiozona*, *Ophiopeza*, *Pectinura*, *Ophiactis*, *Amphiura*, *Ophiochiton*, *Ophiacantha*, *Ophiomitra*, *Ophiothrix*, *Ophiomyxa*, *Gorgonocephalus*, *Ophiocreas*; KOEHLER (169).

E. coast of Africa.—*Hol.* collected by Stuhlmann, incl. *H. signata*, *Chirodota rufescens*, *Orcula cucumiformis*, *Synapta ooplax*, also *Chirodota stuhlmanni*, n. sp.; LAMPERT (181).—*Ast.*, *Oph.*, *Ech.* coll. Stuhlmann; PFEFFER (267).

Ceylon,—*Palmipes sarasini*, n. sp.; LORIOLO (196) p. 11.

Amboina and Thursday Is.—*Oph.* 35 spp. of which 8 new, note specially *Ophioglypha sinensis* and *Ophiochæta hirsuta*; DOEDERLEIN (68).—*Ast.*, 26 spp. of which 1 new (*Bunaster*, n. g.), and general remarks on Indo-pacific *Ast.* esp. *Culcita*; DOEDERLEIN (69) p. 303.

(iv) PACIFIC OCEAN AND ADJACENT SEAS.

Puget Sound, *Heliaster*, *Asterias*, *Cucumaria* (p. 156); *Dendraster excentricus*, *Asterias*, *Cucumaria* (p. 158); *Holothuria californica*, *Synapta*, *Cribrella*, *Solaster*, *Asterias*, *Ophioglypha* (p. 162); *Strongylocentrotus*, *Psolus* (p. 164); HARRINGTON & GRIFFIN (124).—Vancouver, *Ast.* with n. spp. *Crossaster vancouverensis*, *Asterias koehleri*, *A. saanichensis*; LORIOLO (196) p. 12.

Chile and Magellan, *Ast.*, incl. n. spp. *Asterias platei*, and *A. fernandensis*; MEISSNER (229).—Chile, *Ech.*; MEISSNER (228).

Kermadec Is. (Raoul or Sunday Is.), *Tripneustes variegatus*, *Echinometra lucunter*, *Ophiopeza danbyi*, *Asterias rodolphi*, *Asteropsis imperialis*, *Ophiaster*, sp.; FARQUHAR (83).

New Zealand,—deep sea, *Ast.* (p. 7), *Crin.* (p. 10), *Ech.* (p. 11), *Hol.* (p. 20), *Oph.* (p. 24); HAMILTON (122).—Various localities, *Echinocardium australe*, *Strongylocentrotus tuberculatus*, *S. eurythrogrammus*, *Centrostephanus rogersi*, *Pectinura maculata*, *Amphiura pusilla*, *A. elegans*, *Astrogonium huttoni*, *Asterina regularis*, *Stichaster polyplax*, and others; FARQUHAR (83).—*Hol.*, revised list; DENDY (63).

New S. Wales, *Stichopus mollis*, hitherto known only from New Zealand; WHITELEGGE (347).—Houtman's Abrolhos, Holothurian fauna; SAVILLE-KENT (290) p. 149.

Japan,—list of *Hol.*, with extra-Japanese habitats quoted, and literature; MITSUKURI (237).—Sagami, *Sphærothuria bitentaculata*; MITSUKURI (240).—Echinoderms dredged by long-line in Sagami Bay, *Zoroaster*, n. sp., *Asthenosoma*, *Pourtalesia*, *Lætmogone* sp., *Metacrinus rotundus*; IJIMA (137) p. 42.—Near Misaki, *Ilyodæmon ijimai*, n. sp.; MITSUKURI (239).—Shoal Hamashima in Kagoshima B., *Ophiopsila* sp. in crowds; MITSUKURI & HARA (241).—*Echinaster spinosus*, a W. Atlantic sp. found off Japan; ANON. (12).

(v) ARCTIC OCEAN AND ADJACENT SEAS.

Inglefield Gulf, *Ech.*, *Ast.*, *Oph.*, *Crin.*; OHLIN (251) p. 204.

(vi) ANTARCTIC OCEAN AND ADJACENT SEAS.

Comparison of *Echinoderma* of deep-water and shallow-water of Kerguelen Region with those of other Regions; MURRAY (246).

B. GEOLOGICAL.

(i) GENERAL.

Remarks on geological history of Echinoderms; GAUDRY (96).—General palæontological data afforded by Echinoderma, with table of distribution; HÆCKEL (116) p. 359. The imperfection of the Geological record as exemplified by Crinoidea; WACHSMUTH and SPRINGER (336) p. 167.—Distribution of *Crinoidea* (p. 146), *Cystidea* (p. 158), *Echinoidea* (p. 202), *Holothurioidea* (p. 204); ZITTEL (356).—See also ZITTEL-EASTMAN (357).

(ii) CAINOZOIC.

(a) **General**:—Upper Tertiaries, British Isles, *Crin.* (p. 6), *Ech.* (p. 7), *Oph.* (p. 11), *Ast.* and *Hol.* (p. 12); BELL (33).—Discussion of geological distribution of *Ech.* in coll. Mazzetti, mostly Eocene and Miocene from Salto and Montese, Italy; MAZZETTI (225).—Tertiary of Piedmont, list of 53 spp. and vars. of *Ech.*, with *Brissopsis latissimus*, *B. craverii*, Placentian, *Linthia peolæ*, *L. cevense*, Pliocene, *Schizaster pyriformis*, Tongrian, *S. braidensis*, Placentian, *Spatangus manzonei*, Astian, n. spp.; BOTTO-MICCA (41) p. 344.

(b) **Pleistocene**:—Vacant.

(c) **Pliocene**:—Of Piacentino and Parma, Italy, *Astrogonium* sp. and *Astropecten linati*, n. sp.; PRATO (271).—Of Parma, list of *Ech.* incl. *Psammechinus monilis*, n. var. *depressa*, *Clypeaster guidotti*, n. sp.; VINASSA DE REGNY (335) p. 141.—*Echinolampas hemisphericus*, above sands with *Cyprina aequalis* of Monte Mario, Rome; MELI (230) p. 164.—Monte Mario, *Echinocyamus pusillus*; MELI (231) p. 149.—Dahra (Algeria), *Ech.*; BRIVE (45).—Central America, *Encope chilensis*; IHERING (136) p. 338.

(d) **Miocene**:—France, monograph of *Spatangus*, with list from other Miocene localities; COTTEAU (56).—Pierre-longue near Avignon, *Ech.*; DEPÉRET (64) p. 522.—Brittany, *Hipponoë* & *Echinolampas*; SEUNES (305).—Gombio, Italy, *Astropecten*; PRATO (271).—Lemberg, Galicia, *Ech.*; ŁOMNICKI (192) p. 34.—Letkés, Hungary, *Clypeaster acuminatus*, *C. reidii*, *C. sp.*; FRANZENAU (87) p. 20.

Middle Miocene, "terreno a *Clypeaster*," Calabria, *Ech.*; FUCINI (92) p. 61.—(? Helvetian) of Vigoleno and Ciano d'Enza in Piacentino, Italy, *Ech.*; VINASSA DE REGNY (334) p. 154.—Helvetian, "pietra da Cantoni," Rosignano and Vignale, Monferrato, Italy, *Ech.*, with *Pericosmus pedemontanus* and *Schizaster ozzanensis*, n. spp.; ALESSANDRI (1) pp. 69–84.—Langhian or Helvetian, Portugal, *Ech.*, n. spp., *Arbacina mutellensis*, *Scutella lusitanica*, *S. roquettei*, *Clypeaster palencaensis*, *C. mutellensis*, *C. delgadoi*, *Brissopsis lusitanicus*, *Opissaster cotteri*, and 20 other spp., discussion of age on p. 48; LORIOU (193).—"Schlier" of San Severino (Marche), *Hemipneustes italicus*; ANGELIS D'OSSAT & LUZZI (9) p. 66.

Tortonian,—Monterenzio, Bologna, *Cidaris tessurata*; SANGIORGI (288) p. 180; Near Orleansville, Algeria, lists of *Ech.*, chiefly *Clypeaster*; REPELIN (279) pp. 172–181.—Upper Burdigalian,—*Ech.* and *Crin.* with *Antedon anglesensis*, *A. pellati*, *A. allardi*, *A. fontannesii*, *A. depereti*, and *Pentacr. miocenicus*, n. spp.; LORIOU (194); Near Angles (Gard) and St.-Etienne-du-Grès (Bouches du Rhône), *Ech.* and *Crin.*, presence of *Pentacr.* columnals does not prove depth as supposed by SINARD (247, Zool. Rec. 1893); PELLAT (260).—Bas Languedoc, *Ech.* (Burdigalian), pp. 204, 205, 206, 210; (Vindobonian), pp. 218, 224, 226, 232; ROMAN (281).

(e) **Oligocene**:—Of Gaas (Landes), list of *Ast.* and *Ech.*; RAULIN (274).—Transylvania, lists of *Ech.*; KOCH (162) pp. 294, 313.—Patagonia, *Scutella patagonensis*; IHERING (136) p. 337.—Aquitanian and Langhian,

“Globigerina Limestones,” Malta, *Pentacrinus gastaldi* and 24 spp. *Ech.*; COOKE (55), pp. 510 & 511.

Middle Oligocene, “Septarien-thon,” Cassel in Hesse, *Schizaster acuminatus*; KAYSER (153).—Of Laufen in Berner Jura, *Ditremaster* (?) sp.; HAGMANN (119).

(f) **Eocene**:—Aude, *Ech.* discussed; LAMBERT (179).—Saint-Palais (Charente-Inférieure), *Sismondia marginalis*, var. *minor*; COURJAULT (58).—Horizons of species of *Sismondia*; FOURTAU (86).—Württemberg, lists of fossils, various localities; ENGEL (78).—Venetia, Mte Pulli, *Psammechinus* sp. (p. 144), and Roncà, *Ech.* (pp. 110 & 111); GREGORIO (105).—Transylvania, lists of *Ech.* & *Crin.*; KOCH (162) pp. 252, 258, 267, 271, 282.—Haskovo, Bulgaria, *Ech.*; BONTSCHEFF (40) Table facing p. 324, pp. 326, 327, 354, 355, 368–373.—Nummulitic limestone of Albert in Roumania, *Conoclypeus conoideus* and *Conocrinus piriformis*; POPOVICI-HATZEG (270) pp. 248 & 249.—Central Caucasus, *Ech.*; FOURNIER (85) pp. 179, 182.—Egypt, *Fibularia lorioli* and *Mistechinus mayeri*, *Euspatangus cairensis*, n. spp.; LORIOU (196) p. 4.—Patagonia, *Hypechinus patagonicus*, *Echinarachnius juliensis*; IHERING (136) p. 336.

Australia, list of *Ech.*, *Ast.*, *Crin.*; TATE & DENNANT (324) p. 130.—Murravian?, Bordertown, S. Australia, *Psammechinus woodsi*, *Hemiaster planedeclevis*, *Lovenia forbesi*, *Scutellina patella*; CLARK (50) p. 111.—Lower Maude series,—Lower Moorabool, Victoria, *Fibularia*; HALL (120) p. 45; Muddy Creek and Spring Creek, list of *Ech.*; TATE & DENNANT (324) p. 146.—Table Cape beds, Tasmania, list of *Ech.*; TATE & DENNANT (324) p. 132; & PRITCHARD (272) p. 143.

(iii) MESOZOIC.

(a) **General**:—Oxfordian (pp. 101, 112, 118), Bajocian (pp. 110, 114), Bathonian (p. 117), Neocomian (p. 128), Aptian (pp. 132, 138), Albian (p. 140), Cenomanian (pp. 157, 163), Senonian (pp. 158, 160, 164), of Central Caucasus; FOURNIER (85).

(b) **Cretaceous**:—Of Seine-Inférieure, list of 144 spp. of *Ech.* including *Holaster integer* and *Micraster laxoporus*; COULON (57).—S.W. France, list of *Salenia*, *S. heberti* from Upper Campanian of Talmont (Charente-Inf.), also *S. rejaudryi*, Lower Campanian, *S. maxima*, Mid. Campanian, and *S. pesmei*, Dordonian, all Charente, n. spp.; ARNAUD (15), see esp. pp. 29 & 30.

(1) Upper:—Baltic chalk classified, with list of *Ech.* according to zones, *Brisopneustes danicus* and *B. suecicus*, n. spp.; *Marsupites* in Sweden; SCHLUETER (297).—Zones of, at Georgsberg, Bohemia, list of *Crin.*, *Ech.*, *Ast.*; ZAHALKA (353) p. 10.—Madagascar, *Ech.*; NEWTON (247) pp. 311, 313.

Maestrichtian,—Mari Hills, Baluchistan, *Ech.*; NÆTLING (248) p. 11.

Danian,—“Craie de Cibly,” discussion of *Ech.* and of geological horizon (p. 186), the following n. spp. *Cidaris montainvillensis*, *Macrodiadema ciplyensis*, *Salenia belgica*, *Gauthieria broecki*, *Rachiosoma grossouvrei*, *Cyphosoma inops*, *C. rutoti*, *Caratomus rutoti*, *Echinocorys belgicus*; LAMBERT (180).

Senonian,—Co. Antrim, *Ech.*, *Crin.*; HUME (134) pp. 545, 546, 551, 552, 553, 557, 559, 562, 568.—Between Sewerby and South Sea Landing, Flamborough Head, *Marsupites* has a range of about 50 feet, just above *Actinocamax quadratus*; LAMPLUGH (182) pp. 82 & 83.—N. Germany and Baltic, distribution of *Ech.*; STOLLEY (320), passim, esp. p. 272.—Lüneburg and Lägerdorf, horizons of *Ech.* esp. *Micraster* spp. discussed; STOLLEY (319).—Dieppe, *Micraster fortini*, n. sp.; LAMBERT (178) p. 328.—Elbeuf,

Gauthieria radiata, var. *granulosa*: Dieppe, *Micraster fortini*; FORTIN (84).—Madagascar, various *Ech.* with n. spp., *Lampadaster gauthieri*, *Menuthiaster cotteaudi*, *Micraster meunieri*, *Echinocorys duchesnei*, and *Infulaster boulei*; LAMBERT (178).—"Trigonoarca beds," Rautankupam, Pondicherry, India, *Hemiaster tamulicus*, n. sp., and *H. pullus*; KOSSMAT (172) pp. 95 & 96.—Lower Senonian,—of England and Westphalia, abundance of *Uintacrinus*; BATHER (25); Valley of Méhaigne, Belgium, *Ech.*; RUTOT (286) pp. 39, 42.—"Niobrara chalk," *Uintacrinus* at Smoky Hill near Elkader, Kansas; WILLISTON (348) p. 110, & (349).

Turonian,—"Hippurite limestone," lists of fossils with numerous *Ech.*; TOUCAS (328).—"Scaphitenpläner" of Oppeln, Silesia, *Ech.*, including *Ananchytes ovatus*; LEONHARD (187) pp. 40–42.—"Seewerkalk," N. of Klönthal, Switzerland; BURCKHARDT (47) p. 88.—"Formation des Gas," Turonian? near Chatillon-en-Diois, France, *Ech.*, *Crin.*; LORY & SAYN (197) p. 13.

Cenomanian and Turonian,—Lebanon, *Ech.* including n. spp., *Hemicidaris ghazirensis*, *Diplopodia blankenhorni*, *Psammechinus zumoffeni*, *Pyrina lamberti*, *Echinobrissus ghazirensis*, *Toxaster libanoticus*, *Linthia fraasi*, *Hemiaster ibelensis*, and *H. kfourensis*, also the following previously unrecorded from district, *Diplopodia variolaris*, *Holactypus cenomanensis*, *H. excisus*, *Enallaster delgadoi*, *Micraster decipiens*; LORIOI (195).

Cenomanian,—Ventnor, *Ech.* (p. 105), at C. La Hève, *Ech.* (p. 121), at St Jouin, *Ech.* (p. 125), Craie de Rouen, *Ech.* (p. 132), and various *Ech.* (p. 143); JUKES-BROWNE & HILL (150).—Groschowitz, *Catopygus carinatus*, and Sabschütz, *Pygurus lampas*, Silesia; LEONHARD (187) pp. 28 & 29.—El Golea, S. Algeria, *Ech.*; PERON (261).—"Chlomeker Schichten," Bohemia, *Ech.*, *Ast.*; FRIČ (91) p. 71.

(2) Lower:—Berriasian, *Ech.* (p. 49), Neocomian, *Ech.* (pp. 57 & 58) Urgonian, *Ech.* (p. 66), Albian, *Ech.* (p. 80), N. of Klönthal, Switzerland; BURCKHARDT (47).—Wealden to Albian of Barcelona, zonal lists with spp. of *Heteraster*, *Epiaster*, *Echinospatagus*, *Pseudodiadema*, *Pygaulus*, *Pyrina*, *Collyrites*, *Discoidea*, *Salenia*, *Catopygus*; ALMERA (3).

Albian,—of S.E. France, *Ech.*; KILIAN (157) pp. 792–797.—Escagnolles, Nizza, and W. Liguria, *Ech.*; PARONA & BONARELLI (258) pp. 64–66.

Aptian,—"Upper Greensand," Dorset, list of *Ech.*, *Crin.*; JUKES-BROWNE (149) p. 101.—"Chert and Greensand" of Warminster, list of *Ech.* (p. 264), "Rye Hill sand," list of *Ech.* and *Crin.* (p. 270), with note (p. 271), and doubtful *Catopygus columbarius* (p. 273); JUKES-BROWNE (148).—Of S.E. France, *Ech.*; KILIAN (157) pp. 752–771.—Gault of La Palud-de-Moustiers (Basses-Alpes), *Ech.*; KILIAN (158) p. 894.—Zapatoca in Cordilleras of Bogota, *Toxaster raulini*; GERHARDT (99) pp. 132, 189.

Neocomian and Upper Greensand,—*Ech.* in drift at Moreseat, Aberdeen; SHARMAN & NEWTON (306) p. 254.—Neocomian of Isère, *Eugeniocr. gevreyi*, n. sp.; LORIOI (196) p. 24. Valanginian and Hauterivian,—of Escagnolles (Alpes-maritimes); KILIAN & ZURCHER (160) pp. 963–965; Of Bas-Languedoc, *Ech.*, *Crin.*; ROMAN (281) pp. 124, 130, 135.—Valanginian, Hauterivian, Barremian of Moustiers Ste-Marie (Basses-Alpes), *Ech.*; KILIAN & LEENHARDT (159) pp. 973–980.—Of S.E. France, *Ech.*, *Crin.*; KILIAN (157) pp. 721–729, 733–737, & 738–746.

(c) **Jurassic**:—Württemberg, lists of fossils, various localities; ENGEL (78).

(1) Upper:—Inowrazlaw, Posen, occurrences of *Ech.*, *Crin.*; GALLINEK (93).—Tithonian,—of Bas-Languedoc, *Crin.*, *Ech.*; ROMAN (281) pp. 87, 88, 329; Tunis, *Metaporhinus convexus*, and *Proholaster auberti*, n. g. et sp.; GAUTHIER (98) p. 17.—Portlandian, Tithonique,—at Sisteron (Basses-Alpes) and other localities in S.E. France, *Ech.*, *Crin.*; KILIAN (157) pp. 678–688.—? Kimeridgian,—S. Tunis, *Pygurus meslei*, *Hemicidaris*

zeguellensis, *Acrosalenia meslei*, n. spp.; *Holactypus corallinus*, *Monodiadema cotteaui*, *Rhabdocidaris? orbignyana*; and *Millericrinus meslei*, n. sp.; GAUTHIER (98).

(2) Middle:—Oxfordian to Portlandian,—of Escagnolles (Alpes-maritimes), *Ech.*, *Crin.*; KILIAN & ZURCHER (160) pp. 960–962.—Oxfordian,—St Ives, Hunts., *Pseudodiadema jessoni*, n. s.; GREGORY (107).—Tunis, *Cyclolampas volzi*, *Collyrites friburgensis*, *Pleurodiadema stutzi*; GAUTHIER (98) p. 19.—Crinoid Limestone with *Pentacr. jurensis* associated with *Hildoceras bifrons*; STEFANO (316) p. 195.—“Terrain à Chailles” and Rauracian of Isteiner Klotz, S.W. Baden, *Ech.*, *Ast.*, *Crin.*; HUG (133) pp. 392, 403–405.—Callovian and Oxfordian,—Bas-Languedoc, *Crin.*, *Ech.*; ROMAN (281) pp. 55 & 65.—Callovian,—Acque Fredde, Lago di Garda, Italy, 4 spp. of *Cidaris*, indet. spines; PARONA (257) pp. 394 & 395.—Lower Callovian, Chanasiën, Savoy, list of *Crin.* and *Ech.* with comparative distribution (p. 46), and notes (p. 78); PARONA & BONARELLI (259).

(3) Lower:—Madagascar, *Stomechinus* aff. *bigranularis*; NEWTON (247) p. 315.—Bathonian,—boulders of Malm in W. German plain contain *Crin.* columnals and *Cidaris* plates, origin discussed; SCHLUETER (298).—Braun Jura,—“*Murchisonæ* beds, *Sowerbyi* beds, *Humphriesi* beds,” Baden, *Ech.*, *Ast.*, *Crin.*; SCHALCH (293) pp. 574, 585, 604.—Bajocian,—Bas-Languedoc, *Crin.*, *Ech.*; ROMAN (281) p. 47.

(d) **Lias**:—(?) Madagascar, *Pentacr.* and *Acrosalenia*; NEWTON (247) p. 315.

Upper,—“Lower *Leda ovum* beds,” *Archæodiadema thompsoni*, n. g. et sp.; GREGORY (106).

Middle,—“Bündner Schiefer,” between Hinter- and Vorderrhein, *Pentacr.* cf. *basaltiformis*; ROTHPLETZ (282) pp. 34 & 54.

Lower,—“Bündner Schiefer” between Hinter- and Vorderrhein, *Pentacr. angulatus*, *P. psilonoti*; ROTHPLETZ (282) pp. 35 & 54.—“*Planorbis* beds,” Kalksburg near Vienna, *Pentacr.* cf. *psilonoti*; TOULA (330) p. 218.

(e) **Trias**:—“Brachiopodenkalk” of Grignagebirge, S. Alps, *entrochus*; PHILIPPI (266) p. 716.—Muschelkalk,—near Jena, *Crin.*, *Ech.*, *Ast.*, *Oph.* list with horizons (p. 100) and references, *passim*; WAGNER (337).—Of Recoaro, *Aspidura italica*, and *Apiocrinus recubariensis*, n. spp.; CREMA (59). Ditto, *Millericrinus*; BATHER (27).—G. of Ismid, Asia Minor, *Encrinus*; TOULA (329) p. 158.

(iv) PALÆOZOIC.

(a) **General**:—Distribution of Crinoidea Camerata in Palæozoic rocks of N. America, and comparison with other localities (p. 171), range in time of all *Crinoid* families (p. 172), followed by description of all American *Camerata*; various localities described (pp. 19 & 20); WACHSMUTH & SPRINGER (336).—Geological history of N. American *Actinocrinidæ*; MILLER & GURLEY (234) p. 73.—List of Palæozoic Crinoids of Cornwall, all stem-fragments, *Cyathocrinus (?) carinatus*, and *C. (?) leptos*, n. spp.; COLLINS (54).

(b) **Permian**. Vacant.

(c) **Permo-Carboniferous**. Vacant.

(d) **Coal Measures**:—Upper,—of Poteau Mt., Indian Territory, and Scott Co., Arkansas, *Crin.* (pp. 236, 274); Lower,—White Co. and Pope Co., Arkansas, *Crin.* (pp. 236, 275); SMITH (313).

(d & e) Carboniferous, Kansas, complete list of *Crin.* & *Ech.*; BENNETT (36) p. 271.

(e) **Lower Carboniferous**:—*Crin.* as zonal fossils: BATHER (19).—*Archæocidaris urei*, "not found before below the Upper Grey Limestone," found at base of Lower Brown Limestone at Craig-adwy-wynt, N. Wales; MORTON (245) p. 59.—Central France, *Ech.* with n. spp., *Archæocidaris grüneri*, *Palaechinus lacazei*, *P. rutoti*, *P. robineti*, *P. konincki* and *P. gaudryi* (pp. 125–131), and *Crin.*, *Actinocr.* and *Poteriocr.* (pp. 135–138); JULIEN (151).—Fresh horizon for palechinoids in Belgium; LOHEST (191).—"Petit-granit," Modave, Belgium, *Crin.*; DORLODOT (71) p. 252.—Stage V a, Pair, Belgium, *Platycrinus münsterianus*, *P. cf. planus*; DESTINEZ (66).—Culm and Carboniferous Limestone, *Archæocidaris*; LEYH (188) p. 540.—"Schieferigen Kohlenkalk facies," Ober-Elsass, chiefly Hunsrückwald, *Ech.*, character of the fauna discussed (p. 787), incl. *Palaechinus lacazei*, *Rhoechinus elegans*, *Archæocidaris urii*, and n. spp., *Pholidocidaris tenuis* and *Leptechinus gracilis*; other Carboniferous *Ech.* also discussed; TORNQUIST (327).

Geological history of N. American spp. of *Agaricocrinus*; MILLER & GURLEY (235) p. 9.—Louisiana Limestone to Upper Burlington, table showing range of *Crin.* and *Blast.*: KEYES & ROWLEY (156) p. 30–33.—Bridger Mts., Bozeman, Montana, n. spp. of *Poteriocr.* and *Platycr.* (vide IV F) MILLER & GURLEY (234).—Ditto, *Batocr.*, *Rhodocr.*, *Platycr.*, *Dichocr.*; MILLER & GURLEY (235).

Kaskaskia,—Pulaski Co., Ky., *Poteriocr.*, *Zeacr.*; Dover Hill, Ind., *Zeacr.*; MILLER & GURLEY (232).—Monroe Co., Ill., *Poteriocr.*; Randolph Co., Ill., *Agassizocr.*; MILLER & GURLEY (233).—Breckenridge Co., Ky., *Talarocr.*, MILLER & GURLEY (235).

St. Louis,—Lanesville, Ind., *Batocrinus*; Spergen Hill, Ind., *Steganocr.*, *Barycr.*; MILLER & GURLEY (232)—Alton, Ill., *Poteriocr.*; MILLER & GURLEY (233).

Warsaw,—Jersey Co., Ill., *Forbesocr.*; MILLER & GURLEY (232).—Salem, Ind., *Batocr.*; MILLER & GURLEY (233).

Keokuk,—Washington Co., Ind., *Forbesocr.*, Crawfordsville, Ind., *Taxocr.*; MILLER & GURLEY (232).—Boonville, Mo., *Batocr.*, *Poteriocr.*; Jersey Co., Ill., *Forbesocr.*; Edwardsville, Ind., *Forbesocr.*; Keokuk, Ia., *Batocr.*; Crawfordsville, Ind., *Barycr.*; Chert Hill, Ala., *Dorycr.*; Little Barren R., Ky., *Batocr.*; MILLER & GURLEY (234).—Keokuk, Ia., *Agaricocr.*; MILLER & GURLEY (235).

Burlington,—Adams Co., Ill., *Batocr.*, *Agaricocr.*, *Symbathocr.*, *Platycr.* (232); *Batocr.*, *Agaricocr.* (233); *Batocr.* (234): Burlington, Ia., *Strotocr.* (232); *Batocr.* (233); *Actinocr.*, *Dorycr.*, *Batocr.*, *Cyathocr.* (234): Sagetown, Ill., *Batocr.* (234): near Sharon, Mo., *Batocr.*, *Dorycr.*, *Steganocr.*, *Platycr.* (235): Sedalia, Mo., *Batocr.*, *Amphoracr.*, *Actinocr.* (232); *Batocr.*, *Actinocr.* (233); *Actinocr.*, *Physetocr.*, *Dorycr.*, *Batocr.*, *Barycr.*, *Codaster* (234); MILLER & GURLEY.

Kinderhook,—Le Grand, Iowa, List of *Crin.* and *Blast.*, mode of occurrence; BEYER (39) pp. 223–225: *Scaphiocr.*; MILLER & GURLEY (233).—Louisiana, Mo., horizons of *Crin.* and *Blast.*; KEYES (155) pp. 363 & 366.

Chouteau Limest.,—Sedalia, Mo., *Amphoracr.*, *Rhodocr.* (233); *Amphoracr.* (234); *Actinocr.* (235); MILLER & GURLEY.

(f) **Devonian**:—General distribution Echinoderms; FRECH (89) p. 120.

Middle,—“Pilton, Croyde and Braunton Beds,” Devonshire, list of *Ech.*, *Ast.*, *Oph.*, *Crin.*, including 14 insufficiently described n. spp.; WHIDBORNE (342) pp. 376 & 377.—Haina near Waldgirm, *Crin.*, *Ech.*; BEYER (38) p. 88.—“Lenneschiefer” Crinoid-bed, near Attendorn, Westphalia, *Crin.*; HUNDT (135) p. 219.—(? Lower or Middle) Sta. Lucia, Spain,

Megistocr. waliszewskii, *Stortingocr. haugi*, n. spp., *Cupressocr.*, *Codiocr. granulatus*, *Pentremitidea*; OEHLERT (250) p. 818 et sqq.

Lower,—Oakhampton and Treborough, Devon, Crinoid columnals; HICKS (130) p. 456.—“Riffkalk,” E. Alps, *Eucalyptocr.*, *Rhipidocr.*, *Hexacr.*, *Cupressocr.*, *Cococr.* (p. 177); *Ctenocr. typus* probably does not occur in the Upper Coblenzian; “Asterscheid” should be “Asterstein” (p. 179); FRECH (88).

Upper,—Portage and Ithaca groups, spp. of *Taxocrinus*, *Poteriocrinus*, and *Arthroacantha*; KINDLE (161).

Lower,—Hamilton group, Charleston, Ind., *Megistocr.*, *Stereocr.* (235); *Dolatocr.* (232, 233, 235); MILLER & GURLEY.—Rio Mæcurú, Amazons, *Ctenocrinus* (?) columnals; KATZER (152) p. 209.

(g) **Silurian**:—General distribution Echinoderms; FRECH (89) p. 64.—L. Temiscaming outlier, Ottawa, *Crin.*; AMI (4) p. 158.

Niagara,—Decatur Co., Tenn., *Thysanocr.* (232); *Caryocr.* (233); *Glyptaster*, *Eucalyptocr.* (234); Louisville, Ky., *Lecanocr.* (232); MILLER & GURLEY.—Jones Co., Iowa, *Petalocrinus mirabilis* and *P. major*, n. spp.; WELLER & DAVIDSON (341).—Joliet, Illinois, n. spp. of *Cryptodiscus* (q.v. sub. IV F); WELLER (339); others from Racine, Wis.; WELLER (340).

“Middle Trilobite bed” (=Yass beds of David), at Bowning Village, Co. Harden, N. S. W., *Palæchinus*; MITCHELL (236).—Melbourne, *Hapalocrinus victoriae*, n. s.; BATHER (30) p. 337.

(h) **Ordovician**:—General distribution Echinoderms; FRECH (89) p. 63.

“Keisley Limestone,” Upper Bala, *Sphaeronis pyriformis*, and various crinoid stems; REED (276) pp. 82, 93.—“Middleton group,” Mincop, W. Shropshire, *Merocrinus salopie*, n. s., and another crinoid; BATHER (20).—Portraine, Co. Dublin, *Glyptocystis cf. Logani*; GARDINER, REYNOLDS & REED (95) pp. 524, 538.

Calcareous,—Phillipsburgh, Quebec, *Palæocystis* (p. 115); Chazy, Quebec, —St. Dominique, *Bolboporites* (p. 117); Abbotsford, *Bolboporites*, *Blastoidocr.* (p. 118); Grande Ligne, *Blastoidocr.*, *Palæocystis* (p. 118); Id. of Montreal, *Malocystis*, *Palæocystis*, *Blastoidocr.*, *Glyptocystis*, *Bolboporites* (pp. 119, 121 & 122); Joliette, *Palæocystis* (p. 120); Caughnawaga, *Blastoidocr.*, *Bolboporites*, *Glyptocystis* (pp. 122 & 123); AMI (5).

Trenton,—various localities in Quebec, *Crin.*, *Cyst.*, compiled list (p. 144), Joliette, *Glyptocrinus* (p. 147); AMI (5).—Of Ottawa Valley, list of *Crin.*, *Cyst.*, *Ast.*; AMI (4) p. 154.—Ottawa, *Astrocystis ottawaensis*, n. g. et sp.; WHITEAVES (345).—Galena-Trenton and Black R.,—L. Winnipeg, *Crin.*, *Cyst.*, *Ast.* fragments; WHITEAVES (344) p. 159.

Cincinnati group,—spp. of *Reteocr.*, *Canistocr.* [sic], *Xenocr.*, *Ptychocr.*, *Glyptocr.*, and *Mariacr.*, second-hand descriptions; JAMES (146).

Larapintine series,—Middle Valley, Central Australia, Crinoid stems, one figured [with 5 longitudinal sutures and most peculiar articular surface]; TATE (323) p. 113.

(k) **Cambrian**:—Tejřovic and Skrej, Bohemia, *Cyst.* and *Edrioast.*, incl. *Stromatocystis*, n. g.; POMPECKJ (268) p. 502–508.—Ditto, localities for *Mitrocystis*, *Lichenoides priscus*, *Stromatocystis*, and *Trochocystis bohemicus*, q.v. in IV G; JAHN (145).—Tremadoc fossils, new locality at Hof, Bavaria, *Macrocytella bavarica*; POMPECKJ (269).

IV. SYSTEMATIC.†

(A.)—ECHINODERMA IN GENERAL.

Systematic Synopsis; BELZUNG (35) pp. 503 & 504.

Classification into Holothurides, Echinides, Stellérides, Crinoides, and Radiolaires, the last being associated by reason of their ground-plan, no distinction recognized between Protozoa and Metazoa; VILLOT (334, 1 April, 1891).

Divided into *Pelmatozoa*, *Asterozoa*, and *Echinozoa*, the last incl. *Hol.*; ZITTEL (356) p. 113.

Classification of Echinoderma, its principles (p. 368); HÆCKEL (116). System of *Echinoderma*; HÆCKEL (118) p. 164: thus expressed by HÆCKEL (116) p. 378:

Cladomes	Classes	Sub-classes
I Monorchonia (Noncineta)	Amphoridea	Amphoralia
	Thuroidea	Amphoronia
	Cystoidea	Paractinota
II Pentorchonia orocincta	Blastoidea	Actinopoda
	Crinoidea	Microplacta
		Megaplacta
III Pentorchonia pygocincta	Echinidea	Eublastoidea
		Parblastoidea
	Ophiodea	Palacrinida
		Neocrinida
	Asteridea	Palechinida
		Autechinida
	Palophiura	
	Colophiura	
	Palasterida	
	Colasterida	

Anolena, a physiological grouping of armless classes, *Cyst.*, *Blast.*, *Hol.*, *Ech.*; HÆCKEL (116) p. 373.

Monorchonia, sub-phylum nov., includes *Holothurioidea*, = *Anactinogonidiata* Bell; HÆCKEL (116) p. 371 & (117) p. 403.

Olenata, a physiological grouping of armbearing classes, *Crin.*, *Ast.*, *Oph.*; HÆCKEL (116) p. 373.

Orocincta, super-class nov., includes *Blast.* and *Crin.*; HÆCKEL (116) p. 372 & (117) p. 403.

Pentorchonia, sub-phylum nov. = *Actinogonidiata*, Bell; HÆCKEL (116) p. 372 & (117) p. 403.

Pygocincta, super-class nov., includes *Ech.*, *Ast.* and *Oph.*; HÆCKEL (116) p. 373 & (117) p. 403.

(B.)—HOLOTHURIOIDEA.

List of Japanese species; MITSUKURI (237).

Relations of *Hol.* to *Cystidea*; HÆCKEL (118) p. 8.

† A dagger prefixed to the trivial name of a species indicates that it is fossil; prefixed to the name of the author, it denotes that the reference is to the species in a fossil state; prefixed to the name of a genus, it indicates that all species of the genus here recorded are fossil, and the † is therefore not repeated before each name. The abbreviations *l. c.* and *op. cit.* refer only to the place or work quoted immediately before. *Ibid.* is used when the locality and horizon are the same as those of the preceding item.

A name and reference quoted without further statement (e.g. "*Ankyroderma danielsenii*; HÉROUARD," on p. 59) indicate that the quoted author's statement refers merely to locality or some question of slight importance. Further information can usually be gleaned from the cross-references to II and III, given under TITLES.

Holothuroidea, sub nomine *Thuroidea*, defined and discussed; HÆCKEL (116) p. 429.

Classification of Holothurians thus given by HÆCKEL (116) p. 442:

	Orders	Families	
I Paractinota (Paractinopoda)	{ Archithuriæ Synaptonia Nectothuriæ	{ Protholothurida Palæothurida Synaptida Trochodotida Pelagothurida	
		{ Dendrochirota Molpadonia	{ Cucumarida Psolida Rhopalodinida Molpadida Caudinida
			{ Elasipoda Aspidochirota	{ Psychropotida Deimatida Elpidida Stichopoda Sporadipoda
{ Dendrothuriæ Aspidothuriæ			
II Actinopoda (Actinota)			

Actinopoda, sub-class defined; HÆCKEL (116) p. 440.

Ankyroderma,—anchors and anchor-plates; ÖSTERGREN (255) p. 156, fig.—*A. danielsseni*; HÉROUARD (126), p. 165: B. of Biscay, notes on spicules; KOEHLER (163) p. 492: Spicules, redescr.; KOEHLER (164) p. 118.—*A. jeffreysii*, no muscular tubules in integument; GEROULD (100) p. 133.

†*Archithuriæ*, hypothetical ancestral group, defined; HÆCKEL (116) p. 439.

Aspidochirota, order defined; HÆCKEL (116) p. 443.

Bathyplotes, n. g., with type *Bathyplotes natans* (olim *Stichopus*) Sars, redescr., spicules figd, anatomical notes (p. 351); genus includes also *Stichopus moseleyi*, and *S. pourtalesii* Theel (p. 355), and *S. tizardi* Theel, redescr., respiratory trees, calcareous ring, and spicules figd; ÖSTERGREN (253) Festschrift für Lilljeborg, p. 354.

B. fallax, Bergen, respiratory trees figured; ÖSTERGREN (253) *op. cit.*, p. 355, n. sp.

Benthodytes janthina; HÉROUARD (126) p. 164.

B. glutinosa and *B. lingua*, N. Atlantic, precise localities, depths, and figg. not given; PERRIER (265) C.R. Ac. Paris, cxxiii, p. 902, n. spp.

Benthogone, n. g., with genotype *B. rosea*, n. sp., 1300 m., 50° 22' W., 44° 2' N., B. of Biscay, allied to *Lætmogone*; KOEHLER (163) Rev. biol. Nord France, vii, p. 488, & (164) Ann. Univ. Lyon, xxvi, p. 113, figg. 2, 3, 36, 37.—*B. rosea*, nn. varr. *cylindrica* et *quattuorlineata*, N. Atlantic; PERRIER (265) p. 900.

Caudina arenata et var. *armata*, detailed account of anatomy and histology, with bibliography; GEROULD (100).—*C. coriacea*, redescribed with internal anatomy; DENDY (63) p. 29.

Chiridota contorta, brood-pouch; LUDWIG (204).—*C. dunedinensis*, spicules, pharyngeal skeleton, and internal anatomy, described and figd, distinguished from *C. australiana* (p. 26), and spicule-growth (p. 49); DENDY (63).—*C. laevis*, 20 cm. long, Egedesminde, N. Greenland; BERGENDAL (37) p. 11.—*C. pisani*, with parasitic Gastropod; LUDWIG (206).—*C. rufescens*; LAMPERT (181) p. 67.

C. stuhlmanni, Tumbatu, E. coast Africa, allied to *C. rigida*, ciliated funnels dimorphic; LAMPERT (181) Mt. Mus. Hamburg, xiii, p. 67, n. sp.

Colochirus alba Hutton sp., redescr. and figd, with internal anatomy; DENDY (63) p. 35.—*C. anceps*, Roebuck B., W. Australia, photograph

- of a living group; SAVILLE-KENT (290) p. 218.—*C. brevidentis* Hutton sp., redescr., and spicules figd; DENDY (63) p. 40.
- C. calcarea* on sea-weed in Cook Strait, N. Z. (p. 38), *C. ocnoides*, New Brighton, N. Z., with description of internal anatomy (p. 36); DENDY (63) J. Linn. Soc. xxvi, n. spp.
- Cucumaria*; HARRINGTON & GRIFFIN (124).—*C. crucifera*, brown spicules of Semper rediscovered in one specimen, not in the other; LAMPERT (181) p. 60.—†*C. dubiosa*; BELL (33) p. 12.—*C. frondosa*, embryonic stages as plankton, off N. Greenland; BERGENDAL (37) p. 8: walls of stomach (pp. 148, 150, 152), muscles of circumoral water-ring (p. 158), gonads (pp. 171, 175), genital duct (p. 180); GEROULD (100): vide *Pentacta*.—*C. pentactes*; MARCHISIO (216), p. 4.—*C. planci*, autotomy; MONTICELLI (242).—*C. ? thomsoni* and *C. ? turbinata*; DENDY (63) p. 34.
- C. huttoni*, Oamaru, N. Z., with description of internal anatomy; DENDY (63) J. Linn. Soc. xxvi, p. 32, n. sp.
- Cucumariidæ*, relations to *Molpadiidæ*; GEROULD (100) p. 180.
- Cuvieria fabricii*; HONEYMAN (131), p. 258.
- Dendrochirota*, order defined; HÆCKEL (116) p. 441.—Number and arrangement of tentacles too variable to be a good classificatory character; LAMPERT (181) p. 63.
- Echinocucumis alba* Hutton, referred to *Colochirus*; DENDY (63) p. 35.—*E. typica*, variation from type in form of spicules; KOEHLER (163) p. 493: var. nov. *abyssalis*, 650 m., 4° 25' W., 44° 36' N., B. of Biscay; KOEHLER (164) Ann. Univ. Lyon, xxvi, p. 119.
- Elasipoda*, order defined; HÆCKEL (116) p. 441.
- Eucyclus* maintained; LAMPERT (181) p. 63.
- Euphronides auriculata* (p. 901), *E. talismani* and *E. violacea* (p. 902), N. Atlantic, precise localities, depths, and figg. not given; PERRIER (265) C.R. Ac. Paris, cxxiii, n. spp.
- Halithuria*, n. g. = "*Holothuria* sensu strictissimo!! = *Sporodipus* = *Trepang*"; HÆCKEL (116) p. 443.
- Holothuria albiventer*, has penetrated from Red Sea to Suez, is distinct from *H. aculeata*, *H. bowensis*, and *H. modesta*, pace Hérouard; LAMPERT (181) p. 55.—*H. argus*; WHITELEGGE (346) p. 161.—*H. armata* Selenka is a stage or var. of *Stichopus japonicus*; MITSUKURI (238).—*H. aspera*, vide *Mesothuria*.—*H. atra*; WHITELEGGE (346) p. 161: ? var. *amboinensis*; LAMPERT (181) p. 56.—*H. cinerascens*, anatomical notes; LAMPERT (181) p. 55.—*H. ecalcarea* Sars; ÖSTERGREN (253) p. 356: referred to *Stichopus*, perhaps = *S. tremulus*; ÖSTERGREN (254) p. 9.—*H. erinaceus*, maintained, spicules figd; LAMPERT (181) p. 57.—*H. forskali*, including *H. nigra*, is distinct from *H. poli* and has Cuvier's organ; KOEHLER (170).—*H. glaberrima*, distinct from *H. lubrica*, *H. erinaceus*, and *H. parva*, spicules figd; LAMPERT (181) p. 57.—*H. imitans*, colour and spicules, Funafuti; WHITELEGGE (346) p. 161.—*H. impatiens*; LAMPERT (181) p. 54.—*H. intestinalis*, includes *H. verrilli*, has variable spicules; KOEHLER (163) p. 482, and (164) p. 106: var. *verrilli*; HÉROUARD (126) p. 163.—*H. lactea*, redescr., from B. of Biscay, includes *H. thomsoni* and possibly *H. murrayi*; KOEHLER (163) p. 478, and (164) p. 102: vide *Mesothuria*.—*H. lubrica*, maintained, spicules figured; LAMPERT (181) p. 58.—*H. maculata*; LAMPERT (181) p. 54.—*H. mammata*; MARCHISIO (216) p. 4.—*H. monacaria*; LAMPERT (181) p. 54.—*H. murrayi*, vide *Mesothuria*.—*H. nigra*, is synonym of *H. forskali* and has Cuvier's organ; KOEHLER (170) p. 507.—*H. pardalis*; WHITELEGGE (346) p. 161: including *H. insignis*, *H. lineata*, and *H. peregrina* Ludwig, but not *H. pardalis*? juv. of Semper, 1868, pl. xxx, fig. 30; LAMPERT (181) p. 52.—*H. parva*, anatomical notes, distinct from *H. glaberrima*,

- spicules figured; LAMPERT (181) p. 56.—*H. pervicax*, colour; LAMPERT (181) p. 53.—*H. polii*; HÉROUARD (126) p. 164; MARCHISIO (216) p. 4: origin of gonads; RUSSO (284): (= *H. nigra*) Cuvierian organs; BARTHEL'S (18): is distinct from *H. forskali*, does not occur on Atlantic seaboard, and has no Cuvier's organ; KOEHLER (170).—*H. robsoni*; DENDY (63) p. 48.—*H. sanctori*; MARCHISIO (216) p. 4.—*H. scabra* (p. 54); *H. signata*, perhaps = *H. edulis* Lesson, has same spicules (p. 53); LAMPERT (181).—*H. stellati*; HÉROUARD (126) p. 163.—*H. thomsoni*, vide *Mesothuria*.—*H. tremula*; KOEHLER (163) p. 483, and (164) p. 108: in only 10 fms; APPELLÖF (13) p. 6: referred to *Stichopus*; ÖSTERGREN (254) p. 7.—*H. tubulosa*; HÉROUARD (126) p. 164; IWANZOFF (138): has no Cuvier's organ; KOEHLER (170) p. 509.—*H. vagabunda*; WHITELEGGE (346) p. 161.—*H. verrilli*, referred to *Mesothuria* and compared with *M. intestinalis*; ÖSTERGREN (253).
- H. roulei*, 1300 m., Bay of Biscay, 5° 22' W., 44° 2' N., allied to *H. intestinalis*, has variable spicules; KOEHLER (163) Rev. biol. Nord France, vii, p. 480, and (164) p. 105, fig. 47, n. sp. Vide *Mesothuria*.
- Ilyodæmon ijimai*, Sagami Bay and outer part of Tokyo Bay, over 250 fathoms; MITSUKURI (239) Annot. zool. Japon. i, p. 133, n. sp.
- Lætmogone violacea*; PERRIER (265) p. 900.—*L. wyville-thomsoni*, colour and shape in living state; KOEHLER (164) p. 117: Bay of Biscay, slight variations from Theel's description; KOEHLER (163) p. 492.
- Mesothuria*, rediagnosed, and to it are referred following species—*aspera* (?), *intestinalis*, *lactea*, *magellani*, *multipes*, *murrayi*, *roulei* (?), *thomsoni*, *verrilli*; ÖSTERGREN (253) p. 351.—*M. intestinalis* (olim *Holothuria*) Ascan., redescribed, with figures of spicules, anatomical notes; ÖSTERGREN (253) p. 347.
- Molpadiida*, relations to *Cucumariida*; GEROULD (100) p. 180.
- Molpadonia*, order defined; HAECKEL (116) p. 441.
- Mülleria echinites*; LAMPERT (181) p. 59; WHITELEGGE (346) p. 160.—*M. mauritiana*, colour; LAMPERT (181) p. 59.
- Nectothuria*, order founded for *Pelagothuria*; HAECKEL (116) p. 440.
- Onciophanta mutabilis*; PERRIER (265) p. 900.
- Orcula cucumiformis*, additions to previous description; LAMPERT (181) p. 61.
- Paractinota*, sub-class defined; HAECKEL (116) p. 438.
- Peniagone*, restricted; PERRIER (265) p. 901.—*P. azorica*; HÉROUARD (126) p. 164; PERRIER (265) p. 901.
- P. porcellus*, N. Atlantic, precise locality and depth not given and no figures; PERRIER (265) C.R. Ac. Paris, cxxiii, p. 901, n. sp.
- Pentacta frondosa*; HONEYMAN (131) p. 258. Vide *Cucumaria*.
- Periamna*, n. g., including *Peniagone naresi* (genotype), *Scotoplana insignis*, *S. robusta*, and a n. sp. *Periamna roseum*, N. Atlantic, precise locality and depth not given and no figures; PERRIER (265) C.R. Ac. Paris, cxxiii, p. 901.
- Pseudocucumis africana*, with young form, incl. *P. théli* Ludwig, discussed; LAMPERT (181) p. 61.
- Pseudostichopus villosus*, HÉROUARD (126) p. 164.
- Psolus antarcticus*, care of brood; LUDWIG (205).—*P. (Cuvieria) fabricii*; VANHOEFFEN (333) p. 242.—*P. phantapus*; loc. cit.; HONEYMAN (131) p. 257; †BELL (33) p. 12.
- P. macquariensis*, Macquarie Is., N. Z.; DENDY (63) J. Linn. Soc. xxvi, p. 41.—*P. tessellatus*, 1700 metres, 6° 15' W., 45° 47' N.; KOEHLER (164) Ann. Univ. Lyon, xxvi, p. 119: n. spp.
- Psychropotes buglossa*, and *P. fucata*, N. Atlantic, precise localities and depths and figures not given; PERRIER (265), C.R. Ac. Paris, cxxiii, p. 902.—*P. grimaldii*, 4020 m., E. of São Miguel, 38° 9' N., 11° 36' W. (Paris), spicules figd; HÉROUARD (126) pp. 164, 167: n. spp.

- Scotoplana*, restricted; PERRIER (265) p. 901.
- S. delagei*, 1165–1385 metres, near Azores, spicules figured; HÉROUARD (126) pp. 164, 167, n. sp.
- Sigmodota*, n. g. for spp. of *Chiridota* with sigmoid spicules; ÖSTERGREN (255), Bergens Mus. Aarbog, 1896, No. 12, p. 154, footnote.
- Sphærothuria bitentaculata*, found off Japan; MITSUKURI (240).
- Stichopus ecalcareus* (olim *Holothuria*) Sars., perhaps = *S. tremulus*; ÖSTERGREN (254) p. 9.—*S. japonicus*, change in spicules with advancing age, includes *Holothuria armata* as var., also var. nov. *australis*; MITSUKURI (238).—*S. mollis* Hutton sp., redescrip. and figd, with internal anatomy and spicules, includes *S. sordidus*, Théel; DENDY (63): first recorded from N. S. Wales, colour, external anatomy; WHITELEGGE (347).—*S. regalis*; IWANZOFF (138); KOEHLER (163) p. 488, & (164) p. 113.—*S. tizardi*, redescrip. with figures, from B. of Biscay; KOEHLER (163) p. 484, & (164) p. 108, figg. 33–35.—*S. torvus* Théel, probably a *Meseres*; ÖSTERGREN (253) p. 357.—*S. tremulus* (olim *Holothuria*) Gumm., redescrip., internal anatomy causes change of genus, figures of spicules; ÖSTERGREN (254) p. 7.—*S. variegatus*; LAMPERT (181) p. 59.
- S. griegi*, 80–100 fms., W. of Utvaer in S.W. Norway, with anatomical notes and figures of spicules; ÖSTERGREN (254), Bergens Mus. Aarbog, 1896, No. 12, p. 4.—*S. pallens*, 1300 m., 5° 22' W., 44° 2' N., B. of Biscay, has no spicules; KOEHLER (164), Ann. Univ. Lyon, xxvi, p. 111, figg. 1 & 45; & (163), Rev. biol. Nord France, vii, p. 486: probably a *Meseres*; ÖSTERGREN (253) p. 357.—*S. richardi*, 351 m., B. of Biscay, spicules figd; HÉROUARD (126) pp. 164 & 165: n. spp.
- Synallactes*, discussed; ÖSTERGREN (253) p. 356.—*S. lactea*; HÉROUARD (126) p. 164.
- S. théeli*, based on specimens not named by Théel, "Challenger Rep. Holothurioidea," ii, p. 242; ÖSTERGREN (253), Festschrift für Lilljeborg, p. 356, n. sp.
- Synallactinae*, removed from *Holothuriidæ* to *Elpidiidæ*; ÖSTERGREN (253) p. 357.
- Synapta beselii*; LAMPERT (181) p. 64.—*S. digitata*; HÉROUARD (126) p. 165; KOEHLER (163) p. 494, & (164) p. 121.—*S. girardi*, structure of genital tubules; GÉROULD (100) p. 172.—*S. inæqualis*, holotype destroyed; DENDY (63) p. 26.—*S. lappa*, anchors and anchor-plates; ÖSTERGREN (255) p. 150, fig.—*S. ooplax*, spicules described, anatomical notes; LAMPERT (181) p. 66.—*S. picta*, Théel, probably syn. of *S. vivipara*; CLARK (53) p. 282.—*S. serpentina*, colour, anatomical notes, number of tentacles; LAMPERT (181) p. 64.—*S. uncinata*, holotype redescrip. with internal anatomy; DENDY (63) p. 25.—*S. vivipara*, general description, spicules figd, development, habitat, food; CLARK (53).
- Synaptidæ*, distinctive characters; GÉROULD (100) p. 181.
- Synaptonia*, order defined; HÆCKEL (116) p. 439.
- Synaptula*, syn. of *Synapta*; CLARK (53) p. 282.
- Thyone brevidentis* Hutton, referred to *Colochirus*; DENDY (63) p. 40.—*T. briareus*, structure of genital tubules; GÉROULD (100) pp. 171 & 172.—*T. inermis*; HÉROUARD (126) p. 165.
- Thyonidium longidentis* Hutton sp., redescrip. and figd, includes *T. caudatum* Hutton, and *T. rugosum* Théel; DENDY (63).
- Trochostoma*, anchors and anchor-plates; ÖSTERGREN (255) p. 158, fig.—*T. antarcticum*, no muscular tubules in integument; GÉROULD (100) p. 133.—*T. (Molpadia) oolitica*; HONEYMAN (131) p. 258.
- Tutela*, n. g. with genotype *T. echinata*, N. Atlantic, precise locality and depth not given, and no fig.; PERRIER (265), C.R. Ac. Paris, cxxiii, p. 901, n. sp.

(C.)—ECHINOIDEA.

Defined (p. 474), classified (p. 481), with Stammbaum (p. 489), and the following system (p. 488); HÆCKEL (116):

Sub-class	Legions	Orders	Families
I Cystechinida	—	{ Promelonaria	{ Procidarida Cystocidarida
		{ Eumelonaria	{ Melonitida Pholocidarida
II Palechinida	—	{ Stenopalmaria	{ Bothriocidarida Lepidocentrida
		{ Eurypalmaria	{ Archæocidarida Plesiocidarida
		{ Cidaridaria	{ Eocidarida Cidarida
		{ Diademaria	{ Echinothurida Salenida Glypticida Cyphosomida Arbacida Echinometrida Typechinida
Autechinida (= Euechinoidea)	{ Demosticha (= Cidaronia v. Regularia)	{ Conoclyparia	{ Galeritida Conoclypeida Fibularida Clypeastrida Laganida Scutellida
	{ Anthosticha (= Clypeastronia v. Subregularia)	{ Scutellaria	{ Echinonida Cassidulida Collyritida Eolampada Ananchytida Pourtalesida Leskiada Spatangida Brissida
	{ Petalosticha (= Spatangonia v. Atelostoma, v. Irregularia)	{ Cassidularia	
		{ Spatangaria	

Tabular synopsis of Neozoic genera; KOKEN (171) p. 256.

General account, with special reference to fossils; ZITTEL (356) p. 174; ZITTEL-EASTMAN (357) p. 210.

Palæozoic *Ech.* are thus classified by JACKSON (139) p. 238: Sub-class I, *Palæechinoidea*. Order 1, *Bothriocidaroida*; 2, *Perischoechinoidea*. Families, *Melonitidæ*, *Lepidesthidæ*, *Archæocidaridæ*, *Lepidocentridæ*; 3, *Cystocidaroida*; 4, *Plesiocidaroida*. Family, *Tiarechinidæ*. Sub-class II, *Euechinoidea*, a few spp. of *Cidaris*.

†*Acrosalenia*, vide sub *Gauthieria*.

A. meslei, Kimeridgian, Ksar-Dagra near Tatouine, S. Tunis, one specimen shows pathological reduction of pores; GAUTHIER (98) pp. 14, 16, pl. xxxii, n. sp.

†*Actinophyma*, syn. of *Rachiosoma*; LAMBERT (179) p. 498.

†*Actinopsis* (errore *Actinopis*), nom. nov. pro *Asteropsis* Cotteau non Müller & Troschel, genotype *A. lapparenti*, and comprising *Cyphosoma arnaudi*, subgenus *Heteractis*, q. v.; LAMBERT (179) p. 500.

A. (Heteractis) heteroporus, Eocene, La Vornede, near Conques, Monze, La Valette, between Pradelles and Monze (Aude); LAMBERT (179) Bull. Soc. geol. France, ser. 3, xxv, p. 507, pl. xviii, n. sp.

Aeropidæ, fam. nov. with 4 tribes: *Stenoniens*, *Stenonia*, *Menuthiaster*; *Ovulasteriens*, *Physaster*, *Ovulaster*, *Ornithaster*, *Coraster*; *Neopneu-*

- stiens, *Neopneustes*, *Homolampas*, *Aceste*, *Palæobrissus*, *Genicopatagus*; Paleotropiens, *Cleistechinus*, *Palæotropus*, *Argopatagus*; LAMBERT (178) p. 324.
- †*Agassizia equipetala*, probably not British; BELL (33) p. 10.
- Amphidetus cordatus*; ROBERTSON (280): vide sub *Echinocardium*.
- Amphiope bioculata* and *A. perspicillata*, compared in terms of variations noted in *Monophora darwini*; LAHILLE (176) p. 439.—†*A. palpebrata*, redescribed, from Portugal, compared with *A. lovisatoi* and *A. villei*; LORIOLO (193) p. 14, pls. iii & iv.
- †*Ananchytes*:—*A. artatus* (pp. 159, 161), *A. cf. beaumonti* (p. 162), *A. carinatus* (p. 164), *A. conoideus* (p. 160); FOURNIER (85).—*A. crasis-sima* Ag. is syn. of *A. conoideus* Goldf.; LAMBERT (180) p. 185.—*A. cf. douvillei* (pp. 161, 163), *A. gibbus* (p. 164), *A. ovatus* (pp. 159, 160, 162, 163, 164); FOURNIER (85): from Turonian [!]; LEONHARD (187) p. 40.—*A. semiglobus* Lam. is syn. of *Galeola papillosa* Klein; LAMBERT (180) p. 184.—*A. cf. semiglobus*; FOURNIER (85) pp. 162 & 163.—*A. spatangiformis* F. A. Roem., holotype lost; SCHLUETER (297) p. 23.—*Ananchytes striatus*; FOURNIER (85) p. 164.
- Arbacia dufresnii*; MEISSNER (228) p. 83.—*A. pustulosa*; MARCHISIO (216) p. 4: asphyxia; UEXKÜLL (331) p. 469.—*A. spatuligera*; MEISSNER (228) p. 84.
- †*Arbacina mutellaensis*, Miocene, between Mutella and Cacilhas, Portugal; LORIOLO (193), Mem. Direc. Trav. Geol. Portugal, p. 8, pl. i, n. sp.
- †*Archæocidarida*, defined, includes *Archæocidaris*, *Lepidocidaris*; JACKSON (139) p. 241: incl. *Pholidocidaris*, *Lepidocidaris*, *Archæocidaris*, *Eocidaris*; TORNQUIST (327) pp. 731, 764.
- †*Archæocidaris*, rediagnosed, divided in 2 groups of *A. rossica* and *A. urei*; TORNQUIST (327) p. 770.—*A. agassizi*, discussed (p. 213); *A. drydenensis*, discussed (p. 214); JACKSON (189): referred to *Eocidaris*; TORNQUIST (327) pp. 770, 773.—*A. edgarensis*, *A. illinoisensis*, *A. keokuk*, *A. legrandensis*, and *A. mucronata*; JACKSON (139) p. 214.—*A. cf. munsterianus* (pp. 541, 555); *A. nereis* (pp. 540, 555); LEYH (188): redescri. from Domaine des Roches, La Varville, and Siguret; JULIEN (151) p. 126, pl. vi.—*A. rossica* Vern., redescri. with morphological notes (see II B) and figures; TORNQUIST (326): var. nov. *schellwieni*, Upper Carboniferous, Pontafel, Carnatic Alps; TORNQUIST (327) p. 781, pl. xxii.—*A. shumardana* and *A. spiniclavata*; JACKSON (139) p. 214.—*A. urei*; MORTON (245) p. 59: redescri.; TORNQUIST (327) p. 775, pl. xxii: redescri. from l'Ardoisière, Central France, plates figd by Keeping, 1876, not of this genus; JULIEN (151) p. 223, pl. xvi.—*A. wortheni*; TORNQUIST (326) p. 31 footnote: arrangement of plates fully described, and early growth-stages inferred; JACKSON (139) p. 213, pl. viii.—*A. sp.*, spines from l'Ardoisière (p. 125, pls. xvi & xvii); *A. sp. ?*, plate and spine from Regny (p. 127, pl. iii); JULIEN (151).
- A. grüneri*, Carboniferous Limestone, l'Ardoisière, Central France; JULIEN (151) p. 125, pl. xvi.—*A. trautscholdi*, based on *A. rossica* Trautsch., 1868, non Verneuil, Carboniferous, Mjatschkowa; TORNQUIST (326), N. Jahrb. Min. 1896, vol. ii, p. 29, pl. iv.—*A. wervekei*, Lower Carboniferous, Hunsrückwald, Elsass; TORNQUIST (327), Abh. geol. Karte Elsass, v, p. 778, pls. xxi & xxii: n. spp.
- †*Archæodiadema*, n. g. with genotype *A. thompsoni*, n. s., *Cerithium* beds or Lower *Leda ovum* beds of Upper Lias, Higham Ferrers, Northants, England; GREGORY (106), Geol. Mag. (n. s. Dec. iv), iii, p. 317; LAMBERT in Review says only subgenus of *Diademopsis*.
- †*Asteropsis*, nom. mut. in *Actinopsis*, q. v.; LAMBERT (179).
- Asthenosoma hystrix*; KOEHLER (163) p. 472, & (164) p. 90.
- A. ijimai*, near Misaki, Japan (p. 8, pl. ii); *A. longispinum*, 313–376 fms.,

- Sagami Sea, Japan, (p. 5, pl. ii); YOSHIWARA (352), Annot. zool. Japon. i, n. spp.
- Astropyga radiata*; PFEFFER (267) p. 46.
- Atelostomata*, suborder defined, includes families *Cassidulidæ*, *Holasteridæ*, *Spatangidæ*; ZITTEL (356) p. 195.
- †*Bolbaster verrucosus*, Senonian of Mekneça, Algeria; REPÉLIN (279) p. 104.
- Bothriocidarida*, defined; ZITTEL (356) p. 182; ZITTEL-EASTMAN (357) p. 219.—Place of the Order in the System; JACKSON (139) p. 238.
- †*Bothriocidaris*, possibly a Cystid; KOKEN (171) p. 256.—*B. pahleni*, ambulacra (p. 190), growth discussed (p. 233); JACKSON (139).
- †*Botriopygus zumoffeni*, slight variations from type; LORIOU (195) p. 161.
- †*Brissopneustes*:—*B. danicus*, Danian of Vixø in Jutland, and other Scandinavian localities (p. 18, pl. i); *B. succicus*, Faxekalk (Danian) of Annetorp, S.W. of Malnø, Sweden (p. 34, pl. i); SCHLUETER (297), Zeitschr. Deutsch. geol. Ges. xlix: n. spp.
- Brissopsis*:—†*B. borsonii*, is Pliocene (Placentian) not Miocene (p. 349); †*B.* cf. *B. borsonii*, from Placentian of Mt. Capriolo near Bra in Piedmont (p. 351); BOTTO-MICCA (41).—†*B. bucklandi*, holotype redescribed, compared with all other spp. of genus, locality and horizon unknown; SCHLUETER (296) p. 970.—†*B. crescenticus*; MAZZETTI (225) p. 436.—†*B. elegans*, believed to occur in Miocene of Ceva, Piedmont (p. 352); †*B. genei* (p. 345); var. nov. *pliocenicæ*, Placentian of Monte Capriolo near Bra in Piedmont (p. 346, pl. x); var. nov. *cevensis*, Langhian of Ceva in Piedmont (p. 346); †*B. intermedius* (p. 347); BOTTO-MICCA (41).—*B. lyrifer*; SMITH (314); KOEHLER (163) p. 475, & (164) p. 97; †VINASSA DE REGNY (334) p. 152.—*B. lyriphera* [sic]; †MAZZETTI (225) p. 435.—†*B. ottangensis*, op. cit. p. 436.—†*B. ovatus* Sismonda, emended, comes from Helvetian (p. 348, pl. x); †*B. pecchiolii* (p. 347); †*B. sismondæ* (p. 352); †*B.* cf. *B. sismondæ*, Miocene of Ceva, Piedmont (p. 350); BOTTO-MICCA (41).
- †*B. craverii*, with var. *major* (p. 349, pl. x) & †*B. latissimus* (p. 347), Placentian of Monte Capriolo near Bra in Piedmont; BOTTO-MICCA (41), Boll. Soc. geol. Ital. xv.—†*B. lusitanicus*, Miocene, Grillos near Lisbon, allied to *B. borsonii*; LORIOU (193) Mem. Direc. Trav. Geol. Portugal, p. 42, pl. xiii: n. spp.
- †*Brissus unicolor*; BELL (33) p. 10.—†*B.* sp.; MAZZETTI (225) p. 436.
- †*Caratomus* Agass., 1840, is syn. of *Echinogalerus* Koenig, 1825 (p. 160); *C. avellana* compared with *C. sulcatoradiatus*, and distinguished from *C. dollfusi*, n. s. and *C. peltiformis* (pp. 157 & 158); *C. laubei*, discussed (p. 159); *C. peltiformis*, distinguished from *C. avellana* and *C. dollfusi*, n. s., and discussed, with var. nov. *belgica*, Danian of Ciply (p. 158, pl. iv); *C. sulcatoradiatus*, compared with *C. avellana* (p. 157, pl. v); LAMBERT (180).
- †*C. dollfusi*, Cretaceous, Cotentin, based on *C. avellana* d'Orb. and Desor., non Dubois (p. 158); *C. rutoti*, Danian, "poudingue de la Malogne," Ciply (p. 157, pl. iv); LAMBERT (180) Bull. Soc. Belge Geol., ser. 2, xi: n. spp.
- †*Cardiaster*:—*C. ananchytis*, internal cast from Chlomeker Schichten figd; FRIČ (91) p. 71.—*C.* (olim *Holaster*) *cordiformis* Morris non Sorignet is syn. of *C. granulatus* Goldf., for Sorignet's sp. v. *C. heberti*; LAMBERT (180) p. 177.—*C. cotteauanus*; FRIČ (91) p. 72.—*C. fossarius* Benett; JUKES-BROWNE (149) p. 107.—*C. granulatus* Goldf.; STOLLEY (320) p. 247: redescribed, plastron figd, distinguished from Turonian specimens so called which = *C. cotteau* d'Orb. (p. 173, pl. iii); *C. heberti*, redescribed, incl. *Holaster cordiformis* Sorignet non Morris, derived from *C. equituberculatus* (of *M. cor-anguinum* zone) by way of *C.* (olim *Stegaster*) *facki* Stolley (of *Bel. quadrata* zone) (p. 176, pl. ii); LAMBERT (180).—*C. orientalis* Stoliczka, fig. 2 non fig. 1, is probably

- Hemipneustes*; NOETLING (248) p. 29.—*C. zignoanus* d'Orb., is *Ovulaster*; LAMBERT (178) p. 331.
- †*Cardiolampas* Pomel, its relations to *Collyrites*; GAUTHIER (98) p. 21.
- †*Cassidulus testudinarius*; GREGORIO (105) p. 110.
- †*Catopygus*:—*C. carinatus*; LEONHARD (187) p. 28.—*C. cylindricus*; ALMERA (3) p. 569.—*C. fenestratus*, affinities discussed, apices figured, one abnormal; LAMBERT (180) p. 172.
- Centrostephanus rogersi*, New Zealand; FARQUHAR (83) p. 189.
- Cidaris*:—†*C. attenuata*; RAULIN (274).—†*C. avenionensis*; DEPÉRET (64) p. 522; MAZZETTI (225) p. 417: redescribed from Portugal; LORIOLO (193) p. 3, pl. i: Burdigalian and Helvetian; LORIOLO (194) p. 118, pl. iv.—†*C. aff. avenionensis*; ALESSANDRI (1) p. 83.—†*C. belgica*; BELL (33) p. 7; MAZZETTI (225) p. 417.—†*C. blumenbachi*; HUG (133) pp. 392, 403; ROMAN (281) p. 329: (Incl. *C. histricoides*, Quenst.), geogr. distrib., found in Posen; GALLINEK (93) p. 403.—†*C. buccinifera* Cuffin, referred to *Macrodiadema*; LAMBERT (180) p. 147.—†*C. cervicalis*, HUG (133) p. 403.—†*C. cf. coronata*; FOURNIER (85) pp. 118, 121.—†*C. faujasi*, spines probably belong to *Temnocidaris danica* (p. 145); †*C. forchhammeri*, synonymy discussed; LAMBERT (180) (pp. 143, 190).—†*C. florigemma*; HUG (133) p. 403; SCHLUETER (298) p. 946: Interambulacrals; JACKSON (139) p. 215, pl. viii.—†*C. cf. florigemma*; FOURNIER (85) pp. 118, 121.—†*C. glandifera*; KILIAN (157) pp. 678, 680, 682, 685, 686; ROMAN (281) p. 330.—†*C. cf. glandifera*; FOURNIER (85) p. 120.—†*C. grandæva*; WAGNER (337) p. 100.—†*C. hardouini*; LAMBERT (180) p. 142.—†*C. heteracantha*; KILIAN (157) p. 733.—†*C. hirta* & †*C. melitensis*; MAZZETTI (225) p. 417.—†*C. cf. melitensis* et aff. *C. sabaritensis*; PRATO (271).—†*C. meridanensis*; KILIAN (157) p. 721.—*C. metularia*; PFEFFER (267) p. 45.—†*C. munsteri*, spines redescr., incl. *C. peroni* Cott., Helvetian and Burdigalian; LORIOLO (194) p. 119, pl. iv.—†*C. oosteri*, spines discussed; LAMBERT (179) p. 487.—†*C. papillata*; MAZZETTI (225) p. 417.—†*C. parandieri* Ag., made syn. of *C. blumenbachi* Münst.; HUG (133) p. 403.—†*C. peroni* Cott., is distinct from *C. munsteri* Sism.; ALESSANDRI (1) p. 84.—†*C. pilum*; KILIAN (158) p. 894.—*C. psammosa*; SCHLUETER (298) p. 946.—†*C. pseudoserrata* Pavay non Cott., made n. sp. *Cidaris pannonicæ*; LAMBERT (179) p. 486.—†*C. punctatissima*, KILIAN (157) pp. 733, 738.—†*C. rosaria*; ALESSANDRI (1) p. 83: spines, redescr.; VINASSA DE REGNY (334) p. 143.—†*C. serrata*; LAMBERT (180) p. 142, pl. ii.—†*C. cf. spinosus*, in Posen; GALLINEK (93) p. 404.—†*C. subularis*, spines found in Eocene of Aude; LAMBERT (179) p. 486, pl. xviii.—†*C. subvesiculosa*; FRIČ (91) p. 71.—†*C. tessurata*; SANGIORGI (288) p. 180.—†*C. tombecki*, redescr.; LAMBERT (180) p. 145, pl. ii.—†*C. transversa*; WAGNER (337) p. 100.—*C. tribuloides*, interambulacrals; JACKSON (139) p. 218, pl. viii.—†*C. verticillum*, “à la specie fossile della vivente *Cidaris verticillata*; Lam. Fu così denominata per distinguerla da essa”; MAZZETTI (225) p. 417.—†*C. vesiculosa*; KILIAN (157) p. 793.—†*C. sp. a, b, c, d*, spines, Callovian; PARONA (257) pp. 394 & 395, and figg. 45–47.—†*C. sp.*, spine like *C. chalmasi*, from S. Tunis; GAUTHIER (98) p. 16.—†*C. sp.* referred by Peron to *C. distincta* Sorignet; LAMBERT (180) p. 142, pl. ii.—†*C. sp.*; ALESSANDRI (1) p. 84, pl. ii.
- †*C. montainvillensis*, Calcaire pisolithique à *Nautilus danicus* de Montainville, also at Meudon and Vigny, in Calcaire grossier of Mons, Upper Chalk of Faxoe, and Chalk of Ciply, based on spines; but subsequently shown to be only a var. of *C. forchhammeri*; LAMBERT (180) Bull. Soc. Belge Geol. ser. 2, xi, pp. 143, 190, pl. ii.—†*C. pannonicæ*, based on *C. pseudoserrata* Pavay non Cotteau, Budapest; LAMBERT (179) Bull. Soc. geol. France, ser. 3, xxv, p. 486.—†*C. pisum*, Bryozoan Crag,

- Aldborough, Suffolk; BELL (133) Rep. Yorksh. Soc. for 1896, p. 7, no fig.—†*C. suleimani*, Maestrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3, p. 11, pl. ii : n. spp.
- †*Circopeltis*, defined, place in system, includes *Micropsina* and *Strictechinus*; *C. baicherei* discussed; LAMBERT (179) p. 517.
- †*Clypeaster*:—*C. acclivis*, redescr. fr. Portugal; LORIOLO (193) p. 18, pl. v.—*C. acuminatus*; FRANZENAU (87) p. 20.—*C. altus*, redescr. fr. Portugal; LORIOLO (193) p. 24, pl. x.—*C. altus* Leske, *C. depressus* Sow., *C. gibbosus* Serr., *C. latirostris* Ag., *C. michelottii* Ag., *C. olisiponensis* Mich., *C. placenta* Mich., *C. portentosus* Des-Moul., *C. scillai* Des-Moul., *C. tauricus*, Desor., maintained, all other names applied to this group becoming those of subspp. or else synonyms; MAYER-EYMAR (224).—*C. atlas*, Tortonian, Algeria (p. 181); *C. beringeri*, Tortonian, plain of Chellif, Algeria (pp. 175 & 176); REPELIN (279).—*C. cf. breunigii*, described; BONTSCHOFF (40) p. 369.—*C. cinalaphi*, and *C. conoideus*, Tortonian, plain of Chellif, Algeria; REPELIN (279) pp. 175 & 176.—*C. crassicosatus*; ALESSANDRI (1) p. 80: redescr. fr. Portugal, also plaster cast of type figured, synonymy discussed; LORIOLO (193) p. 16, pls. iv, v.—*C. curtus*, and *C. decemcostatus*, Tortonian, plain of Chellif, Algeria; REPELIN (279) pp. 175 & 176.—*C. depressus*, vide *C. altus*.—*C. expansus*, *C. aff. expansus et marginatus*, Tortonian, Dra el Khenanis, &c., Algeria; REPELIN (279) pp. 179, 180, 181.—*C. fasciatus*; GREGORIO (105) p. 111.—*C. gibbosus*, vide *C. altus*.—*C. cf. guidotti*, Miocene of Vigoleno; VINASSA DE REGNY (334) p. 154.—*C. intermedius*; ALESSANDRI (1) p. 81, pl. ii: Helvetian of Tiaret, Algeria; REPELIN (279) p. 157.—*C. cf. laboriei*, Tortonian, Dra el Khenanis, Algeria; REPELIN (279) pp. 179 & 180.—*C. laganooides*, redescr. fr. Portugal; LORIOLO (193) p. 33, pl. xi.—*C. latirostris*, ditto; *op. cit.* p. 31: vide et. *C. altus*.—*C. marginatus*, redescr. fr. Portugal; LORIOLO (193) p. 34, pl. xi.—*C. michelotti*, ditto; *op. cit.* p. 29, pl. x: vide et. *C. altus*.—*C. cf. ogleianus*, Tortonian, Dra el Khenanis, Algeria; REPELIN (279) pp. 179 & 180.—*C. olisiponensis*, redescr. fr. Portugal; LORIOLO (193) p. 22, pl. viii: vide et. *C. altus*.—*C. parvituberculatus*, Tortonian, plain of Chellif, Algeria; REPELIN (279) pp. 175 & 176.—*C. placenta* and *C. portentosus*, vide *C. altus*.—*C. productus*, Tortonian of Dir el Kebir, Algeria (p. 172), plain of Chellif (p. 175 & 176); var. *tigaudensis*, Tortonian, Algeria (p. 181); *C. punctalatus*, Tortonian, plain of Chellif, Algeria (pp. 175 & 176); REPELIN (279).—*C. reidi*; FRANZENAU (87) p. 20.—*C. scillae*, vide *C. altus*.—*C. subacutus* (pp. 175 & 176), and *C. subconicus* (pp. 175, 176, 181), Tortonian, plain of Chellif, &c., Algeria; *C. cf. suboblongus*, Tortonian, Dra el Khenanis, Algeria (pp. 179 & 180); REPELIN (279).—*C. tauricus*, redescr. fr. Portugal; LORIOLO (193) p. 28: vide et. *C. altus*.
- C. delgadoi*, Miocene, Marvilla, near Lisbon; LORIOLO (193) Mem. Direc. Trav. Geol. Portugal, p. 26, pl. ix.—*C. guidottii*, Pliocene, Castellarquato; VINASSA DE REGNY (335) Atti Soc. Toscana, xv, p. 150 and fig.—*C. mutellensis*, Miocene, Mutella, Portugal (p. 21, pl. vii); *C. palencaensis*, Miocene, Fornodo Tijolo (Palença) and Portinho d'Arrabida, Portugal (p. 19, pl. vi); LORIOLO (193) Mem. Direc. Trav. Geol. Portugal: n. spp.
- †*Clypeolampas*:—*C. helios* (p. 24, pl. v), and *C. vishnu* (p. 25, pl. iv), Maestrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3: n. spp.
- †*Codiopsis doma*, Cenomanian of Devon; JUKES-BROWNE & HILL (150) p. 143.
- †*Collyrites*, the genus discussed; GAUTHIER (98) p. 21.—*C. analis* not Callovian; PARONA & BONARELLI (259) p. 82.—*C. bicordata*; HUG

- (133) p. 392.—*C. carinata*; KILIAN (157) p. 679.—*C. elliptica*; PARONA & BONARELLI (259) p. 81.—*C. friburgensis*, Oxfordian, Tunis; GAUTHIER (98) p. 20, pl. xxxii.—*C. malbosi*; KILIAN (157) p. 678.—*C. oblonga*; ALMERA (3) p. 568.—*C. ovalis* not Callovian (p. 82); *C. pseudoringens* (p. 81); PARONA & BONARELLI (259).—*C. subelongatus* referred to *Disaster*; LAMBERT in KILIAN & LEENHARDT (159) p. 974.
- C.*, Neocomian of Palud-de-Moustiers (Basses-Alpes); LAMBERT in KILIAN & LEENHARDT (159) p. 973, n. sp. sine nom.
- Collyropsis*, a link between *Collyrites* and *Ananchytidae*; GAUTHIER (98) p. 22.
- †*Conoclypeus*:—*C. anacoreta* (p. 442), *C. bordae* (p. 443); MAZZETTI (225).—*C. conoideus*; FOURNIER (85) p. 179; POPOVICI-HATZEG (270) p. 248.—*C. depressus* (p. 443), *C. duboisii* (p. 442), *C. montesiensis* (p. 443), *C. ovum* (p. 443), *C. plagiosomus* (p. 442); MAZZETTI (225).—*C. rostratus*; PRITCHARD (272) p. 143.—*C. semiglobus* (p. 442), *C. subcylindricus* (p. 442); MAZZETTI (225).
- †*Coptosoma*, incl. *Glyptocidaris*, place in system (p. 498); *C. atacicum* should be *C. blanggianum* Desor. (p. 504); *C. crenulare* (olim *Glyptocidaris*), apex figured (p. 510); *C. monzense* discussed (p. 505); *C. pellati* discussed (p. 505); *C. rousSELLi* closely allied to *C. pentagonale* (p. 505); LAMBERT (179).
- C. granulare*, Eocene, Trabet de Montolieu (Aude) (p. 506, pl. xviii); *C. marticense*, for *Cyphosoma schlumbergeri* Cotteau, from Cretaceous of Martigues (p. 503); LAMBERT (179) Bull. Soc. geol. France, ser. 3, xxv: n. spp.
- †*Coraster meunieri*; FOURNIER (85) pp. 161, 163.
- †*Cosmocypus*, syn. of *Cyphosoma*; LAMBERT (179) p. 499.
- Cyclaster* discussed; SCHLUETER (297) p. 25.—†*C. archeri*, with synonymy; PRITCHARD (272) p. 144.
- †*Cyclolampas voltzi* or *verneuili*, Oxfordian, Tunis, compared with specimens from Ardèche and Var; GAUTHIER (98) p. 19.
- †*Cystocidaroida*, diagnosis of Order; GREGORY (109) p. 133; ZITTEL (356) p. 182; ZITTEL-EASTMAN (357) p. 219.
- †*Cyphosoma*, incl. *Phymosoma* & *Koenigia*; LAMBERT (179) p. 499.—*C. amelicæ* is very distinct from *Micropsis* and *Micropsidia*; ARNAUD (14) p. 239.—*C. arnaudi* Cott., referred to *Asteropsis* (p. 497); *C. aublini* referred to *Thylechinus* (p. 503); *C. blanggianum* de Loriol non Desor., referred to *Thylechinus* (p. 503), but Desor sp. referred to *Coptosoma* (p. 504); *C. bonissenti* Cott., referred to *Rachiosoma* (p. 497); LAMBERT (179).—*C. corneti*; LAMBERT (180) p. 154.—*C. croizieri* Cott., referred to *Thylechinus* (p. 497); *C. Uoræ*, Cott., referred to *Actinopsis* (*Heteractis*) (pp. 500, 508); LAMBERT (179).—*C. paucituberculatum*; KILIAN (157) p. 733.—*C. pulchellum* referred to *Thylechinus* (p. 504); *C. rarituberculatum* Cott., referred to *Coptosoma* (p. 497); LAMBERT (179).—*C. schlumbergeri* Cott., Turonian of Algeria, referred to *Thylechinus*, but the one from Martigues is a *Coptosoma*, *C. marticense*, n. sp. (p. 503); LAMBERT (179).—*C. schlumbergeri* and *C. verneuili*, not referable to *Micropsidia*; ARNAUD (14) p. 238.—*C. superbum*, probably a *Thylechinus*; LAMBERT (179) p. 503.—*C. sp.*, Maestrichtian, Mari Hills, Baluchistan; NOETLING (248) p. 13.
- C. inops*, based on a spine, and *C. rutoti*, both Senonian, phosphatic chalk of Ciplu; LAMBERT (180) Bull. Soc. Belge Geol. ser. 2, xi, p. 155, pl. iv: n. spp.
- Diadema setosum*; DUERDEN (77) p. 284: colour; PFEFFER (267) p. 45.—†*D. sp.*; BELL (33) p. 7.
- †*D. megastoma*, Middle Crag, probably derived from Diestian, Waldringfield; BELL (33) Rep. Yorksh. Soc. for 1896, p. 7, no fig., n. sp.
- Diademides* (= *Glyphostomata*), scheme of classification; LAMBERT (179) p. 511.

- †*Diplopodia*:—*D. hermonensis*, added details; LORIOL (195) p. 150, pl. vi.
—*D. (Pseudodiadema) variolare*; PERON (261) p. 298: fr. Lebanon; LORIOL (195) p. 151, pl. vi: var. *roissy*, redescribed, connected with *D. zumoffeni*; LORIOL (195) p. 152, pl. vi.
- D. blankenhorni*, Cenomanian, Wady Salima, nr. Douar, Valley of the Nahr el Kelb, nr. Beit-Chebab, and Bikfaya (outside the village), Lebanon; LORIOL (195) Rev. Suisse Zool. v, p. 149, pl. vi, n. sp.
- Diploporus*, syn. of *Salmacis*; LAMBERT (179) p. 497.
- †*Disaster*, etymology, non *Dysaster*; LAMBERT in KILIAN & LEENHARDT (159) p. 974.—*D.*, cf. *analisis*; FOURNIER (85) p. 115.—*D. anasteroides*; KILIAN (157) pp. 733 & 734.—*D. granulatus*; HUG (133) p. 404.—*D. ovalis* not Callovian; PARONA & BONARELLI (259) p. 82.—*D. subelongatus*; KILIAN (157) pp. 721, 734; KILIAN & LEENHARDT (159) pp. 974, 976.
- †*Discoidea*:—*D. concava*?; FOURNIER (85) p. 117.—*D. conica*; KILIAN (157) p. 797, & (158) p. 894; PARONA & BONARELLI (258) p. 64.—*D. cylindrica*; *op. cit.* p. 65.—*D. decorata*; ALMERA (3) p. 568.—*D. maxima*; FOURNIER (85) p. 159.—*D. rotula*; KILIAN (158) p. 894.—*D. subuculus*; FOURNIER (85) pp. 134, 141, 157, 159, 161.
- †*Ditremaster* (?) sp.; HAGMANN (119).
- Dorocidaris*:—†*D.* cf. *bartletti*, spine fr. Pliocene of Parma & †*D.* cf. *blakei*, plates and spines fr. Pliocene (Tortonian) of Parma district (p. 146); *D. papillata*, spines, redescr. from Neogene of Parma district, incl. *Cidaris schwabenaui* Laube, and probably *C. signata* and *C. margaritifera* Menegh. (p. 144); †VINASSA DE REGNY (334).—*D. papillata*; KOEHLER (163) p. 472, & (164) p. 89: action of Stewart's organs, asphyxiation; UEXKÜLL (331) p. 468.—†*D.* sp.; VINASSA DE REGNY (334) p. 146.
- †*Duncanaster*, n. g., with genotype *D. australis* (olim *Holaster*), Duncan; LAMBERT (178) Bull. Soc. geol. France, ser. 3, xxiv, p. 317, footnote.
- Dysaster*, vide *Disaster*.
- †*Echinanthus*:—*E. angulatus*; MAZZETTI (225) p. 437.—*E. aremoricus*, redescr. fr. Portugal; LORIOL (193) p. 41, pl. xii.—*E. marginatus*; MAZZETTI (225) p. 437.
- E. griesbachi*, Maestrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3, p. 22, pls. iv & v, n. sp.
- Echinarachnius*:—†*E. juliensis*, Des., Patagonian formation, San Julian; IHERING (136) p. 336.—*E. parma*; HONEYMAN (131) p. 256.
- Echinaster sepositus*, var. nov. *mediterraneus*, G. of Rapallo, 1 metre; MARCHISIO (216) p. 2.—*E. spinosus*, off Japan; ANON. (12).
- Echinobrissidae* include *Echinobrissiens*, *Archiaciens*, *Pygauliens*, *Clypeens*, *Catopygiens* and *Pyguriens*; LAMBERT (180) p. 167.
- †*Echinobrissus*:—*E. bourgeoisi* is a *Nucleopygus*, perhaps = *N. minimus*; LAMBERT (180) p. 170.
- E. ghazirensis*, Cenomanian, below Ghazir, Lebanon; LORIOL (195) Rev. Suisse Zool. v, p. 161, pl. vii, n. sp.
- Echinocardium australe*, local var., Wellington, N.Z.; FARQUHAR (83) p. 187.—*E. cordatum*; ROBERTSON (280); †BELL (33) p. 11: and its Gregarine parasite; LÉGER (185).—*E. flavescens*; KOEHLER (163) p. 475 and (164) p. 97.
- †*Echinoconus*:—*E. castanea*; KILIAN (158) p. 894; PARONA & BONARELLI (258) p. 65.—*E. conicus*; FOURNIER (85) p. 164; STOLLEY (320) p. 272: Lam. (= "albogalerus" Strombeck); STOLLEY (319) p. 144.—*E. gigas*, apparently differing from the norm in ambulacral pores, Maestrichtian, Mari Hills, Baluchistan; NOETLING (248) p. 17, pl. iii.—*E. roemeri*; STOLLEY (320) p. 272.—*E. subconicus*; FOURNIER (85) p. 164.
- †*Echinocorys*, vide sub *Ananchytes*. Geological history and mutations; 1897. [VOL. XXXIV.]

- LAMBERT (180) p. 178.—*E. arnaudi* discussed, incl. *E. regularis* Arnaud nom. nud.; LAMBERT (180) p. 184.—*E. sulcatus*; STOLLEY (320) p. 256.—*E. vulgaris*, var. *conica*; STOLLEY (320) pp. 247, 272: described, distinguished from a var. nov. *subconica*, of Senonian; LAMBERT (180) p. 182: var. *gibba*, Rathsbruche, Luneburg (p. 143), varr. *conica*, *rotunda* (p. 147); STOLLEY (319): var. *ovata*; STOLLEY (320) p. 247: defined and described, includes var. *limbata*, its origin, it gives rise to a subvar. *ciplyensis*; LAMBERT (180) p. 181, pl. v.
- E. belgicus*, Danian, Cibly; LAMBERT (180) Bull. Soc. Belge Geol. ser. 2, xi, p. 183, pl. iv.—*E. duchesnei*, Cretaceous,? Senonian, Ambohimarina, near Diégo-Suarez, Madagascar, allied to *E. beaumonti*; LAMBERT (178) Bull. Soc. geol. France, ser. 3, xxiv, p. 329.—*E. pyramidalis*, Danian of Bedat, quoted from Arnaud MS.; LAMBERT (180) Bull. Soc. Belge Geol. ser. 2, xi, p. 183, pl. iv: n. spp.
- Echinocyamus*:—†*E. forbesi*, †*E. hispidulus*, and †*E. oviformis*; BELL (33) p. 10.—†*E. piriformis*; RAULIN (274); ALESSANDRI (1) p. 79, pl. ii.—*E. pusillus*; MARCHISIO (216) p. 4; †BELL (33) p. 9: Pliocene, Mte Mario; †MELI (231) p. 149: incl. *E. transylvanicus*, Laube; †VINASSA DE REGNY (334) p. 149.—†*E. umbonatus*, redescribed, from Upper Burdigalian; LORIOLO (194) p. 116, pl. iv.
- Echinocyphus*, incl. *Zeuglopleurus*, place in system; LAMBERT (179) p. 495.—†*E. difficilis*; SHARMAN & NEWTON (306) p. 254.
- †*Echinocystidae*, diagnosis; GREGORY (109) p. 133.
- †*Echinocystis* Wyv.-Thoms., discussed; JACKSON (139) p. 242.—*E. pomum*, structure fully described, affinities discussed; GREGORY (109) p. 124.
- †*Echinogalerus* Koenig, with type *E. peltiformis* Wahlenb., is prior to *Caratomus* d'Orb.; LAMBERT (180) p. 160.
- †*Echinolampas*:—*E. affinis*; ALESSANDRI (1) p. 78; MAZZETTI (225) p. 438.—*E. algirus*; BRIVE (45) p. 597.—*E. angulatus*; ALESSANDRI (1) p. 77, pl. ii; MAZZETTI (225) p. 438.—*E. beaumonti* and *E. blainvillei*; MAZZETTI (225) p. 441.—*E. calarensis*; ALESSANDRI (1) p. 76.—*E. dinanensis* var. nov. *gahardensis*, Miocene, Brittany; SEUNES (305).—*E. conicus* (p. 440), *E. depressus* (p. 437), *E. discus?* (p. 440), *E. ellipticus* (p. 439), *E. escheri?* (p. 438), *E. eurysomus* (p. 438), *E. globulus* (p. 438), *E. hemipilus* (p. 441); MAZZETTI (225).—†*E. hemisphaericus*; ALESSANDRI (1) p. 74; MAZZETTI (225) p. 440; VINASSA DE REGNY (334) p. 152: including *E. linki* Goldf., and *E. semiglobus* Grasel.; MELI (230) p. 164: redescri. including *E. linki*, Goldf. (p. 37, pl. xi), with var. nov. *maxima*, Miocene, numerous localities, Portugal (p. 40, pl. xii); LORIOLO (193).—*E. insignis*, Tortonian, plain of Chellif, Algeria; REPELIN (279) p. 175.—*E. kleini* (p. 439); *E. magnificus* Mazz., 1888, Miocene, Montese [possibly intended as n. sp.] (p. 441); *E. patellaris* (p. 440); MAZZETTI (225).—*E. pilus*; ALESSANDRI (1) p. 76; MAZZETTI (225) p. 441.—*E. plagiosomus*; ALESSANDRI (1) p. 75.—*E. pomeli*, Tortonian, plain of Chellif, Algeria; REPELIN (279) p. 175.—*E. productus* (p. 439), *E. rostratus* (p. 439), *E. scutiformis* (p. 440), *E. similis* (p. 438), *E. sphaericus* (p. 440), *E. stelliferus* (p. 442), *E. studeri?* (p. 440), *E. subangulatus* (p. 438), *E. subcylindricus* (p. 438), *E. subellipticus* (p. 439), *E. subquadrangulatus* (p. 439); MAZZETTI (225).—*E. subrostratus*, probably Belgian Miocene, not British; BELL (33) p. 10.—*E. sulcatum*, Lower Eocene of Djebel Coubarnas, Algeria; REPELIN (279) p. 121.
- E. soyei*, Miocene, Brittany; SEUNES (305).—*E. zlatarskii*, volcanic tuff, Eocene, above Kavak-Mahle near Haskovo, Bulgaria; BONTSCHOFF (40) Jahrb. geol. Reichsanst. xlv, p. 369, pl. iv: n. spp.
- Echinometra lucunter*; WHITELEGGE (346) p. 156: Kermadec Is.; FARQUHAR (83) p. 188: colour of spines; PFEFFER (267) p. 46.—*E. oblonga*, Funafuti; WHITELEGGE (346) p. 156.

- Echinometridæ*, classificatory characters discussed (p. 487), divided into Oligoporous genera (*Salmacinae*) (p. 494) and Polyporous (*Cyphosominae*) (p. 498); LAMBERT (179).
- †*Echinopsis nattheimensis* may be *Archæodiadema*; GREGORY (106) p. 319.
- †*Echinospatagus*:—*E. collegnoi*; ALMERA (3) pp. 567 & 568; KILIAN (157) pp. 753, 754, 756: vide *Toxaster*.—*E. cordiformis*, referred to *Toxaster retusus*; LAMBERT in KILIAN (157) p. 736.
- Echinothrix calamaris*, colour; PFEFFER (267) p. 45.—*E. turcarum*, colour of spines; PFEFFER (267) p. 45: colour and measurements, Funafuti; WHITELEGGE (346) p. 155.
- †*Echinothuridæ*, affinities with *Pedinidæ*; GREGORY (108): compared with *Perischoechinidæ*; TORNQUIST (326) p. 59.
- Echinus acutus*; KOEHLER (163) p. 473, & (164) p. 92.—*E. alexandri*, first found in Bay of Biscay, 1710 m., variations from type described; KOEHLER (163) p. 473, & (164) p. 92, figg. 4, 18, 19.—*E. angulosus*; WHITELEGGE (346) p. 156.—*E. elegans*; KOEHLER (163) p. 473, & (164) p. 92.—*E. esculentus*; DAHL (62) p. 172; †BELL (33) p. 8: parasitic copepod; SCOTT (300): activities of amœbocytes; THÉEL (325) p. 50.—*E. hungaricus* Laube, specimen causing reference of *E. dux* to this species; VINASSA DE REGNY (334) p. 147: probably an *Anapesus*; LAMBERT in Review of VINASSA DE REGNY (334).—†*E. lusseri*, referred to *Triplacidia*; LAMBERT (179) p. 504.—†*E. lyelli*; BELL (33) p. 8.—*E. magellanicus*; MEISSNER (228) p. 87.—*E. microtuberculatus*; MARCHISIO (216) p. 4: pluteus; SEELIGER (304): irritability of mesenchyme cells; DRIESCH (75): cleavage under compression; ZIEGLER (354) p. 67: movements of larvæ; ZIEGLER (355) p. 143: mitosis; LAUTENBACH (183) and HERTWIG (128).—*E. miliaris*; †BELL (33) p. 8: stereom formation by special amœbocytes; THÉEL (325) p. 55.—†*E. nortoni* A. Bell, is syn. of *Psammechinus sphaeroides* Cott. (p. 8); †*E. norvegicus* and †*E. paucimiliaris* (p. 9); BELL (33).—*E. sphaera*; KOEHLER (163) p. 475 & (164) p. 97.—†*E. woodi* and †*E. woodwardi*; BELL (33) p. 8.
- †*Enallaster*:—*E. dclgadoi*, from Lebanon; LORIOL (195) p. 165.—*E. (Toxaster) scoticus*, is nearly allied to *E. granosus*; SHARMAN & NEWTON (306) p. 254.—*E. syriacus*, variation from type; LORIOL (195) p. 164.
- Encope*:—†*E. chilensis*, Philippi, is from Pliocene of Central America; IHERING (136): is it *Encope*, *Mellita*, or *Monophora*? LAHILLE (176) (p. 437).—*E. emarginata*, specimen with only 2 genital pores (p. 435); *E. grandis* from C. Frio, Brasil, or is it *E. emarginata* convergent with *E. grandis*? (p. 436); *E. michclini* closely related to *E. emarginata*, also to *Monophora darwini* (p. 434); LAHILLE (176).
- †*Eocidaris*, rehabilitated; TORNQUIST (327) p. 772: compared with *Archæocidaris*, maintained, including *E. drydenensis*, *E. scrobiculata*, and *E. verneuillana*; TORNQUIST (326) p. 38.
- E. (?) acuaria*, Pilton Beds, Devonshire; WHIDBORNE (342) P. Geol. Assoc. xiv, p. 376, no fig., n. sp.
- †*Epiaster*:—*E. distinctus*; ALMERA (3) p. 569.—*E. gibbus*; STOLLEY (320) p. 272.—*E. trigonalis*; PARONA & BONARELLI (258) p. 66.
- Euechinoidea*, sub-cl. defined, includes orders *Regulares* and *Irregulares*; ZITTEL (356) p. 185: Revised according to Duncan; ZITTEL-EASTMAN (357) p. 223.
- †*Euspatangus*:—*E. elongatus*, *E. lateralis*, *E. minimus*, *E. navicella*, *E. ornatus*; BOTTO-MICCA (41) pp. 367 & 368.
- E. cairnsii*, Eocene, Ouadi-el-Tih, nr. Cairo, incl. *E. formosus* Loriol, pars; LORIOL (196) Mem. Soc. Geneve, xxxii, p. 4, pl. i, n. sp.
- Evechinus rarituberculatus* Bell, is syn. of *E. chloroticus*, specimen measured, spicules of tube-feet figd.; FARQUHAR (83) p. 188.

- †*Fibularia*, 5 spp. recognised, the views of Lambert as to interchange of name with *Echinocyamus* combated; LORIOLO (196) p. 8.—*F. lorioli*, Egypt, compared with *F. subglobosa*; LORIOLO (196) p. 6, pl. i.
- †*Gagara*, syn. of *Thylechinus* (p. 496), *G. atacica* referred to *Thylechinus* (p. 500), *G. biarritzensis*, *G. gauthieri*, and *G. pegoti*, referred to *Micropsidia* (p. 500); LAMBERT (179).
- †*Galerites*:—*G. albo-galerus*; FOURNIER (85) pp. 161, 164.—*G. castanea*; SHARMAN & NEWTON (306) p. 252.
- †*Gauthieria*, place in system; LAMBERT (179) p. 498: apex compared with *Rachiosoma* and *Acrosalenia*; LAMBERT in FORTIN (84).—*G. radiata* (olim *Cyphosoma*) SORIGNET; LEONHARD (187) p. 40: apex figured; LAMBERT (179) p. 510: its geol. and geogr. distrib., distinguished from *G. broeckii*; LAMBERT (180) p. 152: var. *granulosa*, maintained as var., Senonian, Elbeuf; LAMBERT in FORTIN (84): figures really $\times 2$ not $\times 4$; LAMBERT in abstract.
- G. broeckii*, Cretaceous, Danian, "Poudingue de la Malogne," Cibly, a descendant of *G. radiata* with which it was confused by Cotteau; LAMBERT (180) Bull. Soc. Belge Geol. ser. 2, xi, p. 152, pl. iv, n. sp.
- Glyphopneustes*, incl. *Coptophyma*, place in system; LAMBERT (179) p. 494.
- Glyphostomata*, sub-order defined, includes families *Salenidae*, *Diadematidae*, *Echinidae*; ZITTEL (356) p. 187.
- †*Glypticus hieroglyphicus*; HUG (133) p. 404: lower Coralline Oolite near Völksen in Posen; GALLINEK (93) p. 404.
- †*Glyptocidaris*, syn. of *Coptosoma*; LAMBERT (179) p. 499.
- †*Glyptocyphus*, place in system; LAMBERT (179) p. 498.
- Gnathostomata*, sub-order defined, includes families *Echinoconidae*, *Conoclypeidae*, *Clypeastridae*; ZITTEL (356) p. 191.
- †*Gomphechinus*, redefined, place in system; LAMBERT (179) p. 516.
- Goniocidaris*, growth discussed; JACKSON (139) p. 234.
- †*Goniophorus* sp.? "very aberrant variety of *G. lunulatus*," Chloritic Marl, loc. not given; JUKES-BROWNE & HILL (150) p. 143.
- †*Guettaria rocardi*, redescri. with additions to Cotteau's diagnosis, compared with *G. angladei*, apex and plastron figd; LAMBERT (178) p. 314, pl. x.
- Helikodiadema*, n. g., with genotype *H. fragile* Wiltshire (olim *Pseudodiadema* [jam *Palæodiadema* Pomel]); GREGORY (108) Quart. J. Geol. Soc. liii, p. 121.
- Hemiaster*:—†*H. acuminatus*; MAZZETTI (225) p. 427.—†*H. cf. batnensis*; PERON (261) p. 298.—†*H. bufo* not in England; JUKES-BROWNE & HILL (150) p. 143.—†*H. bufo?* and †*H. buklandi?* [sic]; MAZZETTI (225) p. 428.—*H. cavernosus*; MEISSNER (228) p. 87.—†*H. cotteaui* (p. 428), †*H. declivus* (p. 427); MAZZETTI (225).—*H. (Tripylus) excavatus*; MEISSNER (228) p. 89.—†*H. gibbus* (p. 426), †*H. hemiglobus* (p. 427); MAZZETTI (225).—†*H. major*; VINASSA DE REGNY (334) p. 153.—†*H. morrissi* is true name of "Spatangus bufo" C. J. A. Meyer, 1874; JUKES-BROWNE & HILL (150) p. 144.—†*H. pullus*, from *Trigonoarca* beds, Pondicherri; KOSSMAT (172) p. 95, pl. x.—†*H. regulusanus*; FRIČ (91) p. 71.—†*H. rostratus* (p. 426), †*H. semirostratus* (p. 427); MAZZETTI (225).—†*H. sublacunosus*; FRIČ (91) p. 71.—†*H. truncatus* (p. 427), †*H. varus* (p. 426); MAZZETTI (225).
- †*H. blanfordi*, Mæstrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3, p. 35, pl. viii.—†*H. ibelensis*, Cenomanian or Turonian, Ain Ibel, Galilee; LORIOLO (195) Rev. Suisse Zool. v, p. 170, pl. vii.—†*H. kfourensis*, Cenomanian or Turonian, Kfour, Lebanon, allied to *H. tumidosus*; *op. cit.* p. 172, pl. viii.—†*H. mæstrichtensis* based on "*Micraster leskei*" of Bosquet, which is redescribed; SCHLUETER (297) Zeitschr. deutsch. geol. Ges. xlix, p. 32, footnote, pl. ii.—†*H. oldhami*, Mæstrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3, p. 36, pl. viii.—†*H. tamulicus*, *Trigonoarca*

- beds, $\frac{1}{4}$ mile W. of Rautankupam, Pondicherri; KOSSMAT (172) Rec. Geol. Surv. India, xxx, p. 96, pl. v, fig. 5 : n. spp.
- †*Hemicidaris*:—*H. crenularis*; FOURNIER (85) pp. 101, 113, 118, 121.—*H. crenularis*?, *H. intermedia*, and *H. cf. lestoquii*; HUG (133) p. 403.—*H. mespilum* referred to *Rhabdocidaris*; LAMBERT (179) p. 484.
- H. ghazirensis*, Cenomanian, perhaps Senonian, Ghazir (outside the village) Lebanon, Syria; LORIOLO (195) Rev. Suisse Zool. v, p. 147, pl. vi.—*H. zeguellensis*, *Pteroceras* bed, near Tlalet, E.S.E. of Bir Zeguellem, S. Tunis; GAUTHIER (98) pp. 9, 16, pl. xxxii : n. spp.
- †*Hemipatagus cordiformis* and †*H. grignonensis*; MAZZETTI (225) p. 437.
- †*Hemipneustes*, redescribed, discussed and maintained, its six known species compared; NOETLING (248) p. 26.—*H. italicus*; ANGELIS D'OSSAT & LUZZI (9) p. 66; MAZZETTI (225) p. 436.—*H. leymERICI* (p. 32, pl. vii) and *H. pyrenaicus* (p. 29, pls. vi & vii), Mæstrichtian, Mari Hills, Baluchistan; NOETLING (248).
- H. compressus*, Mæstrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3, p. 34, pl. vii, n. sp.
- †*Hemithylus*, n. g., with genotype *H. rejaudryi* Cotteau (olim *Thylechinus*); ARNAUD (14) Act. Soc. Bordeaux, xlvi, p. 236: perhaps only young of *Rachiosoma*; LAMBERT (179) p. 498.
- †*Heteractis*, subgenus nov. of *Actinopsis*, for *A. heteroporus* (q.v.) and *Cyphosoma lloræ* Cott.; LAMBERT (179) pp. 500, 509.
- †*Heteraster*:—*H. couloni*; KILIAN (157) p. 761.—*H. oblongus*; ALMERA (3) pp. 567–571.
- †*Heterobrissus montesii*; MAZZETTI (225) p. 436.
- Heterocentrotus mamillatus*; WHITELEGGE (346) p. 156.—*H. trigonarius*; PFEFFER (267) p. 46.
- †*Heteroclypeus semiglobus*, redescr. fr. Portugal; LORIOLO (193) p. 36.
- Hipponoe variegata*; PFEFFER (267) p. 46.—†*H. Parkinsoni* var. nov. *gahardensis*, Miocene, Brittany; SEUNES (305).
- †*Holaster*:—*H. bouilleti*; FOURNIER (85) p. 164.—*H. lævis* (p. 796), *H. lardyi* (p. 721); KILIAN (157).—*H. perezi*; KILIAN (157) p. 796; PARONA & BONARELLI (258) p. 65.—*H. planus*, including *H. subglobosus*; LEONHARD (187) p. 41.—*H. cf. subglobosus*; FOURNIER (85) pp. 157, 163.—*H. suborbicularis* as figd. by Wright in Pal. Soc. Monogr. probably not same as figd. by d'Orbigny in Pal. franc.; JUKES-BROWNE & HILL (150).—*H. sp.*, Cenomanian, Devon; *op. cit.* p. 144.
- H. syriacus*, Cenomanian or Turonian, Kfour, Lebanon; LORIOLO (195) Rev. Suisse Zool. v, p. 163, pl. vii, n. sp.
- †*Holactypus*:—*H. cenomanensis*, from Lebanon, incl. *H. serialis* Lartet; LORIOLO (195) p. 155.—*H. corallinus*, near Bir Zeguellem, S. Tunis; GAUTHIER (98) p. 8, pl. xxxii.—*H. crassus*; PERON (261) p. 298.—*H. depressus*; FOURNIER (85) p. 117: (including *H. ormoisianus* Favre non Cotteau); PARONA & BONARELLI (259) p. 80.—*H. excisus*, from Lebanon (p. 156, pl. vi), *H. larteti* (p. 157, pl. vi); LORIOLO (195).—*H. neocomiensis* (p. 721), *H. orificiatus* (p. 679); KILIAN (157).—*H. punctulatus*; PARONA & BONARELLI (259) p. 80.
- H. baluchistanensis*, Mæstrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3, p. 18, pl. iii, n. sp.
- Holostomata*, suborder defined, includes families *Cidaridæ*, *Echinothuridæ*; ZITTEL (356) p. 185.
- †*Hybochinus*, type of n. fam.; TORNQUIST (171); Abh. geol. Karte Elsass, v, p. 732.
- †*Hypechinus patagonicus* Des. (= *Echinus patagonensis* d'Orb.), San Julian, Patagonia; IHERING (136) p. 336.
- †*Hypsoclypeus doma*, Burdigalian of Algeria; REPÉLIN (279) pp. 135, 151.
- †*Hypsopatangus*:—*H. marmoræ* (olim *Macropneustes*); BOTTO-MICCA (41)

- p. 366.—*H. meneghini*, fresh characters described, and two varieties, *complanatus* and *convexus*, distinguished; BONTSCHOFF (40) p. 372.
- †*Infulaster*:—*I. excentricus*, Lüneburg; STOLLEY (319) p. 175.
- I. boulei*, Cretaceous, ?Senonian, near Diégo-Suarez, Madagascar; LAMBERT (178) Bull. Soc. geol. France, ser. 3, xxiv, p. 331, pl. xiii, n. sp.
- Iraniaster*, plastron discussed; LAMBERT (178) p. 324.
- Irregulares*, order defined, includes sub-orders *Gnathostomata*, *Atelostomata*; ZITTEL (356) p. 191.
- †*Isopneustes*, discussed; SCHLUETER (297) p. 23.
- †*Jeronia*, compared with *Lampadaster*; LAMBERT (178) p. 316.
- †*Kænigia*, syn. of *Cyphosoma*; LAMBERT (178) p. 499.
- †*Koninckocidaris* Dollo and Buisseret, is syn. of *Perischodomus*; TORNQUIST (171) p. 725, footnote.
- Laganum depressum*, Funafuti; WHITELEGGE (346) p. 156.
- †*Lampadocorys*, related to *Lampadaster*, its genotype "*Holaster sulcatus*" is from Cenomanian of Rioufroid, near Lus (Drôme); LAMBERT (178) p. 316.
- †*Lampadaster*, rediagnosed, affinities discussed (p. 316); *L. grandidieri*, redescribed, apex figured (p. 317); LAMBERT (178) pls. x and xiii.
- L. gauthieri*, Cretaceous, ?Senonian, near Diégo-Suarez, Madagascar, apex and plastron figured; LAMBERT (178) Bull. Soc. geol. France, ser. 3, xxiv, p. 319, pl. xi: n. sp.
- †*Leiosoma* Cotteau non Brandt, nom. mut. in *Trochalosoma* (p. 515); *L. archiaci*, made type of n. g. *Pseudarbacia* (p. 515); *L. babeau*, probably *Phymechinus* (p. 516); *L. bahezrei*, referred to *Gomphechinus* (p. 516); *L. jauberti* Cott., referred to *Phymechinus* (p. 516); LAMBERT (179).
- †*Leiosominae*, sub. fam. of *Echinometridae* [should be *Trochalosominae*]; LAMBERT (179) p. 515.
- †*Lepidechinus*, structure and development discussed on evidence of *L. imbricatus* and *L. rarispinus* (p. 226, pl. vii): compared with *Perischodomus* (p. 241); JACKSON (139).
- †*Lepidesthes*, alone in family; TORNQUIST (327) p. 732.—*L. colletti* (pp. 200, 210), *L. coreyi* (p. 209), and *L. formosus* (p. 210), discussed; JACKSON (139).
- L. (?) devonians*, Pilton Beds, Devonshire; WHIDBORNE (342) P. Geol. Ass. xiv, p. 376, no fig.—*L. wortheni*, Keokuk group, Indiana, arrangement of plates fully described, distinguished from *L. formosus* Miller; JACKSON (139) p. 207, pl. ix: n. spp.
- Lepidesthidae*, n. fam., distinguished from *Lepidocentridae*, including *Lepidesthes* and *Pholidocidaris*; JACKSON (139) pp. 206, 241.
- †*Lepidocentridae*, defined; JACKSON (139) pp. 222, 242: defined, includes *Lepidocentrus*, and discussed; TORNQUIST (327) p. 783.
- †*Lepidocentrus*:—*L. eifelianus*, discussed (pp. 224 & 225); *L. mülleri*, ambulacrals and interambulacrals described (p. 223); *L. rhenanus*, discussed (p. 224); JACKSON (139).
- †*Lepidocidaris*, discussed; TORNQUIST (327) p. 773.—*L. squamosus*, arrangement of plates fully described, genus maintained; JACKSON (138) p. 220.
- Leptechinus* Gauth., incl. *Peronia*, place in system; LAMBERT (179) p. 494.
- †*Leptechinus*, n. g. with genotype *L. gracilis*, Lower Carboniferous Hunsrückwald, Elsass; TORNQUIST (327) Abh. geol. Karte Elsass, v, p. 63, n. sp. [Nom. gen. preocc., v. supra.]
- †*Linthia*:—*L. arizensis?* (p. 435), *L. aurisleporis* (p. 435), *L. batyolcos* (p. 435), *L. cuoghii* (p. 434); MAZZETTI (225).—*L. capellini*; BOTTO-MICCA (41) p. 353.—*L. capellini* Lorient = *Prenaster fulux* Mazz. (p. 434), *L. cavernosa* (p. 435), *L. inflata* (p. 435), *L. insignis* (p. 433), *L. locardi?* (p. 434), *L. perplexa* (p. 434), *L. subelliptica* (p. 434), *L. subglobosa* (p. 433); MAZZETTI (225).

- L. cevense*, Pliocene of Ceva, Piedmont; BOTTO-MICCA (41) Boll. Soc. geol. Ital. xv, p. 353, pl. x.—*L. fraasi*, probably Cenomanian of Ghazir, Lebanon; LORIOLO (195) Rev. Suisse Zool. v, p. 174, pl. viii.—*L. peolæ*, Pliocene of Mt Castello, Alessandria, Piedmont; BOTTO-MICCA (41) Boll. Soc. geol. Ital. xv, p. 352, pl. x.—*L. spiennesensis*, zone of *Bel. mucronata*, Spiennes, Belgium; SCHLUETER (297) p. 48, pl. ii; LAMBERT (180) p. 188 : n. spp.
- †*Lovenia forbesi*, with synonymy; PRITCHARD (272) p. 143.
- †*Lychnidius* Pomel, maintained but removed from *Caratomidæ* to *Echinobrissidæ*, and distinguished from *Trematopygus* (p. 160); *L. analis* (olim *Nucleolites*) Ag. non d'Orb. (p. 164); *L. scrobiculatus* (olim *Nucleolites* vel *Echinobrissus*), redescr. (p. 162, pl. v); LAMBERT (180).
- †*Lysechinidæ*, n. fam. of *Plesiocidaroida*, with unique *Lysechinus*, n. g. with genotype *L. incongruens*, St Cassian Beds, Trias, St Cassian, Tyrol; GREGORY (110) p. 1001, n. sp.
- †*Macrodiadema*, n. g. with genotype *M. cipllyensis*, Senonian of Ciplly, based on spine; LAMBERT (180) Bull. Soc. Belge Geol. ser. 2, xi, p. 146, pl. ii, n. sp.
- †*Macropneustes*:—*M. desorii*?; BOTTO-MICCA (41) p. 365.—*M. marmoræ*, vide sub *Spatangus*.—*M. meneghini*, is a *Hypsospatangus*; MAZZETTI (225) p. 429.
- M. zitteli*, volcanic tuff, Eocene, above Kavak-Mahle near Haskovo, Bulgaria; BONTSCHOFF (40) Jahrb. geol. Reichsanst. xlvi, p. 372, pl. iv, n. sp.
- †*Magnosia pulchella*; KILIAN (157) p. 768.
- Maretia*:—†*M. grignonensis*; BOTTO-MICCA (41) p. 368.—†*M. parieti*, probably not a *Maretia*; MAZZETTI (225) p. 428 : vide sub *Spatangus*.—*M. planulata*; PFEFFER (267) p. 46 : colour, Funafuti; WHITELEGGE (346) p. 157.
- Mellita*, characters that separate it from *Encope* (p. 435); *M. stokesi*, its relations to *Monophora* (p. 437); LAHILLE (176).
- Melobosis*, syn. of *Salmacis*; LAMBERT (179) p. 497.
- †*Melonites*:—*M. indianensis*; JACKSON (139) p. 183.
- M. giganteus*, Lower Subcarboniferous, Bowling Green, Ky., arrangement of plates fully described and compared with *M. multiporus*; JACKSON (139) p. 172, pls. iv & v.—*M. septenarius*, Warsaw group of Lower Carboniferous, Buzzard Roost, Franklin Co., Ala., plates of interambulacrum discussed; JACKSON (139) p. 182, pl. ix : n. spp.
- †*Melonitidæ*, discussed; TORNQUIST (327) p. 735 : defined, includes *Rhoechinus*, *Palaechinus*, *Oligoporus*, and *Melonites*; JACKSON (139) p. 239.
- †*Menuthiaster*, n. g. with genotype *M. cotteai*, Cretaceous, ? Senonian, near Diégo-Suarez, Madagascar, placed in fam. *Aeropidæ*, apex and plastron figured; LAMBERT (178) Bull. Soc. geol. France, ser. 3, xxiv, p. 325, pl. xi, n. sp.
- Metalia sternalis*; PFEFFER (267) p. 46.
- †*Metaporhinus*:—*M. convexus*, Tithonian, Tunis; GAUTHIER (98) p. 17 : Oxfordian of Orléansville, Algeria; REPELIN (270) p. 51.—*M. transversus*; KILIAN (157) p. 679.
- †*Micraster*:—*M. atacamensis* Philippi, referred to *Schizaster*; IHERING (136) p. 338.—*M. breviporus*, contrasted with *M. cor-testudinarium*; LEONHARD (187) pp. 41 & 42.—*M. breviporus* (v. *Leskei*), Rathsbruche, Lüneburg; STOLLEY (319) p. 143.—*M. brevisulcatus*; MAZZETTI (225) p. 426.—*M. cor-anginum*; FOURNIER (85) pp. 159 & 160; STOLLEY (319) pp. 147, 171, and (320) p. 272.—*M. cortestudinarium*, var., Rathsbruche, Lüneburg; STOLLEY (319) p. 142 : fig. 401 of ZITTEL-EASTMAN (357) should be *M. decipiens*, Lower Senonian, Normandy; LAMBERT, Rev. crit. Pal. i, p. 113.—*M. decipiens*, from Lebanon; LORIOLO (195) p. 169.—*M. gibbus*; STOLLEY (319) p. 171, & (350) p. 247 :

- redescr. for comparison with *M. meunieri*; LAMBERT (178) p. 327, pl. xii.—*M. glyphus*; STOLLEY (319) p. 171, and (320) p. 272.—*M. gottschei* (p. 147), maintained (p. 171); STOLLEY (319), & (320) pp. 247, 272.—*M. haasi*, maintained; STOLLEY (319) p. 171.—*M. heberti*; FOURNIER (85) p. 164.—*M. idæ* Cott., is syn. of *Brissopsis cretacea*; SCHLUETER (297) p. 37.—*M. leskei* of various authors discussed at intervals; SCHLUETER (297) pp. 18–34.—*M. schræderi*, maintained; STOLLEY (319) p. 171.
- M. (?) cipliensis* [Danian?], Ciplý; SCHLUETER (297) Zeitschr. Deutsch. geol. Ges. xlix, p. 18 footnote, pl. ii: separated from *M. gibbus*, *M. senonensis*, and *M. fastigiatus*, diagnosed; LAMBERT (180) p. 185, pl. ii.—*M. fortini*, Middle Senonian, with *M. cor-anguinum*, Carrière Montigny, W. of Dieppe; LAMBERT (178) Bull. Soc. geol. France, ser. 3, xxiv, p. 328 footnote, pl. xii: Lambert's description repeated and type refigured in FORTIN (84) p. 90, pl. v.—*M. meunieri*, Cretaceous, ? Senonian, Ambohimarina, near Diégo-Suarez, Madagascar; LAMBERT (178) Bull. Soc. geol. France, ser. 3, xxiv, p. 326, pl. xii: n. spp.
- Microcyphus maculatus*, colour of spines; PFEFFER (267) p. 46.
- †*Micropeltis*, redefined, its place in system; LAMBERT (179) p. 516.
- †*Micropsidia*, probably should not contain *Cyphosoma schlumbergeri* and *C. verneuiti*, and certainly not *C. ameliæ*; ARNAUD (14) p. 238: place in system; LAMBERT (179) p. 496.
- M. savini*, Middle Eocene of Bertrandon, near Aragon, also Caunettes Hautes (Aude), and Les Garrigues de Villegailhenc (Aude), ambulacrals and an abnormal apex figd; LAMBERT (179) Bull. Soc. geol. France, ser. 3, xxv, p. 501, pl. xviii, n. sp.
- †*Micropsina baudoni*, referred to *Circopeltis*; LAMBERT (179) p. 517.
- †*Micropsis*, place in system (p. 499); *M. fraasi*, referred to *Triplacidia* (p. 504); *M. frossardi*, referred to *Micropsidia* (p. 500); *M. lorioli*, referred to *Triplacidia* (p. 504); *M. mokattanensis*, probably a *Thylechinus* (p. 503); LAMBERT (179).—*M. petrocoriensis*, compared with other spp. of *Micropsis* and *Micropsidia*, forms a distinct section; ARNAUD (14) p. 238.—*M. petrocoriensis*, referred to *Thylechinus* (p. 504); *M. stachei*, referred to *Triplacidia* (p. 504); *M. vilanova*, referred to *Micropsidia* (p. 500); LAMBERT (179).
- †*Miocyphosoma*, syn. of *Rachiosoma*; LAMBERT (179) p. 498.
- †*Miotoxaster colleanoi*; LAMBERT in KILIAN (157) p. 756, footnote.
- †*Mistechinus*, n. g. with type *M. mayeri*, Eocene, Oasis de Moëleh (50 kil. S. of Fajouim); LORIOL (196) Mem. Soc. Geneve, xxxii, p. 9, pl. i, n. sp.
- †*Monodiadema*, defined, allied to *Acrosalenia*; GAUTHIER (98) p. 11.—*M. cotteavi*, redescribed with a young specimen, Pterocerian of S. Tunis; GAUTHIER (98) pp. 12, 16, pl. xxxii.
- †*Monophora darwini*, study of variation, and affinities; LAHILLE (176) & (177): incl. *Scutella geometrica* Bravard, older Tertiary but horizon uncertain; IHERING (136) p. 337.
- †*Nædlingia*, nom. nov., vide sub *Protechinus*.
- †*Nucleolites* Desor does not = *Nucleolites* Lam., which has for genotype *N. scutata*, and includes as synn. or subgen. *Lophopygus*, *Clitopygus*, *Acromazus*, *Taphropygus*, and *Echinobrissus* (pars) of Pomel (p. 165); *N. analis* Agassiz non d'Orb., referred to *Lychnidius* (pp. 163 & 164) *N. analis* d'Orb. non Agassiz is syn. of *Trematopygus guillieri* Cott. (p. 164); *N. minimus* Ag., what is it? (p. 170); *N. ovulum* Goldf., referred to *Lychnidius* (p. 163); LAMBERT (180).—*N. pyramidalis*; MAZZETTI (225) p. 437.—*N. roberti*; KILIAN (157) p. 761.—*N. scutata* Lam., discussed; LAMBERT (180) p. 166.—*N. cf. scutatus*; FOURNIER (85) p. 115.—*N. subtrigonatus* Catullo, is *Cardiaster*; LAMBERT (178) p. 331.
- †*Nucleopygus* Ag. non Desor., redefined, with *N. minor* as genotype,

- includes most of *Nucleolites* Desor non Lam., and *Ochetus* Pomel (p. 164); *N. bourgeoisii*, discussed (p. 171); *N. coravium*, redescribed (p. 168, pl. v); LAMBERT (180).
- †*Offaster*:—*O. corculum* and *O. pilula*; STOLLEY (319) p. 147, & (320) pp. 247, 272.
- †*Oligoporus*:—*O. bellulus* (p. 193); *O. blairi* (p. 193); *O. coreyi*, arrangement of plates fully described and their development discussed (p. 186, pl. vi); *O. danae*, arrangement of plates fully descr., spines (p. 193, pl. vi); *O. nobilis* & *O. sulcatus* (p. 193); JACKSON (139).
- O. missouriensis*, Augusta Limestone?, Webb City, Mo., arrangement of plates fully described; JACKSON (139) p. 184, pl. ix, n. sp.
- †*Oppissaster cotteri*, Tertiary of Portugal, holotype in Lisbon Museum; LORIOLO (193) Mem. Direc. trav. Geol. Portugal, p. 45, pl. xiii, n. sp.
- †*Orthocyphus*, n. g., with genotype *O. pulchellus* Cotteau (olim *Orthechinus* et *Cyphosoma*), and including *O. boreaui* (olim *Orthechinus*); ARNAUD (14) Act. Soc. Bordeaux, xlviii, p. 234: syn. of *Thylechinus*; LAMBERT (179) p. 496.
- †*Orthechinus*, syn. of *Thylechinus*; LAMBERT (179) p. 496.—*O. boreaui* and *O. pulchellus*, compared with genotype, and removed to nov. gen. *Orthocyphus*; ARNAUD (14) p. 232.—*O. boreaui*, referred to *Thylechinus*; LAMBERT (179) p. 504.
- †*Orthopsis*:—*O. repelini*; KILIAN (157) p. 768.—*O. zumoffeni*; LORIOLO (195) p. 153.
- O. perlata*, Mæstrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3, p. 12, pl. ii, n. sp.
- †*Palaechinoidea*, sub-cl. defined, includes orders *Cystocidarida*, *Bothriocidarida*, *Perischoechinida*; ZITTEL (356) p. 182; ZITTEL-EASTMAN (357) p. 218.
- †*Palaechinus*, compared with *Rhoechinus*; JACKSON (139) p. 200: literary history, rediagnosis; TORNQUIST (327) p. 735.—*P. gigas*, ambulacrals (p. 190), ambulacrals and interambulacrals described (p. 204, pl. vii); JACKSON (139): interambulacral from Regny; JULIEN (151) p. 130.—*P. paradoxus* is a cup of *Platycrinus*; JAEKEL (144) p. 48.—*P. (?)* sp., Upper Silurian, N. S. W.; MITCHELL (236) with fig.
- P. konincki*, Carboniferous Limestone, Regny, Néronde, and St-Germain-Laval, Central France; JULIEN (151) p. 130, pls. x & xi; TORNQUIST (327) p. 753.—*P. lacazei*, Carboniferous Limest., l'Ardoisière, Central France; JULIEN (151) p. 128, pl. xvi: redescr., stages of growth, comparison with other spp., nearest *P. gigas*; TORNQUIST (327) p. 742, pls. xx & xxi.—*P. robineti*, Carboniferous Limest., La Varville, Siguret, Central France; JULIEN (151) p. 129, pl. iii: why not *Rhoechinus*? TORNQUIST (327) p. 753.—*P. rutoti*, Carboniferous Limest., Domaine des Roches near Savigny-Poil-Fol, Central France; JULIEN (151) p. 129, pl. vi: ? identical with *P. lacazei*; TORNQUIST (327) p. 753: n. spp.
- †*Palæodiscida*, diagnosis; GREGORY (109) p. 133.
- †*Palæodiscus ferox*, structure, especially of ambulacra and jaws, affinities discussed; GREGORY (109) p. 129.
- Palæolampas* Bell, not accepted; LORIOLO (193) p. 39.
- †*Palæopneustes cristatus*, young stages in development of plastron; LAMBERT (178) p. 323.
- †*Pedina charmassei*; HUG (133) p. 404.
- †*Pedinothuria*, n. g., with genotype *P. cidaroides*, Weisser Jura (? γ), Germany; GREGORY (108) Quart. J. Geol. Soc. liii, p. 119, pl. vii, n. sp.
- †*Peltastes studeri*; KILIAN (158) p. 894.
- Periaster* not accepted; LORIOLO (195) p. 175.
- †*Pericosmus*:—*P. æqualis*; MAZZETTI (225) p. 428; BOTTO-MICCA (41) p.

- 365.—*P. affinis*; MAZZETTI (225) p. 429.—*P. cf. affinis*; VINASSA DE REGNY (335) p. 155.—*P. callosus* (p. 428), *P. dilatatus* and *P. edwardsi* (p. 429); MAZZETTI (225).—*P. edwardsii* (errore pro *edwardsi*) with var. nov. *minor*, Helvetian of Cassinelle, Piedmont; BOTTO-MICCA (41) p. 365.—*P. latus*; ALESSANDRI (1) p. 70; MAZZETTI (225) p. 428; BOTTO-MICCA (41) p. 364.—*P. malatinus*; MAZZETTI (225) p. 429.—*P. peroni* and *P. spatangoides*; BOTTO-MICCA (41) p. 363.—*P.* (an *Micraster* ?) sp.; MAZZETTI (225) p. 429.
- P. pedemontanus*, Helvetian, "pietra da Cantoni," Cellamonte, Basso Monferrato, Italy; ALESSANDRI (1) Mem. Mus. Milano, vi (1), p. 70, pl. i, n. sp.
- †*Perischoechinoida*, place of the Order in the system; JACKSON (139) p. 239: Jackson's classification criticised, another phylogeny given; TORNQUIST (327) p. 730: defined, includes families *Lepidocentridæ*, *Melonitidæ*, *Archæocidaridæ*, and *Tiarechinidæ*; ZITTEL (356) p. 183; ZITTEL-EASTMAN (357) p. 219.
- †*Perischoechinidæ*, interrelations discussed, with special reference to *Archæocidaris*; TORNQUIST (326) p. 55.
- †*Perischodomus biserialis* and *P. illinoisensis*, discussed; JACKSON (139) p. 225.
- Peronella* sp., young; PFEFFER (267) p. 46.
- †*Pholidocidaris*, systematic position discussed; TORNQUIST (327) p. 767.—*P. irregularis*, discussed; JACKSON (139) p. 212.
- P. gaudryi*, [n. sp. ?] Carboniferous Limest., L'Ardoisière, Central France, previously referred to by Julien as *Lepidocentrus munsterianus* (1874) and *Melonites gaudryi* (1890); JULIEN (151) p. 131, pl. xvi.—*P. meeki*, Keokuk group, Warsaw, Ill., arrangement of plates fully described; JACKSON (139) p. 210, pl. ix.—*P. tenuis*, Lower Carboniferous, Hunsrückwald, Elsass; TORNQUIST (327) Abh. geol. Karte Elsass, v, p. 767, pls. xxi & xxii : n. spp.
- Phormosoma luculentum*; KOEHLER (163) p. 473, and (164) p. 93.—*P. placenta*; KOEHLER (163) p. 472, and (164) p. 91.
- Phyllacanthus annulifera* and *P. verticillata*; PFEFFER (267) p. 45.
- †*Phymechinus*, redefined, place in system; LAMBERT (179) p. 516.
- †*Phymosoma*, syn. of *Cyphosoma*; LAMBERT (179) p. 499.
- †*Plagiopygus*, n. g. for so-called *Pygorhynchi* of Tertiary, genotype *P. grignonensis* (olim *Nucleolites*) Defr.; LAMBERT (180) Bull. Soc. Belge Geol., ser. 2, xi, p. 162, footnote.
- Plesiocidaroida*, rediagnosed, affinities discussed; GREGORY (110) p. 1003.
- †*Plesiopeltis*, n. g. with genotype *Leiosoma gourdoni* Cott.; LAMBERT (179) p. 517.
- †*Pleurodiadema*, place in system; LAMBERT (179) p. 495.—*P. stutzi*, large specimen from Oxfordian of Tunis described; GAUTHIER (98) p. 22.
- †*Pliocyphosoma*, syn. of *Cyphosoma*; LAMBERT (179) p. 499.
- †*Plistophyma*, should be subgenus of *Leiosoma* (= *Trochalosoma*); LAMBERT (179) p. 515.
- Porocidaris elegans*, small specimen with genital plates imperforate; KOEHLER (163) p. 472, & (164) p. 89.—†*P. pseudoserrata*, referred to *Rhabdocidaris mespilum*; LAMBERT (179) p. 484.—†*P. schmideli*; GREGORIO (105) p. 111, pl. xxiv:—†*P. serraria*; ALESSANDRI (1) p. 82: and *P. cf. serraria*; VINASSA DE REGNY (335) p. 144.
- †*Proholaster*, n. g., allied to *Collyrites*, with genotype *P. auberti*, BerriAsian, Khanget Fioufi in Djebel Meloussi, Tunis; GAUTHIER (98) p. 17, pl. xxxii, n. sp.
- †*Proraster* Lambert, not accepted; SCHLUETER (296) p. 968.
- †*Protechinus*, n. g., with genotype *P. paucituberculatus*, Mæstrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pl. 3, pp. 14 & 16, pls. ii & iii: n. sp. [gen. preocc. *Protoechinus* Austin]

- 1860, mutatum *Noetlingia*; LAMBERT in Rev. crit. Pal. ii, pp. 125-127, 1898].
- +*Prototiara*, n. g. with genotype *Pleurodiadema jutieri* Cotteau; LAMBERT (179) Bull. Soc. geol. France, ser. 3, xxv, p. 495, footnote.
- +*Psammechinus*:—*P. charlesworthi*; BELL (33) p. 8.—*P. dubius*; LORIOLO (194) p. 117: redescri. from Portugal, should perhaps include *P. gauthieri* and *P. serresi*; LORIOLO (193) p. 6, pl. i.—*P. henslowi*; BELL (33) p. 8.—*P. monilis*; DEPÉRET (64) p. 522: with n. var. *depressa*, Pliocene of Lugagnano near Parma; VINASSA DE REGNY (335) p. 148 & fig.; said not to be this species by LAMBERT in Review.—*P. monilis?*; MAZZETTI (225) p. 418.—*P. cf. monilis*; ŁOMNICKI (192) p. 34.—*P. parvus*; ALESSANDRI (1) p. 81.—*P. theveneti*; KILIAN (157) p. 768.—*P. sphaeroideus*; BELL (33) p. 8.
- P. zumoffeni*, Cenomanian, Valley of Nahr el Kelb, Bykfaya (above the village); LORIOLO (195) Rev. Suisse Zool. v, p. 153, pl. vi, n. sp.
- P. n. sp.*; GREGORIO (105) pp. 144 & pl. xxvii.—*P. n. sp.*, Pliocene, Castellarquato; VINASSA DE REGNY (335) p. 149.
- +*Pseudananchis*, compared with *Lampadaster*; LAMBERT (178) p. 317.
- +*Pseudarbacia*, n. g. with genotype *P. archiaci* (olim *Leiosoma*) Cott., Cretaceous; LAMBERT (179) Bull. Soc. geol. France, ser. 3, xxv, p. 515.
- +*Pseudocidaris crenularis*; KILIAN (157) p. 685.
- +*Pseudodiadema*:—*P. brongniarti*; KILIAN (158) p. 894.—*P. dubium*; ALMERA (3) pp. 567 & 568.—*P. lenticulatum*; PARONA & BONARELLI (259) p. 82.—*P. libanoticum* Loriol, 1887; that of Cotteau 1893 changed to *P. saninensis*, nom. nov.; LORIOLO (195) p. 148.
- P. jessoni*, Oxford clay, St Ives, Hunts., England; GREGORY (107) Ann. Nat. Hist. (6) xviii, p. 465, n. sp.
- +*Psilosoma*, syn. of *Thylechinus*; LAMBERT (179) p. 497.
- +*Pygaster umbrella*; HUG (133) p. 404.
- +*Pygaulus*:—*P. cylindricus* & *P. depressus* (p. 761), *P. desmoulinsi* (p. 768); KILIAN (157).—*P. ovatus*; ALMERA (3) p. 567.
- +*Pygopistes* Pomel, "pas indispensable"; LAMBERT (180) p. 162, footnote.
- +*Pygorhyncus*:—*P. colombi*; MAZZETTI (225) p. 437.—*P. grignonensis* made type of n.g. *Plagiopygus*; LAMBERT (180) p. 162, footnote.
- +*Pygurus*:—*P. lampas*; LEONHARD (187) p. 29: supposed to be from Upper Greensand but proves to be Cenomanian; JUKES-BROWNE & HILL (150) p. 145.—*P. montmollini* (p. 722), *P. rostratus* (pp. 721 & 722); KILIAN (157).
- P. meslei*, Kimeridgian?, Ksar-Dagra near Tatouine, S. Tunis; GAUTHIER (98), p. 7, pl. xxxii, n. sp.
- +*Pyrina*:—*P. atavensis*, nm. varr. *pentagonalis*, *tumida*, et *globosa*, Mæstrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3, p. 19, pls. iii & iv.—*P. houzeaui*, redescri., apex figd, also a senescent individual; LAMBERT (180) p. 156.—*P. ovulum*; GREGORIO (105) p. 111.
- P. gigantea*, Mæstrichtian, Mari Hills, Baluchistan; NOETLING (248) Pal. Ind. (16) i, pt. 3, p. 21, pl. iv.—*P. lamberti*, Ghazir (above the village), and *P. zumoffeni*, Ghazir (below the village), Cenomanian, Lebanon; LORIOLO (195) Rev. Suisse Zool. v, p. 159, pl. vii: n. spp.
- +*Rachiosoma*, incl. *Miocyphosoma* & *Actinophyma*, place in system; LAMBERT (179) p. 498: vide sub *Gauthieria*.—*R. paucituberculatum*, KILIAN & ZURCHER (160), p. 964.—*R. peroni*, apex figd; LAMBERT (179) p. 510.
- R. grossouvrei*, Danian, "Poudingue de la Malogne," Cibly; LAMBERT (180) Bull. Soc. Belge Geol., ser. 2, xi, p. 154, pl. iii, n. sp.
- Regulares*, order defined, includes suborders *Holostomata*, *Glyphostomata*; ZITTEL (356) p. 185: Polian vesicles and others; LUDWIG (201).
- +*Rhabdocidaris*:—*R. caprimontana*; KILIAN (157) pp. 680, 685 & 686;

- KILIAN & ZURCHER (160), pp. 960–962.—*R. crassissima*; KILIAN (157) p. 721; PARONA & BONARELLI (259) p. 82.—*R. itala*; BONTSCHIEFF (40) p. 368.—*R. kiliani*; KILIAN (157) p. 721; KILIAN & LEENHARDT (159) p. 975.—*R. mespilum*, redescr., incl. *Cidaris* vel *Porocidaris pseudoserrata*; LAMBERT (179) p. 484.—*R. ? orbignyana* Desor., spine only, S. Tunis; GAUTHIER (98) p. 16.—*R. pouechi*, spines discovered in association with plates; LAMBERT (179) pp. 484, 486, pl. xviii.—*R. pouyannei*; PERON (261) pp. 295, 298.—*R. trispinata*; SCHLUETER (298) p. 946.—*R. sismondai*, single spine; LORIOLO (193) p. 5, pl. i.—*R. tuberosa*; KILIAN (157) p. 721.—*R.* sp.; ROMAN (281) p. 330.
- †*Rhoechinus*, discussed and rediagnosed; TORNQUIST (327): compared with *Palaechinus*; JACKSON (139) p. 200.—*R. burlingtonensis* (olim *Palaechinus*) discussed; *op. cit.* p. 203.—*R. elegans*, ambulacrals and interambulacrals described; *op. cit.* pp. 190, 204, pl. vii: redescribed, comparison with other species; TORNQUIST (327) p. 757, pls. xx & xxi.—*R. gracilis* (olim *Palechinus*), arrangement of plates fully described; JACKSON (139) pp. 193, 201, pl. vii.
- †*Rhynchopygus woodi*; BELL (33) p. 10.
- Salenia*, the species divided into groups *quadrate* and *coronate* according to scrobicular ornament of tubercles; ARNAUD (15) p. 25.—*S. anthophora* Müller, discussed; LAMBERT (180) p. 148.—†*S. bourgeoisi*, apical plates described, growth-stages measured and distinguished from those of *S. mæstrichtensis*; ARNAUD (15) p. 11, pl. i.—†*S. clarkii*?, Cenomanian, Devon; JUKES-BROWNE & HILL (150) p. 145.—†*S. cylindrica*, measured, apical plates described; ARNAUD (15) p. 16.—†*S. fraasi*, redescribed; LORIOLO (195) p. 146, pl. vi.—*S. geometrica*, re-established, apical plates described, growth-stages measured; ARNAUD (15) p. 9, pl. i.—†*S. gibba*, apical plates described; ARNAUD (15) p. 5.—*S. hastigera*; KOEHLER (163) p. 472, & (164) p. 89.—†*S. heberti*, recognised in Upper Campanian of Talmont (Charente-Inf.), measurements compared with those given by Schlueter; ARNAUD (15) p. 14.—†*S. mæstrichtensis*, discussed; LAMBERT (180) pp. 149, 151.—†*S. petalifera*, var. aff. *S. scutigera*, loc. not given; JUKES-BROWNE & HILL (150) p. 145.—*S. prestensis*; ALMERA (3) p. 568; KILIAN (157) p. 761.—†*S. radians*, measurements and ornament distinguish it from other spp.; ARNAUD (15) p. 15.—†*S. scutigera* Cott., perhaps not the same as *Cidaris scutigera* Goldf.; LAMBERT (180): Cotteau wrongly referred to this *S. geometrica*, *S. maxima*, and *S. petalifera*; ARNAUD (15) p. 5.—†*S. trigonata*, apical plates described, growth-stages and mutations measured; ARNAUD (15) p. 12.
- †*S. belgica*, Cretaceous, Danian; "Poudingue de la Malogne," Cibly, distinguished from *S. minima*; LAMBERT (180) Bull. Soc. Belge Geol. ser. 2, xi, p. 150, pl. iii.—†*S. maxima*, Middle Campanian of Saint-Seurin d'Uzet, and Upper Campanian of Talmont (Charente-Inf.) and of Courgeac (Charente), description and measurements of adult and young; ARNAUD (15) Act. Soc. Bordeaux, lii, p. 23, pls. ii & iii.—†*S. pesmei*, Lower and Middle Dordonian, Royan (Charente-Inf.), descr. and measured; *op. cit.* p. 27, pl. ii.—†*S. rejaudryi*, Lower Campanian, Blanzac Livernant, Montmoreau (Charente), description of adult, also of two young (15 & 16 mm. diam.) one with peculiar apex, the other with peculiar madreporite; *op. cit.* p. 18, pl. ii: n. spp.
- †*Salenidia bonissenti* (olim *Salenia*) Cotteau, redescribed and defined; LAMBERT (180) p. 148, pl. ii.
- Salmacis*, place in system, incl. *Melobosis*, *Diploporus*, and *Salmacopsis* (p. 497); †*S. vandenhecki* referred to *Triplacidia* (p. 504); LAMBERT (179).
- Salmacopsis*, syn. of *Salmacis*, LAMBERT (179) p. 497.
- Schizaster*:—†*S. acuminatus*; KAYSER (153); BOTTO-MICCA (41) p. 360:

- contains more than one species, SCHLUETER (296), p. 966.—†*S. ambulacrum*; MAZZETTI (225) p. 431; BOTTO-MICCA (41) p. 360.—†*S. archiaci* (p. 433), †*S. aff. archiaci* (var. *lata*) (p. 430), †*S. baylei* (p. 432); MAZZETTI (225).—*S. baylei*; †*S. bellardii*, redescr. from type; BOTTO-MICCA (41) p. 357.—†*S. belouchistanensis?*; MAZZETTI (225) p. 432.—†*S. canaliferus*; MAZZETTI (225) p. 431: probably incl. *S. orbignyanus* Al. Ag.; VINASSA DE REGNY (335), p. 152: by no means, but rather in a different genus; LAMBERT in Review.—†*S. convexus*; MAZZETTI (225) p. 430.—†*S. corsicus*; BOTTO-MICCA (41) p. 354.—†*S. cristagalli*; MAZZETTI (225) p. 433.—†*S. desori*; MAZZETTI (225) p. 432, BOTTO-MICCA (41) p. 361.—†*S.*, cf. *desori*; VINASSA DE REGNY (334) p. 154.—†*S. djulfensis?*; BOTTO-MICCA (41) p. 361.—†*S. d'urbani* (p. 431), †*S. exagonalis* (p. 430), †*S. foveatus* (p. 432), †*S. globulus* (p. 432); MAZZETTI (225).—†*S. karreri*; ŁOMNICKI (192) p. 34; BOTTO-MICCA (41) p. 359.—†*S. lacunosus* Goldf., holotype at Bonn, redescr., incl. *Micraster goldfussi* Ag., *Spatangus crassissimus* Desmoul., *Hemiaster amplus* Des., locality and horizon unknown; SCHLUETER (296) p. 963.—†*S. laubei*; MAZZETTI (225) p. 430.—†*S. laubei* Hoernes non Bittner; BOTTO-MICCA (41) p. 356.—†*S. lorioli*; MAZZETTI (225) p. 432.—†*S. macCarthyi*, Lower Eocene of Mt. Raouïa, Algeria; REPELIN (279) p. 119.—†*S. major*; BOTTO-MICCA (41) p. 356: incl. *S. canaliferus* Sism. non Agass.; ALESSANDRI (1) p. 72.—†*S. maurus*; BRIVE (45) pp. 597 & 598.—†*S. oviformis* (p. 430), †*S. parkinsoni* (p. 432); MAZZETTI (225).—*S. philippi*; MEISSNER (228) p. 89.—†*S. phrynus*, Tortonian, plain of Chellif, Algeria; REPELIN (279) p. 175.—†*S. princeps*, p. 432.—†*S. pumilius* (p. 433), †*S. rimosus* (p. 431); MAZZETTI (225).—*S. rimosus*; BOTTO-MICCA (41) p. 362: varying in direction of *S. vicinalis*; BONTSCHIEFF (40) p. 370.—†*S.* cf. *rimosus*; FOURNIER (85) pp. 179, 182.—†*S. roemeri*; FRIČ (91) p. 72.—†*S. rotundus*; MAZZETTI (225) p. 430.—†*S. scillæ*; ALESSANDRI (1) p. 71; MAZZETTI (225) p. 431: discussed; SCHLUETER (296) p. 964: redescr. fr. Portugal; LORIOLO (193) p. 43, pl. xii: var. nov. *pliocenica*, from Asti; BOTTO-MICCA (41) p. 534.—†*S. studeri*; MAZZETTI (225) p. 433; BOTTO-MICCA (41) p. 359: var. nov. *haskoviensis*, Eocene "Gelbe Schicht," Haskovo, Bulgaria; BONTSCHIEFF (40) Jahrb. geol. Reichsanst. xlv, p. 371.—†*S. trigonalis*; MAZZETTI (225) p. 429.—†*S. vicinalis*; MAZZETTI (225) p. 431, BOTTO-MICCA (41) p. 359: discussed; SCHLUETER (296) p. 965.—†*S.* sp.; VINASSA DE REGNY (335) pp. 153 & 154.
- †*S. ameghinoi*, Lower Tertiary, Gulf of S. Jorge, Patagonia; IHERING (136) Revist. Mus. Paulista, ii, p. 338.—†*S. braidensis*, Placentian of Mt. Castello, Alessandria, and Mt. Capriolo near Bra, Piedmont; BOTTO-MICCA (41) Boll. Soc. geol. Ital. xv, p. 362, pl. x.—†*S. ozzanensis*, Helvetian "pietra da Cantoni," Ozzano, Basso Monferrato, Italy; ALESSANDRI (1) Mem. Mus. Milano, vi (1), p. 73, pl. ii.—†*S. pyriformis* [errore pro *piriformis*], Tongrian of Carcare, Piedmont; BOTTO-MICCA (41) Boll. Soc. geol. Ital. xv, p. 358, pl. x.—†*S. aff. scillæ*, Helvetian and Astian, Piedmont; BOTTO-MICCA (41) Boll. Soc. geol. Ital. xv, p. 355: n. spp.
- Scutella*, relations of genus to *Monophora* with discussion of spp. *subrotunda*, *truncata*, *propinqua*, *striatula*, *producta*, *paulensis*, *stellata*, *smithiana*, in terms of variations noted in *M. darwini*; LAHILLE (176) p. 437.—†*S. bonali* Tournouër, Aquitanian of Pindères (Lot et Garonne), described [If, as is suggested, Tournouër never published a description, this must rank as n. sp.]; LORIOLO (193) p. 12.—*S. faujasi*, probably incl. *S. producta*, *S. propinqua*, and *S. stellata*; LAHILLE (176) p. 439: redescr. fr. Portugal, incl. *S. truncata*, *S. brongniarti*, and *S. smithi*; †LORIOLO (193) p. 10, pl. i.—†*S. patagonensis* Des., Sta. Cruz formation, Porto St Desiré; IHERING (136) p. 337.—†*S. striatula*;

- RAULIN (274).—†*S. subrotunda*, redescr. fr. Portugal; LORIOLO (193) p. 9, pl. iii: probably incl. *S. paulensis*, *S. truncata*, *S. striatula*, and *S. brongniarti*; *S. subtetragona*, distinct, but allied to *S. subrotunda*; LAHILLE (176) p. 439.
- †*S. lusitanica*, Miocene, various localities in Portugal; LORIOLO (193) Mem. Direc. Trav. Geol. Portugal, p. 12, pls. ii & iii.—†*S. roquettei*, Miocene, Portugal, loc. unknown, holotype in Lisbon Museum, perhaps young of *S. faujasi*; *op. cit.* p. 13, pl. iii: n. spp.
- Scutellidæ*, relations of genera, in 3 sections, *Rotulinæ*, *Scutellinæ*, and *Monophorinæ*; LAHILLE (176) p. 440.
- †*Sismondia*:—*S. loghotheti*, Upper Egypt; FOURTAU (86).—*S. marginalis*, var. *minor*; COURJAU (58).—*S. planulata*, Mokattam, Egypt; FOURTAU (86).
- †*Spatangopsis costata* Torell, possibly an Echinoderm, but not Cystocidaroid; GREGORY (109) p. 133.
- †*Spatangus*:—*S. æquedilatatus*; MAZZETTI (225) p. 422.—*S. amygdala* Goldf. non Klein; SCHLUETER (297).—*S. arcuatus*; MAZZETTI (225) p. 418.—*S. asterias*; BOTTO-MICCA (41) p. 374.—*S. austriacus*; MAZZETTI (225) p. 423; VINASSA DE REGNY (335) p. 155.—*S. austriacus* vel *S. manzonii*; *loc. cit.*—*S. aff. austriacus*; ŁOMNICKI (192) p. 34.—*S. britannus*, redescr. and figd; COTTEAU (56) p. 176.—*S. brissoides*, distinguished from *S. loncophorus*; MAZZETTI (225) p. 423 and pl.—*S. chitonosus*; BOTTO-MICCA (41) p. 371: incl. *S. euglyphus* Mazz. non Laube; MAZZETTI (225) p. 421.—*S. cor*, perhaps syn. of *S. philippii*; MAZZETTI (225) p. 423.—*S. corsicus*; ALESSANDRI (1) p. 69: redescr.; BOTTO-MICCA (41) p. 369: redescr. from Portugal; LORIOLO (193) p. 47, pl. xiii: redescr., figd, and distinguished from *S. delphinus*; COTTEAU (56) p. 166: ?; MAZZETTI (225) p. 419.—*S. delphinus*; MAZZETTI (225) p. 418: descr. and figd [according to the author, for the first time]; COTTEAU (56) p. 179.—*S. desmarestii*; BOTTO-MICCA (41) p. 374: ?; MAZZETTI (225) p. 418.—*S. discoidalis* (p. 422); *S. hemiornatus*, holotype was young (p. 424); *S. hemisphaericus* (p. 420); MAZZETTI (225).—*S. marmoræ*, olim *Macropneustes*, redescr. and figd; COTTEAU (56) p. 171.—*S. mutinensis*; MAZZETTI (225) p. 424.—*S. ocellatus*; MAZZETTI (225) p. 422.—*S.*, cf. *S. ocellatus*, Helvetian, Turin; BOTTO-MICCA (41) p. 373, pl. x.—*S. pagliarolensis*; MAZZETTI (225) p. 421.—*S. parati*, not a *Maretia*; COTTEAU (56) p. 194; BOTTO-MICCA (41) p. 370.—*S. peroni*, redescr. and figd; COTTEAU (56) p. 169.—*S. philippii*; MAZZETTI (225) p. 420; BOTTO-MICCA (41) p. 374.—*S. podex*; MAZZETTI (225) p. 422.—*S. purpureus*; BELL (33) p. 11: Agassiz non Leske, recent and fossil; MAZZETTI (225) p. 424 and pl.: Leske non Agassiz=*S. spinosissimus* Desor; MAZZETTI (225) p. 425.—*S. regina*; BELL (33) p. 11; MAZZETTI (225) p. 420.—*S. rissoi*; BOTTO-MICCA (41) p. 374: descr. and figd [according to the author, for the first time]; COTTEAU (56) p. 187: ?; MAZZETTI (225) p. 424.—*S. semelanensis*; MAZZETTI (225) p. 423.—*S. siculo* Desor ex Parkinson, does not equal *S. siculo* Agassiz, 1847, but rather *S. philippii* Desor; COTTEAU (56) p. 195.—*S. simplex*, redescr. and figd; COTTEAU (56) p. 174.—*S. spinosissimus*, probably includes *S. purpureus* Lam., *S. siculo* Desor, and *S. meridionalis* Risso; MAZZETTI (225) p. 419 and pl.—*S. subconicus*; MAZZETTI (225) p. 420.—*S. subinermis*; BRIVE (45) p. 598.—*S. tessellatus*, Tortonian, plain of Chellif, Algeria; REPÉLIN (279) pp. 174 & 175.—*S. viquesneli*; BONTSCHÉFF (40) p. 373.
- S. deydiéri*, quoted as "Cotteau, 1894," but probably is new, Miocene (Burdigalian) of Reillane (Basses-Alpes), and var. *major*, Tortonian of Cucuron (Vaucluse); COTTEAU (56) Bull. Soc. Isère (4) iii, p. 185, pl. x, figg. 2-4, pl. xi, figg. 1 & 2.—*S. gauthieri*, quoted as "Cotteau, 1894," but probably is new, Miocene (Burdigalian) of St Paul-Trois-

- Châteaux (Drôme); *op. cit.* p. 183, pls. ix & x, fig. 1.—*S. heinzi*, quoted as "Gauthier, 1894," but probably is new, descr. but not figd as plate is lost; *op. cit.* p. 190.—*S. manzonei*, Astian of Asti, Piedmont; BOTTO-MICCA (41) Boll. Soc. geol. Ital. xv, p. 372, pl. x. [Said by LAMBERT in Review to be *S. botto-miccai* Vinassa de Regny.] *S. aff. paretii*, Miocene of Ceva and Clavesana, Piedmont; *op. cit.* p. 371 : n. spp.
- †*Sphærechinæ*, sub-fam. of *Echinometridæ*; LAMBERT (179) p. 516.
- Sphærechinus*:—†*S. brevispinosus*; BELL (33) p. 9.—*S. granularis*; MARCHISIO (216) p. 4: structure and functions of vesicles connected with lantern; UEXKÜLL (331): larva; SEELIGER (304): karyokinesis; DOFLEIN (70), & HERTWIG (128).
- Sperosoma*, n. g., with genotype *S. grimaldi*, near Azores; KOEHLER (168) Zool. Anz. xx, p. 302, and fig, n. sp.
- †*Stegaster*, compared with *Lampadaster*; LAMBERT (178) p. 316.—†*S. facki* Stolley, is a *Cardiaster*; LAMBERT (180) p. 178.
- †*S.*, n. sp.; FOURNIER (85) Ann. Fac. Marseille, vii, p. 161.
- Stenonia*, plastron discussed; LAMBERT (178) p. 322.
- †*Stereocidaris silesiaca*; LEONHARD (187) p. 40.
- †*S. oppoliensis*, Turonian of Oppeln, Oberschlesien; LEONHARD (187) Palæontogr. xlv, p. 40, pl. v, n. sp.
- †*Stomechinus perlatus*; HUG (133) p. 404.—†*S. sp.*; ROMAN (281) p. 330.
- Stomopneustes variolaris*; PFEFFER (267) p. 46.
- †*Strictchinus*, syn. of *Arcopeltis*; LAMBERT (179) p. 517.
- Strongylocentrotus albus*, with crab parasite; MEISSNER (228) p. 86.—*S. drobachiensis*; †BELL (33) p. 9: (as *Echinus*); HONEYMAN (131) p. 256: ambulacrals and inter-ambulacrals; JACKSON (139) pl. iii: two specimens with abnormal arrangement of oculars, ? a reversion; OSBORN (252): large size in Greenland waters, six pores to ambulacral plate; VANHOEFFEN (333) p. 235.—*S. curythrogrammus*, Wellington, N. Z.; FARQUHAR (83) p. 189.—*S. lividus*; †BELL (33) p. 9; MARCHISIO (216) p. 4: karyokinesis; DOFLEIN (70), & HERTWIG (128).—†*S. scaber*; BELL (33) p. 9.—*S. tuberculatus*, New Zealand; FARQUHAR (83) p. 189.
- †*S. cotteaui*, Coralline Crag, Aldborough; BELL (33) Rep. Yorksh. Soc. for 1896, p. 9, n. sp.
- †*Temnechinus*:—*T. excavatus*, *T. globosus*, *T. melocactus*, *T. turbinatus*, and *T. woodi*; BELL (33) pp. 7 & 8.
- T. forbesi*, Coralline Crag, Oxford, Ramsholt; BELL (33) Rep. Yorksh. Soc. for 1896, p. 8, no fig, n. sp.
- †*Temnocidaris danica*, includes spines called *Cidaris faujasi*; LAMBERT (180) p. 145.
- Temnopleurus*, place in system, incl. *Toreumatica* and *Temnotrema*; LAMBERT (179) p. 497.
- Temnotrema*, syn. of *Temnopleurus*; LAMBERT (179) p. 497.
- †*Thylechinus*, incl. *Orthechinus*, *Gagara*, *Orthocyphus*, *Psilosoma*; LAMBERT (179) p. 496.—*T. atacicus* (olim *Cyphosoma*) Cotteau 1861, non 1856, apex figured; LAMBERT (179) p. 503.—*T. rejaudryi*, redescribed and referred to *Hemithylus*, n. g.; ARNAUD (14) p. 236.
- †*Tiarechinidæ* rediagnosed; GREGORY (110) p. 1003.
- †*Tiarechinus* discussed; GREGORY (110) p. 1000: its place in the system; JACKSON (139) p. 243.
- Toreumatica*, syn. of *Temnopleurus*; LAMBERT (179) p. 497.
- †*Toxaster*:—*T. cf. campichei*; FOURNIER (85) p. 128.—*T. collegnoi*; FOURNIER (85) pp. 132, 139; KILIAN (157) pp. 753, 754, 756, 768: vide *Echinospatagus*.—*T. complanatus*, vide *T. retusus*.—*T. dienceri*, with var. *alta*, redescr.; LORIOU (195) p. 168, pl. vii.—*T. gibbus*; KILIAN & ZURCHER (160) pp. 964 & 965.—*T. granosus*; KILIAN (157)

- p. 722, & (158) p. 893; KILIAN & ZURCHER (160) p. 963; LAMBERT in KILIAN & LEENHARDT (159) p. 973: apex varying in direction of *T. africanus*, figured; LAMBERT (178) p. 321.—*T. aff. T. granosus*, Lower Neocomian of Venasclé; LAMBERT in KILIAN & LEENHARDT (159) p. 974.—*T. granosus*, var. or perhaps n. sp.; LAMBERT in KILIAN (157) p. 726, footnote.—*T. cf. neocomiensis*, with abnormal apical system; LAMBERT in KILIAN & LEENHARDT (159) p. 979, fig. 1.—*T. retusus*; KILIAN (157) pp. 734, 746, and LAMBERT in KILIAN (157) p. 736; KILIAN (158) p. 893; KILIAN & LEENHARDT (159) pp. 976, 980; KILIAN & ZURCHER (160) pp. 964 & 965: variation in apex; LAMBERT (178) p. 320.—*T. cf. retusus*; KILIAN & LEENHARDT (159) p. 975.—*T. ricordeaui*; *op. cit.* p. 977.—*T. roulini*, carefully redescr. and figd on evidence of 71 specimens from Aptian of Zapatoca (Santander) in Cordilleras of Bogota; GERHARDT (99) p. 189.—*T. subcavatus*, development of apex; LAMBERT (178) p. 321.—*T. aff. T. subcylindricus*, Lower Neocomian of Moustiers (Basses-Alpes); LAMBERT in KILIAN & LEENHARDT (159) p. 974.
- T. libanoticus*, Cenomanian, Lebanon; LORIOU (195) *Rev. Suisse Zool.* v, p. 166, pl. vii.—*T. lorioli*, Valanginien of Basses-Alpes, also incl. *T. ricordeaui* of "Echinologie Helvétique," pl. xxviii, fig. 5; LAMBERT in KILIAN & LEENHARDT (159) *Bull. Soc. geol. France* (3) xxiii, p. 974: n. spp.
- †*Toxobrissus michelotti* should be *Brissopsis*; BOTTO-MICCA (41) p. 351.
- Toxopneustes variegatus*; DUERDEN (77) p. 285.
- †*Trematopygus* d'Orb., maintained but restricted, includes *Plagiochasma* Pomel and *Dochmostoma* (pars) Duncan, genotype is *Nucleolites olfersi* Agassiz; LAMBERT (180) p. 160.—*T. oblongus* d'Orb., referred to *Lychnidius*; LAMBERT (180) p. 163.
- †*Tretechinus*, n. g., with genotype *T. illinoisensis* (olim *Perischodomus*) Worthen, St John, & Miller; TORNQUIST (327) *Abh. geol. Karte Elsass*, v, p. 784.
- Trigonocidaris albida*; KOEHLER (163) p. 472, & (164) p. 90.
- †*Triplacidia*, place in system; LAMBERT (179) p. 497.—*T. vandenheckei*, nov. var. *rothpletzi*, *Lithothamnium* limestone, Haskovo, Bulgaria; BONTSCHIEFF (40) *Jahrb. geol. Reichsanst.* xlvi, p. 368.
- Tripneustes*:—†*T. parkinsoni*; MAZZETTI (225) p. 418.—*T. variegatus*, Klein, Kermadec Is., descr. and measured; FARQUHAR (83) p. 188.
- †*Typhlechinus*, syn. of *Palechinus*; TORNQUIST (327) p. 737, footnote.
- †*Trochalosoma*, nom. nov. pro *Leiosoma* Cotteau non Brandt, genus defined and placed in system; LAMBERT (179) p. 515.
- †*Xenocidaris*, provisionally retained in *Archæocidaridæ* on account of spines of genotype *X. clavigera*; JACKSON (139) p. 222.—*X. clavigera*; BEYER (38) p. 89, pl. iii, figg. 80 & 81.
- †*Zeuglopleurus*, syn. of *Echinocyphus*; LAMBERT (179) p. 496.

(D.)—ASTEROIDEA.

Classification, history of Perrier's views since 1884, criticism of Viguiier's and Sladen's schemes, the Euasteroidea are thus classified: Ord. I. *Forcipulata*, Famm. *Brisingidæ*, *Pedicellasteridæ*, *Zoroasteridæ*, *Stichasteridæ*, *Asteriidæ*; II. *Spinulosa*, Famm. *Echinasteridæ*, *Solasteridæ*, *Pterasteridæ*, *Asterinidæ*; III. *Valvulata*, Famm. *Linckiidæ*, *Pentagonasteridæ*; IV. *Paxillosa*, Famm. *Archasteridæ*, *Astropectinidæ*; PERRIER (263).

Defined (p. 496), classified (p. 502), in the following system (p. 504); HÆCKEL (116):—

Sub-class	Orders							
Palasteriæ (= Encrinasteriæ)	{	Hypomadrepia	Patrasterida	{ Patrasterida Palasteriscus Palæodiscus				
		Epimadrepia	Palasterinida	{ Palasterinida Palasterina Palæocoma				
Colasteriæ (= Autasteriæ)	{	Phanerozonia (= Eurystroteria)	{	Pentaceronia	{ Archasterida Porcellanasterida Astropectinida Pentagonasterida Pentacerotida Gymnasterida			
				Asterisconia	{ Asterinida Asteriscida Ganerida			
		Cryptozonia (= Leptostroteria)	{	{	Solasteronia	{ Solasterida Stichasterida Zoroasterida Pterasterida Heliasterida Echinasterida Urasterida		
					{	{	Brisingonia	{ Brisingida Brisinga

Very short account of a few fossil forms, with figures after Stürtz; KOKEN (171) pp. 292, 294.—General account with special reference to fossils; ZITTEL (356) p. 170: revised by SLADEN; ZITTEL-EASTMAN (357) p. 205.

Mediterranean, key to genera; LUDWIG (209) p. 281.—General systematic results of study of Mediterranean spp., reduction from 81 names to 24 valid spp. in 14 genera; LUDWIG (210) p. 450.

Acanthaster echinites, from Amboina, measured and described, probably includes *A. mauritiensis* Loriol; DOEDERLEIN (69) p. 320, pl. xxi.

Anasterias, accepted as genus, with genotype *A. minuta*; PERRIER (263) pp. 32, 35.

Anthenea acuta, variation in form due to imperfect preservation; WHITELEGGE (346) p. 159.—*A. tuberculosa*, neanic specimen from Thursday Id.; DOEDERLEIN (69) p. 309.

Archaster typicus; DOEDERLEIN (69) p. 305.

Archasteridæ, rediagnosed; PERRIER (263) p. 47.

Asteracanthion rubens; DAHL (62) p. 172.—*A. tenuispinus*, var. *elongatus* Lorenz. = *Asterias tenuispina*; LUDWIG (210) p. 345.

Asterias, rediagnosed; PERRIER (263) pp. 32, 34, 38: diagnosis, and key to Mediterranean spp.; LUDWIG (209) p. 303: rediagnosed with special reference to Mediterranean genera and key to the 4 spp.; LUDWIG (210) p. 344: how it opens molluscs; SCHIEMENZ (295).—*A. africana* Greeff = *A. glacialis*; LUDWIG (210) p. 365.—*A. (Sporasterias) antarctica* (p. 105, pl. vi), var. *rupicola*, measurements (p. 106, pl. vi); MEISSNER (229).—*A. atlantica* Verrill. = *A. tenuispina*?; LUDWIG (210) p. 362.—†*A. cilicia*; WAGNER (337) p. 100.—*A. conferta*, redescr. and now first figd; LORIOLO (196) p. 17, pl. iii.—*A. edmundi*, nom. nov. pro *Stolasterias neglecta* Perrier (non *A. neglecta* Bell), diagnosis; LUDWIG (209) p. 306: synonymy, diagnosis, external description, measurements of old and young, colour, geogr. distrib., depth 160–485 m.; LUDWIG (210) p. 395, pl. xii.—*A. epichlora*, redescr., and now first figd; LORIOLO (196) p. 19, pl. iii.—*A. (Stolasterias) gelatinosa*; MEISSNER (229) p. 103.—*A. glacialis*, colour; MARCHISIO (216) p. 2: diagnosis; LUDWIG (209) p. 305: treated similarly to *A. edmundi*,

- also with bathymetric distrib., food, breeding-period, and regeneration; LUDWIG (210) p. 364, pls. iii, xii.—*A. gracilis* Giebel, syn. of *Craspidaster hesperus*; LUDWIG (210) pp. 60, 451.—*A. gronlandica*, *forma typica et robusta*, measured; VANHOEFFEN (333) p. 236.—*A. heptactis* Konrad = *A. tenuispina* Lm.; LUDWIG (210) p. 344.—*A. hispidus* M. Tr., syn. of *A. pentacanthus*, var. *serratus* (q.v.); LUDWIG (210) p. 451.—*A. lutkeni*, redescr. and now first figd; LORIOLO (196) p. 15, pl. ii.—*A. madeirensis* Stimps. = *A. glacialis*; LUDWIG (210) p. 364.—*A. ophidion*, relations to *A. richardi*; LUDWIG (210) p. 417.—*A. pallida*, development; GOTO (102).—*A. papyracea* Konrad = *Palmipes membranaceus*; LUDWIG (210) pp. 243, 452.—*A. polaris*; HONEYMAN (131) p. 255; VANHOEFFEN (333) p. 237: Azores; PERRIER (263) p. 38.—*A. richardi*, diagnosis; LUDWIG (209) p. 307: treated similarly to *A. edmundi*, also with bathymetric distrib., autotomy due to *Myzostoma*, systematic position discussed; LUDWIG (210) p. 403, pl. xii.—*A. rodolphi*, redescr. from Raoul Id. specimens, and distinguished from *A. scabra*; FARQUHAR (83).—*A. rubens*, Bay of Biscay; PERRIER (263) p. 38: recorded occurrences in Mediterranean all doubtful; LUDWIG (210) p. 345, footnote.—*A. rugispina* Leiboldt, is in part syn. of *A. antarctica*; MEISSNER (229) p. 94: formation of gonads confirms inclusion of *A. spirabilis*, *A. cunninghami*, *Anasterias minuta*, and probably *Calvasterias stolidota*, in this species; LEIPOLDT (186).—†*A. schulzii*, occurrence in Chlomeker Schichten doubtful; FRIČ (91) p. 72.—*A. spirabilis* Perr., is syn. of *A. antarctica*; MEISSNER (229) p. 106.—*A. squamatus* M. Tr., syn. of *A. jonstoni* (Della Chiaje); LUDWIG (210) p. 451.—*A. (Cosmasterias) sulcifera*; MEISSNER (229) p. 102.—*A. tenuispina*, colour; MARCHISIO (216) p. 2: diagnosis; LUDWIG (209) p. 304: treated similarly to *A. edmundi*, also with bathymetric distrib., breeding period, autotomy; LUDWIG (210) p. 344, pls. iii, xi.—*A. tenuissima* Risso, errore pro *A. tenuispina* = *Luidia ciliaris*; LUDWIG (210) pp. 61, 345, 451.—*A. tessellata*, see *Hippasterias phrygiانا* and *Pentagonaster granularis*.—*A. variolata* Risso = *Hacelia attenuata*; LUDWIG (210) pp. 272, 452.—*A. verrucosa* Risso, = *Chaetaster longipes*; LUDWIG (210) pp. 134, 451.—*A. vulgaris*; HONEYMAN (131) p. 255: pyloric caeca; STONE (321).
- A. (Polyasterias) fernandensis*, Juan Fernandez; MEISSNER (229), Arch. Naturg. (1) lxii, p. 104.—*A. koehlerii*, Saanich Inlet (Vancouver); LORIOLO (196) Mem. Soc. Geneve, xxxii, p. 21, pl. iii.—*A. (Coscinasterias) platei*, Juan Fernandez; MEISSNER (229) Arch. Naturg. (1) lxii, p. 103, pl. vi.—*A. saanichensis*, Saanich Inlet (Vancouver); LORIOLO (196) Mem. Soc. Geneve, xxxii, p. 23, pl. ii: n. spp.
- Asteriidae*, rediagnosed with synopsis of genera; PERRIER (263) p. 31.
- Asterina*, rediagnosed with special reference to Mediterranean genera; LUDWIG (210) p. 207, and (209) p. 296.—*A. calcar*, colour-variation; SAVILLE-KENT (290) p. 243.—*A. calcarata*, var. nov. *selkirki*, Juan Fernandez; MEISSNER (229) p. 97, pl. vi.—*A. cepheus*; PFEFFER (267) p. 47; DOEDERLEIN (69) p. 316.—*A. chilensis*, colour; MEISSNER (229) p. 96.—*A. fimbriata*; MEISSNER (229) p. 97.—*A. gibbosa*; MARCHISIO (216) p. 3: development, specially from gastrula to end of larval stage; MACBRIDE (212): with var. *pancerii*, diagnosis; LUDWIG (209) p. 297: synonymy includes *H. minuta* Olivi, *A. umbilicata* Konrad, *A. minima* Verany, *A. membranacea* Risso, *Asteriscus arrecificensis* Greeff, and *A. pancerii* Gasco; diagnoses, external description, measurements of old and young, colour, geogr. and bathymetric distrib., food, breeding period, anatomical notes; LUDWIG (210) pp. 207, 451, pls. v, ix.—*A. regularis*, variation in rays, madreporite, and spines, perhaps includes *A. novae-zelandiae* Perrier; FARQUHAR (83) p. 196.—*A. sp.*, colour-variation; SAVILLE-KENT (290) p. 243.

- Asterinidæ*, rediagnosed; PERRIER (263) p. 42.
- Asteropsis vernicina*, irregularity in specialised pedicellariæ; FARQUHAR (83) p. 194.
- A. imperialis*, Raoul Id., Kermadecs; FARQUHAR (83) J. Linn. Soc. xxvi, p. 193: n. sp.
- Astellæ simplex*, see *Luidia sarsi*, brephic stage.
- Astrogonium*, rediagnosed; PERRIER (263) p. 44.—*A. annectens*; KOEHLER (163) p. 451, & (164) p. 57: Bay of Biscay; PERRIER (263) p. 45.—*A. pulchellum* var. *B.* of Hutton is perhaps *A. abnormale* Gray, perhaps *A. huttoni*, n. s.; FARQUHAR (83) p. 194.—†*A. sp.*?, Pliocene of Piacentino; PRATO (271) p. 48, pl.
- Astropecten*, rediagnosed; PERRIER (263) p. 51: key to Mediterranean spp., and diagnosis; LUDWIG (209) p. 283: rediagnosed, with special reference to Mediterranean genera, and key to spp.; LUDWIG (210) p. 2: feeding on Molluscs; SCHIEMENZ (295).—*A. aurantiacus*, B. of Biscay; PERRIER (263) p. 51: diagnosis; LUDWIG (209) p. 284: synonymy, diagnosis, external description, measurements of old and young, colour, geogr. and bathymetric distrib., food, breeding-period; LUDWIG (210) p. 3, pls. ii, vi.—*A. bispinosus*; MARCHISIO (216) p. 3: diagnosis; LUDWIG (209) p. 284: and var. *platyacanthus*, treated similarly to *A. aurantiacus*; LUDWIG (210) p. 16, pls. ii, vi.—*A. brevior* Lorenz, merged in *A. pentacanthus* (q. v.); LUDWIG (210) p. 451.—*A. flaticus* Lorenz, not upheld; LUDWIG (210) pp. 18, 451.—*A. gracilis* Giebel, supposed Mediterranean sp. = *Craspidaster hesperus*, known only from W. Pacific; LUDWIG (210) p. 60.—*A. granulatus*, measured; DOEDERLEIN (69) p. 305, pl. xviii.—*A. hemprichii*, colour; PFEFFER (267) p. 47.—*A. irregularis*; KOEHLER (164) p. 53: variation in spines; KOEHLER (163) p. 450: skiagram; MEEK (226).—*A. jonstoni*, diagnosis; LUDWIG (209) p. 286: treated similarly to *A. aurantiacus*; LUDWIG (210) p. 50, pls. ii, vi.—*A. jonstoni* M. Tr., syn. of *A. spinulosus* Philippi (q. v.); LUDWIG (210) p. 451.—*A. pentacanthus*; MARCHISIO (216) p. 3: diagnosis; LUDWIG (209) p. 285: treated similarly to *A. aurantiacus*; LUDWIG (210) p. 39, pls. ii, vi.—*A. platyacanthus*; MARCHISIO (216) p. 3: var. of *A. bispinosus* (q. v.); LUDWIG (210) p. 451.—*A. polyacanthus*, colour; PFEFFER (267) p. 47.—*A. serratus*, B. of Biscay; PERRIER (263) p. 51: described as var. of *A. pentacanthus* and held to include *A. hispidus*; LUDWIG (210) p. 47.—*A. spinulosus*, diagnosis; LUDWIG (209) p. 285: treated similarly to *A. aurantiacus*; LUDWIG (210) p. 31, pls. ii, vi.—*A. squamatus*, colour; MARCHISIO (216) p. 3: syn. of *A. jonstoni* (q. v.).—*A. velitaris*, measured; DOEDERLEIN (69) p. 307, pl. xviii.—*A. zebra* (includes *A. coppingeri* Bell), measured and described; DOEDERLEIN (69) p. 306, pl. xviii.—†*A. sp.* (cf. *A. forbesi* and *A. bispinosus*), Miocene of Gombio, Italy; PRATO (271) p. 43, pl.
- †*A. linati*, Middle Pliocene, Piacentino and Parma district, locality uncertain; PRATO (271), Riv. ital. Pal. ii, p. 45, pl., n. sp.
- Astropectinidæ*, rediagnosed; PERRIER (263) p. 50.
- Astropectininæ*, rediagnosed; PERRIER (263) p. 51.
- Brisinga*, diagnosis; LUDWIG (209) p. 308: rediagnosed with special reference to Mediterranean genera; LUDWIG (210) p. 418: rediagnosed; PERRIER (263) p. 20.—*B. coronata*; KOEHLER (163) p. 440: redescr.; KOEHLER (164) p. 38: Azores; PERRIER (263) p. 20: diagnosis; LUDWIG (209) p. 308: (incl. *B. mediterranea* Perrier), diagnosis, literary history, external description, measurements of old and young, colour, geogr. and bathymetric distrib., food, breeding-period, regeneration; LUDWIG (210) p. 418.
- Brisingidæ*, rediagnosed; PERRIER (263) p. 19.
- Bunaster*, n. g. with genotype *B. ritteri*, Amboina, allied to *Ophi-*

- diaster*; DOEDERLEIN (69) Denk. Ges. Jena, viii, p. 317, pl. xxii : n. sp.
- Calvasterias*, accepted as genus, with genotype *C. asterinoides*; PERRIER (263) pp. 32, 34.
- Calycaster*, rediagnosed; PERRIER (263) p. 27; *C. monæcus*, Azores, re-described, 4 specimens of different ages; PERRIER (263) p. 28, pl. ii.
- Chætaster*, rediagnosed; PERRIER (263) p. 43: diagnosis; LUDWIG (209) p. 292: rediagnosed with special reference to Mediterranean genera (134), its systematic position discussed (p. 155); LUDWIG (210).—*C. longipes* Bruzelius, B. of Biscay; PERRIER (263) p. 44: redescr., referred to *Archasteridæ*; LUDWIG (202): diagnosis; LUDWIG (209) p. 292: synonymy, diagnosis, external description, measurements of old and young, colour, geogr. and bathymetric distrib., breeding-period; LUDWIG (210) p. 134, pls. i, ix.
- Chætasteridæ*, n. fam. provisional; LUDWIG (210) pp. 134, 156.
- Coronaster antonii*, variations from Perrier's type; KOEHLER (163) p. 440: re-described; KOEHLER (164) p. 40.
- Coscinasterias*, accepted as genus, with genotype *C. calamaria*; PERRIER (263) p. 34.
- Cosmasterias*, accepted as genus, with genotype *C. sulcifera*; PERRIER (263) pp. 32, 35: vide etiam sub *Asterias*.
- †*Crenaster lævis*; RAULIN (274).
- Cribrella*, rediagnosed; PERRIER (263) p. 39.—*C. hyadesi*, redescr.; MEISSNER (229) p. 99.—*C. læviuscula*, redescr. and now first figd.; LORIOLO (196) p. 14, pl. ii.—*C. oculata*; KOEHLER (163) p. 444, & (164) p. 45; VANHOEFFEN (333) p. 237: Azores and Newfoundland; PERRIER (263) p. 39.—*C. oculata*, Russo, probably neanic *Echinaster sepositus*; LUDWIG (207) p. 112, & (210) pp. 314, 452.
- C. biscayensis*, B. of Biscay, 1410 metres, 6° 21' W., 45° 57' N., allied to *C. antillarum*; KOEHLER (163) Rev. biol. Nord France, vii, p. 444, & (164) Ann. Univ. Lyon, xxvi, p. 45, figg. 12 & 13.—*C. caudani*, B. of Biscay, 650 metres, 4° 25' W., 44° 36' N., allied to *C. oculata*; KOEHLER (163) Rev. biol. Nord France, vii, p. 445, & (164) Ann. Univ. Lyon, xxvi, p. 46, figg. 16 & 17 : n. spp.
- Crossaster*, rediagnosed; *C. papposus*, Newfoundland; PERRIER (263) p. 40.
- C. vancouverensis*, Saanich Inlet (Vancouver); LORIOLO (196) Mem. Soc. Geneve, xxxii, p. 12, pl. i : n. sp.
- Ctenodiscus corniculatus*; VANHOEFFEN (333) p. 238.
- Culcita acutispina*, re-described, variation in form due largely to imperfect preservation; WHITELEGGE (346) p. 157.—*C. coriacea*, defined (p. 316, pl. xxi); *C. grex*, defined (p. 316); *C. novæ-guineæ*, includes *C. plana* Hartlaub, which is the young form, also *C. acutispinosa* Bell, *C. arenosa* Perrier, *C. pentangularis* Gray, which are stages of growth or local varieties (p. 300, pl. xix); *C. schmideliana*, discussed and defined, with var. *ceylonica* and var. *africana* (p. 315, pl. xx); *C. veneris*, defined (p. 316); DOEDERLEIN (69).
- Cycethra simplex*, with forma *subelectilis*; MEISSNER (229) pp. 95 & 96.
- †*Diclidaster*, n. g., allied to *Valvaster*, with genotype *D. gevreyi*, Lower Lias, Mercuer (Ardeche); LORIOLO (195) Rev. Suisse Zool. v, p. 177, pl. viii, n. sp.
- Distolasterias*, genotype *D. sticantha* (Slad.); PERRIER (263).
- Dorigona arenata*; KOEHLER (163) p. 451, & (164) p. 57.—*D. jacqueti*, "paraît pouvoir être réunie à la *D. arenata*"; KOEHLER (163) p. 451: compared with *D. arenata*, intermediate forms; KOEHLER (164) p. 58.—*D. subspinoso*; KOEHLER (163) p. 451: redescr.; KOEHLER (164) p. 59.
- Dytaster*, rediagnosed and *D. intermedius*, Azores, re-described; PERRIER (263) p. 48, pl. iii.

- Echinaster*, diagnosis; LUDWIG (209): rediagnosed with special reference to Mediterranean genera; LUDWIG (210) p. 313.—*E. doriæ* and *E. tribulus* de Filippi, said to be from Mediterranean, are synn. of *E. spinosus*, and come from E. coast of America; LUDWIG (199), see also LUDWIG (208).—*E. eridanella*; DOEDERLEIN (69) p. 322.—*E. sepositus*, colour; MARCHISIO (216) p. 2: growth-stages; LUDWIG (207): diagnosis; LUDWIG (209) p. 302: synonymy, diagnosis, external description, measurements of old and young, colour, breeding period, development, geogr. and bathymetric distrib.; LUDWIG (210) p. 300, pls. iii, viii: var. *mediterraneus* not upheld; LUDWIG (210) p. 343.—*E. tribulus* = *E. doriæ* (q. v.); LUDWIG (208).
- Echinasteridæ*, rediagnosed; PERRIER (263) p. 39.
- Encrinasteriæ*, defined, fossil representatives; ZITTEL (356) p. 171; ZITTEL-EASTMAN (357) p. 207.
- Euasteriæ*, defined, includes *Phanerozonia* and *Cryptozonia*, fossil representatives; ZITTEL (356) p. 172; ZITTEL EASTMAN (357) p. 208.
- †*Eugaster granifer*, Pilton Beds, Devonshire; WHIDBORNE (342) P. Geol. Ass. xiv, p. 377, no fig.: n. sp.
- Ferdina kuhlî*; PFEFFER (267) p. 47.
- Forcipulata*, rediagnosed; PERRIER (263) p. 19.
- Ganeria falklandica*, redescribed; MEISSNER (229) p. 94.
- Gnathaster mediterraneus*, v. *Odontaster*. *G. rugosus*, mouth-plates figured; FARQUHAR (83) p. 194.
- †*Goniaster impressæ*; HUG (133) p. 405.
- Goniodiscus acutus* et *G. placentæformis*, Heller = *Pentagonaster placenta*; LUDWIG (210) pp. 157, 451.—*G. pleyadella*, large and small specimens described; DOEDERLEIN (69) p. 308, pl. xviii.—*G. sebac*; *op. cit.* p. 309.
- Gymnasteria carinifera*; DOEDERLEIN (69) p. 316.
- Hacelia*, diagnosis; LUDWIG (209) p. 299: rediagnosed with special reference to Mediterranean genera; LUDWIG (210) p. 271.—*H. attenuata*, diagnosis; LUDWIG (209) p. 300: synonymy, diagnosis, external description, measurements of old and young, colour, geogr. and bathymetric distrib., special description of brepthic stage, anatomical notes; LUDWIG (210) p. 272, pls. iii, xi.
- Heliaster*; HARRINGTON & GRIFFIN (124).—*H. helianthus*; MEISSNER (229) p. 102.
- Hexaster*, rediagnosed; PERRIER (263) p. 41.—*H. obscurus*, Newfoundland, redescribed; PERRIER (263) p. 41, pl. iii.
- Hippasterias phrygiana* recorded, under name *Asterias tessellata*, from Lindisfarne; SUTTON (322) & DISTANT (67).
- Hydrasterias*, accepted as genus, genotype *H. ophidion*; PERRIER (263) pp. 32, 34.
- Hymenaster* rediagnosed, and *H. pellucidus*, Azores; PERRIER (263) p. 40.
- Iconaster longimanus*; DOEDERLEIN (69) p. 307, pl. xviii.
- Labidiaster radiosus*; MEISSNER (229) p. 101.
- Leiaster coriaceus*, colour; PFEFFER (267) p. 47.
- Leptasterias*, accepted as genus, with genotype *L. mülleri*; PERRIER (263) pp. 32, 34.
- Linckia miliaris*; DOEDERLEIN (69) p. 319.—*L. multifora*; *loc. cit.*; PFEFFER (267) p. 47.—*L. pacifica*; WHITELEGGE (346) p. 157.
- Linckiidæ*, rediagnosed; PERRIER (263) p. 43.
- Luidia*, rediagnosed; PERRIER (263) p. 52: diagnosis, key to Mediterranean species; LUDWIG (209) p. 286: rediagnosed, with special reference to Mediterranean genera, and key to the two species; LUDWIG (210) p. 61.—*L. bellonæ*, colour; MEISSNER (229) p. 93.—*L. ciliaris*, redescribed, variations of pedicellaria; KOEHLER (164) p. 50, & (163) p. 448: diagnosis; LUDWIG (209) p. 287: synonymy, diagnosis, measure-

- ments of old and young, external description, colour, geogr. and bathymetric distrib., food, breeding-period, special description of brepthic stage, anatomical notes; LUDWIG (210) p. 61, pls. iv, vi: var. *normani*, given up; LUDWIG (210) p. 79.—*L. maculata*; DOEDERLEIN (69) p. 307.—*L. paucispina* Marenz., syn. of *L. sarsi*; LUDWIG (210) pp. 85, 86, 451.—*L. sarsi*; KOEHLER (163) p. 449, & (164) p. 51: Bay of Biscay; PERRIER (263) p. 52: diagnosis; LUDWIG (209) p. 288: treated similarly to *L. ciliaris*, also with description of larva, *Bipinnaria asterigera*; LUDWIG (210) p. 85, pls. iv, vii.
- L. lorioli*, based on *L. bellonæ* Loriol non Lützk., Mexico; MEISSNER (229) Arch. Naturg. (1) lxii, p. 94: n. sp.
- Luidiinae*, rediagnosed; PERRIER (263) p. 51.
- Marginaster*, diagnosis; LUDWIG (209) p. 295: rediagnosed with special reference to Mediterranean genera; LUDWIG (210) p. 189.—*M. capreensis*, diagnosis; LUDWIG (209) p. 295: synonymy, diagnosis, external description, measurements of old and young, colour, geogr. and bathymetric distrib., stomach-cæca, gonads; LUDWIG (210) p. 189, pl. vii.—*M. fimbriatus* Sladen = *M. capreensis* (Gasco); LUDWIG (210) pp. 189, 451.
- Marthasterias foliacea* Jullien; LUDWIG (210) p. 365.
- Mediaster*, rediagnosed (p. 45); *M. stellatus*, Newfoundland, redescr. (p. 46, pl. iv); PERRIER (263).
- Mithrodia clavigera*; DOEDERLEIN (69) p. 322.
- Myxaster perrieri*, Bay of Biscay, 1300 metres, 5° 22' W., 44° 2' N.; KOEHLER (163) Rev. biol. Nord France, vii, p. 446, & (164) Ann. Univ. Lyon, xxvi, p. 48, fig. 11: n. sp.
- Nanaster*, n. g. with genotype *N. (olim Stichaster) albulus* Stimps; PERRIER (263) p. 27.
- Nardoa tuberculata*; DOEDERLEIN (69) p. 319.—*N. variolata*; PFEFFER (267) p. 47.
- Neomorphaster*, discussed (p. 26), rediagnosed (p. 30); PERRIER (263).—“*N. parfaiti*,” errore pro *N. talismani*, redescr., incl. *N. eustichus*, first occurrence in B. of Biscay; KOEHLER (163) p. 443, & (164) p. 44.—*N. talismani*, Azores, incl. *N. eustichus*; PERRIER (263) p. 30.
- Nepanthia brevis*; DOEDERLEIN (69) p. 316.
- Odinia robusta*; KOEHLER (163) p. 440, & (164) p. 40.
- Odontaster*, diagnosis; LUDWIG (209) p. 290: rediagnosed with special reference to Mediterranean genera; LUDWIG (210) p. 125.—*O. mediterraneus*, diagnosis; LUDWIG (209) p. 291: diagnosis, external description, measurements of old and young, S. Adriatic, 414–1196 m.; LUDWIG (210) p. 125.—*O. meridionalis*, measurements; MEISSNER (229) p. 93.—*O. singularis*, measurements; *op. cit.* p. 92, pl. vi.
- Ophidiaster*, rediagnosed; PERRIER (263) p. 43: diagnosis; LUDWIG (209) p. 300: rediagnosed with special reference to Mediterranean genera; LUDWIG (210) p. 299.—*O. agassizi*; MEISSNER (229) p. 99.—*O. canariensis* Greff = *O. ophidianus* (Lm); LUDWIG (210) pp. 300, 452.—*O. cylindricus*, Funafuti; WHITELEGGE (346) p. 157.—†*O. lessonæ* Gasco, is half-grown *O. attenuatus*; LUDWIG (203) p. 56, & (210) pp. 272, 452.—*O. ophidianus*, colour; MARCHISIO (216) p. 3: Azores; PERRIER (263) p. 44: diagnosis; LUDWIG (209) p. 301: synonymy, diagnosis, external description, measurements of old and young, colour, geogr. and bathymetric distrib., anatomical notes; LUDWIG (210) p. 300, pls. iii, viii.—*O. pustulatus* includes *O. purpureus*, Perrier; DOEDERLEIN (69) p. 317.—*O. tuberifer*; *loc. cit.*—*O. sp.*, Kerinadec Is., described; FARQUHAR (63) p. 195.
- Oreaster reticulata*; DUERDEN (77) p. 285.
- †*Palæaster*:—*P. parviusculus*; HONEYMAN (131) p. 255.—*P. wykoffi*, Hudson River group, near Madison, Ind.; MILLER & GURLEY (235): “Einord-

- nung zur *Palæaster* höchst zweifelhaft"; LUDWIG.—17 spp. of Cincinnati group redescr.; JAMES (146) pp. 126–133.
- P. longimanus*, Pilton Beds, Devonshire; WHIDBORNE (342) P. Geol. Ass. xiv, p. 376, no fig.: n. sp.
- †*Palasterina approximata* & *P. speciosa* reld to *Palæaster*; JAMES (146) p. 135.
- Palmipes*, rediagnosed; PERRIER (263) p. 42: rediagnosed with special reference to Mediterranean genera; LUDWIG (209) p. 298 & (210) p. 243.—*P. lobianci*=*P. membranaceus* × *Asterina gibbosa*, 90 m., Grotto of Capri, external description, gonads, interbrachial septa; LUDWIG (210) p. 267, pl. v.—*P. membranaceus*; KOEHLER (163) p. 446, and (164) p. 47: B. of Biscay; PERRIER (263) p. 42: synonymy, diagnosis, external description, measurements of old and young, colour, geogr. and bathymetric distrib., food, breeding-period, anatomical notes; LUDWIG (210) p. 243, pls. v, viii: diagnosis, with bastard *P. lobianci*; LUDWIG (209) p. 298.—*P.*, sp., colour-variation; SAVILLE-KENT (290) p. 243.
- P. sarasini*, Trincomali (Ceylon), allied to *P. pellucidus*; LORIOL (196) Mem. Soc. Geneve, xxxii, p. 11, pl. i: n. sp.
- Pararchasterinae*, rediagnosed; PERRIER (263) p. 47.
- Paxillosa*, rediagnosed; PERRIER (263) p. 47.
- Pedicellaster*, rediagnosed (p. 20); *P. parvulus*, Newfoundland, redescr. (p. 21); PERRIER (263).
- Pedicellasteridae*, rediagnosed; PERRIER (263) p. 20.
- Pentaceropsis obtusatus*; DOEDERLEIN (69) p. 310.
- Pentaceros grayi*; PFEFFER (267) p. 47.—*P. muricatus*, colour; *loc. cit.*—*P. turritus*; DOEDERLEIN (69) p. 309.
- Pentagonaster*, rediagnosed; PERRIER (263) p. 45: diagnosis and key to Mediterranean spp.; LUDWIG (209) p. 293: rediagnosed with special reference to Mediterranean genera, and key to the two spp.; LUDWIG (210) p. 157.—*P. australis*, colour-variation; SAVILLE-KENT (290) p. 243.—*P. balteatus* and *P. concinnus* of Sladen, possibly identical with *P. hystericis*; LUDWIG (203) p. 55, and (210) pp. 186 & 187.—*P. crassus*, B. of Biscay; PERRIER (263) p. 45.—*P. gosselini*, Azores, five variations in marginals and adambulacral spines; *loc. cit.*—*P. granularis*; SUTTON (322): Azores; PERRIER (263) p. 45: specific characters discussed, Bell's (1892) description criticised; LUDWIG (210) p. 180, footnote.—*P. greeni* Bell, ? syn. of *P. hystericis*; *op. cit.* p. 185.—*P. hystericis*, diagnosis; LUDWIG (209) p. 294: synonymy, diagnosis, external description, measurements of old and young, colour, geogr. and bathymetric distrib.; LUDWIG (210) p. 179, pl. viii.—*P. mirabilis* Perrier=*P. placenta*; *op. cit.* pp. 176, 451.—*P. perrieri*; KOEHLER (163) p. 451, and (164) p. 60.—*P. placenta*, diagnosis; LUDWIG (209) p. 294: treated similarly to *P. hystericis*, also with anatomical notes; LUDWIG (210) p. 157, pls. v, vii: first found in B. of Biscay, growth-stages of madreporite; KOEHLER (163) p. 454, and (164) p. 66.
- P. kergroheni*, 1710 metres, B. of Biscay, 6° 52' W., 46° 34' N., allied to *P. concinnus*, *P. balteatus*, and *P. hystericis*; KOEHLER (163) Rev. biol. Nord France, vii, p. 453, and (164) Ann. Univ. Lyon, xxvi, p. 63, figg. 8–10: syn. of *P. hystericis*; LUDWIG (203) p. 55, and (210) pp. 179, 188.—*P. minor*, 400–500 metres, B. of Biscay, 6° 58' W., 46° 40' N.; KOEHLER (163) Rev. biol. Nord France, vii, p. 451, and (164) Ann. Univ. Lyon, xxvi, p. 61, figg. 5–7: young of *P. placenta*; LUDWIG (203) p. 55, and (210) p. 176: n. spp.
- Pentagonasteridae*, rediagnosed; PERRIER (263) p. 44.
- †*Petraster* & *P. wilberanus*; JAMES (146) p. 134.
- Plutonaster*, rediagnosed; PERRIER (263) p. 48: diagnosis, key to Mediterranean spp.; LUDWIG (209) p. 288: rediagnosed, with special reference to Mediterranean genera, and key to the two spp.; LUDWIG (210)

- p. 104.—*P. bifrons*; KOEHLER (163) p. 450, and (164) p. 56: diagnosis; LUDWIG (209) p. 290: diagnosis, external description, measurements of old and young, colour, geogr. and bathymetric distrib.; LUDWIG (210) p. 118.—*P. granulatus*, Azores, redescribed (p. 49, pl. iv); *P. inermis* (p. 49); *P. notatus*, Azores (p. 49); PERRIER (263).—*P. subinermis*; diagnosis; LUDWIG (209) p. 288: treated similarly to *P. bifrons*, also food, description of brephic stage, anatomical notes, systematic position discussed; LUDWIG (210) p. 105, pls. i, vi.
- Plutonasterinae*, rediagnosed; PERRIER (263) p. 47.
- Podasterias*, with genotype *P. lutkeni*; PERRIER (263) p. 35.
- Polyasterias*, genotype *P. tenuispina* (Lam.); PERRIER (263) p. 34: vide etiam sub *Asterias*.
- Pontaster*, rediagnosed, and *P. limbatus*, Newfoundland; PERRIER (263) p. 47.—*P. marionis*; KOEHLER (163) p. 450: probably var. of *P. tenuispinus*; KOEHLER (164) p. 53.—*P. venustus*; KOEHLER (163) p. 450: some variations from the type; KOEHLER (164) p. 55: Azores; PERRIER (263) p. 47.
- Porania*, rediagnosed; PERRIER (263) p. 42.—*P. antarctica*; *loc. cit.* and pl. iii, fig. 4; MEISSNER (229) p. 99.—*P. pulvillus*; KOEHLER (163) p. 446, and (164) p. 47: Bay of Biscay; PERRIER (263) p. 43.
- Prognaster*, rediagnosed and discussed; PERRIER (263) p. 22.—*P. grimaldii*, Azores, redescribed; *op. cit.* p. 23, pl. ii.
- Psilaster*, rediagnosed; PERRIER (263) p. 51.—*P. andromeda*, Azores; *loc. cit.*: redescribed; KOEHLER (164) p. 52: variation in spines, gradation between paxillæ and granules; KOEHLER (163) p. 449.
- Pteraster personatus*, variation from type; KOEHLER (163) p. 447: re-described, differences from type; KOEHLER (164) p. 49.
- Pterasteridae*, rediagnosed; PERRIER (263) p. 40.
- Pycnopodia*, accepted as genus, with genotype *P. helianthoides* (Stimps.); PERRIER (263) pp. 32, 34.
- Quadraster*, n. g. with genotype *Q.* (olim *Stichaster*) *felipes* Sladen; PERRIER (263) p. 27.
- Retaster cribrosus*, includes *R. insignis* Sladen, specimens from Thursday Island and Dar-es-Salaam described; DOEDERLEIN (69) p. 319.
- Sclerasterias*, rediagnosed; PERRIER (263) pp. 34 & 35.—*S. guernei*, Bay of Biscay, redescribed; *op. cit.* p. 35, pl. i: specimens larger than Perrier's type; KOEHLER (163) p. 441: redescribed; KOEHLER (164) p. 41.
- Smilasterias*, accepted as genus, with genotype *S. scalptrifera*; PERRIER (263) pp. 32, 34.
- Solaster papposus*, 10- and 12-rayed, measurements; VANHOEFFEN (333) p. 238.
- Solasteridae*, rediagnosed; PERRIER (263) p. 39.
- Spinulosa*, rediagnosed; PERRIER (263) p. 38.
- Sporasterias*, with genotype *S. rugispina* (Stimps.); PERRIER (263) p. 34: vide etiam sub *Asterias*.
- Stellaster incei*, measurements of nine specimens, includes *S. belcheri*; DOEDERLEIN (69) p. 307.
- Stellonia webbia* d'Orb. = *Asterias glacialis*; LUDWIG (210) p. 364.
- †*Stenaster* (incl. *Urasterella*), *S. grandis*, *S. harrisi*; JAMES (146) pp. 135, 136.
- Stichaster*, defined and emended; PERRIER (263) pp. 26, 31.—*S. albulus*; VANHOEFFEN (333) p. 237.—*S. aurantiacus*; MEISSNER (229) p. 101.—*S. littoralis* Farq. is syn. of *S. suteri* Lorient, colour-difference due to alcohol, variation in shape of rays (p. 197); *S. polyplax*, includes *Tarsaster neozelanicus* Farq. (p. 196); FARQUHAR (83).—*S. roseus*; KOEHLER (163) p. 443, and (164) p. 44: B. of Biscay; PERRIER (263) p. 31.
- Stichasteridae*, rediagnosed, and its genera discussed; PERRIER (263) p. 25.
- Stolasterias*, emend. as genus; PERRIER (263) pp. 32, 34, 36: vide etiam sub *Asterias*.—*S. glacialis*; KOEHLER (163) p. 441, and (164) p. 41.—

- S. neglecta*, B. of Biscay, redescr.; PERRIER (263) p. 37, pl. i: vide etiam *Asterias edmundi*.—*S. madeirensis*, Azores; PERRIER (263) p. 37.
- †*Tæniaster*, maintained as genus of Asteroidea, with genotype *T. spinosus*; GREGORY (111) p. 1035.—†*T.?* sp.; WHITEAVES (344) p. 160.
- Tarsaster*, merged in *Neomorphaster*; PERRIER (263) p. 26.—*T. neo-zelanicus* Farquhar, though probably a *Tarsaster*, is syn. of *Stichaster polyplax*; FARQUHAR (83) p. 196.
- Tethyaster*, rediagnosed; PERRIER (263) p. 50.—*T. subinermis*, in B. of Biscay; KOEHLER (163) p. 450, & (164) p. 56, and PERRIER (263) p. 50.
- Tonia* Gray, 1840, resuscitated with genotype *T.* (vel *Stichaster*) *aurantiaca*; PERRIER (263) p. 27.
- Uniophora*, accepted as genus, with genotype *U. globifera*: PERRIER (263) pp. 32, 35.
- †*Uraster rubens*; BELL (33) p. 12.
- †*Urasterella*, vide sub *Stenaster*.
- Valvulata*, rediagnosed; PERRIER (263) p. 43.
- Zoroaster fulgens*; KOEHLER (163) p. 442, and (164) p. 42.
- Z. trispinosus*, 650 metres, Bay of Biscay, 4° 25' W., 44° 36' N., adult, also marine specimen from 1750 metres, 7° W., 46° 28' N.; KOEHLER (163) Rev. biol. Nord France, vii, p. 442, and (164) Ann. Univ. Lyon, xxvi, p. 42, figg. 14 & 15 : n. sp.
- Zoroasteridae*, rediagnosed; PERRIER (263) p. 21.

(E.)—OPHIUROIDEA.

- Ophiodea* (= *Ophiuroidea*) defined (p. 487), classified (p. 494) into Sub-cl. I. *Palophiuræ*, Ord. 1, *Allostichia* (*Protophiurida*), 2, *Zygostichia* (*Ophiurina*); Sub-cl. II, *Colophiuræ*, Ord. 3, *Ophioctonia* (*Ophioglyphida*, *Ophiocomida*, *Ophiomyxida*), 4, *Euryalonia* (*Astroporpida*, *Astrophytida*); system on p. 504; HÆCKEL (116).
- General account with special reference to fossils; ZITTEL (356) p. 166, ZITTEL-EASTMAN (357) p. 200.
- Classification of Palæozoic Ophiuroidea; GREGORY (111).
- †? *Acrowra* sp.; WAGNER (337) p. 100.
- †*Aganaster*, maintained but not rediagnosed (p. 1039): *A.* sp., Miller & Gurley, 1890, is not an *Aganaster* but allied to *Lapworthura* (p. 1038); GREGORY (111).
- Amphilepis norvegica*; KOEHLER (164) p. 74.
- Amphiura angularis*; KOEHLER (166) p. 244.—*A. chiajei*; KOEHLER (165) p. 209, and (166) p. 243.—*A. duplicata*; KOEHLER (165) p. 208, and (166) p. 244: variations in buccal papillæ; KOEHLER (164) p. 74.—*A. elegans*, small var., near Gisborne, N. Z., colour in life; FARQUHAR (83) p. 191.—*A. filiformis*; KOEHLER (165) p. 209, and (166) p. 244: colour; MARCHISIO (216) p. 4.—*A. squamata*; KOEHLER (165) p. 212: development of ovoid gland (p. 378), currents of madreporite (p. 381), right hydrocœl in (p. 391); MACBRIDE (212).—*A. sundevalli*, measurements; VANHOEFFEN (333) p. 240.
- A. brocki*, Thursday Id.; DOEDERLEIN (68) Denk. Ges. Jena, viii, p. 286, pl. xv.—*A. caulleryi*, off Colombo, 593 fms.; Mouth of the Krishna, 753 fms., allied to *A. incisa*; KOEHLER (169) Ann. Sci. nat. iv, p. 330, pl. vii.—*A. denticulata*, 155 metres, off Newfoundland, 46° 50' N., 50° 11' 45" W.; KOEHLER (165) Mem. Soc. zool. France, ix, p. 209.—*A. dispar*, Laccadive Is., G. of Bengal, and Colombo, 193–675 fathoms; KOEHLER (169) Ann. Sci. nat. iv, p. 334, pl. vii.—*A. frigida*, off Colombo, 675 fathoms, allied to *A. incisa* and *A. caulleryi*; *op. cit.* p. 332, pl. vii.—*A. grandis*, 2620 metres, 38° 38' N., 30° 33' W.; KOEHLER (166) Mem. Soc. zool. France, ix, p. 246.—*A. longispina*,

- 861 metres, Azores, 38° 48' N., 30° 19' W., allied to *A. grandisquama*; KOEHLER (165) Mem. Soc. zool. France, ix, p. 211, (164) p. 74, and (166) p. 244.—*A. partita*, Laccadive Is., 444 metres, allied to *A. duplicata*; KOEHLER (169) Ann. Sci. nat. iv, p. 336, pl. vii.—*A. pusilla*, among roots of *Lessonia* and *Macrocystis*, Wellington, N. Z.; FARQUHAR (83) J. Linn. Soc. xxvi, p. 191.—*A. richardi*, 1165 metres, 38° 26' N., 28° 51' W., N. Atlantic; KOEHLER (166) Mem. Soc. zool. France, ix, p. 245 : n. spp.
- †*Aspidura*:—*A. ludeni*; WAGNER (337) p. 100.
- A. italica*, Muschelkalk, Recoaro; CREMA (59) Atti Ist. Veneto, liv, p. 855, pl. iia : n. sp.
- Astronyx loveni*, KOEHLER (169) p. 370.
- A. locardi*, Bay of Biscay, 1710 metres, 7° W., 46° 28' N.; KOEHLER (163) Rev. biol. Nord France, vii, p. 470, and (164) Ann. Univ. Lyon, xxvi, p. 88, fig. 25 : n. sp.
- Astrophyton agassizi*; HONEYMAN (131) p. 254.—*A. clavatum*; PFEFFER (267) p. 48.
- A. sculptum*, Amboina; DOEDERLEIN (68) Denk. Ges. Jena, viii, p. 299, pl. xviii : n. sp.
- Brisinga endecacnemos* first found near Bergen; APPELLÖF (13) p. 4.
- †*Bundenbachia*, rediagnosed; GREGORY (111) p. 1033.
- †*Cholaster* Worthen & Miller, allied to *Aganaster*; GREGORY (111) p. 1040.
- †*Eoluidiæ*, n. fam., founded for *Eoluidia*, which is redefined, and *Eospondylus*, *Miospondylus*, and *Aganaster* (qq. v.); GREGORY (111) p. 1038.
- †*Eospondylus*, n. g., with genotype *E.* (olim *Ophiura*) *primigenia* (Stürtz); GREGORY (111) P. Zool. Soc. London, 1896, p. 1039.
- †*Eucladiæ*, defined, and *Eucladia*, arms described and figured, referred to *Streptophiuræ*; GREGORY (111) p. 1040.
- †*Eugaster*, rediagnosed from Hall's figures; GREGORY (111) p. 1035.
- Euryale ludwigi*, Amboina; DOEDERLEIN (68) Denk. Ges. Jena, viii, p. 299, pl. xvii : n. sp.
- Euryaleæ*, defined, fossil representatives; ZITTEL (356) p. 168.
- †*Furcaster*, rediagnosed, has no ventral arm-plates; GREGORY (111) p. 1038.
- Gorgonocephalus eucnemis*; KOEHLER (165) p. 213; VANHOEFFEN (333) p. 241.
- Gorgonocephalus cornutus*, imperfect description, Indian Ocean; KOEHLER (167) Zool. Anz. xx, p. 168: Andaman Is., 45–270 fathoms, neanic specimen; KOEHLER (169) Ann. Sci. nat. iv, p. 368, pl. ix.—*G. levigatus*, imperfect description, Indian Ocean; KOEHLER (167) Zool. Anz. xx, p. 168: Colombo, 142–400 fathoms; KOEHLER (169) Ann. Sci. nat. iv, p. 365, pl. ix : n. spp.
- †*Lapworthura miltoni*; GREGORY (112) p. 97, fig. 154.
- †*Lapworthuridæ*, n. fam., including *Lapworthura*, n. g., with genotype *L.* (olim *Protaster*) *miltoni* (Salter), also *Furcaster*, *Palastropecten*, and *Aganaster* sp. (qq. v); GREGORY (111) p. 1037.
- †*Lysophiuræ*, ord. nov.; GREGORY (111) p. 1030.
- †*Miospondylus*, n. g., with genotype *M.* (olim *Ophiura*) *rhenanus* (Stürtz); GREGORY (111) P. Zool. Soc. London, 1896, p. 1039.
- †*Onychasteridæ*, defined; GREGORY (111) p. 1040.
- Ophiacantha abyssicola*; KOEHLER (163) p. 463, (164) p. 79, and (165) p. 213.—*O. bidentata*; KOEHLER (163) p. 463, (164) p. 79, and (165) p. 212; VANHOEFFEN (333) p. 241.—*O. dallasi*, from Amboina, described; DOEDERLEIN (68) p. 291, pls. xiv, xvi.—*O. rosea*, variations from type; KOEHLER (163) p. 463, and (164) p. 81.—*O. setosa*; KOEHLER (165) p. 212.—*O. spectabilis*, redescribed, from Bay of Biscay; KOEHLER (163) p. 464, and (164) p. 80, figg. 41 & 42.
- Ophiacantha aristata*, Bay of Biscay, 1700 metres, 6° 15' W., 45° 47' N., allied to *O. aspera*; KOEHLER (163) Rev. biol. Nord France, vii,

- p. 467, (164) Ann. Univ. Lyon, xxvi, p. 84, figg. 43 & 44, and (165) p. 212.—*O. composita*, Nicobar Is., 1590 fms., allied to *O. levispina*; KOEHLER (169) Ann. Sci. nat. iv, p. 350, pl. viii.—*O. duplex*, Colombo, 675 fms., allied to *O. imago*; *op. cit.* p. 352, pl. viii.—*O. gratiosa*, Laccadive Is., 444 fms., Andaman Is., 240 fms., G. of Bengal, 193 fms., allied to *O. abnormis*; *op. cit.* p. 346, pl. viii.—*O. lineata*, 1165 metres, 38° 26' N., 28° 51' W., allied to *O. aristata*; KOEHLER (166) Mem. Soc. zool. France, ix, p. 247.—*O. pentagona*, Andaman Is., 240–375 fms., allied to *O. stellata*; KOEHLER (169) Ann. Sci. nat. iv, p. 342, pl. viii.—*O. rufescens*, 845 metres, 38° 31' N., 29° 9' W.; KOEHLER (166) Mem. Soc. zool. France, ix, p. 249.—*O. simulans*, Bay of Biscay, 1700 metres, 6° 15' W., 45° 47' N., allied to *O. bidentata*; KOEHLER (163) Rev. biol. Nord France, vii, p. 465, and (164) Ann. Univ. Lyon, xxvi, p. 82, figg. 37 & 38.—*O. sociabilis*, Andaman Is., 1840 fms., G. of Bengal, 1803 fms., allied to *O. discoidea*; KOEHLER (169) Ann. Sci. nat. iv, p. 348, pl. viii.—*O. vestita*, Coast of Coromandel, 195–210 fms., and Andaman Is., 250 fms., allied to *O. hirsuta*; *op. cit.* p. 344, pl. viii.—*O. vorax*, C. Comorin, 1043 fms., allied to *O. longidens*; *op. cit.* p. 353, pl. viii : n. spp.
- Ophiactis abyssicola*, KOEHLER (165) p. 208, (166) p. 243.—*O. balli*; KOEHLER (165) p. 208: redescribed; KOEHLER (164) p. 77, figg. 23 & 24 : redescribed and figured, from Bay of Biscay; KOEHLER (163) p. 461.—*O. modesta*, from Thursday Id., one young with an abnormal 6th ray, relations to *O. affinis* and *O. maculosa*; DOEDERLEIN (68) p. 285, pls. xiv & xv.—*O. savignii*; PFEFFER (267) p. 47.
- O. corallicola*, 950–1710 metres, various stations, Bay of Biscay, on corals *Amphihelia oculata*, allied to *O. cuspidata*; KOEHLER (163) Rev. biol. Nord France, vii, p. 460, and (164) Ann. Univ. Lyon, xxvi, p. 75, fig. 30: near Azores; KOEHLER (165) p. 208: see also KOEHLER (166) p. 243.—*O. lorioli*, G. of Bengal, Laccadive Is., and coast of Malabar, 1091–1300 fms.; KOEHLER (169) Ann. Sci. nat. iv, p. 328, pl. vii.—*O. perplexa*, W. of C. Comorin, 719 fms., allied to *O. flexuosa*; *op. cit.* p. 327, pl. vii : n. spp.
- Ophiarthrum elegans*; DOEDERLEIN (68) p. 289: Funafuti; WHITELEGGE (346) p. 160.
- Ophiermus adspersus*, variations from type; KOEHLER (169) p. 316.
- O. abyssalis*, 1674 m., off La Corogne; KOEHLER (166) Mem. Soc. zool. France, ix, p. 2: n. sp.
- Ophiocamax fasciculata*, variations from type; KOEHLER (169) Ann. Sci. nat. iv, p. 360.
- Ophioceramis tenera*, nom. nud.; KOEHLER (167) p. 168: Laccadive Is., 636 fms., Andaman Is., 265 fms., allied to *O. obstricta*; KOEHLER (169) Ann. Sci. nat. iv, p. 317: n. sp.
- Ophiochæta hirsuta* (= *O. setosa*), from Amboina; DOEDERLEIN (68) p. 284, pl. xv.
- Ophiochiton ambulator*, nom. nud.; KOEHLER (167) p. 168: Laccadive and Maldive Is., G. of Bengal, Trincomali, and coast of Beloochistan, at depths varying from 200 to 890 fms., allied to *O. fastigatus*; KOEHLER (169) Ann. Sci. nat. iv, p. 337, pl. vii.—*O. modestus*, Andaman Is., 265 fms., type is neanic, allied to *O. tenuispinus*; *op. cit.* p. 340, pl. vii : n. spp.
- Ophiocnida*:—†*O. brachiata*; BELL (33) p. 11.
- O. verticillata*, Amboina; DOEDERLEIN (68) Denk. Ges. Jena, viii, p. 287, pls. xiv & xv : n. sp.
- Ophiocoma*:—†*O. bellis*; BELL (33) p. 11.—*O. brevipes*, Amboina; DOEDERLEIN (68) p. 289.—*O. erinaceus*; PFEFFER (267) p. 48; WHITELEGGE (346) p. 160: made var. of *O. scolopendrina*; DOEDERLEIN (68) p. 289.—*O. nigra*; SUTTON (322).—†*O. rosula*; BELL (33) p. 11.—*O.*

- scolopendrina*; PFEFFER (267) p. 48; WHITELEGGE (346) p. 160: var. *alternans*; DOEDERLEIN (68) p. 288.—*O. valenciæ*; PFEFFER (267) p. 48.
- Ophiocoris forbesi*; KOEHLER (165) p. 213.
- O. indica*, Andaman Is., 45–270 fms.; KOEHLER (169) Ann. Sci. nat. iv, p. 325, pl. vii: n. sp.
- Ophiocreas* (?) E. of Andaman Is., 1644 fms., imperfect specimen; KOEHLER (169) Ann. Sci. nat. iv, p. 365: n. sp. sine nom.
- Ophiocten sericeum*, measurements; VANHOEFFEN (333) p. 240.
- O. le-danteci*, Bay of Biscay, 1700 metres, 6° 58' W., 46° 26' N., allied to *O. amitimum*; KOEHLER (163) Rev. biol. Nord France, vii, p. 458, and (164) Ann. Univ. Lyon, xxvi, p. 72.—*O. longispinum*, 1850 metres, N. of Azores, 40° 5' N., 29° 48' W.; KOEHLER (165) Mem. Soc. zool. France, ix, p. 204, and (166) p. 243.—*O. scutatum*, 160 metres, Bay of Biscay, 45° 48' N., 5° 38' W., also from Banc de la Grand Sole and Newfoundland, allied to *O. abyssicola*; KOEHLER (165) Mem. Soc. zool. France, ix, p. 206: n. spp.
- Ophioderma*:—†*O. (Ophiarachna) hauchecornei*; WAGNER (337) p. 100.—*O. longicauda*, colour; MARCHISIO (216) p. 3.
- Ophioglypha abyssorum*; KOEHLER (166) p. 241.—*O. aequalis*, redescr., compared with *O. lepida*; KOEHLER (169) p. 297, pl. vi.—*O. albida*; KOEHLER (163) p. 458, (164) p. 71, and (165) p. 203: parasitic *Dactylococcus*; MORTENSEN (244) p. 322.—*O. carnea*; KOEHLER (165) p. 203, and (166) p. 241.—*O. flagellata*, slight variations from type; KOEHLER (169) p. 299.—*O. imbecillis*, very young; KOEHLER (169) p. 303.—*O. irrorata*; KOEHLER (166) p. 241: redescr.; KOEHLER (164) p. 67: redescr. and figd. from B. of Biscay; KOEHLER (163) p. 455.—*O. laceratosa*, colour; MARCHISIO (216) p. 3.—*O. ljungmanni*; KOEHLER (164) p. 71.—*O. minuta*; KOEHLER (163) p. 458, & (166) p. 242: redescr.; KOEHLER (164) p. 72.—*O. orbiculata*, compared with *O. irrorata* (p. 302); *O. palliata*, Maldive Is., slight variation in tentacular scales (p. 298); *O. radiata* (p. 300); KOEHLER (169).—*O. robusta*; HONEYMAN (131) p. 254.—*O. sarsi*; KOEHLER (165) p. 203: large individuals only found; VANHOEFFEN (333) p. 239.—*O. sculptilis*, variations from type; KOEHLER (169) p. 301.—*O. sinensis*, var. from Amboina; DOEDERLEIN (68) p. 283, pl. xv.—*O. tessellata*, KOEHLER (165) p. 203.—*O. texturata*; KOEHLER (163) p. 458, (164) p. 71, and (165) p. 203: parasitic *Dactylococcus* (p. 322), growth-stages (p. 321); MORTENSEN (244).—*O. undulata*, slight variations from type; KOEHLER (169) p. 299.
- O. inflata*, off Colombo, 597 fms., allied to *O. tenera* Lyman; KOEHLER (169) Ann. Sci. nat. iv, p. 288, pl. v.—*O. involuta*, G. of Bengal, 1748 fms., allied to *O. irrorata* and *O. orbiculata*; *op. cit.* p. 295, pl. vi.—*O. paupera*, Laccadive Is., 705 fms., and coast of Malabar, 406 fms., allied to *O. convexa*; *op. cit.* p. 290, pl. v.—*O. sordida*, Andaman Is., 561 fms., allied to *O. paupera*; *op. cit.* p. 292, pl. v.—*O. thouleti*, B. of Biscay, 1300 m., 5° 22' W., 44° 2' N., allied to *O. ljungmanni* and *O. palliata*; KOEHLER (163) Rev. biol. Nord France, vii, p. 456, (164) Ann. Univ. Lyon, xxvi, p. 69, figg. 39 & 40, and (166) p. 241: n. spp.
- Ophiolepis annulosa*; DOEDERLEIN (68) p. 283.—†*O. (Haploaster) gracilis*; BELL (33) p. 11.
- Ophiolypus granulatus*, nom. nud.; KOEHLER (167) p. 168: Port Blair (Andaman Is.) 112 fms.; KOEHLER (169) Ann. Sci. nat. iv, p. 315, pl. vi: n. sp.
- Ophiomastix annulosa* (p. 289, pl. xvi); *O. asperula*, redescr. (p. 290, pl. xv); *O. caryophyllata*, redescr. (p. 290, pl. xv); DOEDERLEIN (68).—*O. venosa*; PFEFFER (267) p. 48.
- Ophiomastus tumidus*, nom. nud.; KOEHLER (167) p. 167: G. of Bengal, 1310 fms., compared with *O. tegulitus* and *O. secundus*; KOEHLER (169) Ann. Sci. nat. iv, p. 285, pl. v: n. sp.

- Ophiomaza cacaotica*, colour; DOEDERLEIN (68) p. 298, pl. xvii.
- Ophiomitra cordifera*, 1143 metres, 38° 52' N., 30° 26' W.; KOEHLER (166) Mem. Soc. zool. France, ix, p. 250.—*O. globulifera*, Bay of Biscay, 1700 metres, 6° 15' W., 45° 57' N.; KOEHLER (163) Rev. biol. Nord France, vii, p. 469, and (164) Ann. Univ. Lyon, xxvi, p. 86, figg. 28 & 29.—*O. integra*, Andaman Is., 220–240 fms., allied to *O. valida*; KOEHLER (169) Ann. Sci. nat. iv, p. 356, pl. ix.—*O. rudis*, Andaman Is., 780 fms., allied to *O. incisa*, *O. chelys*, and *O. dipsacos*; *op. cit.* p. 358, pl. ix : n. spp.
- Ophiomusium lymani*; KOEHLER (163) p. 458, (164) p. 72, (165) p. 204, and (166) p. 242.—*O. planum*; KOEHLER (166) p. 242, and (169) p. 308.—*O. scalare*, redescribed from specimens more adult than type; *op. cit.* p. 308, pl. vi.—*O. validum*, variation from Lyman's description; *op. cit.* p. 307.
- O. elegans*, Laccadive Is., 406 fms., and Andaman Is., 490 fms., allied to *O. eburneum*; KOEHLER (169) Ann. Sci. nat. iv, p. 305, pl. vi.—*O. familiare*, Laccadive Is., 406 fms., allied to *O. eburneum*; *op. cit.* p. 303, pl. vi : n. spp.
- Ophiomyxa australis*; PFEFFER (267) p. 48.—*O. brevispina*, with parasitic gastropod, ? *Stylifer*; DOEDERLEIN (68) p. 298, pl. xvii.—*O. pentagona*, colour; MARCHISIO (216) p. 4.
- O. bengalensis*, Andaman Is., 173–250 fms., allied to *O. serpentaria*; KOEHLER (169) Ann. Sci. nat. iv, p. 363, pl. ix : n. sp.
- †*Ophiopege* G. Boehm, syn. of *Aganaster*; GREGORY (111) p. 1040.
- Ophiopeza conjungens*, redescri.; DOEDERLEIN (68) p. 281, pl. xv.—*O. cylindrica*, descr. and figd; FARQUHAR (83) p. 190.—*O. fallax*, colour; PFEFFER (267) p. 47.
- O. custos*, Andaman Is., 45–270 fms.; KOEHLER (169) Ann. Sci. nat. iv, p. 321, pl. vi.—*O. danbyi*, Raoul Id., Kermadecs, the few, large arm-spines involve rediagnosis of genus; FARQUHAR (83) J. Linn. Soc. xxvi, p. 190 : n. spp.
- O. aculeata*; KOEHLER (165) p. 208; HONEYMAN (131) p. 254: measurements; VANHOEFFEN (333) p. 241.
- Ophiopleura borealis*; VANHOEFFEN (333) p. 239.
- Ophioplocus imbricatus*; PFEFFER (267) p. 47; DOEDERLEIN (68) p. 283.
- Ophiopsila* sp., crowded in sand; MITSUKURI & HARA (241).
- Ophiopteris antipodium*, Nelson, N. Z.; FARQUHAR (83) p. 192.
- Ophiopyren bispinosus*, Indian Ocean; KOEHLER (167) Zool. Anz. xx, p. 167: Andaman Is., 240–250 fms., compared with *O. brevispinus* and *O. longispinus*; KOEHLER (169) Ann. Sci. nat. iv, p. 312, pl. vi: n. sp.
- Ophiopyrgus alcocki*, nom. nud.; KOEHLER (167) p. 167: G. of Bengal, 1310 fms.; KOEHLER (169) Ann. Sci. nat. iv, p. 283, pl. v : n. sp.
- Ophioscolex retectus*, Bay of Biscay, 1410 metres, 6° 21' W., 45° 57' N.; KOEHLER (163) Rev. biol. Nord France, vii, p. 462, and (164) Ann. Univ. Lyon, xxvi, p. 78, fig. 31: n. sp.
- Ophiothela danæ*, remarks, a specimen with 3 arms atrophied; DOEDERLEIN (68) p. 297, pl. xvii.
- Ophiothrix alopecurus*; MARCHISIO (216) p. 4.—*O. aristulata*, n. var. *investigatoris*, Andamans and coast of Coromandel, 130–290 fms.; KOEHLER (169) Ann. Sci. nat. iv, p. 361, pl. ix.—*O. bedoti*, additional notes; DOEDERLEIN (68) p. 294, pls. xiv, xvi.—*O. fragilis*; KOEHLER (163) p. 470, (164) p. 88, (165) p. 213, and (166) p. 253; MARCHISIO (216) p. 4: development, movements of larva; ZIEGLER (355) p. 136.—*O. hirsuta*; PFEFFER (267) p. 48.—*O. longipeda*, measured (p. 293, pls. xiv, xvi); *O. martensi*, redescri. (p. 291, pls. xiv, xvi); *O. nereidina*, incl. *O. cataphracta* Martens (p. 293, pl. xvi); *O. punctolimbata*, perhaps=*O. longipeda* juv. (p. 294, pls. xiv, xvi); *O. purpurea*, redescri. (p. 296, pls. xiv, xvii); *O. stelligera* (p. 294, pls. xiv, xvi);

- O. striolata*, descr. (p. 295, pls. xiv, xvii); *O. triloba*, Amboina (p. 293, pl. xvi); DOEDERLEIN (68).—†*O. sp.*; BELL (33) p. 11.
- O. belli*, Thursday Id.; DOEDERLEIN (68) Denk. Ges. Jena, viii, p. 292, pls. xiv, xvi.—*O. investigatoris*, nom. nud.; KOEHLER (167) p. 168.—*O. lorioli*, Amboina; DOEDERLEIN (68) Denk. Ges. Jena, viii, p. 297, pls. xiv, xvii.—*O. vitrea*, Amboina; *op. cit.* p. 295, pls. xiv, xvi: n. spp.
- Ophiotrema*, n. g., with genotype *O. alberti*, 4020 metres, 38° 9' N., 25° 36' W., possibly congeneric with *Ophiacantha bartleti* Lyman; KOEHLER (166) Mem. Soc. zool. France, ix, p. 251; n. sp.
- Ophiotriton*, n. g., with genotype *O. semoni*, Thursday Id.; DOEDERLEIN (68) Denk. Ges. Jena, viii, p. 288, pl. xv: n. sp.
- Ophiotrochus panniculus*; KOEHLER (169) p. 312.
- Ophiotypa*, n. g., with genotype *O. simplex*, Indian Ocean and Azores; KOEHLER (167) Zool. Anz. xx, p. 167: G. of Bengal, 1997 fms.; KOEHLER (169) Ann. Sci. nat. iv, p. 281, pl. v: n. sp.
- Ophiozona bispinosa*, nom. nud.; KOEHLER (167) p. 168: Port Blair (Andaman Is.), 112 fms., allied to *O. tessellata*; KOEHLER (169) Ann. Sci. nat. iv, p. 319, pl. vi: n. sp.
- Ophiura*:—†*O. albida*; BELL (33) p. 11.—*O. granulata*, see *Ophiocoma nigra*.—†*O. prisca*; WAGNER (337) p. 100.—†*O. texturata*; BELL (33) p. 11.
- O. annæ*, 570 fms., 44° 38' N., 54° 6' W., Grand Bank, N. Atlantic, has 6 rays; HONEYMAN (132) P. Nova Scotian Inst. vii, p. 265: n. sp.
- Ophiuræ*, defined, fossil representatives; ZITTEL (356) p. 169.
- †*Ophiurina* and *Ophiurina*, rediagnosed; GREGORY (111) p. 1036.
- †*Palæophiuridæ*, defined, and *Palæophiura*, rediagnosed; GREGORY (111) p. 1034.
- †*Palastropecten*, rediagnosed; GREGORY (111) p. 1038.
- Pectinura arenosa*, redescribed; DOEDERLEIN (68) p. 282, pl. xv.—*P. heros*; KOEHLER (169) Ann. Sci. nat. iv, p. 325.—*P. maculata*, New Zealand, colour in life; FARQUHAR (83) p. 190.—*P. rigida*; PFEFFER (267) p. 47.—*P. septemspinosa*, specimen with divided dorsal plates, relations to *P. rigida* and *P. armata* discussed; DOEDERLEIN (68) p. 282.
- P. conspicua*, nom. nud., size only given; KOEHLER (167) p. 168: Delta of the Godavery, 410 fms., allied to *P. heros*; KOEHLER (169) Ann. Sci. nat. iv, p. 322, pl. vii: n. sp.
- †*Protaster*, rediagnosed; GREGORY (111) p. 1031; JAMES (146) p. 137.—*P. daoulasensis* Davy, allied to *Furcaster*; GREGORY (111) p. 1038.—*P. decheni*, vide *Tremataster*. *P. ? granuliferus* & *P. miamiensis*; JAMES (146) p. 138.
- P. biforis*, Wenlock Shale, Castle Dinas, Bran, near Llangollen, Wales; GREGORY (111) P. Zool. Soc. London, 1896, pp. 1032 & 1033.—*P. gregarius*, *P. perarmatus*, and *P. scabrosus*, all Pilton Beds, Devonshire; WHIDBORNE (342) P. Geol. Assoc. xiv, p. 377, no figg.: n. spp.
- †*Protasteridæ*, redefined; GREGORY (111) p. 1031.
- †*Protasterina*, *P. fimbriata*, & *P. flexuosa* (olim *Protaster*); JAMES (146) pp. 139, 140.
- †*Ptilonaster*, maintained but not diagnosed; GREGORY (111) p. 1036.
- †*Streptophiuræ*, redefined; GREGORY (111) p. 1036.
- †*Sturtzura*, n. g., with genotype *S.* (olim *Protaster*) *brisingoides* (Greg.), and including *Protaster leptosoma* Salter; GREGORY (111) P. Zool. Soc. London, 1896, p. 1034.
- †*Teniaster* & *T. elegans*; JAMES (146) pp. 138, 139.
- †*Tæniura*, n. g., with genotype *T.* (olim *Teniaster*) *cylindricus* (E. Bill.); GREGORY (111) P. Zool. Soc. London, 1896, p. 1035. [*Tæniura* preocc. Müller & Henle 1837, Raiadum genus.]
- †*Tremataster*, rediagnosed with genotype *T. difficilis*, and probably including *Protaster decheni*; GREGORY (111) p. 1037.

(F.)—CRINOIDEA.

Defined (p. 462), classified (p. 468): Subcl. I *Palacrinida*, Ord. 1, *Cystodiata* (*Haplocrinida*, *Coclocrinida*, *Stephanocrinida*, *Pisocrinida*, *Hybocrinida*, *Porocrinida*, *Cupressocrinida*), 2, *Camerata* (*Retecrinida*, *Rhodocrinida*, *Glyptocrinida*, *Melocrinida*, *Actinocrinida*, *Platyocrinida*, *Crotalocrinida*, *Barrandocrinida*, *Hexocrinida*, *Acrocrinida*, *Calypocrinida*), 3, *Flexilata* (*Taxocrinida*, *Ichthyocrinida*, *Uintocrinida*, *Thaumatoocrinida*), 4, *Inadunata* (*Poteriocrinida*, *Cyathocrinida*, *Dendroocrinida*, *Decadocrinida*, *Astylocrinida*); Subcl. II, *Neocrinida*, Ord. 5, *Pelvicata* (*Encrinida*, *Apiocrinida*, *Eugeniocrinida*, *Holopida*, *Hyocrinida*, *Plicatocrinida*, *Saccocomida*, *Marsupitida*), 6, *Canalicata* (*Bathyocrinida*, *Rhizocrinida*, *Pentacrinida*, *Comatulida*, *Actinometrida*); HAECKEL (116).—History of name (pp. 12 et sqq.); classification, history of previous attempts (pp. 11–31); value of the group, the name *Pelmatozoa*, principles of division (pp. 144 et sqq.); *Crinoidea* divided into Order 1, *Inadunata*, Suborders *Larviformia* and *Fistulata*; 2, *Camerata*, Typical Section and Nontypical Section; 3, *Articulata*, suborders *Impinnata* and *Pinnata* (p. 169); WACHSMUTH & SPRINGER (336).

Family, generic, and specific characters in *Crin.* (p. 153); species, criteria of (p. 155); colour of fossil *Crin.* as a systematic character (p. 227); WACHSMUTH & SPRINGER (336).

Crinoidea, name supplants *Eucrinoidea* formerly used by Zittel, general account with special reference to fossils; divided into Orders, *Larviformia*, *Camarata*, *Fistulata*, *Flexibilia*, *Articulata*; ZITTEL (356) p. 113.—Classification of Wachsmuth and Springer (336) adopted in part; ZITTEL-EASTMAN (357) pp. 134–175.

Tabular synopsis of Mesozoic and Palæozoic genera; KOKEN (171) p. 277.

†Crinoid fragments *Incertæ sedis* from Cornwall; COLLINS (54) p. 82, pl. E.

Acacocrinus, subg. n., vide sub *Habrocrinus*.

†*Acrochordocrinus*,—*A.*, cf. *amalthei*, Bajocian, Caucasus; FOURNIER (85) p. 110.—[Vide etiam sub *Cyclocrinus*.]

†*Acrocrinidæ*, redefined, distribution of species; WACHSMUTH & SPRINGER (336) p. 803.

†*Acrocrinus*, rediagnosed (p. 505), arms (p. 86); *A. shumardi*, redescr., incl. *A. urnæformis* Hall (p. 806, pl. lxxx), *A. wortheni*, redescr. (p. 807, pl. lxxx); WACHSMUTH & SPRINGER (336).

A. amphora, St. Louis group, near Huntsville, Ala.; WACHSMUTH & SPRINGER (336) p. 808, pl. lxxx; n. sp.

†*Actinocrinidæ*, defined, includes *Briarocr.*, *Patelliocr.*, *Macrostylocr.*, *Carpocr.*, *Leptocr.*, *Desmidocr.*, *Periechocr.*, *Megistocr.*, *Agaricocr.*, *Actinocr.*, *Teleiocr.*, *Steganocr.*, *Physetocr.*, *Strotocr.*, *Eretmocr.*, *Amphoracr.*, *Batocr.*, *Dorycr.*; ZITTEL (356) p. 128: arrangement follows Wachsmuth & Springer (336); ZITTEL-EASTMAN (357) p. 141: N. American spp. discussed, their geological history; MILLER & GURLEY (234) p. 73: defined, analysis and distribution of genera (p. 550), anals (p. 130), arm-structure (p. 85); WACHSMUTH & SPRINGER (336).

Actinocrinoidea T. & T. Austin; WACHSMUTH & SPRINGER (336) p. 16.

†*Actinocrinus*, rediagnosed and descr., much restricted, incl. *Blaiocr.* S. A. Miller (p. 552), arms (p. 85), orals (p. 94), tegmen (p. 108), pores (p. 122); WACHSMUTH & SPRINGER (336).—*A. ægilops* Hall, = *Teleiocr. umbrosus* (p. 628); *A. amplus* M. & W. = *Periechocr. whitei* (p. 530); *A. arrosus* (olim *Blaiocr.*) S. A. Miller, redescr., incl. *B. bullatus* S. A. M. (p. 377, pl. lv); *A. asperrimus*, redescr. (p. 575, pl. lx); *A. blairi* S. A. Miller = *Cactocr. glans* (p. 625); *A. brevi-*

- cornis* Hall = *Megistocr. evansi* (p. 535); *A. caroli* Hall, possibly syn. of *Dizygocrinus unionensis* (p. 425); (?) *A. chouteauensis*, redescr. (p. 570, pl. xlvi); *A. christyi* Hall non Shum. = *Periechocr. whitfieldi* (p. 522); *A. clivosus* Hall = *Teleiocr. rudis* (p. 630); *A. dalyanus* S. A. Miller = *Cactocr. proboscidalis* (p. 601); *A. daphne*, redescr. (p. 574, pl. lvi); *A. decornis* Hall = *Dorycr. cornigerus* (p. 458); *A. delicatus* M. & W. = *Teleiocr. umbrosus* (p. 628); *A. divaricatus* Hall = *Dorycr. cornigerus* (p. 458); *A. (Calathocr.) erodus* Hall = *Teleiocr. rudis* (p. 630); *A. eryx* Hall = *Cactocr. glans* (p. 625); *A. excerptus* Hall = *Cactocr. proboscidalis* (p. 601); WACHSMUTH & SPRINGER (336).—*A. icosidactylus*, redescr., from La Varville; JULIEN (151) p. 135, pl. v.—*A. inflatus* Hall = *Amphocr. spinobrachiatus* (p. 591); *A. infrequens* Hall = *Cactocr. thalia* (p. 604); *A. (Calathocr.) insculptus* Hall = *Teleiocr. rudis* (p. 630); *A. jugosus*, redescr. (p. 563, pl. liv); *A. lagena* Hall = *Cactocr. proboscidalis* (p. 601), *A. lobatus*, redescr., incl. ? *A. unicarinatus* Hall (p. 557, pls. lii, liv, lv); *A. locellus* Hall = *Cactocr. reticulatus* (p. 605); *A. lowei*, redescr., incl. *A. brontes* Hall (p. 562, pl. liv); *A. minor* Hall = *Megistocr. evansi* (p. 535); *A. multicornus* Lyon, syn. of *Centrocrinus pentaspinus* (p. 309); *A. multiradiatus*, tegmen (p. 109), redescr. (p. 555, pl. lii); *A. nodosus* S. A. Miller = *Cactocr. thalia* (p. 604); WACHSMUTH & SPRINGER (336).—*A. ovatus* Hall, vide *Cactocr. reticulatus*, var. *ovatus*.—*A. pendens* Hall = *Dorycr. unicornis* (p. 468); *A. penicillus* M. & W., an juvenis *Teleiocr. adolescens* (p. 635); *A. pernodosus*, redescr. (p. 561, pl. lv); *A. planobasilis* Hall = *Amphocr. divergens* (p. 588); *A. puteatus* Rowley & Hare = *Cactocr. lucina* (p. 603); *A. quadrispinus* White = *Amphocr. divergens* (p. 588); *A. quaternarius* Hall = *Cactocr. proboscidalis* (p. 601); *A. quinquangularis*, ridges on tegmen (p. 118); WACHSMUTH & SPRINGER (336).—*A. retiarius*, made type of n. g. *Clematocrinus*; JAEKEL (144) p. 47.—*A. scitulus*, redescr., incl. *A. rusticus* Hall, *A. sillimani* M. & W., & *A. wachsmuthi* White (p. 559, pl. lv); *A. securus* Hall = *Cactocr. thetis* (p. 614); *A. stellaris*, tegmen (p. 109); *A. subumbrosus* Hall = *Teleiocr. liratus* (p. 633); *A. superlatus* Hall = *Megistocr. evansi* (p. 535); *A. symmetricus* Hall = *Aorocr. parvus* (p. 477); *A. tenuisculptus*, redescr., incl. *A. chloris* Hall (p. 571, pl. lv); *A. themis* Hall = *Cactocr. proboscidalis* (p. 601); *A. thoas* Hall = *Cactocr. reticulatus* (p. 605); *A. tholus* Hall = *Cactocr. glans* (p. 625); WACHSMUTH & SPRINGER (336).—*A. triacontadactylus*, redescr., from La Varville; JULIEN (151) p. 136, pl. v.—*A. trijugis* (olim *Blairocr.*) S. A. Miller, redescr. (p. 576, pl. liv); *A. trinodus* Hall = *Dorycr. unispinus* (p. 467); *A. urnæformis* McChesney = *Macrocr. konincki* (p. 447); *A. validus* M. & W. = *Steganocr. concinnus* (p. 582); *A. verrucosus*, redescr., incl. *A. asterias* McChesney (p. 558, pl. lii); WACHSMUTH & SPRINGER (336).
- A. batheri*, Pilton Beds, Devonshire; WHIDBORNE (342) P. Geol. Ass. xiv, p. 377, no fig.—*A. bischoffi*, Burlington Group, Burlington, Iowa; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 8, pl. iii.—*A. gracilis*, Lower Burlington Limest., Burlington, Ia.; WACHSMUTH & SPRINGER (336) p. 572, pl. lvi.—*A. griffithi*, Upper part of Upper Burlington Limest., Burlington, Ia., and Pleasant Grove, Ia.; *op. cit.*, p. 568, pl. lii.—*A. jessicæ*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 32, pl. ii.—*A. magnificus*, Keokuk group, Indian Creek, Montgomery Co., Ind., incl. *A. lobatus* Worthen non Hall; WACHSMUTH & SPRINGER (336) p. 567, pl. liii.—*A. multiramosus*, Keokuk group, Indian Creek, Montgomery Co., and Canton, Washington Co., Ind. (an incl. *A. grandis* S. A. Miller non Lyon); *op. cit.* p. 564, pls. liii, lv.—*A. pallubrum*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 26, pl. i.

- A. pettisensis*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 6, pl. i.—*A. porteri*, Pilton Beds, Devonshire; WHIDBORNE (342) P. Geol. Ass. xiv, p. 377, no fig.—*A. sampsoni*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 5, pl. i.—*A. senectus*, Chouteau limestone, Sedalia, Mo.; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 36, pl. ii.—*A. sobrinus*, Burlington Group, Burlington, Ia.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 10, pl. iii.—*A. spectabilis*, *ibid.*; *op. cit.* p. 9, pl. iii.—*A. subpulchellus*, *ibid.*; *op. cit.* p. 13, pl. iii.—*A. subscitulus*, *ibid.*; *op. cit.* p. 12, pl. iii.—*A. tuberculosus*, Upper Burlington Limest., Burlington and Pleasant Grove, Ia.; WACHSMUTH & SPRINGER (336) p. 573, pl. lii: n spp.
- Actinoidea* C. F. Roem.; WACHSMUTH & SPRINGER (336) p. 16.
- Actinometra pulchella*, in B. of Biscay, variation in position of 1st syzygy, and of others; KOEHLER (163) p. 477, & (164) p. 99.
- †*Adelocrinus hystrix*; WHIDBORNE (342) p. 377.
- †*Agaricocrinus*, rediagnosed (p. 486), radial dome plates (p. 104); WACHSMUTH & SPRINGER (336): geological history of N. American spp.; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 9.—*A. americanus*, with var. *tuberosus*, redescr., incl. *A. dissimilis* S. A. Miller (p. 488, pls. xl, xlii); *A. bellatrema* (= *ornatrema*), redescr. (p. 506, pl. xli), var. nov. *major*, Upper Burlington Limest., Burlington and Pleasant Grove, Ia. (p. 507, pl. xli); *A. brevis*, redescr., incl. *A. corniculus* Hall (p. 511, pl. xxxviii); *A. bullatus*, redescr., incl. *A. pentagonus* Hall (p. 493, pl. xli); *A. convexus*, redescr., distinct from *A. pentagonus* (p. 508, pl. xxxviii); *A. coreyi*, redescr., incl. *A. springeri* White (p. 510, pl. xxxix); *A. crassus*, redescr. (p. 499, pls. xxxix & xl); *A. elegans*, redescr. (p. 500, pl. xl); *A. excavatus*, redescr. (p. 491, pl. xxxix); *A. fiscellus*, redescr. (p. 512, pl. xxxviii); *A. gracilis*, redescr. (p. 513, p. xli); *A. inflatus*, redescr. (p. 502, pl. xli); *A. nodosus*, redescr. (p. 493, pl. xliii); *A. nodulosus*, with var. *macadamsi*, redescr. (p. 497, pls. xxxix, xl, xliii); *A. planoconvexus*, redescr., incl. *A. decornis* Rowley & Hare, et *A. blairi* S. A. Miller (p. 503, pl. xxxviii); *A. pyramidatus*, redescr., incl. *A. corrugatus* Hall (p. 512, pl. xxxviii); *A. sampsoni*, redescr., incl. *A. germanus* et *A. chouteauensis* S. A. Miller (p. 505, pl. xlvi); *A. splendens*, redescr., incl. *A. indianensis* et *A. gorbyi* S. A. Miller (p. 495, pl. xl); *A. stellatus*, redescr., incl. *A. geometricus* Hall (p. 508, pl. xxxviii); *A. whitfeldi*, redescr. (p. 496, pls. xlii & xliii); *A. wortheni*, redescr. (p. 490, pls. xxxix & xl); WACHSMUTH & SPRINGER (336).
- A. adamsensis*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 24, pl. i.—*A. conicus*, Keokuk group, Indian creek, Montgomery Co., Ind., 3 arms with cysts of ? *Myzostoma*; WACHSMUTH & SPRINGER (336) p. 501, pl. xxxix.—*A. hodgsoni*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 23, pl. i.—*A. illinoisensis*, *ibid.*; *op. cit.* p. 25, pl. i.—*A. iowensis*, Keokuk group, Keokuk, Ia.; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 5, pl. i.—*A. keokukensis*, *ibid.*; *op. cit.* p. 7, pl. i: n spp.
- †*Agassizocrinidae*, defined; ZITTEL-EASTMAN (357) p. 162.
- †*Agassizocrinus*, chambered organ (p. 45), base (p. 59); WACHSMUTH & SPRINGER (336).
- A. ovalis*, Kaskaskia Group, Randolph Co., Ill.; MILLER & GURLEY (233), Bull. Illinois Mus. ix, p. 36, pl. ii: n sp.
- †*Agriocrinus*, discussed, syn. of *Hapalocrinus*, q. v.; BATHER (30) p. 343.
- †*Allagecrinidae*, defined, includes only *Allagecrinus*; ZITTEL-EASTMAN (357) p. 135.
- †*Allagecrinus*, arm-branching (p. 78), muscle-plates (p. 87), orals (pp. 89, 92); WACHSMUTH & SPRINGER (336).

- †*Allionia* Michelotti, is syn. of *Antedon*; LORIOLO (194) p. 123.
- †*Alloocrinus*, rediagnosed (p. 306); *A. benedicti*, redescr. (p. 308, pl. xxiv), *A. typus*, redescr. (p. 307, pl. xxiv); WACHSMUTH & SPRINGER (336).
- †*Alloprosalloocrinus*, rediagnosed (p. 406); *A. cornicus*, redescr. (p. 407, pl. xlii); *A. depressus*, probably an *Agaricocrinus* (p. 407); WACHSMUTH & SPRINGER (336).
- †*Amblacrinus*; BATHER (30) p. 341.
- †*Amphoracrinus*, rediagnosed & described (p. 586), arms (p. 85); WACHSMUTH & SPRINGER (336).—*A. americanus*, Quenst. Handb. Petrefactenk., Aufl. 3, pl. lxxvii, f. 7, non Roemer = *Agaricocr. wortheni* Hall (p. 488); *A. divergens*, redescr., incl. *Actinocr. planobasilis* Hall, *A. quadrispinus* White, and var. *multiramosus* M. & W. (p. 588, pl. lxii); *A. spinobrachiatus*, redescr., incl. *Actinocr. inflatus* Hall (p. 591, pl. lxii); *A. viminalis*, redescr. (p. 590, pl. liv); WACHSMUTH & SPRINGER (336).
- A. blairi*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 26, pl. i.—*A. jessiae*, Chouteau limestone, Sedalia, Mo.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 21, pl. iii.—*A. sampsoni*, *ibid.*; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 27, pl. i : n. spp.
- †*Ancyrocrinus*, what it is; WACHSMUTH & SPRINGER (336) p. 50.
- †*Anisocrinus*, arm-branching; WACHSMUTH & SPRINGER (336) p. 77.
- †*Anomalocrinidae*, defined; ZITTEL-EASTMAN (357) p. 152.
- †*Anomalocrinus*, stem (p. 40), base (p. 57), compound radials (pp. 71, 158), arm-branching (p. 78), tegmen (p. 116), anals (p. 127); WACHSMUTH & SPRINGER (336).
- †*Anthemocrinus*, arm-branching; WACHSMUTH & SPRINGER (336) pp. 77.
- Antedon*, base (pp. 64, 68), development of arms (p. 82), orals (p. 99), anal (p. 139); WACHSMUTH & SPRINGER (336).—*A. bifida*, locomotion; BATHER (26) p. 301, & (29) p. 664: vide etiam *A. rosacea*.—†*A. brownii*, and †*A. ransomei*; BELL (33) p. 6.—†*A. rhodanicus*, incl. *A. speciosus* Pomel, redescr. with variations in centrodorsal, Upper Burdigalian, compared with *A. lenticularis*; LORIOLO (194) p. 121, pl. iv.—*A. rosacea*; MARCHISIO (216) p. 1: vide etiam *A. bifida*.—†*A. woodwardi*; BELL (33) p. 6.—*A. sp.*, 75 fathoms, La Have Banks; HONEYMAN (131) p. 253.—†*A. sp.*; KILIAN (157) p. 721.
- †*A. allardi*, Upper Burdigalian, Les Angles, near Avignon, compared with *A. globosus*; LORIOLO (194) Bull. Soc. geol. France (3), xxv, p. 126, pl. iv.—†*A. anglesensis*, *ibid.*; *tom. cit.* p. 121, pl. iv.—†*A. depereti*, *ibid.*, compared with *Allionia oblita*, *Antedon lineatus*, *A. cartennensis*, and *A. solutus*; *op. cit.* p. 125, pl. iv.—*A. flava*, B. of Biscay, 1410 m., 6° 21' W., 45° 57' N., belongs to *granulifera* group; KOEHLER (163) Rev. biol. Nord France, vii, p. 475, & (164) Ann. Univ. Lyon, xxvi, p. 97, figg. 20 & 21.—†*A. fontanesi*, Upper Burdigalian, Les Angles, near Avignon, compared with *A. meneghianus*; LORIOLO (194) Bull. Soc. geol. France (3), xxv, p. 126, pl. iv.—*A. moræ*, 570 fms., 44° 38' N., 54° 6' W., Grand Bank, N. Atlantic; HONEYMAN (132) P. Nova Scotian Inst. vii, p. 265.—†*A. pellati*, Upper Burdigalian, Les Angles, near Avignon; LORIOLO (194) Bull. Soc. geol. France (3), xxv, p. 125, pl. iv : n. spp.
- †*Aorocrinus*, n. g. with genotype *A. immaturus* [syn. ac *Cælocrinus*]; WACHSMUTH & SPRINGER (336) p. 470.—*A. canaliculatus* (olim *Dorycr.*) M. & W., redescr. (p. 475, pl. xlv); *A. cassedayi* (olim *Actinocr. et Gennæocr.*) Lyon, redescr., incl. ? *Actinocr. cauliculus* et *A. culyпсо* Hall (p. 483, pl. xlii); *A. concavus* (olim *Actinocr., Amphoracr., Cælocr.* [Typ.], et *Dorycr.*) M. & W., redescr. (p. 482, pl. xlii); *A. elegans* (olim *Dorycr.*) S. A. Miller, redescr. (p. 480, pl. xxxiv); *A. helice* (olim *Actinocr. et Agaricocr.*) Hall, redescr., incl. var. *eris* Hall

- (p. 481, pl. xlv); *A. immaturus* (olim *Dorycr.*) W. & Sp., redescr. (p. 471), *A. parvibasis* (olim *Dorycr.*) W. & Sp., redescr. (p. 473, pl. xlv); *A. parvus* (olim *Actinocr.* et *Dorycr.*) Shum., redescr., incl. *A. symmetricus* Hall, et *D. amœnus* S. A. Miller (p. 477, pl. xlv); *A. radiatus* (olim *Dorycr.*) W. & Sp., redescr. (p. 472, pl. xlv); *A. spinosulus* (olim *Actinocr.* et *Dorycr.*) Hall, redescr., incl. *D. kelloggi* Worthen (p. 478, pl. xliii); *A. subaculeatus* (olim *Actinocr.* et *Dorycr.*) Hall, redescr. (p. 476, pl. xlv); WACHSMUTH & SPRINGER (336).
- Apiocrinidæ*, defined, includes *Apiocr.*, *Guettardocr.*, *Millericr.*, *Acrochordocr.*, *Calamocr.*; ZITTEL (356) p. 140; ZITTEL-EASTMAN (357) p. 167.
- †*Apiocrinus*, base (pp. 60 & 61), tegmen (p. 117); WACHSMUTH & SPRINGER (336).—*A. meriani*, Tithonian, Bas-Languedoc; ROMAN (281) pp. 88, 331.—*A. milleri*; SCHLUETER (298) p. 496.—*A. polycyphus?*; HUG (133) p. 404.
- A. recubariensis*, Muschelkalk, Recoaro; CREMA (59) Atti Ist. Veneto, liv, p. 858, pl. ii: is a primitive *Millericrinus*; BATHER (27): n. sp.
- †*Archæocrinus*, rediagnosed (p. 253); *A. desideratus*, redescr. (p. 257, pl. x); *A. lacunosus*, redescr. (p. 255, pl. x); *A. microbasalis*, redescr. (p. 256, pl. x); *A. marginatus* Bill., sp. referred back to *Glyptocrinus* (p. 254); *A. pyriformis* [errore pro *piriformis*], redescr. (p. 255, pl. x); WACHSMUTH & SPRINGER (336).
- †*Aristocrinus*, validity of genus doubted; BATHER (24) p. 998.
- †*Arthracantha*, rediagnosed, incl. *Hystericrinus* Hinde, validity of name and value of spines discussed; WACHSMUTH & SPRINGER (336) p. 747.—*A. ithacensis*; KINDLE (161) p. 33: redescr.; WACHSMUTH & SPRINGER (336) p. 749, pl. lxxvi.—*A. punctobrachiata*, redescr., incl. *Hystericrinus carpenteri* Hinde; *op. cit.* p. 750, pl. lxxvi.
- A. depressa*, Lower Chemung group, Steuben Co., N.Y.; WACHSMUTH & SPRINGER (336) p. 751, pl. lxxvi: n. sp.
- Articulata* (= *Neocrinoidea*, P. H. Carp., *Canaliculata*, W. & Sp., *Pentacrinacea*, Neum.), defined, includes families *Encrinidæ*, *Apiocrinidæ*, *Bourgueticrinidæ*, *Eugeniocrinidæ*, *Holopidæ*, *Plicatocrinidæ*, *Saccocomidæ*, *Pentacrinidæ*, *Comatulidæ*; ZITTEL (356) p. 139; ZITTEL-EASTMAN (357) p. 165: sensu Joh. Müller (p. 15), sensu J. S. Miller (p. 13), sensu W. & Sp. (p. 26), redefined (pp. 149, 151), sensu Zittel (pp. 23 & 24); WACHSMUTH & SPRINGER (336).
- Articulosa*, nom. nov. pro *Articulata* sensu W. & Sp. non Müll.; WACHSMUTH & SPRINGER (336) p. 153.
- †*Ascocrinus* vel *Ascocystis*, vide sub IV g.
- †*Astrocrinus* Conrad, syn. of *Melocrinus*; WACHSMUTH & SPRINGER (336) p. 292.
- Astylida* C. F. Roem.; WACHSMUTH & SPRINGER (336) p. 16.
- †*Atelestocrinus*, arm-branching (p. 77), asymmetry (p. 159); WACHSMUTH & SPRINGER (336).
- †*Aulocrinus*, n. g. with genotype *A. agassizi*, Keokuk group, Indiana, with branching anal tube; WACHSMUTH & SPRINGER (336) p. 138, pl. vii, fig. 9: n. sp.
- †*Austinocrinus* spp.; STOLLEY (320) pp. 247, 272.
- †*Baerocrinus*, compound radials; WACHSMUTH & SPRINGER (336) pp. 72, 158.
- †*Balanocrinus subteres*, Callovian (p. 55), Oxfordian (pp. 60, 65), Bas-Languedoc; ROMAN (281).
- †*Barrandeocrinidæ*, defined, includes only *Barrandeocr.*; ZITTEL (356) p. 129, and ZITTEL-EASTMAN (357) p. 144.
- †*Barrandeocrinus*, rediagnosed and described from type-specimens of *B. sceptrum*, referred to *Batocrinidæ* (p. 484, pl. viii), arms (p. 86); WACHSMUTH & SPRINGER (336).

- †*Barycrinus*, stem (pp. 40, 45 & 46), armlets (p. 82); WACHSMUTH & SPRINGER (336).
- B. elrodi*, St. Louis Group, Spergen Hill, Ind.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 38, pl. ii.—*B. neglectus*, Keokuk Group, Crawfordsville, Ind.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 28, pl. ii.—*B. sampsoni*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 81, pl. iv : n. spp.
- Bathycrinus*, stem (p. 40), base (p. 63); WACHSMUTH & SPRINGER (336).
- †*Batocrinidæ*, defined, analysis and distribution of genera, divided into *Batocrinites* and *Periechocrinites* (p. 361), arms (p. 86), anals (p. 130); WACHSMUTH & SPRINGER (336).
- †*Batocrinites*, defined; WACHSMUTH & SPRINGER (336) pp. 361, 366.
- Batocrinus*, rediagnosed and discussed (pp. 364, 366), arm-branching (p. 77), tegmen (p. 109), pores (p. 122); WACHSMUTH & SPRINGER (336): N. Amer. spp. discussed, family *Batocrinidæ* not admitted; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 21.—*B. æqualis*, redescr., incl. *B. doris*, Hall; WACHSMUTH & SPRINGER (336) p. 371, pl. xxviii.—*B. argutus*, variation from type; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 66.—*B. boonvillensis* S. A. Miller = *Dizygocr. originarius*, var. *adultus* (p. 423); *B. bulbosus* Rowley & Hare = *Lobocr. inflatus* (p. 444); *B. calvini*, redescr., approaches *Dizygocr.* (p. 373, pl. xlvi); *B. cantonensis*, redescr. (p. 383, pl. xxvii); *B. cassedayanus* M. & W. = *Lobocr. longirostris* (p. 442); *B. clypeatus*, redescr., incl. *B. inornatus* and *B. papillatus* Hall, and *B. comparilis* S. A. Miller (p. 380, pl. xxvii); *B. davisii* Rowley & Hare = *Dizygocr. unionensis* (p. 424); *B. grandis*, cirri (p. 443), redescr., incl. *Actinocr. wachsmuthi* White (p. 381, pl. xxvii); WACHSMUTH & SPRINGER (336).—*B. gurleyi* S. A. Miller, see *Dizygocr.*: Rowley & Hare, see *D. montgomeryensis*.—*B. irregularis*, redescr. (p. 369, pl. xxvii); *B. icosidactylus*, redescr. (p. 368, pl. xxvii); *B. laura*, abnormal formation of anal tube (p. 135, pl. iv), with var. *sinuosus*, redescr., incl. *B. scyphus* Miller & Gurley (p. 384, pl. xxix); *B. lepidus*, redescr. (p. 372, pl. xxviii); *B. longirostris*, abnormal formation of anal tube (p. 135); *B. lyonanus* Miller & Gurley, syn. of *Dizygocr. biturbinatus* (p. 427); *B. macbridei*, redescr. (p. 376, pl. xxx); WACHSMUTH & SPRINGER (336).—*B. marinus* Miller & Gurley, vide *Lobocr. spiniferus*.—*B. mediocris* S. A. Miller, syn. of *Dizygocr. originarius*, var. *adultus* (p. 423); *B. mundulus*, redescr., incl. *B. similis* Hall (p. 382, pl. xxx); *B. pistillus*, redescr. (p. 378, pl. xxxi); *B. poculum*, redescr. (p. 378, pl. xxx); *B. pulchellus* S. A. Miller, syn. of *Dizygocr. unionensis* (p. 424); *B. quasillus*, redescr. (p. 372, pl. xxviii); *B. rotadentatus*, redescr., transition to *Lobocr.* and *Eretmocr.* (p. 374, pl. xlvi); *B. spergenensis* S. A. Miller, syn. of *Dizygocr. whitei* (p. 419); *B. subæqualis*, tube bursting forth above basals (p. 136), redescr., incl. *B. discoideus* Hall and *B. formosus* M. & W. (p. 369, pl. xxviii); *B. subconicus* Worthen, syn. of *Dizygocr. euconus* (p. 430); *B. turbinatus* with var. *elegans*, redescr., incl. *B. lætus* Miller & Gurley (p. 375, pl. xxvii); *B. venustus* S. A. Miller, syn. of *Dizygocr. euconus* var. *abscissus* (p. 431); WACHSMUTH & SPRINGER (336).
- B. adamsensis*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 14, pl. i.—*B. affinis*, Burlington Group, Sagetown, Ill.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 55, pl. iv.—*B. albersi*, Burlington Group, Burlington, Iowa, *op. cit.* p. 38, pl. ii.—*B. approximatus*, *ibid.*; *op. cit.* p. 56, pl. iv.—*B. argutus*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 9, pl. i.—*B. asper*, *ibid.*; *op. cit.* p. 13, pl. i.—*B. asperatus*, Burlington Group, Adams Co., Ill.; *op. cit.* p. 12, pl. i.—*B. basilicus*, Burlington Group, Sedalia, Mo.; *op. cit.* p. 11, pl. i.—*B. cistula*, St.

Louis Group, Lanesville, Ind.; *op. cit.* p. 18, pl. i.—*B. cognatus*, Burlington Group, Burlington, Iowa, with abnormal specimen (p. 66); MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 60, pl. iv.—*B. complanatus* [sic], *ibid.*; *op. cit.* p. 27, pl. i.—*B. consanguineus*, *ibid.*, with abnormal specimen perhaps of this species; *op. cit.* p. 63, pl. iv.—*B. delicatulus*, Keokuk Group, Boonville, Mo.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 12, pl. i.—*B. douglassi*, Keokuk Group (?), Bridger Mountains, near Bozeman, Montana; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 29, pl. ii.—*B. enodatus*, Burlington Group, Sagetown, Ill.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 46, pl. ii.—*B. enodis*, Burlington Group, Burlington, Iowa; *op. cit.* p. 25, pl. i.—*B. faberi*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 18, pl. ii.—*B. folliculus*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 15, pl. i.—*B. germanus*, *ibid.*; *op. cit.* p. 5, pl. i.—*B. glaber*, Burlington Group, Burlington, Iowa; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 32, pl. i.—*B. hodgsoni*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 8, pl. i.—*B. insolens*, Burlington Group, Burlington, Iowa, MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 35, pl. ii.—*B. jessicae*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 20, pl. i.—*B. levigatus*, Burlington Group, Burlington, Iowa; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 29, pl. i.—*B. levis*, *ibid.*; *op. cit.* p. 23, pl. i.—*B. modulus*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 16, pl. i.—*B. nanus*, Burlington Group, Sedalia, Mo.; *op. cit.* p. 17, pl. i.—*B. niteus* [? err. pro *nitens*], Burlington Group, Burlington, Iowa; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 15, pl. i.—*B. nodosarius*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 22, pl. i.—*B. nodosus*, *ibid.*; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 5, pl. i.—*B. nodulosus*, *ibid.*; *op. cit.* p. 6, pl. i.—*B. parilis*, Keokuk Group, Boonville, Mo.; *op. cit.* p. 17, pl. ii.—*B. pettisensis*, Burlington Group, Sedalia, Mo.; *op. cit.* p. 19, pl. ii.—*B. politus*, Burlington Group, Burlington, Iowa; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 31, pl. i.—*B. proximus*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 7, pl. i.—*B. regalis*, *ibid.*; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 14, pl. i.—*B. reliquus*, Burlington Group, near Sharon, S. W. Missouri; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 22, pl. i.—*B. remotus*, Burlington Group, Burlington, Iowa; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 43, pl. ii.—*B. repertus*, Burlington Group, Sedalia, Mo.; *op. cit.* p. 70, pl. iv.—*B. repositus*, Burlington Group, Burlington, Iowa; *op. cit.* p. 45, pl. ii.—*B. reservatus*, Burlington Group, near Sharon, S.W. Missouri; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 25, pl. i.—*B. rotuliformis*, *ibid.*; *op. cit.* p. 26, pl. i.—*B. rudis*, Keokuk Group, Little Barren R., Ky.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 52, pl. iv.—*B. rusticellus*, Burlington Group, near Sharon, S.W. Missouri; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 23, pl. i.—*B. (?) rusticus*, *ibid.*; *op. cit.* p. 28, pl. ii.—*B. saccellus*, Burlington Group, Burlington, Iowa; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 40, pl. ii.—*B. sagetownensis*, Burlington Group, Sagetown, Ill.; *op. cit.* p. 54, pl. iv.—*B. salemensis*, Warsaw Group, Salem, Ind.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 8, pl. i.—*B. scitululus*, Burlington Group, near Sharon, S.W. Missouri; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 19, pl. i.—*B. sedaliensis*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 71, pl. iv.—*B. selectus*, Burlington Group, Sagetown, Illinois; *op. cit.* p. 37, pl. ii.—*B. senex*, Burlington

- Group, near Sharon, S.W. Missouri; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 21, pl. i.—*B. sharonensis*, *ibid.*; *op. cit.* p. 18, pl. i.—*B. signatus*, Keokuk Group, Keokuk, Iowa; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 10, pl. i.—*B. solitarius*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 22, pl. ii.—*B. speciosus*, Burlington Group, Burlington, Iowa; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 47, pl. ii.—*B. spurius*, *ibid.*; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 20, pl. ii.—*B. stelliformis* [sic], Keokuk Group, Boonville, Mo.; *op. cit.* p. 9, pl. i.—*B. strenuus*, *ibid.*; *op. cit.* p. 11, pl. i.—*B. subaequatus*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 72, pl. iv.—*B. sublevis*, Burlington Group, Sagetown, Ill.; *op. cit.* p. 41, pl. ii.—*B. subovatus*, Burlington Group, Burlington, Iowa; *op. cit.* p. 50, pl. ii.—*B. subrotundus*, *ibid.*; *op. cit.* p. 48, pl. ii.—*B. subscitulus*, Burlington Group, Sedalia, Mo., *op. cit.* p. 51, pl. iii.—*B. tuberculatus*, Lower Burlington, Burlington, Iowa; WACHSMUTH & SPRINGER (336) p. 380, pl. xxvii.—*B. variabilis*, Burlington Group, Iowa, Mo. and Ill.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 58, pl. iv: n. spp.
- †*Belemnocrinidae*, defined; ZITTEL-EASTMAN (357) p. 153.
- †*Belemnocrinus*, base (p. 57), armlets (p. 82); WACHSMUTH & SPRINGER (336).—*B. florifer*, cirri (p. 44); *B. typus*, arm-branching (p. 75), cirri (p. 44); WACHSMUTH & SPRINGER (336).
- †*Blairocrinus* S. A. Miller = *Actinocr.* (p. 555); *B. bullatus*, S. A. Miller = *Actinocr. arrosus* (p. 577); WACHSMUTH & SPRINGER (336).
- †*Botryocrinus*, has armlets not pinnules (pp. 82, 160), anals (p. 127); WACHSMUTH & SPRINGER (336).—*B. decadactylus*, restored figure; BATHER (28) p. 99.
- Bourgueticrinidae*, defined, includes *Bourgueticr.*, *Rhizocr.*, *Mesocr.*, *Bathycr.*; ZITTEL (356) p. 141: not the last two; ZITTEL-EASTMAN (357) p. 169.
- †*Bourgueticrinus*, joint-surfaces of stem; WACHSMUTH & SPRINGER (336) p. 48.—*B. ellipticus*; HUME (134) p. 568: conglomerats des Gas, columnals figured; LORY & SAYN (197) pp. 13, 27.—*B.*, sp., Senonian, Caucasus; FOURNIER (85) p. 159.
- B.*, sp. n.; STOLLEY (319) Arch. Anthropol. Geol. Schleswig, i, p. 147.
- †*Cacabocrinus*, syn. of *Dolatocrinus*; WACHSMUTH & SPRINGER (336) p. 311.—*C. troosti*, cirri; JAEKEL (144) p. 48.
- †*Cactocrinus*, n. g., with genotype *C. proboscidalis* (p. 600), arms (p. 85), food-grooves (p. 101); WACHSMUTH & SPRINGER (336).—*C. arnoldi* (olim *Actinocr.*) W. & Sp., redescr. (p. 624, pl. lvii); *C. clarus* (olim *Actinocr.*) Hall, redescr. (p. 612, pls. lvii & lviii); *C. caelatus* [err. pro *caelatus*] (olim *Actinocr.*) Hall (p. 618, pl. lix), var. *spinotentaculus* (p. 619, pl. lix), redescr.; *C. ectypus* (olim *Strotocr. et Actinocr.*) M. & W., redescr. (p. 611, pl. lvi); *C. fossatus* (olim *Actinocr.*) S. A. Miller, redescr. (p. 620, pl. lv); *C. glans* (olim *Actinocr.*) Hall, redescr., incl. *A. tholus* et *A. eryx* Hall, et *A. blairi* S. A. Miller (p. 625, pl. liv), ambulacra (p. 102, pl. iv); *C. limabrachiatus* (olim *Actinocr.*) Hall, redescr. (p. 608, pl. lviii); *C. longus* (olim *Actinocr.*) M. & W., redescr. (p. 609, pl. lvii); *C. lucina* (olim *Actinocr.*) Hall, redescr., incl. *A. puteatus* Rowley & Hare (p. 663, pl. lvi); *C. multibrachiatus* (olim *Actinocr.*) Hall, redescr., incl. var. *echinatus* (p. 617, pls. lvi, lviii); *C. nodobrachiatus* (olim *Actinocr.*) W. & Sp., redescr. (p. 622, pl. lvii); *C. opusculus* (olim *Actinocr.*) Hall, redescr. (p. 607, pl. lvi); *C. ornatissimus* (olim *Actinocr.*) W. & Sp., redescr. (p. 621, pl. lvii); *C. proboscidalis* (olim *Actinocr.*) Hall, redescr., incl. *A. quaternarius*, *A. excerptus*, *A. themis*, et *A. lagena*, Hall, et *A. dalyanus* S. A. Miller (p. 601, pl. lviii), ambulacra (p. 102, pl. v), tegmen (p. 107); *C. reticulatus* (olim *Actinocr.*) Hall, redescr., incl. *A. thoas* et *A. locellus*, Hall (p. 605, pl. lviii), var. *ovatus* (p. 606, pl. lvii); *C. sexarmatus* (olim

- Actinocr.*) Hall, redescr. (p. 615, pl. lv); *C. thalia* (olim *Actinocr.*), redescr., incl. *A. infrequens* Hall, et *A. nodosus* S. A. Miller (p. 604, pls. lvi & lvii); *C. thetis* (olim *Actinocr.*) Hall, redescr., incl. *A. securus* Hall (p. 614, pl. lvi); WACHSMUTH & SPRINGER (336).
- C. denticulatus*, Lower Burlington Limest., Burlington, Ia.; WACHSMUTH & SPRINGER (336) p. 606, pl. lvii.—*C. extensus*, *ibid.*, incl. *Actinocr. sexarmatus* (pars) Hall; *op. cit.* p. 616, pl. lvii.—*C. obesus* (quoted as Keyes MS), Lower Burlington Limest., Hannibal, Mo.; *op. cit.* p. 613, pl. lv: n. spp.
- Calamocrinus*, proximale (p. 40), root (p. 51), arm-branching (p. 78), orals (p. 99); WACHSMUTH & SPRINGER (336).
- †*Calceocrinidæ*, definitions after Bather; ZITTEL-EASTMAN (357) p. 154: syzygies, armlets (p. 82), systematic position (pp. 157 & 158); WACHSMUTH & SPRINGER (336).
- †*Calceocrinus*, compound RR; WACHSMUTH & SPRINGER (336) p. 72.
- †*Callicrinus*, rediagnosed; WACHSMUTH & SPRINGER (336) p. 353: vide etiam sub *Cryptodiscus*.—*C. acanthinus*, redescr. (p. 356, pl. lxxxiii); *C. beachleri*, redescr. (p. 355, pl. lxxxiii); *C. cornutus*, redescr., incl. var. *excavatus* Hall (p. 357, pl. lxxxiii); (?) *C. ramifer* (olim *Eucalyptocrinus*) Roemer, redescr. (p. 358); WACHSMUTH & SPRINGER (336).
- †*Calpiocrinus*, base (pp. 52, 58), arm-branching (p. 77); WACHSMUTH & SPRINGER (336).
- †*Calyptrocrinidæ*, stem (p. 43), defined, analysis and distribution of genera (p. 330); WACHSMUTH & SPRINGER (336): defined, incl. *Callicr.*, *Eucalyptocr.*, *Hypanthocr.*; ZITTEL (356), p. 133, & ZITTEL-EASTMAN (357) p. 148.
- †*Camarocystida* = *Lobolithes*, regarded as brood-pouches or parasite-cysts of crinoid stems; HAECKEL (118) p. 168.
- Camerata* W. & Sp. (p. 26), redefined (pp. 149, 151), geol. history and classification (p. 162), analysis of families (p. 170), geol. and geogr. distrib. (pp. 171 & 172); WACHSMUTH & SPRINGER (336): (= *Sphaeroidocrinacea* Neumayr) defined, incl. famm. *Gasterocomidæ*, *Platycrinidæ*, *Hexacrinidæ*, *Actinocrinidæ*, *Barrandeocrinidæ*, *Glyptocrinidæ*, *Rhodocrinidæ*, *Melocrinidæ*, *Polypeltidæ*, *Calyptrocrinidæ*, *Crotalocrinidæ*; ZITTEL (356) p. 126: classification of WACHSMUTH & SPRINGER (336) given, and partly followed; ZITTEL-EASTMAN (357) p. 138.
- †*Campocrinus*, n. subg. of *Dichocrinus*, with genotype *C. myelodactylus*, Keokuk group, Indian creek, Montgomery Co., Ind. (p. 779, pl. lxxv); *C. cirrifer*, Kaskaskia group, near Sloans Valley, Pulaski Co., Ky. (p. 780, pl. lxxvi); the cirri of the two species (p. 44); WACHSMUTH & SPRINGER (336): n. spp.
- Canaliculata* Chapman; WACHSMUTH & SPRINGER (336) p. 30.
- †*Canist[r]ocrinus*; JAMES (146): rejected, *C. richardsoni* is *Glyptocrinus*, *C. pattersoni* is indet.; WACHSMUTH & SPRINGER (336) p. 174.
- †*Carabocrinus*, tegmen (pp. 137, 162), anals (p. 127), anus (p. 137); WACHSMUTH & SPRINGER (336).
- †*Castanocrinus* Roemer, syn. of *Melocrinus*; WACHSMUTH & SPRINGER (336) p. 293.
- †*Catillocrinidæ*, arms (p. 82), systematic position (pp. 157 & 158); WACHSMUTH & SPRINGER (336): defined (p. 153) ZITTEL-EASTMAN (357).
- †*Catillocrinus*, chambered organ (p. 45), compound RR (p. 72), axial canals (p. 142); WACHSMUTH & SPRINGER (336).
- †*Centrocrinus* W. & Sp. 1881, non Austin 1843, nec Worthen [nomen mutandum est], rediagnosed (p. 308), *C. pentaspinus*, redescr., incl. *C. multicornus* (p. 309, pl. xxv); WACHSMUTH & SPRINGER (336).
- †*Ceriocrinus*, anals; WACHSMUTH & SPRINGER (336) p. 133.—*C. greppini* Oppel, made syn. of *Millericrinus milleri*; HUG (133) p. 405.

- †“*Cheirocrinus*” *clarus*, end of stem, terminal plate; WACHSMUTH & SPRINGER (336) p. 51.
- Cionacineti* T. & T. Austin; WACHSMUTH & SPRINGER (336) p. 16.
- Cladoidea*, coil of gut inferred from the bulla; JAEKEL (142) p. 31.
- Clematocrinus*, n. g., with genotype *Actinocrinus retiaris* Phillips; JAEKEL (144) p. 47.
- Clonocrinus* Oehlert non Quenst., syn. of *Melocrinus*; WACHSMUTH & SPRINGER (336) p. 294.
- Coadunata* J. S. Miller; WACHSMUTH & SPRINGER (336) p. 13.
- †*Cococrinidae*, defined, incl. *Cococr.* and *Allagecr.*; ZITTEL (356) p. 124.
- †*Cococrinus*; FRECH (88) p. 177: systematic position discussed; BATHER (30) p. 341: rediagnosed (p. 738), orals (pp. 90, 94, pl. iii); *C. bacca*, redescr. (p. 739, pl. lxxv); *C. rosaceus*, arms and tegmen (p. 739, pl. iii); WACHSMUTH & SPRINGER (336).
- †*Codiocrinus*, arm-branching; WACHSMUTH & SPRINGER (336) p. 77: systematic position; OEHLERT (250) p. 829.—*C. granulatus*, redescr., from Sta. Lucia, Spain; OEHLERT (250) p. 827.
- Columnida* T. & T. Austin; WACHSMUTH & SPRINGER (336) p. 16.
- Comatulida*, defined, includes *Antedon*, *Endiocr.*, *Actinometra*, *Atelecr.*, *Promachocr.*, *Thaumatocr.*, *Thiolliericr.*; ZITTEL (356) p. 145, and ZITTEL-EASTMAN (357) p. 174.
- †*Compsocrinus*, rediagnosed (p. 516), arms (p. 80); *C. harrisi*, redescr. (p. 517, pl. xxi), *C. miamiensis* (olim *Glyptocr.*) S. A. Miller, redescr. (p. 518, pl. xxi); WACHSMUTH & SPRINGER (336).
- †*Conocrinus* (*Rhizocrinus*) *piriformis*; POPOVICI-HATZEG (270) p. 249.
- †*Cordylocrinus*, rediagnosed (p. 735), arms (p. 79); WACHSMUTH & SPRINGER (336): systematic position discussed; BATHER (30) p. 341.—*C. plumosus* (olim *Platyocrinus*), redescr., incl. *Platycr.* vel. *Cordylocr. parvus* Hall (p. 737, pl. lxxv); (?) *C. ramulosus* (olim *Platycr.*) Hall, redescr. (p. 737); WACHSMUTH & SPRINGER (336).
- Costata* Joh. Müller (p. 15), Zittel (p. 23); WACHSMUTH & SPRINGER (336).
- †*Cotyledonocrinus* Cass & Ly., = *Dichocr.*; WACHSMUTH & SPRINGER (336) pp. 753 & 754.
- †*Cromyocrinus*, arms; WACHSMUTH & SPRINGER (336) p. 80.
- †*Crotalocrinida*, systematic position; WACHSMUTH & SPRINGER (336) p. 164: defined, includes *Crotalocr.* & *Enallocr.*, referred to *Camerata*; ZITTEL (356) p. 133, and ZITTEL-EASTMAN (357) p. 149.
- †*Crotalocrinus*, allied to *Gissocrinus*; JAEKEL (144) p. 47: joint-surfaces (p. 81), stem-lumen (p. 46); *C. pulcher*, arm-branching (p. 75); WACHSMUTH & SPRINGER (336).
- †*Cryptodiscus*, referred to *Medusæ*, and following n. spp. described and figured from Niagara Limest., Joliet, Illinois, *C. bilobus* (p. 749), *C. corrugatus* (p. 747), *C. digitatus* (p. 749), *C. hydei* (p. 748), but in added footnote (p. 744) *Cryptodiscus* is regarded as summit-plates of anal tube of *Callicrinus*; WELLER (339) J. Geol. v: redescribed as summit of anal tube of *Callicrinus*, on evidence of specimens from Niagara Limest., Racine, Wis.; WELLER (340).
- †*Ctenocrinus*, discussed and made syn. of *Melocrinus*; WACHSMUTH & SPRINGER (336) p. 294.—*C. typus*; FRECH (88) p. 177.
- †*Culicocrinus*, systematic position; BATHER (30) p. 344: arms (p. 79), orals (p. 90); *C.*, sp., Niagara group, Maquoketa, Ia. (p. 735, pl. lxxv); WACHSMUTH & SPRINGER (336).
- †*Cupressocrinida*, defined, includes only *Cupressocr.*; ZITTEL (356) p. 126, and ZITTEL-EASTMAN (357) p. 136.
- †*Cupressocrinus*; FRECH (88) p. 177: muscle-plates (p. 87), anus (p. 137), axial canals of stem (p. 46), axial cords (p. 141); WACHSMUTH & SPRINGER (336): radials and basals and columnals from Sta. Lucia,

- Spain, figured; OEHLERT (250) p. 824.—*C. abbreviatus* (= *C. schlotheimi*) includes *C. nodosus*; BEYER (38) p. 88, pl. iii, figg. 73–76.
- †*Cyathocrinacea* Neumayr; WACHSMUTH & SPRINGER (336) p. 29.
- Cyathocrinidæ*, defined, includes *Dendrocr.*, *Homocr.*, *Cyathocr.*, *Lecythocr.*, *Gissocr.*, *Arachnocr.*, *Sphærocr.*, *Bactrocr.*, *Codiocr.*, *Achradochr.*, *Botryocr.*, *Euspirocr.*, *Sicyocr.*, *Streptocr.*, *Thenarocr.*, *Mastigocr.*, *Barycr.*, *Vasocr.*, *Parisocr.*, *Atelestocr.*; ZITTEL (356) p. 134: add *Gastrocr.*, *Rhadinocr.*, and *Lecythiocr.*; ZITTEL-EASTMAN (357) p. 155: sensu Bather, discussed; WACHSMUTH & SPRINGER (336) p. 159.
- Cyathocrinides* Pictet; WACHSMUTH & SPRINGER (336) p. 18.
- †*Cyathocrinus*, anals (p. 128), anus (p. 137), arm-branching (p. 77), food-grooves and ambulacrals (p. 101), tegmen (p. 95, pl. iii, & p. 114), stem (p. 45); *C. alutaceus*, tegmen (pp. 96, 98, 162); WACHSMUTH & SPRINGER (336).—*C. (?) annulatus*, perhaps same as *C. glomeratus*; COLLINS (54) p. 81, pl. E.—*C. blairi*, redescrib., probably [indubitably] not *Cyathocr.*; MILLER & GURLEY (232) p. 50, pl. iii: compared with *Mespilocrinus*; MILLER & GURLEY (233) p. 39.—*C. brevisacculus*, tegmen; WACHSMUTH & SPRINGER (336) p. 96.—*C. chouteauensis*, column now first described from a small individual; MILLER & GURLEY (233) p. 38, pl. ii.—*C. gilesi* (p. 95), *C. malvaceus* (p. 97), *C. multi-brachiatus* and *C. nodosus* (p. 96), tegmina; WACHSMUTH & SPRINGER (336).—*C. (?) nodulosus* or *nodosus* (p. 80, pl. D), and *C. (?) pinnatus* (p. 76, pl. D), columnals from Cornwall; COLLINS (54).—*C. protuberans* Hall, ? *Pterotocrinus*; WACHSMUTH & SPRINGER (336) p. 793.—*C. ramosus*, see *C. alutaceus* [which is syn.].—*C. (?) tenuistriatus*, columnals from Cornwall; COLLINS (54) p. 79, pl. D.—*C. waldronensis* S. A. Miller, may be young *Thysanocrinus inornatus*; WACHSMUTH & SPRINGER (336) p. 192: redescrib. from Niagara group, Hartsville, Ind.; MILLER & GURLEY (232) p. 49, pl. iii.—*C. (?) sp.*, columnals from Cornwall; COLLINS (54) p. 80, pl. D.
- C. barumensis*, Devonian, Devonshire; WHIDBORNE (342) P. Geol. Ass. xiv, p. 377, no fig.—*C. (?) carinatus*, based on columnals from Cornwall, Palæozoic; COLLINS (54) Tr. Geol. Soc. Cornwall, xii, p. 77, pl. D.—*C. faberi*, Burlington Group, Burlington, Iowa, MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 85, pl. v.—*C. (?) leptos*, Crinnis and perhaps Polruan, Cornwall, Palæozoic, columnals only; COLLINS (54) Tr. Geol. Soc. Cornwall, xii, p. 79, pl. D : n. spp.
- †*Cyclocrinus macrocephalus*; stem-fragments; PARONA & BONARELLI (259) p. 78. [Vide etiam *Acrochordocrinus*.]
- †*Cyphocrinus gorbyi* S. A. Miller, syn. of *Hyptiocrinus typus*; WACHSMUTH & SPRINGER (336) p. 201.
- †*Cytocrinus* Roemer, syn. of *Melocrinus*; WACHSMUTH & SPRINGER (336) p. 294.—*C. lævis*, vide *Melocrinus oblongus* and *M. roemeri*.
- †*Dactylocrinus oligoptilus* (olim *Dimerocrinus*) Pacht.; JAEKEL (144) p. 44.
- †*Dadocrinus*, considered as ancestor of *Uintacrinus*, its arm structure discussed; BATHER (24) p. 1000 & fig. 13: compared with *Milleriocrinus recubariensis*; BATHER (27) p. 122.—*D. gracilis* from Recoaro; CREMA (59) p. 860, pl. iia.
- †*Decadocrinidæ* Bather, “the most heterogeneous assemblage of genera imaginable”; WACHSMUTH & SPRINGER (336) p. 160.
- †*Decadocrinus*, anus; WACHSMUTH & SPRINGER (336) p. 137: vide etiam *Poteriocrinus*.
- †*Dendrocrinidæ* Bather, discussed; WACHSMUTH & SPRINGER (336) p. 159.
- †*Dendrocrinus*, compound RR (p. 71), arm-branching (p. 78), anals (pp. 126 & 127; *D. casei*, anals (p. 128); WACHSMUTH & SPRINGER (336).
- †*Desmidocrinus*, arm-branching; WACHSMUTH & SPRINGER (336) p. 79.
- †*Diabolocrinus*, n. g. with genotype *D. perplexus* (p. 249); *D. vesperalis*

- (olim *Rhodocr.* *Lyriocr.* vel *Archæocr.*) White, redescribed (p. 251, pl. xi); WACHSMUTH & SPRINGER (336).
- D. hieroglyphicus* (p. 252, pl. x), and *D. perplexus* (p. 249, pl. xi), Trenton group, near Knoxville, Tenn.; WACHSMUTH & SPRINGER (336): n. spp.
- †*Diamenocrinus*, arms; WACHSMUTH & SPRINGER (336) p. 80.
- †*Dichocrinus*, rediagnosed, incl. *Cotyledonocr.* Cass. & Ly. (p. 753), arms (p. 79), arm-branching (p. 77), syzygies (pp. 81, 84), cirri (pp. 41, 44); WACHSMUTH & SPRINGER (336).—*D. angustus*, redescri. (p. 768, pl. lxxvi); *D. blairi*, redescri. (p. 778, pl. lxxv); *D. cinctus*, redescri. (p. 746, pls. lxxv, lxxvii); *D. comis*, redescri. (p. 770, pl. lxxv); *D. constrictus* M. & W., an idem ac *Talarocr. decornis*? (p. 789); *D. coxanus*, redescri. (p. 763, pl. lxxvi); *D. crassitestus*, redescri. (p. 769, pl. lxxvi); *D. dichotomus*, redescri. (p. 777); *D. ficus*, redescri. (p. 774, pl. lxxviii); *D. hamiltonensis*, redescri. (p. 772, pl. lxxvi); *D. humburgi*, redescri. (p. 777); *D. inornatus*, cirri (p. 44), redescri. (p. 770, pl. lxxvii); *D. lachrymosus*, ambulacrals (p. 103), redescri., incl. *Platycr. subspinulosus* W. & Sp. (p. 754, pl. lxxvii); *D. laevis*, redescri. (p. 765, pl. lxxvii); *D. lineatus*, redescri. (p. 761, pl. lxxvi); *D. liratus*, redescri. (p. 759, pls. lxxvi & lxxvii); *D. ornatus*, redescri., incl. *D. sculptus* Cass. & Ly. non De Kon. (p. 762, pl. lxxvii); *D. ovatus*, redescri. (p. 760, pls. lxxvi & lxxvii); *D. parvulus*, cirri (p. 44), redescri. (p. 778); *D. pentalobus* (olim *Cotyledonocr.*) Cass. & Ly., redescri. (p. 775, pl. lxxviii); *D. pisum*, redescri. (p. 763, pls. lxxvi & lxxvii); *D. plicatus*, redescri. (p. 758, pl. lxxvii); *D. polydactylus*, ambulacrals (p. 103), redescri., incl. *D. expansus* M. & W. non De Kon. (p. 756, pl. lxxvii); *D. scitulus*, redescri., incl. *D. pocillum* Hall (p. 767, pl. lxxviii); *D. striatus*, redescri. (p. 757, pl. lxxvii); *D. ulrichi*, redescri. (p. 772); WACHSMUTH & SPRINGER (336).
- D. bozemanensis*, Upper Burlington or Lower Keokuk, Bridger Mts., near Bozeman, Montana; MILLER & GURLEY (235), Bull. Illinois Mus. xii, p. 44, pl. iii.—*D. delicatus*, Kinderhook group of Marshall Co., Ia., and Lower Burlington Limest. of Burlington, Ia., cirri (p. 44); WACHSMUTH & SPRINGER (336), p. 766, pl. lxxvii.—*D. huntsvillæ*, St Louis group, Huntsville and Whitesburg, Ala., incl. *Platycr. parvulus* M. & W. (nom. preocc. S. A. Miller); *op. cit.* p. 773, pl. lxxv.—*D. oblongus*, Warsaw Limest., near Bloomington, Ind.; *op. cit.* p. 759, pl. lxxvii.—*D. pendens*, Upper Burlington Limest., Burlington, Ia.; *op. cit.* p. 774, pl. lxxviii.—*D. superstes*, Kaskaskia group, Pulaski Co., Ky., and Huntsville, Ala.; *op. cit.* p. 767, pl. lxxvi.
- Dicyclia* Bather, criticised; WACHSMUTH & SPRINGER (336) p. 157.
- †*Dimerocrinus*, made syn. of *Thysanocr.*; WACHSMUTH & SPRINGER (336) p. 191.—*D. oligoptilus* Pacht., referred to *Dactylocr.* Quenst.; JAEKEL (144) p. 45.—*D. oligoptilus* and *D. aptilis*, referred to *Taxocr.*; WACHSMUTH & SPRINGER (336) p. 192.
- †*Dizygocrinus*, n. g., with genotype *D. indianensis*; WACHSMUTH & SPRINGER (336) p. 413.—*D. andrewsianus* (olim *Actinocr.* et *Batocr.*) McChesney, redescri. (p. 433, pl. xxix); *D. biturbinatus* (olim *Actinocr.* et *Batocr.*) redescri., incl. *Batocr. lyonanus* Miller & Gurley (p. 427 pl. xxxiii); *D. crawfordsvillensis* (olim *Batocr.*), Miller's description translated (p. 417); *D. decoris* (olim *Batocr.*) S. A. Miller, redescri. (p. 420, pl. xxxv); *D. dodecadactylus* (olim *Actinocr.* et *Batocr.*) M. & W., redescri. (p. 432, pl. xxix); *D. euconus* (olim *Batocr.*); M. & W., redescri., incl. *B. subconicus* Worthen (p. 430, pl. xxxv); var. *abscissus* (olim *Batocr. abscissus* Rowley & Hare) incl. *B. venustus* S. A. Miller (p. 431, pl. xlvi); *D. facetus* (olim *Batocr.*) Miller and Gurley, redescri. (p. 418); (?) *D. gorbyi* (olim *Batocr.*) S. A. Miller's description translated (p. 426); *D. gurleyi* (olim *Batocr.*) S. A. Miller non Rowley & Hare, redescri. (p. 422, pl. xxxiv); *D. indianensis*, redescri., arm-branching discussed (p. 415, pls. xxxii, xxxv); n. var. *simplex*, Keokuk group, Crawfordsville,

- Ind. (p. 416, pl. xxxiii); *D. montgomeryensis* (olim *Batocr.*) Worthen, redescr., incl. *Batocr. gurleyi* Rowley & Hare non Miller, and *B. sweeti* Rowley and Hare (p. 428, pls xxxiii, xlvi); var. nov. *unibrachiatus*, Upper Keokuk, Keokuk, Ia. (p. 429, pl. xxxiii); *D. originarius* (olim *Eretmocrinus*) W. & Sp., redescr., incl. *Eretmocr. varsoviensis* (p. 421, pl. xxxiii); var. *adultus* (olim *Eretmocr. adultus*) W. & Sp., redescr., incl. *Batocr. mediocris* and *B. boonvillensis* S. A. Miller (p. 422, pl. xxxv); *D. rotundus* (olim *Actinocr. et Batocr.*) Yand. & Shum., redescr., incl. *Actinocr. oblatum* Hall (p. 431, pl. xxix); *D. whitei* (olim *Batocrinus*) W. & Sp., redescr., incl. *Batocr. spergenensis* S. A. Miller (p. 419, pl. xxxiii); *D. whitei*, var. nov. *didactylus*, Upper Keokuk, Hamilton, Ill. (p. 420, pl. xxxv); *D. unionensis* (olim *Batocr.*) Worthen, redescr., incl. *B. pulchellus* S. A. Miller, *B. davisii* Rowley & Hare, and possibly *Actinocrinus caroli* Hall (p. 424, pl. xxxv); var. *divalis* (olim *Batocr. divalis* S. A. Miller), redescr. (p. 425, pl. xxxv); WACHSMUTH & SPRINGER (336).
- D. cantonensis*, Keokuk group, Canton and Edwardsville, Ind.; WACHSMUTH & SPRINGER (336) p. 423, pl. xxxiii.—*D. mutabilis*, Keokuk group, Indian Creek, Montgomery Co.; *op. cit.* p. 429, pl. xxxv: arm-branching discussed, p. 414: n. spp.
- †*Dolatocrinites*, sub-fam., defined; WACHSMUTH & SPRINGER (336) pp. 264, 304.
- †*Dolatocrinus*, rediagnosed, has slit-like pores (p. 310), arm-branching (p. 77), pores (p. 122); WACHSMUTH & SPRINGER (336).—*D. canadensis*, redescr., perhaps = *Cacabocrinus troosti* Hall (p. 315, pl. xxv); *D. glyptus*, redescr., incl. var. *intermedius* Hall, and *D. ornatus* Meek (p. 317, pl. xxvi); *D. lacus*, redescr. (p. 311, pl. xxvi); *D. liratus*, redescr., incl. var. *multilira* Hall (p. 319, pl. xxvi); *D. marshi*, redescr. (p. 312, pl. xxvi); var. nov. *hamiltonensis*, Hamilton group, Bear Grass quarries, Louisville, Ky. (p. 314, pl. xxv); *D. speciosus*, redescr. (p. 323, pl. xxv); *D. triadactylus*, redescr. (p. 316, pl. xxvi); WACHSMUTH & SPRINGER (336).
- D. aplatatus*, Hamilton Group, Charlestown, Ind.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 48, pl. iii: tegmen figd; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 49, pl. iii.—*D. argutus*, *ibid.*; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 41, pl. iii.—*D. arrosus*, *ibid.*; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 52, pl. iii.—*D. asper*, *ibid.*; *op. cit.* p. 47, pl. iii.—*D. aspratilis*, *ibid.*; *op. cit.* p. 49, pl. iii.—*D. basilicus*, *ibid.*; *op. cit.* p. 43, pl. iii.—*D. bellarugosus*, *ibid.*; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 43, pl. iii.—*D. calatus*, *ibid.*; *op. cit.* p. 46, pl. iii.—*D. charlestownensis*, *ibid.*; *op. cit.* p. 44, pl. iii.—*D. cistula*, *ibid.*; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 46, pl. iii.—*D. dispar*, *ibid.*; *op. cit.* p. 40, pl. ii.—*D. dissimularis*, *ibid.*; *op. cit.* p. 54, pl. iii.—*D. excavatus*, Upper Helderberg, Clark Co., Ind.; WACHSMUTH & SPRINGER (336) p. 321, pls xxv & xxvi.—*D. icosidactylus*, Hamilton group, Louisville, Ky.; *op. cit.* p. 319, pl. xxvi.—*D. indianensis*, Hamilton group, Charlestown, Ind.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 40, pl. iii.—*D. laguncula*, *ibid.*; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 51, pl. iii.—*D. lyoni*, *ibid.*; *op. cit.* p. 44, pl. iii.—*D. lyoni*, Upper Helderberg group, Clark Co., Ind.; WACHSMUTH & SPRINGER (336) p. 314, pl. xxv [nom. preocc.].—*D. major*, Upper Helderberg, Falls of the Ohio; *op. cit.* p. 322, pl. xxv.—*D. neglectus*, Hamilton group, near Charlestown, Ind.; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 37, pl. ii.—*D. peculiaris*, Hamilton group, Charlestown, Ind.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 55, pl. iii.—*D. preciosus*, *ibid.*; *op. cit.* p. 41, pl. ii.—*D. tuberculatus*, Hamilton group, Clark Co., Ind.; WACHSMUTH & SPRINGER (336) p. 324, pl. xxv.

- †*Dorycrinus*, rediagnosed and much restricted (p. 454), ambulacra (p. 102, pl. iv), tegmen (p. 107, pl. v); WACHSMUTH & SPRINGER (336).—*D. amœnus* S. A. Miller = *Aorocr. parvus* (p. 477); *D. cornigerus*, redescr., incl. *Actinocr. divaricatus* and *A. decornis* Hall (p. 458, pls. xlii, xliii, xlv); *D. gouldi*, redescr. (p. 456, pls. xliii & xlv); *D. intermedius* (olim var. *D. quinquelobi*), redescr. (p. 461, pl. xlv); *D. kelloggi* Worthen = *Aorocr. spinosulus* (p. 478); *D. mississippiensis*, redescr., incl. var. *spiniger* Hall (p. 455, pls. xliii & xlv); *D. missouriensis*, redescr., incl. *D. desideratus* (p. 463, pls. xliii, xlv); *D. quinquelobus*, redescr. (p. 460, pl. xlii); *D. ræmeri*, redescr. (p. 464, pl. xlv); *D. subturbinatus*, redescr. (p. 466, pl. xliii); *D. unicornis*, redescr., incl. *Actinocr. pendens* Hall, *D. lineatus* S. A. Miller, and *D. inflatus* Rowley & Hare (p. 468, pl. xlv); *D. unispinus*, redescr., incl. *Actinocr. trinodus* Hall (p. 467, pl. xlv); WACHSMUTH & SPRINGER (336).
- D. alabamensis*, Keokuk group ?, Chert Hill, Ala.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 15, pl. iii.—*D. faberi*, Burlington group, Burlington, Ia.; *op. cit.* p. 19, pl. i.—*D. sampsoni*, Burlington group, Sedalia, Mo.; *op. cit.* p. 17, pl. iii.—*D. suboviformis*, Burlington group, near Sharon, S.W. Missouri; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 30, pl. ii : n. spp.
- †*Ectenocrinus*, stem (p. 40), compound RR (p. 71), anals (p. 127); WACHSMUTH & SPRINGER (336).
- †*Edriocrinus*, base; WACHSMUTH & SPRINGER (336) p. 59.
- Emedullata* Chapman; WACHSMUTH & SPRINGER (336) p. 30.
- †*Enallocrinus*, stem-lumen; WACHSMUTH & SPRINGER (336) p. 46.
- †*Encrinidae*, extended (p. 162), tegmen (p. 116); WACHSMUTH & SPRINGER (336): defined, includes *Encr.*, *Dadocr.*; ZITTEL (356) p. 139: defined, includes *Cromyocr.*, *Phialocr.*, *Stemmatocr.*, *Eupachyocr.*, *Erisocr.*, *Ceriocr.*, *Ulocr.*, *Holocr.*, *Dadocr.*; ZITTEL-EASTMAN (357) p. 160.
- Encrinoidea* T. T. Austin; WACHSMUTH & SPRINGER (336) p. 16.
- †*Encrinus*:—*E. aculeatus*, *E. brahli*, and *E. carnalli*; WAGNER (337) p. 100.—*E. gracilis*, arms; WACHSMUTH & SPRINGER (336) p. 80.—*E. liliiformis*; WAGNER (337) p. 100: arms (p. 80), syzygies (p. 81), axial canals in cup (p. 140); WACHSMUTH & SPRINGER (336), and *E.*, sp. columnals, Muschelkalk, G. of Ismid; TOULA (329) p. 158, pl. xviii.—*E. pentactinus* Geinitz, in N. Jahrb. f. Min. 1838, p. 530, is stem of *Holocr. wagneri*; WAGNER (337) p. 99.
- Encrinus*, n. sp., Muschelkalk, above Creto, Pieve di Buono, in Judicarien; also "erster Basalkranz eines Crinoiden,...zwischen Prezzo und Cimego, im anstehenden Prezzo-kalk"; ARTHABER (16) Verh. geol. Reichsanst. 1896, p. 265.
- †*Entrochus dubius* (p. 717), *E. silesiacus* (p. 717), and *E. cf. liliiformis* (p. 716); PHILIPPI (266).
- †*Epactocrinus grandis*, syzygies; WACHSMUTH & SPRINGER (336) p. 82.
- †*Epascocrinoidea*, Neumayr (p. 29), criticised (p. 148); WACHSMUTH & SPRINGER (336).
- †*Erisocrinus*, arms (p. 80), anals (p. 133); WACHSMUTH & SPRINGER (336).—*E. inflexus*; SMITH (313) p. 236.
- †*Eretmocrinus*, rediagnosed (p. 385); *E. calyculoides*, redescr., with var. nov. *nodosus*, Upper Burlington, Pleasant Grove, Ia. (p. 395, pl. xxxiv); *E. clio*, redescr. (p. 393, pls. xxxvi & xxxvii); *E. cloelia*, redescr. (p. 398, pl. xxxvi); *E. corbulis*, redescr. (p. 399, pl. xxxvi); *E. coronatus*, redescr. (p. 403, pl. xxxvii); *E. intermedius*, redescr. (p. 404, pl. xxxiii); WACHSMUTH & SPRINGER (336).—*E. konincki*, referred to *Batocr.*; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 13.—*E. leucosia*, redescr., incl. *Dorycr. confragosus* and *Batocr. blairi* S. A. Miller (p. 401, pl. xxxvi); *E. magnificus* Ly. & Cass. non Quenst., redescr., incl. *E. lyonanus* S. A. Miller (p. 386, pl. xxxvii);

- E. matuta*, redescr., var. *attenuata* not accepted (p. 396, pl. xxxvii); *E. neglectus*, redescr. (p. 394, pl. xxxvi); *E. prægravis*, redescr. (p. 405, pl. xxxiv); *E. ramulosus*, redescr. (p. 387, pl. xxxvi); *E. remibrachiatus*, redescr., with var. nov. *expansus*, Burlington and Keokuk transition bed, near Burlington, Ia., and Henderson Co., Ill. (p. 388, pl. xxxvii); *E. varsoviensis* Worthen, syn. of *Dizygocr. originarius* (p. 421); WACHSMUTH & SPRINGER (336).
- E. depressus*, Upper Burlington, Burlington, Ia.; WACHSMUTH & SPRINGER (336) p. 392, pl. xxxvi.—*E. granuliferus*, Keokuk group, Indian creek, Montgomery Co., Ind. and Canton, Ind.; *op. cit.* p. 390, pl. xxxiv.—*E. minor*, Upper Burlington, Burlington, Ia.; *op. cit.* p. 391, pl. xxxvi.—*E. rugosus*, Lower Burlington, Burlington, Ia.; *op. cit.* p. 402, pl. xxxvi: n. spp.
- †*Eucalyptocrinus*; FRECH (88) p. 177: rediagnosed and structure explained, incl. *Hypanthocrinus*; WACHSMUTH & SPRINGER (336) p. 332.—*E. coelatus* (errore pro *cælatus*), redescr., incl. *E. decorus* Hall non Phill. and *E. papulosus* Hall (p. 336, pl. lxxxiii); *E. crassus*, end of stem, terminal plate (p. 51), redescr., incl. *E. constrictus* Hall, and *E. chicagoensis* Winchell & Marcy (p. 342, pl. lxxxii); *E. depressus*, redescr. (p. 349, pl. lxxxiii); *E. egani*, redescr. (p. 352, pl. lxxxii); *E. ellipticus* S. A. Miller, young form, sp. indet. (p. 335); *E. elrodi*, redescr. and revised, syn. *E. cælatus* Hall pars and *E. subglobosus* S. A. Miller (p. 339, pl. lxxxii); *E. inconspicuous*, redescr. (p. 346, pl. lxxxiii); *E. lindahli*, redescr., incl. *E. wortheni* S. A. Miller (p. 347, pl. lxxxii); *E. magnus*, redescr. (p. 348, pl. lxxxii); *E. obconicus*, redescr. (p. 353, pl. lxxxiii); *E. ornatus*, redescr. (p. 340, pl. lxxxii); *E. ovalis*, redescr. and compared with *E. crassus* (p. 344, pl. lxxxii); *E. proboscidalis*, redescr. (p. 352, pl. lxxxii); *E. rotundus*, redescr. (p. 350); *E. splendidus*, redescr. (p. 350); *E. tuberculatus*, redescr., incl. *E. muralis* Ringueb. (p. 337, pl. lxxxiii); *E. turbinatus*, redescr. (p. 351, pl. lxxxii); WACHSMUTH & SPRINGER (336).
- E. milliganae*, Niagara group, Decatur Co., Tenn.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 88, pl. v.—*E. ventricosus*, Niagara group, Decatur and Wayne Cos., Tenn.; WACHSMUTH & SPRINGER (336) p. 341, pl. lxxxiii: n. spp.
- Eucladocrinus*, rediagnosed (p. 719), arm-branching (p. 76), arm-structure (pp. 84 & 85), ambulacrals (p. 101); WACHSMUTH & SPRINGER (336).—*E. millebrachiatus*, axillary ambulacrals (p. 104), redescr. (p. 720, pls. lxxiii & lxxiv), var. nov. *immaturus*, Burlington and Keokuk Transition bed, near Burlington, Ia. (p. 722, pl. lxxiii); *E. montanensis*, redescr. (p. 723, pl. lxxii); *E. pleuroviminus*, redescr., incl. *Platyocr. discoideus* Hall non O. & S. (p. 724, pls. lxxiii & lxxiv); *E. prænuntius* (olim *Platyocr.*) W. & Sp., redescr. (p. 726, pl. lxxiii); *E. tuberosus* (olim *Platyocr.*) Hall, redescr., incl. *P. occidentalis* S. A. Miller (p. 728, pl. lxxii); WACHSMUTH & SPRINGER (336).
- Eucrinoida* Zittel; WACHSMUTH & SPRINGER (336) p. 23.
- †*Eucrinus* made syn. of *Thysanocrinus*, exc. *E. minor* and *E. venustus*; WACHSMUTH & SPRINGER (336), p. 192.
- Eudiocrinus* sp.; KOEHLER (163) p. 478: probably *E. atlanticus*; KOEHLER (164) p. 101.
- †*Eugeniocrinida*, defined, includes *Eugeniocr.*, *Eudesicr.*, *Tetracr.*, *Phyllocr.*; ZITTEL (356) p. 142, & ZITTEL-EASTMAN (357) p. 170.
- †*Eugeniocrinus*:—*E. cf. hoferi*, Oxfordian, Caucasus; FOURNIER (85) p. 112.
- E. gevreysi*, Neocomian of St.-Pierre de Cherenne (Isère); LORIOLE (196) Mem. Soc. Geneve, xxxii, p. 24, pl. iii: n. sp.
- †*Eupachycrinus*, chambered organ (p. 45), arms (p. 80); WACHSMUTH & SPRINGER (336).

- †*Euspirocrinus*, analis (p. 127); *E. spiralis*, tegmen (pp. 96, 98); WACHSMUTH & SPRINGER (336).
- †*Eutrochocrinus*, n. g., with genotype *E. christyi*; WACHSMUTH & SPRINGER (336) p. 408.—*E. christyi* (olim *Batocrinus*), redescri., incl. *B. bisbrachiatus* Whitf. and *B. altiusculus* Miller & Gurley, with var. *trochiscus* (p. 409, pls. xxix, xxxii); *E. christyi*, branching anal tube, and regenerated ditto (p. 135, pl. iv); *E. lovei*, redescri. (p. 412, pls. xxix, xxxii); *E. planodiscus*, redescri. (p. 411, pl. xxxii); WACHSMUTH & SPRINGER (336).
- †*Extracrinus*, base; WACHSMUTH & SPRINGER (336), pp. 53, 61, 65.
- Fistulata* Chapman; WACHSMUTH & SPRINGER (336) p. 30: sensu W. & Sp. (p. 26), redefined (p. 150), includes *Hybocrinidæ*, *Heterocrinidæ*, *Anomalocrinidæ*, *Belemnocrinidæ*, *Gasterocomidæ*, *Catilloocrinidæ*, *Calceocrinidæ*, *Dendroocrinidæ*, *Cyathocrinidæ*, *Poteriocrinidæ*, *Astylocrinidæ*, *Encrinidæ*, *Pentacrinidæ*; WACHSMUTH & SPRINGER (336) p. 157: (= *Inadunata fistulata* W. & Sp., *Cyathocrinacea* Neumayr), defined, includes families *Hybocrinidæ*, *Heterocrinidæ*, *Cyathocrinidæ*, *Poteriocrinidæ*, *Calceocrinidæ*, *Catilloocrinidæ*, *Belemnocrinidæ*; ZITTEL (356) p. 134, & ZITTEL-EASTMAN (357) p. 150.
- †*Flabellocrinus cassianus* Klipstein, is an *Encrinus* allied to *E. cassianus* Laube; BATHER (27) p. 121.
- Flexibilia* (= *Articulata* W. & Sp. non Müller; *Ichthyocrinacea*), defined, includes families *Ichthyocrinidæ*, *Marsupitidæ*, *Urtacrinidæ*; ZITTEL (356) p. 137, & ZITTEL-EASTMAN (357) p. 163.
- †*Forbesiocrinus*, base; WACHSMUTH & SPRINGER (336) p. 58.—“*Forbesiocr.*” *agassizi*, arm-branching, it is not a true *Forbesiocr.*; WACHSMUTH & SPRINGER (336) p. 77.—*F. incurvus* Trautsch., made type of n. g. *Synerocrinus*; JAEKEL (144) p. 46.—*F. multibrachiatus*, Lyon & Casseday's description quoted, and Lyon's original drawing now first published; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 55, pl. iv.
- F. greenei*, Keokuk Group, Edwardsville, Ind.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 57, pl. iv.—*F. jerseyensis*, Warsaw Group, Jersey Co., Ill.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 58, pl. iv.—*F. macadamsi*, Keokuk Group, Jersey Co., Ill.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 58, pl. v.—*F. washingtonensis*, Keokuk Group, Washington Co., Ind.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 54, pl. iii: n. spp.
- †*Gasterocomidæ*, moved from *Larviformia* to *Fistulata*; WACHSMUTH & SPRINGER (336) p. 157: defined, incl. *Gasterocoma*, *Myrtillocr.* and *Nanocr.*; ZITTEL (356) p. 126: defined; ZITTEL-EASTMAN (357) p. 155.
- †*Gasterocoma*, vide *Epactocrinus*.
- †*Gaurocrinus* S. A. Miller, rejected; WACHSMUTH & SPRINGER (336) p. 177.—*G. splendens*, vide *Ptychocrinus*.
- †*Gazacrinus inornatus*, S. A. Miller, syn. of *Idiocrinus elongatus*; WACHSMUTH & SPRINGER (336) p. 203.
- †*Gennaeocrinus*, rediagnosed (p. 547); *G. eucharis*, redescri. (p. 549, pl. xxxiv); *G. kentuckiensis*, redescri., incl. *Actinocr. cornigerus* Ly. and Cass. non Hall, et *A. nyssa* Hall (p. 548, pl. xxxiv); WACHSMUTH & SPRINGER (336).
- †*Gilbertsocrinus*, syn. *Ollacr.*, *Goniasteroidocr.*, and *Trematocr.*, rediagnosed and discussed (p. 233), arms (p. 86), pores (p. 122); WACHSMUTH & SPRINGER (336).—*G. fiscellus*, redescri. (p. 245, pl. xvii); *G. obovatus*, redescri. (p. 241, pl. xvii); *G. reticulatus*, redescri. (p. 244, pl. xvii); *G. spinigerus*, redescri. (p. 247, pl. xv); *G. tenuiradiatus*, redescri. (p. 246, pl. xvii); *G. tuberculosus*, redescri. (p. 243, pl. xvii); *G. tuberosus*, redescri. (p. 239, pls. xv, xvi, xvii); *G. typus*, redescri., incl. *Trematocr. papillatus* Hall (p. 242, pls. xiv, xvii); WACHSMUTH & SPRINGER (336).

- G. dispansus*, Keokuk group, Indian Creek, Montgomery Co., Ind.; WACHSMUTH & SPRINGER (336) p. 240, pl. xv: n. sp.
- †*Glyptaster*, made syn. of *Thysanocrinus*; WACHSMUTH & SPRINGER (336) p. 191.
- G. milliganae*, Niagara Group, Decatur Co., Tenn.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 87, pl. v: n. sp.
- †*Glyptocrinidae* S. A. Miller, discussed; WACHSMUTH & SPRINGER (336) p. 175; *Glyptocrinidae*, defined, incl. *Glyptocr.*, *Glyptaster*, *Reteocr.*, *Canistrocr.*, *Ptychocr.*, *Ascocr.* (= *Ascocystites* Barr.), *Lampterocr.*, *Eucr.*, *Sageniocr.*, *Dimerocr.*, *Stelidiocr.* (*Harmocr.*); ZITTEL (356) p. 130: in part referred to *Thysanocrinidae*; ZITTEL-EASTMAN (357) p. 145.
- †*Glyptocrinus*; JAMES (146): rediagnosed, incl. *Pycnocr.* S. A. Miller (p. 267), root (p. 44), arms (p. 79), interbrachials (p. 117), tegmen (p. 120); WACHSMUTH & SPRINGER (336).—*G. angularis* Miller & Dyer, syn. of *Ptychocr. parvus*; *G. argutus* Walcott, syn. of *Stelidiocr.*; *G. armosus* McChesney, referred to *Siphonocr.*; *G. baeri* Meek, referred to *Xenocr.* (also p. 183); *G. carleyi* Hall, referred to *Mariacr.*; and *G. cognatus* Miller, syn. of *Reteocr. onealli*; WACHSMUTH & SPRINGER (336) p. 269.—*G. decadactylus*, redescr., has no IBB (p. 270, pls. xx & xxi), arm-structure (p. 84); *G. dyeri*, redescr., incl. *G. subglobosus* and *G. richardsoni* (p. 271, pls. xx & xxi), arm-structure (p. 84); *G. expansus* Phillips, referred to *Sagenocrinus* (p. 269); *G. fimbriatus* Shumard, not accepted (p. 269); (?) *G. fornshelli* (p. 45), redescr., with special note on stem (p. 276, pl. xx), stem and base (p. 66); WACHSMUTH & SPRINGER (336).—*G. gracilis* Wetherby, syn. of *Ptychocr. parvus*; *G. harrisi* Miller, referred to *Compsocr.*; *G. lacunosus* Billings, syn. of *Archæocr.*; and *G. libanus* Safford, not accepted; WACHSMUTH & SPRINGER (336) p. 269.—*G. marginatus*, redescr., not *Archæocr.* as supposed (p. 275, pl. xx); *G. miamiensis* Miller, referred to *Compsocr.* (p. 269); *G. nobilis* Hall, referred to *Siphonocr.* (p. 269); *G. ornatus*, redescr., column figd by Billings doubtfully of this species (p. 274, pl. xx); WACHSMUTH & SPRINGER (336).—*G. parvus* Hall, referred to *Ptychocr.*; *G. pattersoni* Miller, not accepted; *G. plumosus* Hall, not accepted; *G. priscus* Billings, syn. of *Periglyptocr.*; and *G. quinquepartitus* Billings, not accepted; WACHSMUTH & SPRINGER (336) p. 269.—*G. ramulosus*, redescr. (p. 273, pl. xx); *G. sculptus* S. A. Miller, has IBB and is a *Rhaphanocr.* (pp. 260, 269); (?) *G. shafferi* with its var. *germanus* S. A. Miller, are probably young examples of *G. dyeri* (p. 272, pl. xxi); *G. siphonatus* Hall, syn. of *Siphonocr. armosus* (p. 269); *G. subnodosus* Walcott, syn. of *Rhaphanocr.* (p. 269); WACHSMUTH & SPRINGER (336) p. 269.
- †*Gnorimocrinus*, base (p. 58), anal tube (p. 138); WACHSMUTH & SPRINGER (336).
- †*Goniasteroidocrinus*, syn. of *Gilbertsocrinus*; WACHSMUTH & SPRINGER (336) p. 236.
- G. faberi*, Subcarboniferous, Joplin, Mo.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 84, pl. v: n. sp.
- †*Graphiocrinus*, cirri (p. 44), base (p. 60), anals (pp. 128, 133), arms, validity of name questioned, relations to *Phialocr.* (p. 80); WACHSMUTH & SPRINGER (336): not found in America, but forms referred to it belong to *Scaphiocr.*; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 35.—*G. encrinoides*, position of anal; WACHSMUTH & SPRINGER (336) p. 80.
- †*Guettardocrinus*, radials (p. 69), interbrachials (p. 117); WACHSMUTH & SPRINGER (336).
- †*Habrocrinus*, arm-branching (p. 79); *H. ornatus*, ridges on tegmen (p. 118). Subgen. nov. *Acacocr.* with genotype *H. (A.) elrodi*, Niagara group, Hartsville, Bartholomew Co., Ind. (p. 515, pl. xxxiv), *H. (A.) americanus*,

- Niagara group, St. Paul, Ind. (p. 516, pl. xxxiv); WACHSMUTH & SPRINGER (336): n. spp.
- †*Hadrocrinus*, arm-branching (p. 77), rediagnosed (p. 327); *H. discus*, redescri. (p. 328, pl. xxiv); *H. plenissimus*, redescri. (p. 328, pl. xxiv); WACHSMUTH & SPRINGER (336).
- †*Hapalocrinidae*, the family rejected; BATHER (30) p. 343.
- †*Hapalocrinus*, erected as single genus with subgenera *Hapalocrinus*, s. str. (*H. elegans*), group of *H. (Agriocrinus) Frechi*, and group of *H. (Thallocrinus) retiarius*; FRECH (88) p. 182: rediagnosed, includes *Agriocrinus* and *Thallocrinus*, genotype is *H. elegans* Jaekel; BATHER (30) p. 344.—*H. retiarius*, systematic position discussed; BATHER (30) p. 342: referred to n. g. *Clematocrinus*; JAEKEL (144) p. 47.
- H. victoriae*, Silurian, Melbourne; BATHER (30) Geol. Mag. (N. S. Dec. iv) iv, p. 345, pl. xv: n. sp.
- Haplocrinacea* Neumayr; WACHSMUTH & SPRINGER (336) p. 29.
- †*Haplocrinidae*, defined, includes *Haplocrinus*; ZITTEL (356) p. 124, & ZITTEL-EASTMAN (357) p. 134.
- Haplocrinides* Pictet; WACHSMUTH & SPRINGER (336) p. 18.
- †*Haplocrinus*, anus (p. 137), compound RR (p. 72), orals (pp. 89, 92, pl. iii); WACHSMUTH & SPRINGER (336).—*H. stellaris*; BEYER (38) p. 88, pl. iii, f. 79.
- †*Harmocrinus* Ang., is possibly *Thysanocrinus*; WACHSMUTH & SPRINGER (336) p. 280.
- †*Hemicrinus astieri*; KILIAN (157) p. 733.
- †*Herpetocrinus*, cirri; WACHSMUTH & SPRINGER (336) p. 44.
- †*Heterocrinidae*, armllets; WACHSMUTH & SPRINGER (336) p. 82: defined, includes *Heterocr.*, *Iocr.*, *Stenocr.*, *Ophiocr.* [err. pro *Ohiocr.*]; ZITTEL (356) p. 134: add *Herpetocr.*; ZITTEL-EASTMAN (357) p. 152.
- †*Heterocrinus*, relations to *Ottawacr.* (p. 68), stem (p. 40), compound RR (p. 71), syzygies (p. 82), anals (p. 127); WACHSMUTH & SPRINGER (336).—*H. bellewillensis*, anals; WACHSMUTH & SPRINGER (336) p. 132.—*H. pygmaeus* is young of *Dactylocr. oligoptilus*; JAEKEL (144) p. 44.
- †*Hexacrinidae*, redefined, analysis and distribution of genera; WACHSMUTH & SPRINGER (336) p. 741: defined, includes *Dichocr.*, *Hystriocr.*, *Hexacr.*; ZITTEL (356) p. 127: also *Arthroacantha*, *Pterotocr.*, *Talarocr.*; ZITTEL-EASTMAN (357) p. 140.
- †*Hexacrinus*; FRECH (88) p. 177: rediagnosed (p. 744), arms (p. 79); WACHSMUTH & SPRINGER (336).—*H. elongatus?*; BEYER (38) p. 89, pl. iii, fig. 77.—*H. leai*, redescribed; WACHSMUTH & SPRINGER (336) p. 746, pl. lxxviii.—*H. ornatus?*; BEYER (38) p. 89, pl. iii, fig. 78.
- H. occidentalis*, Hamilton group, near Davenport, Ia.; WACHSMUTH & SPRINGER (336) p. 745, pl. lxxviii: n. sp.
- †*Holocrinus wagneri*; WAGNER (337) p. 100.
- Holopida*, defined, includes *Cyathidium*, *Holopus*, *Cotylederma*; ZITTEL (356) p. 143, and ZITTEL-EASTMAN (357) p. 171.
- †*Homocrinus*, arm-branching (p. 78), anals (p. 127); WACHSMUTH & SPRINGER (336).—*H. scoparius*, cirri; WACHSMUTH & SPRINGER (336) p. 45.
- †*Hoplocrinus*, compound RR; WACHSMUTH & SPRINGER (336) p. 71.
- †*Hybocrinidae*, tegmen; WACHSMUTH & SPRINGER (336) p. 116: defined, includes *Hybocr.* and *Bacrocr.*; ZITTEL (356) p. 134: add *Hoplocr.* and *Hybocystis*; ZITTEL-EASTMAN (357) p. 151.
- †*Hybocrinus*, tegmen (p. 162), base (p. 67), compound RR (p. 71), anals (p. 127); *H. conicus*, anus (p. 137); WACHSMUTH & SPRINGER (336).
- †*Hybocystis*, considered as link with Cystids; WACHSMUTH & SPRINGER (336) p. 146.
- †*Hydreionocrinus*, arms; WACHSMUTH & SPRINGER (336) p. 80.—*Hydrei[o]-nocrinus mucrospinus*; SMITH (313) p. 236.

- Hyoerinus*, base (pp. 58, 63), arm-branching (p. 78), orals (p. 99, pl. iii); WACHSMUTH & SPRINGER (336).
- †*Hypanthocrinus*, syn. of *Eucalyptocr.*; WACHSMUTH & SPRINGER (336) p. 335.
- Hypascocrinoidea* Neumayr (p. 29), criticised (p. 148); WACHSMUTH & SPRINGER (336).
- †*Hypocrinus*, vide sub IV G.
- †*Hyptiocrinus*, rediagnosed (p. 200), and *H. typus* (syn. *Cyphocrinus gorbyi* S. A. Miller), redescr.; WACHSMUTH & SPRINGER (336) p. 201, pl. xix.
- †*Hystriocrinus* et *H. carpenteri* = *Arthracantha* et *A. punctobrachiata* [qq. v.]; WACHSMUTH & SPRINGER (336) pp. 748, 751.
- Ichthyocrinacea* Neumayr; WACHSMUTH & SPRINGER (336) p. 29.
- †*Ichthyocrinidæ*, separated from *Taxocrinidæ*; JAEKEL (144) p. 47: stem (p. 40), tegmen (p. 113); WACHSMUTH & SPRINGER (336): defined, includes *Ichthyocr.*, *Lecanocr.*, *Homalocr.*, *Anisocr.*, *Calpiocr.*, *Cyrtidocr.*, *Pycnosaccus*, *Lithocr.*, *Taxocr.*, *Forbesiocr.*, *Onychocr.*, *Mespilocr.*; ZITTEL (356) p. 137, & ZITTEL-EASTMAN (357) p. 163.
- †*Ichthyocrinus*, base (p. 58), arm-branching (p. 77), articulation of arms (p. 87); WACHSMUTH & SPRINGER (336).
- †*Idiocrinus*, rediagnosed (p. 202), and *I. elongatus* (syn. *Gazacrinus inornatus* S. A. Miller), redescr. (p. 203, pl. xviii); (?) *I. immaturus* (olim *Thysanocrinus*) Hall (p. 206, pl. xviii); (?) *I. tennesseensis* (olim *Centrocrinus*) Worthen, redescr. (p. 206, pl. xviii); WACHSMUTH & SPRINGER (336).
- I. ventricosus*, Upper part of Niagara group, near St Paul, Ind., oral pyramid previously described as tegmen of *Pisocrinus*; WACHSMUTH & SPRINGER (336) p. 205, pl. xviii: n. sp.
- †*Impinnata*, sub-order of *Articulata*, defined; WACHSMUTH & SPRINGER (336) p. 152.
- Inadunata* W. & Sp. (p. 26), redefined (pp. 149 & 150); WACHSMUTH & SPRINGER (336).
- Inarticulata* J. S. Miller; WACHSMUTH & SPRINGER (336) p. 13.
- †*Iocrinus*, relations to *Merocrinus* (p. 68), compound RR (p. 71), arm-branching (p. 78), anal sac (p. 158), anals (pp. 126 & 127); WACHSMUTH & SPRINGER (336).
- †*Lampteroocrinus*, rediagnosed, *L. inflatus* Hall and *L. parvus*, not recognised (p. 207); *L. tennesseensis*, redescribed (p. 208, pl. xiii); WACHSMUTH & SPRINGER (336).
- Larviformia* W. & Sp. (p. 26), redefined (p. 150), include *Haplocrinidæ*, *Pisocrinidæ*, *Symbathocrinidæ*, *Cupressocrinidæ* (p. 157); WACHSMUTH & SPRINGER (336): (= *Inadunata larviformia* W. & Sp., and *Haplocrinacea* Neumayr), defined, includes families *Haplocrinidæ*, *Coccoocrinidæ*, *Stephanocrinidæ*, *Pisocrinidæ*, *Symbathocrinidæ*, *Cupressocrinidæ*; ZITTEL (356) p. 124, see also ZITTEL-EASTMAN (357) p. 134.
- †*Lecanocrinus*, position of mesentery and gut; JAEKEL (142) p. 30: base; WACHSMUTH & SPRINGER (336) p. 58.—*L. billingsi*, anals, and *L. macropetalus*, anals and interbranchials; WACHSMUTH & SPRINGER (336) p. 139.
- L. greenei*, Niagara Group, Louisville, Ky.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 52, pl. iii: n. sp.
- Liberia* T. & T. Austin; WACHSMUTH & SPRINGER (336) p. 16.
- †*Lobocrinus*, n. g., with genotype *L. nashvillæ* [syn. ac *Uperocrinus*, melius *Hyperocrinus*]; WACHSMUTH & SPRINGER (336) p. 434.—*L. æquibrachiatus* (olim *Actinocr.* et *Batocr.*) McChesney, redescr. (p. 440, pls. xxix, xlvi), var. *asteriscus* (olim *Batocr. asteriscus* M. & W.), redescr., incl. var. *alatus* Hall (p. 441, pl. xxix); *L. inflatus* (olim *Batocr.*) Rowley & Hare, redescr., incl. *B. bulbosus* R. & H. (p. 444, pl. xxxiv), (?) *L. hageri* (olim *Actinocr.* et *Batocr.*) McChesney, redescr.

- (p. 445, pl. xxx); *L. longirostris* (olim *Actinocr.* et *Batocr.*) Hall, redescr., incl. *B. casedayanus* M. & W. (p. 442, pl. xxviii); *L. nashvillæ* (olim *Actinocr.* et *Batocr.*) Hall ex Troost, redescr. (p. 435, pl. xxxi), var. *subtractus*, redescr. (p. 436, pl. xxxi); *L. pyriformis* [errore pro *piriformis*] (olim *Actinocr.*, *Uperocr.* [Typ.], et *Batocr.*) Shum., redescr., incl. var. *rudis* et *Batocr. pistilliformis* M. & W. (p. 437, pl. xxxi), recuperated anal tube (p. 136); *L. yandelli* (olim *Actinocr.* et *Batocr.*) Shum., redescr. (p. 441, pl. xxx); WACHSMUTH & SPRINGER (336).
- L. robustus*, Keokuk group, White's creek Springs, near Nashville, Tenn.; WACHSMUTH & SPRINGER (336) p. 436, pl. xxx.—*L. spiniferus*, Keokuk group, Indian creek, Montgomery Co., Ind. (an *Batocr. marinus* Miller & Gurley ?); *op. cit.* p. 439, pl. xxx: n. spp.
- †*Lyriocrinus*, rediagnosed, includes *Marsupiocr.* Hall non Phill. (p. 261), food-grooves (p. 101); *L. dactylus*, redescr. (p. 262, pl. xi); *L. melissa*, redescr. (p. 263, pl. xi), *L. sculptilis* vel *sculptus* S. A. Miller, syn. of *Diabolocr. vesperalis* (p. 251); *L.*, sp. nondescr., Dudley (p. 217); WACHSMUTH & SPRINGER (336).
- †*Macrocrinus*, n. g., with genotype *M. konincki* (p. 446); *M. carica* (olim *Eretmocr.*) Hall, redescr. (p. 448, pl. xxxvii); *M. gemmiformis* (olim *Eretmocr.*) Hall, redescr. (p. 449, pl. xxxvi); *M. jucundus* (olim *Batocr.*) Miller & Gurley, redescr., incl. *B. agnatus* M. & G. (p. 451, pl. xxx), branched anal tube (p. 136); *M. konincki* (olim *Actinocr.*, *Batocr.*, et *Eretmocr.*) Shum., redescr., incl. *A. urnæformis* McChes. (p. 447, pl. xxxv); *M. lagunculus* (olim *Batocr.*) Hall, redescr. (p. 453, pl. xxxv); *M. verneuilianus* (olim *Eretmocr.*) Shum., redescr. (p. 450, pl. xxx), circumoral water-ring (p. 102, pl. v), convoluted organ (p. 143, pl. v); WACHSMUTH & SPRINGER (336).
- †*Macrostylocrinus*, rediagnosed; WACHSMUTH & SPRINGER (336) p. 285.—*M. fasciatus*, redescr., may include *Actinocr. (Saccocr.) semiradiatus* Hall (p. 288, pl. xxii); *M. fusibrachiatus*, redescr. (p. 291, pl. xxiii); *M. granulatus*, var. raised to specific rank (p. 289, pl. xxii); *M. meeki*, redescr. (p. 290, pl. xxii); *M. ornatus*, redescr. after Hall's figure (p. 286, pl. xxiii); *M. striatus*, redescr., does not include HALL, 20 Rep. N. Y. State Cat. pl. x, fig. 7 (p. 287, pl. xxxii); WACHSMUTH & SPRINGER (336).
- †*Mariacrinus*; JAMES (146): rediagnosed, with *M. carleyi* as genotype; WACHSMUTH & SPRINGER (336) p. 281.—*M. aureatus*, Miller's description translated (p. 285); *M. carleyi*, redescr. (p. 282, pl. xxii); *M. granulatus* S. A. Miller not a *Mariacr.*, whatever it may be (p. 282); *M. macropetalus* Hall, probably *Corymboocr.* (p. 282); *M. plumosus*, redescr. (p. 284, pl. xxiii); (?) *M. ramosus*, Hall's description translated (p. 284); *M. stoloniferus* Hall, not accepted (p. 282); *M. warreni*, redescr. (p. 283, pl. xxii); WACHSMUTH & SPRINGER (336).
- †*Marsupiacrinoides* T. & T. Austin; WACHSMUTH & SPRINGER (336) p. 16.—†*Marsupiacrinus* Phill. non Blainville nec Hall, rediagnosed, incl. *Cypellæcrinus* Troost [nomen preferendum, melius autem *Cypellocrinus*] (p. 730), stem (p. 40), arm-branching (pp. 75, 79), ambulacrals (p. 103); WACHSMUTH & SPRINGER (336): systematic position; BATHER (30) pp. 342, 344.—*M. depressus*, ridges on tegmen (p. 118); (?) *M. præmaturus*, redescr. (p. 734, pl. lxxii); *M. radiatus*, ridges on tegmen (p. 118, pl. viii); *M. tennesseensis*, redescr. (p. 731, pl. lxxv); *M. tentaculatus*, redescr. (p. 733, pl. lxxv); WACHSMUTH & SPRINGER (336).
- M. striatus*, Niagara group, Decatur Co., West Tennessee; WACHSMUTH & SPRINGER (336) p. 732, pl. lxxv: n. sp.
- †*Marsupites*, nekton or plankton; BATHER (24), and WALTHER (338) p. 222: in Sweden; SCHLUETER (297) p. 46.—*M. ornatus* [i.e. *M.*

- testudinarius*]; LAMPLUGH (182) pp. 82 & 83; HUME (134) p. 568: at Broitzem (p. 229), general distribution (p. 272); STOLLEY (320): and *M. sp.* in Lüneburg; STOLLEY (319) pp. 147, 176.
- †*Marsupitidæ*, defined, includes only *Marsupites*; ZITTEL (356) p. 138, and ZITTEL-EASTMAN (357) p. 165.
- †*Megistocrinus*, rediagnosed (p. 532), stem-lumen (p. 46), food-grooves (p. 101); WACHSMUTH & SPRINGER (336).—*M. abnormis*, redescr. (p. 546, pl. xlix); *M. concavus*, redescr. (p. 543, pl. xlviii); *M. depressus*, redescr., incl. *M. ontario* Hall (p. 540, pl. xlix); *M. evansi*, redescr., incl. *Actinocr. brevicornis* Hall, *A. superlatus* Hall, *A. minor* Hall, *M. plenus* White, et *M. parvirostris* M. & W. (p. 533, pl. xlvii), tegmen (p. 119), stem (p. 39), var. *crassus* (p. 536); *M. farnsworthi*, redescr. (p. 539, pl. xlviii); *M. knappi*, type lost, figures misleading (p. 533); *M. latus*, redescr. (p. 538, pl. xlviii); *M. multidecoratus*, redescr. (p. 542, pl. xlix); *M. nobilis*, redescr., incl. *M. parvus* W. & Sp. (p. 537, pls. xlvii, li), tegmen and relation to ambulacra (p. 119); *M. nodosus*, redescr. (p. 541, pl. xlix); *M. rugosus*, redescr. (p. 542, pl. xlviii); *M. spinosulus*, redescr., incl. *M. pileatus* S. A. Miller (p. 544, pl. xlviii); WACHSMUTH & SPRINGER (336).
- M. indianensis*, Hamilton Group, Charleston, Ind.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 27, pl. ii.—*M. waliszewskii*, Lower Devon., Sta. Lucia, Spain; OEHLERT (250) Bull. Soc. geol. France (3) xxiv, p. 818, pl. xxvi: n. spp.
- †*Melocrinidæ*, defined, separated into *Melocrinites* and *Dolatocrinites*, with analysis of genera, geol. and geogr. distribution; WACHSMUTH & SPRINGER (336) p. 264: defined, includes *Melocr. (Ctenocr.)*, *Scyphocr.*, *Xenocr.*, *Corymbocr.*, *Abacocr.*; ZITTEL (356) p. 131: enlarged scope; ZITTEL-EASTMAN (357) p. 146.
- †*Melocrinus*, rediagnosed (p. 292), arm-branching (pp. 76, 78, 86); WACHSMUTH & SPRINGER (336).—*M. æqualis*, redescr. (p. 304); *M. bainbridgensis*, redescr., incl. *M. clarkei* Williams (p. 297, pls. xxii, xxiv); *M. brevidactylus* Hall, not accepted (p. 294); WACHSMUTH & SPRINGER (336).—†*M. gibbosus*?; BEYER (38) p. 89, pl. iii, fig. 72.—*M. nobilissimus*, redescr. (p. 295, pl. xxiii); *M. nodosus* Hall, not accepted (p. 294); *M. obconicus*, redescr. (p. 302, pl. xxii); *M. obpyramidalis* Winchell & Marcy, not accepted (p. 294); *M. pachydactylus*, redescr., incl. *M. paucidactylus* (p. 296, pls. xxiii & xxiv); *M. parvus*, redescr. (p. 303, pl. xxii); *M. pratteni* McChesney, *M. sculptus* Hall, and *M. vernevili* Hall, not accepted (p. 294); WACHSMUTH & SPRINGER (336).
- M. calvini*, Hamilton group, Johnson Co., Iowa; WACHSMUTH & SPRINGER (336) p. 300, pl. xxii.—*M. gracilis*, Hamilton group, Canandaigua Lake, N. Y.; *op. cit.* p. 298, pl. xxii.—*M. oblongus*, Niagara group, near Louisville, Ky., & St. Paul, Ind., separated from *Cytocrinus lævis* Roemer; *op. cit.* p. 300, pl. xxii.—*M. ræmeri*, Niagara group, Decatur Co., Tenn., based on *Cytocrinus lævis* Roemer; *op. cit.* p. 301, pl. xxii.—*M. tiffanyi*, Hamilton group, New Buffalo, Iowa; *op. cit.* p. 299, pl. xxii: n. spp.
- †*Merocrinus*, relations to *Iocrinus* (p. 68), compound RR (p. 71), anals (p. 127); WACHSMUTH & SPRINGER (336).
- M. salopica*, Middleton group of Ordovician, from Mincop, W. Shropshire; BATHER (20) Geol. Mag. (n. s.), Dec. iv, vol. iii, p. 74: should be *salopicus*; JUKES-BROWNE (147): no, it shouldn't; BATHER (22): n. sp.
- †*Mespilocrinus*, base (p. 58), arm-branching (p. 77); WACHSMUTH & SPRINGER (336).
- Metacrinus*, base and stem; WACHSMUTH & SPRINGER (336), pp. 65, 67.—*M. rotundus*, "Bird's leg" of Japanese fishermen, caught by long line, esp. when baited with live mackerel; IJIMA (137) pp. 42, 45.
- †*Millericrinus*, proximale (p. 39), base (pp. 53, 60, 61); WACHSMUTH &

- SPRINGER (336).—*M. aculeatus*, and *M. dudressieri*; SCHLUETER (298) p. 495.—*M. echinatus* (Schlotheim) 1820, is made syn. of *M. horridus* d'Orb., 1840; HUG (133) p. 392: name maintained; SCHLUETER (298) p. 495.—*M. escheri*; SCHLUETER (298) p. 496.—*M. granulatus*, stem-fragments; PARONA & BONARELLI (259) p. 78.—*M. horridus*; SCHLUETER (298) p. 495.—*M. milleri*, and *M. münsterianus*; HUG (133) p. 405.—*M. orbigny*; WACHSMUTH & SPRINGER (336) p. 61.—*M. pilleti*, stem-fragments; PARONA & BONARELLI (259) p. 79.—*M. polydactylus*, base; WACHSMUTH & SPRINGER (336) p. 61.—*M. recubariensis*, redescrip. and figd; BATHER (27).—*M. sp.*; KILIAN (157) pp. 678, 682.
- M. meslei*, n. sp. ? Kimeridgian, Djebel Tlalet, S. Tunis; GAUTHIER (98) p. 24, pl. xxxii.—*M.*, n. sp. allied to *M. milleri*, possibly identical with *M. meslei*, Kimeridgian, S. Tunis; *loc. cit.*: n. spp.
- Monocyclica* Bather, 1893, criticised; WACHSMUTH & SPRINGER (336) pp. 157 & 158.
- †*Mycocrinus*, axial canals; WACHSMUTH & SPRINGER (336) p. 142.
- †*Myrtillocrinus*, orals; WACHSMUTH & SPRINGER (336), p. 89, pl. iii.
- †*Nanocrinus*, asymmetry; WACHSMUTH & SPRINGER (336) p. 159.
- Neocrinoidea* P. H. Carp.; WACHSMUTH & SPRINGER (336) pp. 25, 148.
- †*Ohioocrinus*, compound RR (pp. 71, 158), stem (p. 140); WACHSMUTH & SPRINGER (336).
- †*Ollacrinus*, syn. of *Gilbertsocrinus*; WACHSMUTH & SPRINGER (336) p. 236.
- †*Onychocrinus*, relations to *Dactylocr.* and *Forbesiocr.*; JAEKEL (144) p. 46: arm-branching (p. 77), anal tube (p. 138), stem (p. 43); WACHSMUTH & SPRINGER (336).—*O. diversus*, tegmen (p. 123); *O. ramulosus*, arm-branching (p. 75); *O. ulrichi*, tegmen (p. 123); WACHSMUTH & SPRINGER (336).
- †*Ottawacrinus*, relations to *Heterocrinus* (p. 68), anals (p. 127); WACHSMUTH & SPRINGER (336).
- Palaeocrinoidea* W. & Sp.; WACHSMUTH & SPRINGER (336) pp. 25, 148.
- †*Parisocrinus*, stem (p. 45), arm-branching (p. 77), anals (p. 127); WACHSMUTH & SPRINGER (336).
- †*Patelliocrinus*, arm-branching; WACHSMUTH & SPRINGER (336) p. 79.
- Pentacrinacea* Neumayr; WACHSMUTH & SPRINGER (336) p. 30.
- Pentacrinidae*, growth changes in stem discussed; JACKSON (139) p. 228: defined, includes *Pentacr.*, *Metacr.*, *Balanocr.*; ZITTEL (356) p. 144: add *Extra-cr.*; ZITTEL-EASTMAN (357) p. 173.
- Pentacrinus*, stem (pp. 38, 45, 46), its relations to base (pp. 65, 67), axial cords (p. 141); WACHSMUTH & SPRINGER (336): attached to drifting wood; †WALTHER (338) p. 227.—†*P. amblyscalaris*; HUG (133) p. 405.—†*P. angulatus* Opper non Quenst.; ROTHPLETZ (282), p. 35.—†*P. bajocensis*, in Bas-Languedoc; ROMAN (281) pp. 40, 47.—†*P. cf. basaltiformis*; ROTHPLETZ (282) p. 34: Bajocian, Caucasus; FOURNIER (85) p. 110.—†*P. bronni*; STOLLEY (320) p. 256: Senonian, Caucasus; FOURNIER (85) pp. 159, 161.—†*P. censoriensis*; HUG (133) p. 405.—†*P. cingulatus*, Oxfordian, Caucasus; FOURNIER (85) p. 118: geogr. distrib., found in Posen; GALLINEK (93) p. 402.—†*P. jurensis*; STEFANO (316) p. 195.—*P. naresianus*, root; WACHSMUTH & SPRINGER (336) p. 51.—†*P. ornatus*; SCHLUETER (298) p. 946.—†*P. pentagonalis* (incl. *P. sigmaringensis*), geogr. distrib., found in Posen; GALLINEK (93) p. 401.—†*P. aff. peroni*; LORY & SAYN (197) p. 13.—†*P. psilonoti*; ROTHPLETZ (282) p. 35.—*P. rawsoni*; KOEHLER (163) p. 478.—*P. cf. scalaris*, Bajocian, Caucasus; FOURNIER (85) p. 110.—*P. wyville-thomsoni*, locomotion; WACHSMUTH & SPRINGER (336) p. 49.—*P. sp.*, columnals in molasse of Angles no proof of depth; PELLAT (260) p. 114.
- †*P. miocenicus*, Upper Burdigalian, between St. Etienne-du-Grés and Notre-Dame-du-Château (Bouches-du-Rhône), columnals only, compared

- with *P. milleri*, *P. sowerbyi*, & *P. gastaldi*; LORIOLO (194) Bull. Soc. geol. France (3) xxv, p. 127, pl. iv : n. sp.
- Pentamera* Ang.; WACHSMUTH & SPRINGER (336) p. 31.
- †*Periechocrinites*; WACHSMUTH & SPRINGER (336) pp. 362, 366.
- †*Periechocrinus*, rediagnosed, incl. *Trochoer.* Portlock, ? *Pradocr.* Verneuil, *Geocr.* d'Orb., *Saccocr.* Troost-Hall, *Pyxidocr.* (pars) Müller (p. 519), stem-lumen (p. 46); WACHSMUTH & SPRINGER (336).—*P. howardi* (olim *Saccocr.*), S. A. Miller, redescr. (p. 529); *P. infelix* (olim *Megistocr.* et *Saccocr.*) Winch. & Marcy, redescr., incl. *Saccocr. egani* S. A. Miller (p. 525, pl. 1); *P. marcouanus* (olim *Megistocr.* et *Saccocr.*) Winch. & Marcy, redescr. (p. 523, pls. 1 & li); *P. necis*, redescr. (p. 524, pl. 1); ? *P. ornatus* (olim *Saccocr.*) Hall, redescr., incl. *S. benedicti* S. A. Miller (p. 527, pls. 1 & li); *P. speciosus*, redescr. (p. 521, pl. 1); *P. tennesseensis* (olim *Saccocr.*) Hall, redescr., incl. *S. speciosus* Roem. non Hall (p. 528, pl. 1); ? *P. tenuidiscus*, redescr. (p. 531, pls. xlvi, li); *P. urniformis* (olim *Saccocr.*) S. A. Miller, redescr. (p. 526, pl. 1); ? *P. whitei*, redescr., incl. *Actinocr. amplus* M. & W. (p. 530, pls. xlvi, li); *P. whitfieldi* (olim *Saccocr.*) Hall, redescr., incl. *Actinocr. christyi* Hall non Shum. (p. 522, pl. li), arm-branching (p. 75); WACHSMUTH & SPRINGER (336).
- †*Periglyptocrinus*, n. g., with genotype *P. billingsi*, Trenton limestone, Ottawa, Canada; WACHSMUTH & SPRINGER (336) p. 277, pl. xxi; arms (p. 80) : n. sp.
- P. priscus* (olim *Glyptocrinus*) Bill., redescr.; WACHSMUTH & SPRINGER (336) p. 278, pl. xxi.
- †*Petalocrinidae*, n. fam. (not defined) for *Petalocrinus*, n. g. (not diagnosed) with genotype *P. mirabilis* (p. 167), also *P. (?) major* (p. 170), both from Niagara limestone [near Monticello], Jones Co., Iowa; WELLER & DAVIDSON (341) J. Geol. iv, with figg. : n. spp.
- †*Phialocrinus* Trautschold non Eichw., ? = *Graphiocr.*; WACHSMUTH & SPRINGER (336) p. 80.
- †*Phillipsocrinus* M'Coy, an abnormal *Actinocrinoid*; WACHSMUTH & SPRINGER (336) p. 294.
- †*Phimocrinus*, anal tube; WACHSMUTH & SPRINGER (336) p. 136.
- †*Phyllocrinus patellæformis*; KILIAN (157) p. 682.
- †*Physetocrinus*, rediagnosed (p. 593), arms (p. 85), tegimen (pp. 109, 120, pl. v); WACHSMUTH & SPRINGER (336).—*P. asper*, redescr. (p. 596, pl. lxiii); *P. copei*, redescr. (p. 598, pl. lxiii); *P. dilatatus*, redescr. (p. 595, pl. lxiv); *P. ornatus*, redescr., incl. *Actinocr. senarius* Hall et *A. brittsi* S. A. Miller (p. 597, pl. lxiii); *P. ventricosus*, redescr., incl. varr. *subventricosus* McChesney, *cancellatus* Hall, *internodius* Hall, *reticulatus* Hall (p. 593, pls. lxiii & lxiv); WACHSMUTH & SPRINGER (336).
- P. lobatus*, Lower Burlington age, Lake Valley, New Mexico; WACHSMUTH & SPRINGER (336) p. 599, pl. lxiii.—*P. sampsoni*, Burlington group, Sedalia, Mo.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 14, pl. i : n. spp.
- Pinnastella* T. & T. Austin; WACHSMUTH & SPRINGER (336) p. 16.
- Pinnata*, suborder of *Articulata*, defined; WACHSMUTH & SPRINGER (336) p. 152.
- †*Pisocrinidae*, defined, includes *Pisocr.* and *Triacr.*; ZITTEL (356) p. 125, and ZITTEL-EASTMAN (357) p. 135.
- †*Pisocrinus*, base (p. 57), compound RR (p. 72), anal tube (p. 136); *P. pilula*, orals (p. 90); WACHSMUTH & SPRINGER (336).
- †*Platycrinidae*, Silurian and Devonian genera discussed, origin of the family; BATHER (30) p. 338: relation of arms to cup (p. 83), origin of fam. (p. 167), redefined, analysis and distribution of genera (p. 642); WACHSMUTH & SPRINGER (336): defined, includes *Platycr.*, *Marsupioacr.*,

Culicocr. and *Cordylocr.*; ZITTEL (356) p. 127; also *Coccochr.*; ZITTEL-EASTMAN (357) p. 138.

†*Platyocrinoidea* T. & T. Austin; WACHSMUTH & SPRINGER (336) p. 16.

†*Platyocrinus*, rediagnosed and restricted, including *Centrocr.* et *Pleurocr.* Austin, et *Edwardsocr.* d'Orb., ontogeny (p. 647): stem (p. 40), its cirri (p. 41), its axial canal (p. 46), its joint-surfaces (p. 48), base (p. 57), arm-branching (pp. 77, 79), syzygies (p. 84), ambulacra (p. 102, pl. iv), tegmen (pp. 111 & 112), orals (p. 94); WACHSMUTH & SPRINGER (336): N. American spp. discussed; MILLER & GURLEY (232) p. 64.—*P. absentivus* S. A. Miller, not accepted (p. 650); *P. acclivus*, redescr. (p. 663); *P. æqualis*, redescr., incl. *P. batiola* S. A. Miller (p. 674, pl. lxxi); *P. æquiternus*, redescr., incl. *P. curryvillensis* Rowley & Hare (p. 658, pl. lxxi); *P. allophylus*, redescr. (p. 685, pl. lxxi); *P. altidorsatus* Rowley and Hare, not accepted (p. 650); *P. amabilis* S. A. Miller, not accepted (p. 650); *P. americanus*, redescr., incl. *P. truncatus* Hall, et ? *P. broadheadi* S. A. Miller (p. 686, pl. lxxv); *P. annosus* S. A. Miller, not accepted (p. 650); *P. asper* M. & W. non Goldf., redescr. (p. 690, pl. lxxviii); *P. bedfordensis* Hall & White, not accepted (p. 650); *P. blairi* S. A. Miller, not accepted (p. 650); *P. bonoensis*, redescr., incl. *P. æternalis* et *P. caducus* S. A. Miller (p. 683, pl. lxix); *P. boonvillensis*, redescr. (p. 681, pl. lxxii); *P. brevinodus*, redescr. (p. 688, pl. lxx); *P. britsi*, redescr. (p. 659, pl. lxxi); *P. burlingtonensis*, ambulacrals (p. 103), redescr., incl. *P. inornatus* McChesney, *P. exsertus* Hall, *P. nodobrachiatus* Hall, *P. nucleiformis* Hall, & *P. lautus* S. A. Miller (p. 653, pl. lxix); *P. calyculatus* Hall, not accepted (p. 650); *P. canaliculatus*, redescr. (p. 689, pl. lxxv); *P. cavus*, redescr. (p. 715, pl. lxxvii); *P. chouteauensis*, *P. colletti* and *P. concinnus*, all of S. A. Miller, not accepted (p. 650); *P. contritus*, redescr. (p. 667, pl. lxxi); *P. corbuliformis*, redescr. (p. 657, pl. lxxi); WACHSMUTH & SPRINGER (336).—*P. crassus*; DORLODOT (71) p. 252.—*P. discoideus*, ambulacrals (p. 103), redescr., incl. *P. corrugatus* O. & S., *P. striobrachiatus* Hall, *P. multibrachiatus* M. & W., *P. shumardianus* Hall, & *P. pulchellus* S. A. Miller (p. 713, pl. lxvi); *P. eboraceus* Hall, not accepted (p. 650); *P. eminulus*, redescr. (p. 712, pl. lxxviii); *P. eriensis*, redescr. (p. 676); *P. excavatus*, redescr., incl. *P. sulcatus* S. A. Miller (p. 718, pl. lxvi); WACHSMUTH & SPRINGER (336).—*P. formosus*, var., *approximatus*, n. var., Burlington group, Sedalia, Mo.; MILLER & GURLEY (233) p. 60, pl. v.—*P. glyptus*, redescr. (p. 693, pl. lxxvii); *P. gorbyi*, redescr. (p. 716, pl. lxxviii); *P. graphicus*, redescr., incl. *P. richfieldensis* Hall & White (p. 672, pl. lxxi); *P. halli*, ambulacrals (p. 103), redescr., incl. *P. planus* Hall non Ow. & Shum., et *P. olla* Hall non de Kon. (p. 662, pl. lxxii); *P. haydeni* Meek, not accepted (p. 650); *P. hemisphericus*, redescr. (p. 703, pl. lxvi); *P. huntsvillæ*, redescr., incl. *P. penicillus* M. & W., *P. plenus* M. & W., et *P. alabamensis* S. A. Miller (p. 678, pl. lxxiii); *P. incomptus*, redescr. (p. 664, pls. lxxi & lxxii); *P. insolens*, redescr. (p. 659, pl. lxxi); WACHSMUTH & SPRINGER (336).—*P. laevis*; DORLODOT (71) p. 252.—*P. lodensis*, redescr. (p. 666, pl. lxxi); *P. marginatus* Rowley & Hare, not accepted (p. 650); WACHSMUTH & SPRINGER (336).—*P. minsterianus*; DESTINEZ (66).—*P. niotensis*, redescr. (p. 682, pl. lxxi); *P. ollicula* redescr. after S. A. Miller (p. 667); *P. ornigranulus*, redescr., incl. *P. nodulosus* Hall non Goldf. (p. 701, pls. lxvi, lxxviii); WACHSMUTH & SPRINGER (336).—*P. paradoxus* (olim *Palaechinus*) Eichw.; JAEKEL (144) p. 48.—*P. parvinodus*, redescr.; WACHSMUTH & SPRINGER (336) p. 696, pl. lxxviii.—*P. parvus* Hall referred to *Clematocr.*; JAEKEL (144) p. 47.—*P. pentagonus* S. A. Miller, not accepted (p. 650); *P. pileiformis*, redescr., incl. *P. carchesium* S. A. Miller (p. 656, pls. lxix & lxx); *P. pisum*, redescr. (p. 660, pl. lxxi);

- P. plano-basalis* Rowley & Hare, not accepted (p. 650); *P. planus*, redescr., incl. *P. bloomfieldensis* S. A. Miller (p. 668, pl. lxix); WACHSMUTH & SPRINGER (336).—*P. cf. planus*; DESTINEZ (66).—*P. plumosus* Hall, referred to *Clematocr.*; JAEKEL (144) p. 47: see *Cordylocr.*—*P. pocilliformis*, redescr. (p. 706, pl. lxviii); *P. pratteni*, redescr. (p. 671, pl. lxx); *P. pumilus* Hall, not accepted (p. 650); *P. quinquenodus*, redescr., incl. *P. planobasalis* Rowley & Hare (p. 661, pl. lxxi); WACHSMUTH & SPRINGER (336).—*P. ramulosus* Hall, referred to *Clematocr.*; JAEKEL (144) p. 47: vide etiam *Cordylocr.*—*P. regalis*, redescr., incl. *P. oweni* M. & W.; WACHSMUTH & SPRINGER (336) p. 710, pl. lxxii.—*P. retiarius*, referred to *Hapalocr.*; BATHER (30) p. 344.—*P. saffordi*, redescr. (p. 694, pl. lxvii); *P. sampsoni*, redescr. (p. 673, pl. lxx); *P. saræ*, redescr., incl. *P. georgei* Hall, *P. prattennanus* M. & W., et *P. monroensis* Worthen (p. 677, pls. lxix & lxx); *P. scobina*, redescr., incl. *P. clytis* Hall (p. 695, pl. lxviii); *P. sculptus*, redescr., incl. *P. rotundus* S. A. Miller (p. 691, pls. lxviii, lxxv); WACHSMUTH & SPRINGER (336).—*P. spissus*; DORLODOT (71) p. 252.—*P. subspinosus*, redescr. (p. 717, pl. lxvi); *P. subspinulosus*, redescr. (p. 684, pls. lxvi, lxx); *P. symmetricus*, ambulacrals (p. 103), ridges on tegmen (p. 118), redescr. (p. 655, pls. iii, lxix); *P. tenuibrachiatus*, redescr. (p. 687, pl. lxx); *P. truncatulus*, redescr. (p. 675, pl. lxvii, lxxi); *P. verrucosus*, redescr. (p. 705, pls. lxvi, lxviii); *P. vexabilis* White, not accepted (p. 650); *P. wortheni*, redescr. (p. 702, pl. lxvii); *P. yandelli*, with var. *perasper*, redescr., incl. *P. nodobrachiatus* Hall 1861 non 1858 (p. 706, pls. lxvi, lxviii), ambulacrals (p. 103); WACHSMUTH & SPRINGER (336).
- P. agassizi*, Kinderhook group, Le Grand, Marshall Co., Ia., incl. *P. planus* W. & Sp. non Ow. & Shum.; WACHSMUTH & SPRINGER (336) p. 669, pl. lxix.—*P. bozemanensis*, Lower Carboniferous, Bridger Mts., Montana; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 42, pl. iii.—*P. bridgerensis*, *ibid.*, near Bozeman; *op. cit.* p. 43, pl. iii.—*P. concinnulus*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 63, pl. iv.—*P. davisii*, Lower Burlington Limest., Hannibal, Mo.; WACHSMUTH & SPRINGER (336) p. 684, pl. lxx.—*P. douglassii*, Lower Carboniferous, Bridger Mountains, Bozeman, Mont.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 86, pl. v.—*P. geometricus*, Upper Burlington Limest., Burlington, Ia.; WACHSMUTH & SPRINGER (336) p. 697, pls. lxvii & lxviii.—*P. hodgsoni*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 63, pl. v.—*P. illinoisensis*, *ibid.*; *op. cit.* p. 62, pl. v.—*P. nodostriatus*, Upper Burlington Limest., Burlington, Ia. (= *P. tenuibrachiatus* pars, M. & W.); WACHSMUTH & SPRINGER (336) p. 698, pls. lxvi, lxx.—*P. peculiaris*, Lower Burlington age, Lake Valley, New Mexico; *op. cit.* p. 700, pl. lxviii.—*P. sharonensis*, Burlington Group, near Sharon, S. W. Missouri; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 42, pl. iii.—*P. spinifer*, with var. nov. *elongatus*, Lower Burlington Limest., Burlington, Ia.; WACHSMUTH & SPRINGER (336) p. 708, pls. lxvi & lxvii.—*P. subscitulus*, Burlington Group, Sedalia, Mo.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 62, pl. iv: n. spp.
- Plicatocrinidae*, defined, includes *Plicatocr.* & *Hyocr.*; ZITTEL (356) p. 143 and ZITTEL-EASTMAN (357) p. 171.
- Polycrinides* Pictet; WACHSMUTH & SPRINGER (336) p. 18.
- Polymera* Ang.; WACHSMUTH & SPRINGER (336) p. 31.
- †*Polypeltes*, possibly a Batocrinid; WACHSMUTH & SPRINGER (336) p. 365.
- †*Polypeltidae*, defined, includes *Polypeltes* and *Spyridiocr.*; ZITTEL (356) p. 132: discontinued; ZITTEL-EASTMAN (357) p. 147.

- †*Porocrinus*, considered as link with Cystids (p. 146): related to *Hybo-*
crinus (p. 67); WACHSMUTH & SPRINGER (336).
- †*Poteriocrinoidea* T. & T. Austin; WACHSMUTH & SPRINGER (336) p. 16.
- †*Poteriocrinidae*, tegmen; WACHSMUTH & SPRINGER (336) p. 116: defined,
includes *Poteriocr.* (subgen. *Scaphiocr.*, *Hydriocr.*, *Scytalocr.*, *Dec-*
adocr.), *Woodocr.*, *Zeacr.*, *Caliocr.*, *Hydreionocr.*, *Tribrachiochr.*,
Cromyocr., *Agassizocr.*, *Graphiocr.*, *Bursacr.*, *Phialocr.*, *Ceriochr.*,
Æsiocr., *Delocr.*, *Uocr.*, *Erisocr.*, *Stemmatocr.*; ZITTEL (356) p. 136:
many separated as *Encrinidae*; ZITTEL-EASTMAN (357) p. 160.
- †*Poteriocrinus*, not typical of *Poteriocrinidae* (p. 87), anals (p. 126), anus
(p. 137); WACHSMUTH & SPRINGER (336).—*P. clarkei*, var. *alpha*,
and *P. cornellianus*; KINDLE (161) p. 34.—*P. crassus*, redescrib. from
various localities, Central France; JULIEN (151) p. 138, pl. xvii.—*P.*
(*Decadocrinus*) *gregarius*; KINDLE (161) p. 34.—*P. labyrinthicus*
(olim *Cyathocr.*) S. A. Miller, anal area now first described; MILLER
& GURLEY (233) p. 34, pl. iv.—*P. missouriensis*, arm-branching;
WACHSMUTH & SPRINGER (336) p. 78.—*P. plicatus*, from La Varville;
JULIEN (151) p. 138, pl. v.—*P. radiatus*, La Varville, determined by
De Koninck; JULIEN (151) p. 137.—*P. spissus*, redescrib. from La
Varville, determined by De Koninck; *loc. cit.*—*P. stellaris*; BEYER
(38) p. 89, pl. iii, fig. 71.—*P. (Decadocrinus) zethus*; KINDLE (161) p. 34.
- P. albersi*, Kaskaskia Group, Monroe Co., Ill.; MILLER & GURLEY (233)
Bull. Illinois Mus. ix, p. 29, pl. ii.—*P. arrectarius*, St. Louis Group,
Alton, Ill.; *op. cit.* p. 33, pl. iv.—*P. batheri*, Pilton Beds, Devonshire;
WHIDBORNE (342) P. Geol. Assoc. xiv, p. 377, no fig.—*P. bozemanensis*,
Lower Carboniferous, Bridger mountains, Bozeman, Mont.; MILLER
& GURLEY (234) Bull. Illinois Mus. x, p. 82, pl. v.—*P. douglassi*, *ibid.*;
op. cit. p. 83, pl. v.—*P. lautus*, Keokuk Group, Boonville, Mo.;
MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 30, pl. ii.—*P.*
neglectus, *ibid.*; *op. cit.* p. 31, pl. iv.—*P. pulaskiensis*, Kaskaskia
Group, Pulaski Co., Ky.; MILLER & GURLEY (232) Bull. Illinois Mus.
viii, p. 39, pl. iii.—*P. stadiodactylus*, Pilton Beds, Devonshire; WHID-
BORNE (342) P. Geol. Ass. xiv, p. 377, no fig.—*P. tensus*, *ibid.*; *loc. cit.*
no fig. : n. spp.
- †*Pterotocrinus*, rediagnosed, incl. *Asterocr.* Lyon non Müntz. (p. 791), arms
and branching (pp. 77, 79), their relation to cup (p. 83), tegmen (p. 112);
WACHSMUTH & SPRINGER (336).—*P. acutus*, redescrib., incl. *P. spatu-*
latus Wetherby, et ?*P. rugosus* Ly. & Cass. (p. 799, pl. lxxix); var.
bifurcatus (p. 801, pl. lxxix); *P. capitalis*, redescrib. (p. 794, pl. lxxix),
P. chesterensis, redescrib. (p. 802, pl. lxxix); *P. coronarius*, redescrib.
(p. 795, pl. lxxix); *P. crassus*, redescrib. (p. 801, pl. lxxix); *P. depressus*,
redescrib. (p. 796, pl. lxxix); *P. pyramidalis*, redescrib. (p. 798, pl. lxxix);
WACHSMUTH & SPRINGER (336).
- †*Ptychocrinus*; JAMES (146): emended and diagnosed; WACHSMUTH &
SPRINGER (336) p. 197.—*P. parvus* (including *P. angularis* and
Reteocrinus gracilis), redescrib. (p. 199, pl. xviii); *P. priscus*, referred
to *Periglyptocrinus* (q. v.) (p. 198); *P. splendens*, redescrib. (p. 198,
pl. xviii); WACHSMUTH & SPRINGER (336).
- Pycnocrinidées* Pictet; WACHSMUTH & SPRINGER (336) p. 18.
- †*Reteocrinidae*, defined, with analysis of genera, & discussion; WACHSMUTH
& SPRINGER (336) p. 173: defined; ZITTEL-EASTMAN (357) p. 144.
- †*Reteocrinus*; JAMES (146): defined and discussed (p. 176), base (p. 67),
tegmen (p. 120); WACHSMUTH & SPRINGER (336).—*R. cognatus*,
probably large *R. onealli* (p. 177); *R. fimbriatus*, redescrib. (p. 179,
pl. ix); *R. gracilis* Wetherby, syn. of *Ptychochr. parvus* (pp. 177, 200);
R. magnificus, redescrib. (p. 181, pl. ix); *R. nealli* (= *onealli*), redescrib.,
interradials discussed (p. 179, pl. ix); *R. stellaris*, redescrib. (p. 178,
pl. ix), arm-branching (p. 77); WACHSMUTH & SPRINGER (336).

- †*Rhaphanocrinus*, rediagnosed; WACHSMUTH & SPRINGER (336) p. 258.—*R. sculptus* (olim *Glyptocrinus*) S. A. Miller, redescr. (p. 260, pl. x); *R. subnodosus*, redescr. (p. 259, pl. xi); *R. wachsmuthi* Oehlert, "apparently not a typical form" (p. 259); WACHSMUTH & SPRINGER (336).
- †*Rhipidocrinus*; FRECH (88) p. 177: arms and branching (pp. 76, 86); WACHSMUTH & SPRINGER (336).
- Rhizocrinus*, proximale (p. 39), stem (p. 40), its axial canals (p. 46), base (pp. 58, 62); WACHSMUTH & SPRINGER (336).—*R. rawsoni*; KOEHLER (164) p. 101: root; WACHSMUTH & SPRINGER (336) p. 51.
- †*Rhodocrinidae*, redefined, with analysis of genera, geological and geographical distribution; WACHSMUTH & SPRINGER (336) p. 215: defined, includes *Lyriocr.*, *Anthemocr.*, *Rhipidocr.*, *Thylacocr.*, *Ollacr.* (*Goniasteroidocr.*), *Rhodocr.* (*Acanthocr.*); ZITTEL (356) p. 130: add *Archæocr.* and *Diamenocr.*; ZITTEL-EASTMAN (357) p. 145.
- †*Rhodocrinus*, including *Acanthocrinus*, rediagnosed and discussed; WACHSMUTH & SPRINGER (336) p. 218.—*R. asperatus* Bill., a doubtful *Archæocrinus* (p. 254); *R. barrisi*, with var. nov. *striatus*, Upper Burlington, Burlington, Ia., var. *divergens* Hall is only a mature form (p. 230, pl. xii); *R. benedicti*, description translated from S. A. Miller (p. 224); *R. calatus* S. A. Miller, syn. of *R. nanus* (p. 228); *R. coxanus*, redescr. (p. 222, pl. xiii); WACHSMUTH & SPRINGER (336).—*R. echinatus* Schloth., see *Millerocrinus*.—*R. gonatodes*, ? = *Diamenocr.*, arms (p. 80), *R. gracilis* Hall, not recognised (p. 220); *R. kirbyi*, redescr., with note on colour of fossils (p. 226, pl. xii), cirri (p. 44); *R. nanus*, redescr. (p. 288, pls. xi & xii), cirri (p. 44); *R. nodulosus*, redescr. (p. 225, pl. xiii); *R. parvus*, redescr. (p. 229); *R. rectus* Hall, not recognised (p. 220); *R. spinosus* and *R. varsoviensis* of Hall, not recognised (p. 220); *R. vesperalis* White, referred to *Diaboloocr.* (p. 251); *R. wachsmuthi*, redescr. (p. 222, pls. xiii, xv); *R. watersianus*, redescr. (p. 221, pl. xii); *R. whitei*, including var. *burlingtonensis* as a large example, redescr. (p. 223, pl. xiii); *R. wortheni*, redescr. (p. 220, pls. xi & xii); *R. wortheni*, var. nov. *urceolatus*, Lower Burlington age, Lake Valley, New Mexico (p. 221, pl. xii); WACHSMUTH & SPRINGER (336).—*R.* (?) sp., cup-plates from Cornwall; COLLINS (54) p. 81, pl. E.
- R. blairi*, Chouteau limestone, Sedalia, Mo.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 37, pl. ii.—*R. bozemanensis*, Upper Burlington or Lower Keokuk Group, Bridger Mts., near Bozeman, Montana; MILLER & GURLEY (235), Bull. Illinois Mus. xii, p. 40, pl. iii.—*R. bridgerensis*, *ibid.*; *op. cit.* p. 41, pl. iii.—*R. douglassi*, *ibid.*; *op. cit.* p. 39, pl. iii.—*R. truncatus*, Upper Burlington Limestone, Burlington, Iowa; WACHSMUTH & SPRINGER (336) p. 231, pl. xiii.—*R. tuberculatus*, Lower Burlington age, Lake Valley, New Mexico; *op. cit.* p. 232, pl. xiii: n. spp.
- †*Saccocoma*, plankton; WALTHER (338) p. 212.
- †*Saccocomidae*, defined, includes only *Saccocoma*; ZITTEL (356) p. 144, and ZITTEL-EASTMAN (357) p. 172.
- †*Saccocrinus*:—*S. benedicti* S. A. Miller = *Periechocr. ornatus* (p. 527); *S. egani* S. A. Miller = *Periechocr. infelix* (p. 525); WACHSMUTH & SPRINGER (336).
- †*Sagenocrinus*, base; WACHSMUTH & SPRINGER (336) p. 58.
- †*Scaphiocrinus*, cirri (p. 44), arm-branching (p. 75), anus (p. 137); WACHSMUTH & SPRINGER (336).
- S. notatus*, Kinderhook Group, Le Grand, Iowa; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 36, pl. ii, n. sp.
- †*Schizocrinus*, columns; WHITEAVES (344) p. 159: arm-branching; WACHSMUTH & SPRINGER (336) p. 77.
- †*Scytalocrinus*, anus; WACHSMUTH & SPRINGER (336) p. 137.
- Semiarticulata* J. S. Miller; WACHSMUTH & SPRINGER (336) p. 13.
- †*Siphonocrinus*, rediagnosed, has 5 not 3 IBB (p. 209), tegmen (p. 122);

- WACHSMUTH & SPRINGER (336).—*S. armosus*, redescribed (p. 211, pl. xix), tegmen (p. 107, pl. xix); *S. nobilis*, redescribed (p. 212, pl. xix); WACHSMUTH & SPRINGER (336).
- S. pentagonus*, Upper part of Niagara group, Racine, Greenfield, and Waukesha, Wisc., and Chicago, Ill.; WACHSMUTH & SPRINGER (336) p. 213, pl. xix, n. sp.
- †*Sphaerocrinus*; FRECH (88) p. 177.
- Sphaeroidocrinoidea* T. & T. Austin; WACHSMUTH & SPRINGER (336) p. 16.
- †*Spyridiocrinus*, possibly a Batocrinid; WACHSMUTH & SPRINGER (336) p. 365.
- †*Steganocrinus*, rediagnosed (p. 579), arms and branching (pp. 76, 85), ambulacrals (p. 101), tegmen (p. 110); WACHSMUTH & SPRINGER (336).—*S. araneolus*, redescr. (p. 581, pl. lxi); *S. concinnus*, redescr., incl. *Actinocr. validus* M. & W. (p. 581, pl. lxi); *S. pentagonus*, second anal tube (p. 136), axial canals in cup (p. 142), redescr. (p. 579, pl. lxi); *S. sculptus*, arm-branching (pp. 75, 78), redescr. (p. 583, pl. lxi); WACHSMUTH & SPRINGER (336).
- S. albersi*, Burlington Group, Burlington, Ia.; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 33, pl. ii.—*S. blairi*, Burlington Group, near Sharon, S. W. Missouri; *op. cit.* p. 35, pl. ii.—*S. globosus*, Kinderhook group, Burlington, Ia.; WACHSMUTH & SPRINGER (336) p. 585, pl. lxi.—*S. griffithi*, Burlington Group, Burlington, Ia.; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 34, pl. ii.—*S. sharonensis*, Burlington Group, near Sharon, S. W. Missouri; *op. cit.* p. 32, pl. ii.—*S. spergenensis*, St. Louis Group, Spergen Hill, Ind.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 29, pl. ii: n. spp.
- †*Stelidiocrinus*, rediagnosed, based on *S. capitulum* and *S. laevis* Ang., pl. xv, fig. 20 (p. 279), arm-branching (p. 79); (?) *S. argutus*, redescr. (p. 280, pl. xxiv); *S. laevis* Ang., pl. xxviii, fig. 7 is a *Desmidocr.* (p. 280); *S. ovalis* Ang. is a Rhodocrinid (p. 280); WACHSMUTH & SPRINGER (336).
- †*Stemmatocrinus*, base (p. 59), arms (p. 80), anals (p. 133); WACHSMUTH & SPRINGER (336).
- †*Stephanocrinidae*, defined, includes only *Stephanocr.*; ZITTEL (356) p. 125, & ZITTEL-EASTMAN (357) p. 137.
- †*Stereocrinus*, rediagnosed (p. 324), arm-branching (p. 77); *S. triangulatus*, redescr. (p. 325, pl. xxv); WACHSMUTH & SPRINGER (336).
- S. barrisi*, Hamilton Group, Alpena, Mich., based on *S. triangulatus* Barris pars; WACHSMUTH & SPRINGER (336) p. 326, pl. xxv.—*S. indianensis*, Hamilton Group, near Charlestown, Ind.; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 38, pl. iii: n. spp.
- Stomatocrinoidea* W. & Sp.; WACHSMUTH & SPRINGER (336) pp. 25, 148.
- †*Storthingocrinus*, base; WACHSMUTH & SPRINGER (336) p. 57: discussed, placed near *Pisocr.* rather than *Symbathocr.*, structure of base; OEHLERT (250) p. 822.
- S. haugi*, Lower Devon., Sta. Lucia, Spain, supposed [erroneously] not to agree with structure of *S. fritillus* in respect of small basal; OEHLERT (250) Bull. Soc. geol. France (3) xxiv, p. 821, pl. xxvi: n. sp.
- †*Strotocrinus*, rediagnosed, incl. *Calathocr.* (pars) Hall non v. Meyer (p. 637), arms and branching (pp. 76, 85), tegmen (p. 110), convoluted organ (p. 143, pl. v); WACHSMUTH & SPRINGER (336): includes *Teleiocr.*; MILLER & GURLEY (232) p. 32.—*S. glyptus*, redescr. (p. 640, pls. lx, lxxv); *S. regalis*, stem (p. 39), arm-branching (p. 75), redescr., incl. *Actinocr. perumbrosus* Hall, *A. speciosus* M. & W., *S. bloomfieldensis* S. A. Miller (p. 638, pl. lxxv); WACHSMUTH & SPRINGER (336).
- S. ornatus*, Burlington Group, Burlington, Iowa; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 30, pl. ii: n. sp.

- Stylida* C. F. Roem.; WACHSMUTH & SPRINGER (336) p. 17.
- †*Symbathocrinidae*, defined, includes *Symbathocr.*, *Phimocr.*, *Stylocr.*, *Stortingocr.*, and *Lageniocr.*; ZITTEL (356) p. 125, and ZITTEL-EASTMAN (357) p. 136.
- †*Symbathocrinus*, base (p. 57), orals (pp. 89, 91, pl. iii), muscle-plates (p. 87), anal tube (pp. 136, 157); *S. wachsmuthi*, arm (p. 75); WACHSMUTH & SPRINGER (336).
- S. illinoisensis*, Burlington Group, Adams Co., Ill.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 53, pl. iii: n. sp.
- †*Synerocrinus*, n. g., with genotype *Forbesiocrinus incurvus* Trautsch.; JAEKEL (144) p. 47.
- †*Talarocrinus*, rediagnosed (p. 781), arms and branching (pp. 77, 79); WACHSMUTH & SPRINGER (336).—*T. cornigerus*, redescr. (p. 783, pl. lxxviii); *T. ovatus*, redescr. (p. 787, pl. lxxviii); *T. sexlobatus*, redescr. (p. 784, pl. lxxviii); *T. simplex* (olim *Dichocr.*) Shum., redescr. (p. 790, pl. lxxviii); *T. symmetricus*, redescr., incl. *Dichocr. elegans* Ly. & Cass. (p. 786, pl. lxxviii); WACHSMUTH & SPRINGER (336).
- T. decornis*, Upper part of St. Louis Group, Tateville, Pulaski Co., Ky., an incl. *Dichocr. constrictus*, M. & W. ?; WACHSMUTH & SPRINGER (336) p. 788, pl. lxxviii.—*T. patei*, Kaskaskia Group, Breckenridge Co., Ky.; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 44, pl. iii.—*T. subglobosus*, Upper part of St. Louis Group, Tateville, Pulaski Co., Ky.; WACHSMUTH & SPRINGER (336) p. 789, pl. lxxix: n. spp.
- †*Tanaocrinus*, n. g., with genotype *T. typus*, Hudson River Group, Warren Co., O. (p. 185, pl. ix), base (p. 67); WACHSMUTH & SPRINGER (336): n. sp.
- †*Taxocrinidae*, types of arm-branching; JAEKEL (144) p. 46.
- †*Taxocrinus*, stem (p. 43), base (p. 58), anal tube (p. 138), arm-branching (p. 77), tegmental food-grooves (p. 101, pl. iii), orals (p. 93, pl. iii); WACHSMUTH & SPRINGER (336).—*T. curtus*; KINDLE (161) p. 34.—*T. intermedius*, ridges on tegmen; WACHSMUTH & SPRINGER (336) p. 118, pl. iii.—*T. ithacensis* (p. 33), var. *alpha* (p. 34); KINDLE (161).—*T. macrodactylus*; WHIDBORNE (342) p. 377.—*T. multibrachiatatus*, var. *colletti* White, made a distinct sp. of *Taxocr.*; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 56.—*T. thiemei*, anals and interbrachials; WACHSMUTH & SPRINGER (336) p. 139.
- T. splendens*, Keokuk Group, Crawfordsville, Ind.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 61, pl. v.—*T. (?) stultus*, Pilton Beds, Devonshire; WHIDBORNE (342) P. Geol. Ass. xiv, p. 377, no fig.—*T. unguia*, Keokuk Group, Crawfordsville, Ind.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 59, pl. v: n. spp.
- †*Technocrinus*, rediagnosed (p. 304); *T. andrewsi*, redescr. (p. 306, pl. xxiv); *T. spinulosus*, redescr. (p. 305, pl. xxii); *T. striatus* (p. 305); WACHSMUTH & SPRINGER (336).
- †*Teleiocrinus*, rediagnosed, incl. *Calathocr.* Hall pars, non v. Meyer, & *Strotocrinus*, sect. B, M. & W. (p. 626), arms (p. 85), ambulacra (p. 102, pl. iv), convoluted organ (p. 143, pl. v); WACHSMUTH & SPRINGER (336): considered syn. of *Strotocr.*; MILLER & GURLEY (232) p. 32.—*T. althea*, redescr. (p. 632, pls. lx, lxiii); *T. liratus*, redescr., incl. *Actinocr. subumbrosus* Hall (p. 633, pl. lx); *T. rudis*, tegmen (p. 107, pl. v), redescr., incl. *Actinocr. clivosus* Hall, *A. (Calathocr.) erodus* Hall, *A. (Calathocr.) insculptus* Hall (p. 630, pl. lix); *T. tenuiradiatus*, redescr. (p. 634, pl. lix); *T. umbrosus*, abnormal base (p. 56), second anal tube (p. 136), redescr., incl. *Actinocr. agilops* Hall, et *A. delicatus* M. & W. (p. 628, pls. lix & lx); WACHSMUTH & SPRINGER (336).
- T. adolescens*, Lower Burlington Limest., Burlington, Ia., an incl. *Actinocr.*

- penicillus*, M. & W. ?; WACHSMUTH & SPRINGER (336) p. 635, pl. lix : n. sp.
- Tessellata* Joh. Müller (p. 15), of Zittel (p. 23); WACHSMUTH & SPRINGER (336).
- Tetramera* Ang.; WACHSMUTH & SPRINGER (336) p. 31.
- †*Thallocrinus*, discussed, a syn. of *Hapalocrinus* (q. v.); BATHER (30) p. 343.—*T. retarius*, referred to n. g. *Clematocr.*; JAEKEL (144) p. 47.
- Thaumatocrinus*, interradials (p. 72), interbrachials (p. 117), anals (p. 139); WACHSMUTH & SPRINGER (336).
- †*Thiolliericrinus flexuosus*, *T. Heberti*, Tithonian, Bas-Languedoc; ROMAN (281) pp. 88, 331.
- †*Thylacocrinus*, rediagnosed; WACHSMUTH & SPRINGER (336) p. 248.
- T. clarkei*, Hamilton group, Canandaigua Lake, N. Y.; WACHSMUTH & SPRINGER (336) p. 248, pl. xiii : n. sp.
- †*Thysanocrinidæ*; ZITTEL-EASTMAN (357) p. 145: (= *Glyptasteridæ*) [= *Dimerocrinidæ*], defined, analysis of genera, distribution, affinities; WACHSMUTH & SPRINGER (336) p. 188.
- †*Thysanocrinus*, 1852, substituted for *Dimerocrinus*, 1836, and including *Glyptaster* and *Eucrinus*, defined; WACHSMUTH & SPRINGER (336) p. 190.—*T. brachiatus* (olim *Glyptaster*), redescr. (p. 195, pl. xviii); (?) *T. halli* (olim *Rhodocr.*), redescr. (p. 196, pl. xiii); *T. inornatus* (olim *Glyptaster*), redescr., infrabasals discussed (p. 193, pls. xviii & xix); WACHSMUTH & SPRINGER (336).—*T. immaturus*, see *Idiocrinus*.—*T. liliiformis*, redescr. (p. 192, pl. xviii); *T. occidentalis* (olim *Glyptaster*), redescr., its var. *increbrescens* not admitted (p. 194, pl. xviii); WACHSMUTH & SPRINGER (336).
- T. milliganæ*, Niagara group, Decatur Co., Tenn.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 51, pl. iii : n. sp.
- †*Tiaracrinus*; WACHSMUTH & SPRINGER (336) p. 146.
- †*Trematocrinus*, syn. of *Gilbertocr.* (p. 237); *T. papillatus* Hall, mere variation of *Gilbertocr. typus* (p. 243); WACHSMUTH & SPRINGER (336).
- †*Triacrinus*, base; WACHSMUTH & SPRINGER (336) p. 57.
- †*Tribrachiocrinus*, compound radials [!]; WACHSMUTH & SPRINGER (336) p. 158.
- Trimeria* Ang.; WACHSMUTH & SPRINGER (336) p. 31.
- †*Turbinocrinus* Hall ex Troost, syn. of *Melocrinus*; WACHSMUTH & SPRINGER (336) p. 294.
- †*Uintacrinidæ*, defined, includes only *Uintacr.*; ZITTEL (356) p. 138, and ZITTEL-EASTMAN (357) p. 165.
- †*Uintacrinus*, horizon and locality in Kansas; WILLISTON (348) p. 110: distribution; BATHER (25): nekton or plankton; WALTHER (338) p. 222.—*U. socialis*, redescr., origin of genus discussed; BATHER (24): colony of young, Elkader, Kansas; WILLISTON (349) p. 242.—*U. westfalicus*, believed identical with *U. socialis*; *op. cit.* p. 243.
- †*Ulocrinus*, anals; WACHSMUTH & SPRINGER (336) p. 133.
- †*Xenocrinus*; JAMES (146): redefined, interradials discussed (p. 182), base (p. 67); WACHSMUTH & SPRINGER (336).—*X. baeri*, redescr. (p. 185, pl. ix); *X. penicillus*, redescr., interradials discussed (p. 183, pl. ix); WACHSMUTH & SPRINGER (336).
- †*Zeacrinus*, base; WACHSMUTH & SPRINGER (336) p. 52.—*Z. excavatus* Schultze, referred to *Dactylocr.*; JAEKEL (144) p. 47.
- Z. doverensis*, Kaskaskia group, Dover Hill, Ind.; MILLER & GURLEY (232) Bull. Illinois Mus. viii, p. 35, pl. ii.—*Z. kentuckiensis*, Kaskaskia group, Pulaski Co., Ky.; *op. cit.* p. 37, pl. ii.—*Z. peculiaris*, *ibid.*; *op. cit.* p. 34, pl. ii : n. spp.
- †*Zophocrinus*; WACHSMUTH & SPRINGER (336) p. 146.

(G.)—†CYSTIDEA.

Defined and restricted by removal of *Amphoridea* (p. 443), classified (p. 551); HÆCKEL (116).—Defined (p. 72), and classified (p. 73), system (p. 77), structure discussed (p. 78); the genera of Barrande "Syst. Silur. de Bohême" vol. vii referred to genera, sub-families, and families of Hæckel (p. 166); HÆCKEL (118).—Hæckel's definition discussed; GREGORY (109) p. 128.—Classification; JAEKEL (143).

General account and synopsis of chief genera; KOKEN (171) p. 288.—General account, no Orders recognised, but Families *Aristocystidæ*, *Camarocystidæ*, *Echinosphæritidæ*, *Cryptocrinidæ*, *Caryocrinidæ*, *Anomalocystidæ*, *Callocystidæ*, *Agelacrinidæ*; ZITTEL (356) p. 148, and ZITTEL-EASTMAN (357) p. 177.

Acanthocystida, sub-fam. nov. of *Palæocystida*, for *Acanthocystis* and *Archæocystis*; HÆCKEL (118) p. 64.

Acanthocystis; HÆCKEL (117) p. 402: redefined; HÆCKEL (118) p. 70: "has long been preoccupied among Protozoa by Carter" [to be precise, since 1863]; GREGORY (109) p. 133.—*A. briareus*, redescribed; HÆCKEL (118) p. 71, pl. i.

Achrdocystis, redefined and made to include *Cyclocrinus* Eichw. [which is no Echinoderm], *A. grewingkii*, redescribed; HÆCKEL (118) p. 56.

Agelacrinidæ, defined, includes *Agelacr.* (subgen. *Lepidodiscus*, *Hemicystis*, *Cytaster*, *Edriocaster*), *Mesites*, *Asteroblastus*, ? *Tiaracr.*; ZITTEL (356) p. 157, and ZITTEL-EASTMAN (357) p. 187.

Agelacrinus; HÆCKEL (117) p. 401: redefined (p. 112); *A. buchianus*, referred probably to *Edriocystis* (p. 113); *A. dicksoni* (p. 113); *A. vorticellatus*, redescribed (p. 112, pl. iii); HÆCKEL (118).

Agelacystida or *Agelacrinida*; HÆCKEL (117) p. 401.—*Agelacystida*, fam. nov., including sub-famm. *Hemicystida* and *Asterocystida*; HÆCKEL (118) pp. 77, 107.

Agelacystis, n. g., with genotype *A. hamiltonensis* [which unfortunately is genotype of *Agelacrinus*]; HÆCKEL (117) p. 401, & (118) p. 114, pl. iii.

Amorphocystis, n. g., with genotype "*Caryocystis testudinarius*, v. Buch." [non Hisinger] and including *C. pumilus*, Eichw.; JAEKEL in KOKEN (171) p. 411, footnote: name unnecessary, Review in Nat. Sci.

Amphoracystis, n. g., with type *A. irregularis* (olim *Deutocystis*) Barr., described and figured; HÆCKEL (118) p. 52.

Amphoræa, hypothetical ancestral genus; HÆCKEL (118) p. 31.

Amphoralia, subclass of *Amphoridea* (= *Amphoridea bilateralia*); HÆCKEL (116) p. 429: defined; HÆCKEL (118) p. 12.

Amphoridea, removed from Cystidea as a new Class, defined (p. 423), their system in a table (p. 430); HÆCKEL (116): proposed as Class; HÆCKEL (117) p. 394: defined (p. 9), classified (p. 11); HÆCKEL (118).

Amphoronia, subclass of *Amphoridea* (= *Amphoridea monaxonia*); HÆCKEL (116) p. 429: defined; HÆCKEL (118) p. 12.

Amygdalocystis, redefined, *A. florealis*, redescribed; HÆCKEL (118) p. 106.

Anomalocystidæ defined, includes *Trochocystis*, *Mitrocystis*, *Anomalocystis*, *Balanocystis*, *Dendrocystis*, *Pleurocystis*; ZITTEL (356) p. 156, & ZITTEL-EASTMAN (357) p. 185.

Anomocystida or *Pleurocystida*; HÆCKEL (117) p. 398.—*Anomocystida*, defined as including *Anomalocystida* and *Pleurocystida*, and fully discussed; HÆCKEL (118) pp. 12, 33.

Anomocystis, nom. nov. pro *Anomalocystis* Hall; HÆCKEL (117) p. 398: redefined; HÆCKEL (118) p. 40.—*A. cornuta*, and *A. disparilis*, redescribed; HÆCKEL (118) p. 41, pl. ii.

Anthocystida, sub-fam. nov. of *Callocystida*; HÆCKEL (118) p. 129.

- Anthocystis*, n. g., with genotype *A. halliana*, Niagara group, N. America, based on Hall's pl. 1, figg. 1-11 [which really represent the type of *C. jewetti*, genotype of *Callocystis*]; HAECKEL (118) p. 132: n. sp.
- Apiocystida*, sub-fam. nov. of *Callocystida*; HAECKEL (118) p. 129.
- Apiocystis*; HAECKEL (117) p. 401: redefined (p. 132); *A. elegans* (p. 133); *A. pentremitoides*, redescribed (p. 132, pl. iii); HAECKEL (118).
- Aporita*, criticised; HAECKEL (118) p. 19.
- Arachnocystis*; HAECKEL (117) p. 397: redefined (p. 64); *A. infausta*, redescribed (p. 65, pl. i); HAECKEL (118).
- Archæocystida* or *Protamphorida*, hypothetical family; HAECKEL (117) p. 396.
- Archæocystis*, nom. nov., hypothetical genus; HAECKEL (117) p. 396: redefined, and *A. medusa* described; HAECKEL (118) p. 71, pl. i.
- Aristocystida* or *Caryocystida* Haeckel non Neumayr (= *Holocystida*); HAECKEL (117) p. 397: defined and discussed; HAECKEL (118) pp. 12, 45.
- Aristocystidæ*, defined, includes *Aristocystis*, *Deutocystis*, *Craterina*, *Pyrocystis*; ZITTEL (356) p. 152, & ZITTEL-EASTMAN (357) p. 182.
- Aristocystis*; HAECKEL (117) p. 397: redefined, and *A. bohémica* redescribed; HAECKEL (118) p. 50, pl. ii.
- Ascocystida* or *Ascothuria*, fam. nov.; HAECKEL (117) p. 402, & (118) pp. 77, 119.
- Ascocystis*; HAECKEL (117) p. 402: defined and discussed (pp. 121, 124); *A. drabowiensis* (p. 125); HAECKEL (118).
- Asteroblastus*, redefined, and *A. stellatus*, redescribed, and compared with *A. volborthi*; HAECKEL (118) p. 117, pl. iii.
- Asterocystis*, n. g., with genotype *A. tuberculata* (olim *Asteroblastus*) Schmidt; HAECKEL (118) p. 116, pl. iii.
- Asterocystida*, sub-fam. of *Agelacystida*; HAECKEL (118) p. 111.
- Astroblastus*; HAECKEL (117) p. 401.
- Astrocystites*, n. g. [posterior to *Asterocystis* HAECKEL, v. supra], with genotype *A. ottawaensis*, Trenton Limest., Division St., Ottawa, "most nearly related to *Asteroblastus*"; WHITEAVES (345) p. 287, and figg.: n. sp.
- Atelocystida*, sub-fam. nov. of *Anomocystida*; HAECKEL (118) p. 37.
- Atelocystis*; HAECKEL (117) p. 398: redefined; HAECKEL (118) p. 41.
- A. gegenbauri*, Upper Silurian, Wenlock Limestone, Dudley [syn. of *Placocystis forbesianus*]; HAECKEL (118) p. 42, pl. ii: n. sp.
- Calix* Rouault, syn. of *Craterina*; HAECKEL (118) p. 54.
- Callocystida* or *Apiocystida*; HAECKEL (117) p. 401.—*Callocystida*, redefined, incl. sub-famm. *Anthocystida*, *Apiocystida*, and *Pseudocrinida*; HAECKEL (118) pp. 77, 125.—*Callocystidæ*, defined, includes *Pseudocr.*, *Lepadocr.*, *Apiocystis*, *Callocystis*, ? *Hybocystis*; ZITTEL (356) p. 156, & ZITTEL-EASTMAN (357) p. 186.
- Callocystis*; HAECKEL (117) p. 401: redefined, and *C. jewettii* redescribed on basis of Hall's pl. 1, figg. 12-18 [which Hall expressly makes a var. and not the type: see *Anthocystis*] (p. 131, pl. iii), *C. multipora* (p. 132); HAECKEL (118).
- Camarocystidæ*, defined, includes *Camarocr.* & *Lichenocr.*; ZITTEL (356) p. 154, & ZITTEL-EASTMAN (357) p. 183.
- Caryocrinidæ*, defined, includes *Hemicosmites*, *Caryocr.*, *Echinoenocr.*, *Glyptocystis*, *Homocystis*, *Mimocystis*; ZITTEL (356) p. 155, & ZITTEL-EASTMAN (357) p. 184.
- Caryocrinus*, redefined; HAECKEL (118) p. 143.—*C. ornatus*, redescribed; HAECKEL (118) p. 144, pl. iv: coil of gut inferred from sections; JAEKEL (142) p. 31.
- C. hammelli*, Niagara Group, Madison Co., Ind.; MILLER & GURLEY (233) Bull. Illinois Mus. ix, p. 65, pl. v.—*C. milliganæ*, Niagara Group, Decatur Co., Tenn.; *op. cit.* p. 63, pl. v: n. spp.

- Caryocystis*; HAECKEL (117) p. 397: redefined; HAECKEL (118) p. 59.—*C. alutacea*, vide sub *Heliopirum*.—*C. geometrica* and *C. granatum*, vide sub *Heliocrinum*.—*C. ovalis*, vide sub *Heliopirum*.—*C. prominens*, vide sub *Heliocrinum*.—*C. tenuistriata*, vide sub *Heliopirum*.—*C. testudinaria*, Buch et Auctt. [non Hisinger], redescribed; HAECKEL (118) p. 59, pl. ii: made type of n. g. *Amorphocystis*; JAEKEL in KOKEN (171) p. 411, footnote.
- C. angelini*, based on Angelin, pl. xiii, figg. 4–9 [which represent the original specimen of Hisinger, to which the name *testudinarius* is (quite erroneously) applied by all authors, Haeckel included; *angelini* therefore becomes genotype: see Zool. Rec. 1893]; HAECKEL (118) p. 59: n. sp.
- Chirocrinus*, syn. of *Glyptocystis*; HAECKEL (117) p. 402.
- Citrocystida*, sub-fam. nov. of *Palæocystida*, for *Echinosphæra*, *Citrocystis*, and *Palæocystis*; HAECKEL (118) p. 64.
- Citrocystis*, n. g., with type *Citrocystis citrus* (olim *Sphæronites*) Hisinger; HAECKEL (118) p. 68, pl. i.
- Comarocystida*, sub-fam. nov. of *Palæocystida*; HAECKEL (118) p. 64.
- Comarocystis*; HAECKEL (117) p. 397: redefined, and *C. punctata* redescribed; HAECKEL (118) p. 70, pl. i.
- Craterina*, incl. *Calix* Rouault, redefined, and *C. bohémica*, incl. *C. excavata* Barr., redescribed; HAECKEL (118) p. 54.
- Crinocystis chrysalis* Hall, doubtfully referred to *Palæocystis*; HAECKEL (118) p. 69.
- Cryptocrinidæ*, defined, includes *Cryptocr.*, *Echinocystis*, *Porocr.*, *Hypocr.*; ZITTEL (356) p. 154, and ZITTEL-EASTMAN (357) p. 184.
- Cryptocrinus*, redefined (p. 146), and *C. cerasus*, redescribed (p. 147); HAECKEL (118).
- Crystallocystis* Haeckel (=“*Echinosphæra sensu strictissimo!*”); HAECKEL (118) p. 66. [? n. g.]
- Cyathocystis*, redefined, and *C. plautinæ*, redescr.; HAECKEL (118) p. 115.
- Cystidea concomitans*, vide *Stromatocystis*.
- Cystoblastus*, as ancestor of *Blastoidea*; JAEKEL (141): redefined, and *C. leuchtenbergii* redescribed; HAECKEL (118) p. 130.
- Decamphora*, nom. nov., hypothetical ancestor of hypothetical *Protamphora*; HAECKEL (118) p. 33.
- Dendrocystis*; HAECKEL (117) p. 397: redefined (p. 54), and *D. sedgwicki* redescribed (p. 55, pl. ii); HAECKEL (118).
- Deutocystis*; HAECKEL (117) p. 397: redefined, and *D. modesta* redescribed; HAECKEL (118) p. 51, pl. ii.
- Diploporita*, criticised; HAECKEL (118) p. 19.
- Discocystis*, nom. nov. pro *Echinodiscus* Worthen & Miller non Agassiz; GREGORY (109) p. 131.—*D. optatus* is an Agelacrinid, and the genus is of doubtful validity; BATHER (31).
- Echinocystis*; BATHER (31).—*Echinocystis* Hall non Wyv.-Thoms., redefined; HAECKEL (118) p. 146.—*E. armata* (olim *Echinoencrinus*) Forbes, made type of *Echinocystis* Hall [with which it is not congeneric, and already is type of *Schizocystis* Jaekel]; HAECKEL (118) p. 146.
- Echinoencrinus*, syn. of *Glyptocystis*; HAECKEL (117) p. 402.—*E. baccatus*, referred to *Echinocystis*; HAECKEL (118) p. 146.
- Echinosphæra*; HAECKEL (117) p. 397: redefined; HAECKEL (118) p. 66.—*E. baltica* and *E. aranea*, vide sub *Heliocrinum*.—*E. aurantium*; JAEKEL (143) p. 389: redescribed; HAECKEL (118) p. 67, pl. i.
- Echinosphæritidæ*, defined, includes *Echinosphæra*, *Arachnocystis*, *Caryocystis*, *Orocystis*, *Palæocystis*; ZITTEL (356) p. 154, and ZITTEL-EASTMAN (357) p. 183.
- Edriocystis*, nom. nov. pro *Edrioaster*; HAECKEL (118) p. 133.—*E. bigsbyi* (olim *Edrioaster*), redescribed; HAECKEL (118) p. 118, pl. iii.

- Enneacystis*, n. g., with genotype *E. buchiana*, based on *Caryocr. ornatus* with 9 brachioles, Ordovician, Russia; HAECKEL (118) p. 143, pl. iv: n. sp.
- Eocystida* (= *Protamphorida*), defined (p. 12): defined and classified "als heuristische Hypothese"; HAECKEL (118) p. 30.
- Eocystis* Haeckel non Billings nec Walcott, hypothetical ancestral genus; HAECKEL (118) p. 31.
- Eucystis*; HAECKEL (117) p. 401: redefined; HAECKEL (118) p. 99.—*E. raripunctata*, redescribed; HAECKEL (118) p. 100.
- Fungocystida* or *Glyptosphaerida*; HAECKEL (117) p. 401.—*Fungocystida*, fam. nov., including sub-famm. *Glyptosphaerida* and *Malocystida*; HAECKEL (118) pp. 77, 101.
- Fungocystis*; HAECKEL (117) p. 401: redefined; HAECKEL (118) p. 104.—*F. rarissima*, redescribed, with restored figure, showing tentacles; HAECKEL (118) p. 105.
- Glyptocystida* (= *Caryocrinida* pars); HAECKEL (117) p. 402: redefined, including sub-famm. *Hexalacystida* and *Sycocystida*; HAECKEL (118) pp. 77, 136.
- Glyptocystidæ*, coil of gut inferred from varying positions of anus; JAECKEL (142) p. 34.
- Glyptocystis* (= *Chirocrinus*); HAECKEL (117) p. 402: redefined, incl. *Chirocrinus* Eichw.; HAECKEL (118) p. 150.—*G. cf. logani*; GARDINER, REYNOLDS, & REED (95) pp. 524, 538.—*G. multipora* Billings referred to *Callocystis*; HAECKEL (118) p. 132.—*G. pennigera*, redescr.; HAECKEL (118) p. 150, pl. iv.—*G. sp.*, plates; WHITEAVES (344) p. 159.
- Glyptosphaera*; HAECKEL (117) p. 401: redefined, and *G. leuchtenbergi*, redescribed; HAECKEL (118) p. 103.
- Gomphocystis*; HAECKEL (117) p. 401: redefined, and *G. tenax* redescribed; HAECKEL (118) p. 115, pl. iii.
- Haplocystis* Roem., referred to *Lepidodiscus*; HAECKEL (118) p. 113.
- Haploporita*, criticised; HAECKEL (118) p. 19.
- Heliocrinum*, subgen. nov. of *Heliocystis* for *Caryocystis granatum*, *Echino-sphaera baltica*, *E. aranea*, *Caryocystis prominens*, and *C. geometrica*; HAECKEL (118) p. 58.
- Heliocrinus*, vide sub *Heliocystis*.—*H. radiatus*, vide sub *Heliopirum*.
- Heliocystis*, nom. nov. pro *Heliocrinus* Eich., redefined, and *H. radiata* redescribed; HAECKEL (118) p. 58, pl. ii.
- Heliopirum*, subgen. nov. of *Heliocystis* for *Heliocrinus radiatus*, *Caryocystis ovalis*, *C. tenuistriata*, and *C. alutacea*; HAECKEL (118) p. 59.
- Hemicosmites*, redefined; HAECKEL (118) p. 141.—*H. piriformis*, redescribed; HAECKEL (118) p. 142, pl. iv.
- Hemicystida*, subfam. of *Agelacystida*; HAECKEL (118) p. 110.
- Hemicystis*; HAECKEL (117) p. 401: redefined; HAECKEL (118) p. 111.—*H. granulata*, redescribed; HAECKEL (118) p. 112, pl. iii.
- Hexalacystida* (= *Caryocrinidæ*), subfam. nov. of *Glyptocystida*; HAECKEL (118) p. 140.
- Hexalacystis*, n. g., with genotype *H. verrucosa* (olim *Hemicosmites*) Eichw., redescribed; HAECKEL (118) p. 142, pl. iv.
- Holocystis* Hall non Lonsdale (*Megacystis* Hall); HAECKEL (117) p. 397: redefined, and *H. cylindrica* redescribed; HAECKEL (118) p. 60.
- Homocystis*; HAECKEL (117) p. 402: redefined; HAECKEL (118) p. 149.—*H. altera*, redescribed; HAECKEL (118) p. 150, pl. iv.
- Hypocrinus*, redefined, and *H. schneideri*, redescribed; HAECKEL (118) p. 147.
- Lapillocystis fragilis*, referred to *Palamphoridae*; HAECKEL (118) p. 33.
- Lepadocrinus*; HAECKEL (117) p. 401: redefined; HAECKEL (118) p. 134.—*L. gebhardi*, redescribed; HAECKEL (118) p. 135, pl. iii.—*L. quadri-fasciatus*, restored figure; BATHER (28) p. 101.

- Lepidodiscus*, redefined, incl. *Haplocystis*, and *L. cincinnatiensis* redescribed; HÆCKEL (118) p. 113.
- Lichenocystis*, nom. nov. pro *Lichenoides* "da dieser Name bereits verbraucht war" [where? when? by whom?], and *L. prisca* (olim *Lichenoides*) Barr. redescribed; HÆCKEL (118) p. 148, pl. iv.
- Lichenoides prisca*; JAHN (145) pp. 685, 691, 697, 719, 740, 752: re-described, referred to *Caryocrinidæ*; POMPECKJ (268) p. 502, pl. xiii.
- Lysocystis*; BATHER (31).
- Macrocytella*; HÆCKEL (117) p. 402.—*M. maria*, referred to *Mimocystis* or *Homocystis*?; HÆCKEL (118) p. 149.—*M. bavarica* (olim *Cystidea*) Barr.; POMPECKJ (269) p. 90.
- Malocystis*; HÆCKEL (117) p. 401: redefined, and *M. murchisoni* re-described; HÆCKEL (118) p. 105.
- Megacystis*, vide sub *Holocystis*.
- Megaplacta* (= *Parcystidea*), ord. nov.; HÆCKEL (118) p. 77.
- Mesites*; HÆCKEL (117) p. 401: redefined; HÆCKEL (118) p. 118.—*M. pusireffskii*, redescribed; HÆCKEL (118) p. 119.
- Microplacta* (= *Lucystidea*), ord. nov.; HÆCKEL (118) p. 77.
- Mimocystis*; HÆCKEL (117) p. 402: redefined, incl. *Macrocytella* Callaway [which is 10 years older]; HÆCKEL (118) p. 149: considered syn. of *Macrocytella*; POMPECKJ (269) p. 90.—*M. bohémica*, re-described; HÆCKEL (118) p. 149, pl. iv.
- Mitrocystis*; HÆCKEL (117) p. 398: redefined, and *M. mitra* redescribed; HÆCKEL (118) p. 43, pl. ii.
- M.*, (?) n. sp., *Paradoxides* beds on the Studená hora, N. of Tejšovic, Bohemia, also at Pod trním; POMPECKJ (268) p. 504, pl. xiv: this is the fossil described by Jahn (48) Zool. Rec. 1894 as "Eine andere neue Cystideengattung"; JAHN (145) pp. 660, 691.
- Orocystida*, subfam. nov. of *Aristocystida*; HÆCKEL (118) p. 49.
- Orocystis*; HÆCKEL (117) p. 397: redefined; HÆCKEL (118) p. 56.—*O. helmhackeri*, redescribed; HÆCKEL (118) p. 57.
- Palæocystida* or *Echinosphærida*, s. str.; HÆCKEL (117) p. 397: (= *Archæocystida*), defined (p. 12), defined, skeleton described (p. 61), classified (p. 64); HÆCKEL (118).
- Palæocystis*; HÆCKEL (117) p. 397: redefined; HÆCKEL (118) p. 69.
- P. pentolena*, Ordovician, Canada; HÆCKEL (118) p. 69, pl. i: n. sp.
- Palamphora*, nom. nov., hypothetical ancestral genus; HÆCKEL (117) p. 396, and (118) p. 33.
- Palmacystis*, n. g., with genotype *Palmacystis palmata*, based on "Hydrophores palmées," Ordovician, Bohemia; HÆCKEL (118) p. 151, pl. iv: n. sp.
- Pentactæa*, hypothetical ancestral genus; HÆCKEL (117) p. 396, and (118) p. 32.
- Phacocystis* Hæckel, quoted as syn. of *Pseudocrinus*, from HÆCKEL (117) [but the name does not occur in *loc. cit.*]; HÆCKEL (118) p. 135.
- Pirocystida*, sub-fam. nov. of *Aristocystida*; HÆCKEL (118) p. 49.
- Pirocystis*, nom. bene emend. pro *Pyrocystites* Barr., redefined, and *P. pirum* redescribed; HÆCKEL (118) p. 53, pl. ii.
- Placocystida*, sub-fam. nov. of *Anomocystida*; HÆCKEL (118) p. 37.
- Placocystis*, redefined (incl. *Anomalocystis* Woodw.), and *P. crustacea*, nom. mut. pro *Anomalocystis* vel *Anoplura* [Enoploura] vel *Ateleocystis balanoides* Meek, redescribed, with restored fig.; HÆCKEL (118) p. 39.—*P. forbesianus*, redescribed, under name *Ateleocystis gegenbauri*, n. sp.; HÆCKEL (118) p. 42: H. Woodward's old figure modified and with a new legend; BATHER (28) p. 102.
- Pleurocystida*, combined with *Anomalocystida*, as sub-fam.; HÆCKEL (118) pp. 33, 37.

- Pleurocystis*; HAECKEL (117) p. 398: redefined, and *P. filitexta*, redescribed; HAECKEL (118) p. 44, pl. ii.
- Pomocystida* (= *Sphaeronitida* pars); HAECKEL (117) p. 401: fam. nov. including sub-famm. *Sphaeronitida* and *Proteocystida*; HAECKEL (118) pp. 77, 94.
- Pomocystis*, n. g., with genotype *P. uva* (olim *Sphaeronis*) Ang. and including *P. sulcifera* and *P. minuta* Ang. sp.; HAECKEL (117) p. 401, and (118) p. 99.
- Pomonites*, n. g., with genotype *P. pentactæa*, Ordovician of Scandinavia; HAECKEL (118) p. 96: n. sp.
- Pomosphaera*, n. g., with genotype *P. oblonga* (olim *Sphaeronis*) Ang.; HAECKEL (118) p. 99.
- Protamphora*, nom. nov., hypothetical ancestor of hypothetical *Palamphora*; HAECKEL (117) p. 396, and (118) p. 33.
- Proteocystis*; HAECKEL (117) p. 401: redefined, and *P. flava* redescribed; HAECKEL (118) p. 100.
- P. barrandena*, based on Barrande, pl. xxx, figg. 23-26, Lower Devon., Bohemia; HAECKEL (118) p. 101: n. sp.
- Protocrinus*; HAECKEL (117) p. 401: redefined, and *P. fragum* (incl. *P. oviformis* Volb. pars), and *P. oviformis* Eichw. redescribed; HAECKEL (118) p. 104.
- Pseudocrinida*, sub-fam. nov. of *Callocystida*; HAECKEL (118) p. 129.
- Pseudocrinus*; HAECKEL (117) p. 401.—*P. bifasciatus*, redescribed; HAECKEL (118) p. 135, pl. iii.—*P. oblongus*, referred to *Staurocystis*, and *P. quadrifasciatus* made type of *Staurocystis*; HAECKEL (118) p. 134.
- Psolocystis*, nom. nov., genus hypotheticalum, with genotype *P. decanema*, species hypothetica, belonging to *Ascocystida*; HAECKEL (118) p. 124.
- Pyrocystis*; HAECKEL (117) pp. 397, 402 [vide *Pirocystis*].
- Rhombifera*, called *Rhomboporita* and then criticised; HAECKEL (118) p. 19.
- Scolocystis*, nom. nov. pro *Echinocystis* Hall non Thomson; GREGORY (109) p. 133: but was preocc. by *Lysocystis* S. A. Miller; BATHER (31).
- Sphaerocystis*; HAECKEL (117) p. 401: redefined, and *S. multifasciata*, redescribed; HAECKEL (118) p. 133, pl. iii.
- Sphaeronites*; HAECKEL (117) p. 401: redefined and restricted, includes *S. pomum*, *S. globulus*, *S. ovalis*; *S. pomum*, redescribed; HAECKEL (118) p. 98.—*S. pyriformis*, Keisley Limestone; REED (276) p. 82.
- Sphaeronitida*, defined, includes *Sphaeronis*, *Glyptosphaera*, *Protocr.*, *Fungocystis*, *Proteocystis*, *Holocystis*, *Eucystis*, *Gomphocystis*; ZITTEL (356) p. 153, and ZITTEL-EASTMAN (357) p. 182.
- Staurocystis*, n. g., with genotype *S. quadrifasciata* (olim *Pseudocrinus*); HAECKEL (118) p. 134, pl. iii.—*S. oblonga* (olim *Pseudocr.*); *loc. cit.*
- Staurosoma rarum* Barr., doubtfully referred to *Staurocystis*; HAECKEL (118) p. 134.
- Stephanocystis*, hypothetical genus (also called *Stephanamphora*); HAECKEL (117) p. 396.
- Stromatocystis*, n. g. (p. 505), with genotype *S. pentangularis*, n. sp. (p. 506), Cambrian of Podtrnín near Tejšovic, Bohemia, perhaps incl. *Cystidea concomitans*, Barr.; POMPECKJ (268) Jahrb. geol. Reichsanst. xlv, pl. xiii.—*S. pentangularis* is the fossil described by Jahn (48) Zool. Rec. 1894 as "Eine neue...Cystideengattung (mit dem *Agelacrinus* noch am nächsten verwandt) in zwei Formen"; JAHN (145) pp. 660, 691, 752.
- Sycocystida*, subfam. nov. of *Glyptocystida*; HAECKEL (118) p. 141.
- Sycocystis* (= *Echinoencrinus*); HAECKEL (117) p. 402: redefined, incl. *Echinoencrinus* pars, and *Gonocrinus* Eichw.; HAECKEL (118) p. 145.—*S. angulosa*, incl. *Echinoencrinus senckenbergi* et *E. striatus*, redescribed; *loc. cit.*

- Thuriocystis*, nom. nov.; HAECKEL (117) p. 402: genus hypotheticalum, with genotype *T. pentadecalis*, species hypothetica, belonging to *Ascocystida*; HAECKEL (118) p. 124.
- Tiarocrinus quadrifrons*, doubtfully referred to *Staurocystis*; HAECKEL (118) p. 134.
- Trigonocystis*, n. g., with type *T. trigona*, incl. *Trochocystis bohemia*, Barr. var. pl. iii, figg. 29-38, Cambrian, Bohemia; HAECKEL (118) p. 38, pl. ii: n. sp.
- Trinemacystida*, subfam. nov. of *Palæocystida*, for *Arachnocystis* and *Trinemacystis*; HAECKEL (118) p. 64.
- Trinemacystis*, n. g., with type *T. triactis* (3-rayed var. of *Echinosphæra aurantium*), perhaps incl. *E. gyllenhali* Quenst., Ordovician, Scandinavia; HAECKEL (118) p. 65: n. sp.
- Trochocystis*; HAECKEL (117) p. 398: redefined; HAECKEL (118) p. 38.—*T. bohemicus* of Jahn (48) Zool. Rec. 1894, p. 271, is *Stromatocystis*; JAHN (145) p. 660, see also pp. 697, 701, 719, 731, 732, 740, 743, 745, 742: various plates; POMPECKJ (268) p. 503, pl. xiii: redescribed; HAECKEL (118) p. 38.

(H.)—+BLASTOIDEA.

- Defined (p. 452), classified (p. 460): Order I. *Eublastoidea* or *Pentremitaria* (*Codonasterida*, *Orophocrinida*, *Elæocrinida*, *Pentremitida*).
Order II. *Parblastoidea* or *Astrocrinaria* (*Eleutherocrinida*, *Astrocrinida*); HAECKEL (116).
- General account; KOKEN (171) p. 286.—General account, classification follows Etheridge & Carpenter; ZITTEL (356) p. 158: with additional notes by Wachsmuth; ZITTEL-EASTMAN (357) p. 188.
- Blastoidea, derived from *Cystoblastus*; JAEKEL (141): relations to Cystidea, *Blastoidocrinus*, *Asteroblastus*, and *Astrocystis* (Whiteaves non Hacck.); WHITEAVES (345) p. 291.
- Codaster jessicæ*, Chouteau limestone, Sedalia, Mo.; MILLER & GURLEY (234) Bull. Illinois Mus. x, p. 89, pl. v, n. sp.
- Orophocrinus fusiformis*, restored figure; BATHER (28) p. 101.
- Pentremitidea*, diagrammatic restoration (p. 835, fig. 11).—*P.* sp. *?eifelensis*, described, section across theca (p. 831), *P.* cf. *gilbertsoni*, described, section of hydrospires (p. 829, pl. xxvi); OEHLERT (250).

(K.)—+INCERTÆ SEDIS.

- “Spheroidal bulb, of nodose, sculptured plates”; MILLER & GURLEY (235) Bull. Illinois Mus. xii, p. 46, pl. ii.
- Spatangopsis*, see under IV, C.

XV. VERMES.

BY

FLORENCE BUCHANAN, B.Sc.

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INTRODUCTION.*

THE titles of papers relating to the HEMICHORDA and ROTIFERA are again given apart from the rest and will be found on pp. 44 and 46, respectively, of this record.

There has been a lively dispute during the year with regard to the homologies of several of the organs in the different members of the group *Hemichorda* and in the larva of *Phoronis*; but our actual knowledge of the group has also been added to by the discovery and description of new forms of the *Balanoglossus* group by WILLEY (276) & HILL (269), and a careful account of the anatomy of *Cephalodiscus* and of the *Actinotrocha*-larva of *Phoronis* by MONTGOMERY (271).

Our knowledge of the nature of, and the conditions for producing, the different kinds of eggs in the *Rotifera* is furthered by the work of ERLANGER & LAUTERBORN (284), and NUSBAUM (290). JENNINGS in his elaborate memoir on the early development of *Asplanchna* (286) gives important evidence against the purely mechanical theory of cleavage.

No work on the *Mesozoa* is recorded this year.

By far the most important systematic work on the *Polychæta* published during the year is that of EHLERS on the Hamburg collections (67). It is of especial value because the author has taken the trouble to compare his specimens with the original ones of Grube and Kinberg before identifying them with their species, and he has thus been able to correct, or modify, the descriptions of the latter author and to point out errors in his figures; and also on account of the excellent figures by which his own descriptions of 36 new species are accompanied. The same author (68) has reported on some polychætes from E. Africa, shewing the identity of some of them with Mediterranean or W. Indian species. With regard to the systematic of separate families: MÉSNIL's discovery of a new genus, and description of 4 other spp. (2 new), intermediate between the *Maldanidæ* and *Arenicolidæ* shews the close connection that exists between these two families (169-III). A new Maldanid is also described by LEWIS (150). MÉSNIL (169-II) has some further remarks to make on the *Spionidæ*; he would remove 2 species of *Aonides* from this family and place them, as a new genus, amongst the *Cirratulidæ*, and he would create a new family intermediate between the *Spionidæ* and *Chaetopteridæ* for the genera *Disoma* and *Pæcilochætus*. He would also introduce *Ctenodrilus* into the family *Cirratulidæ* as a retrograde species which has lost all power of sexual reproduction (171). Together with CAULLERY he has made a study of the genus *Spirorbis*, from 28 representative species, 12 new species are described, and the morphology, phylogeny and geographical distribution of the genus, together with its position in the family to which it belongs, is ably dealt with (173). Another new species of the genus is described by SCHIVELEY (222). A new Capitellid is also described by MÉSNIL (168).

For those who are working systematically at the *Polychæta* a note giving the year 1822 as the date of publication of Savigny's "Annélides" in the "Description de l'Égypte" is worth recording (see P. zool. Soc. London, 1897, p. 695).

The most important contribution to our knowledge of the internal anatomy of the *Polychæta* is FAUVEL's beautifully illustrated work on the *Ampharetidæ* (76). In connection with what he has to say on the relations

* The Recorder regrets having been unable to obtain some of the memoirs published during the year. Amongst these may be mentioned those on the Fauna of L. Balaton, which contain descriptions of several new species. [See Nos. 252, 248, 208, 63, and 281.] It is hoped that these, and also other memoirs whose titles are not here referred to, will be fully recorded next year.

of the genera to one another should be read BIRULA's views on the members of the family occurring in the Black and Caspian Seas and their relations to one another and to the arctic species (15). ARWIDSSON (6) gives a much wished-for account of the internal anatomy of 2 genera of *Glyceridæ*. FAUVEL, having discovered a 2nd specimen of *Eupolyodontes cornishii* is able to give the histology of the peculiar branchia-like filaments on the back of this Acoëtid and to describe its pharynx and jaws (74). He has also studied the vascular system of the *Amphictenidæ* (75). SCHREINER (224) details the histological structure of the eyes in the different families of Errant annelids; GOODRICH (91) describes the interesting nephridia and ciliated organs of *Hesionæ*, *Tyrrhena* and *Nephtlys*; CANTACUZÈNE (46) the different phagocyte organs, some of them regularly arranged in each segment, in *Nephtlys*, *Glycera*, *Arenicola* and *Spirographis*. GOODRICH (92) contributes to our knowledge of the internal anatomy of the interesting genus *Sternaspis*.

As regards the *Gephyrea*: GRUVEL & KUNSTLER (98) give an account of the history of the "urns" and of what they term "enigmatical vesicles" in the cœlomic fluid of *Sipunculus*, evidently considering them independent organisms. A more detailed account with figures is promised. A pigment, to which the name of "*thalassemine*" is given, occurring in a new British Echiuroid is reported on, and compared with known pigments, by Sherrington, Noel Paton and Miss Newbigin in HERDMAN'S paper (105). The mode of occurrence and optical properties of the pigments *chætopterin* and *bonellin* is discussed by LANKESTER (144) who gives Engelmann's measurements of the absorption spectra of both.

Interesting new *Oligochæta* are described by MICHAELSEN (175 & 176), BEDDARD (9), BENHAM (10), ROSA (213) to (216), EISEN (70), FEDARB (77) and SMITH (232). The physiology of the group has been carefully studied by CUÉNOT (59) in 15 species (5 of them freshwater) and in a *Branchiobdella*, with especial reference to glycogen- and fat-storing cells, the cœlomic corpuscles, the blood corpuscles, the dorsal pores, and organs for excretion; the mode of attacking parasites by phagocytes is also described. EISEN (70) describes what appear to be auditory cells in a *Pontoscolex*; and the minute anatomy of dorsal vessel and cardiac body in Enchytræids is shortly described by RAKOWSKI (205) and (192).

Interesting experimental observations have been made to determine the causes of self-amputation in earthworms, and in a marine worm, by HESCHELER (106), and its relation to asexual reproduction is discussed by GIARD (86), see also MICHEL (177), p. 313. MORGAN (187) and MICHEL (177) recount experiments on the power of regeneration of lost parts in earthworms which confirm those of Hescheler published last year. KORSCHOLT (137) finds this power much greater than the other authors referred to, the discrepancy being apparently due to the remarkable fact that small pieces of a worm regenerate more complete new heads than larger ones. JOEST (127) has also observed self-amputation and has made a number of experiments with sewing together different parts of earthworms either of the same or of different species. In this way double headed or double tailed monsters were sometimes produced. MORGAN (187) gives the results of a few similar experiments. A specimen of a Cirratulid with a second tail, not artificially produced, is described by MÉSNIL & CAULLERY (170). Methods of producing abnormalities in Planarians are described by RANDOLPH (206), whose experiments shewing the enormous regenerative power in these animals are also of interest. The histological processes involved in regeneration are made the subject of important memoirs by HESCHELER (107), the re-development of the central nervous system and the stomadeum in *Lumbricus* being especially dealt with; and by HEPKE (104) for the *Naidæ*. v. WAGNER (256) confirms Hescheler's account of the reformation of the stomadeum for *Lumbriculus*. HESCHELER points out the

incompleteness of Rievel's observations recorded last year. MICHEL has two short papers (178) & (179) on the histological processes involved in the regeneration of the posterior-end in oligochætes and polychætes, and comes to the same conclusion as HEPKE that all new tissue is derived from the ectoderm.

With regard to the *Hirudinea* BLANCHARD'S report on the species in the Leyden museum (18), many of them from an old collection from the Dutch East Indies, and that on a new collection from the same locality (20) are important. He also reports on an E. African collection (17). KOWALEWSKY'S memoir on the physiology of the *Clepsinidæ*, of which an abstract was recorded last year, is now published (141). HESSE (109 III) has studied the eyes in 14 spp. and is able to give us a good account of their formation and structure. JOHANSSON has a valuable memoir on the anatomy of the fish-leeches of Sweden (128) and also one on the circulation in two of them (129). APÁTHY (5) deals with the nature and function of the neck glands in *Hirudo*, and BRISTOL (36) has a communication on the morphology of the nervous system in *Nephelis*.

LÖNNBERG (158) gives a genealogical tree to express his views with regard to the origin and relationships of the different parasitic *Platyhelminthes*. The question of the nature of the epithelium is again raised by BOTT (32) who is answered by BLOCHMANN (22). A representative of a genus of cestode hitherto thought peculiar to Rodents has been found in a bird (84). Other remarkable bird-cestodes are described by DIAMARE (65 & 66) and JACOBI (116 & 117), and BRAUN (35) has concluded his account of the genital organs of cestodes for the "Thierreich" and begun the embryology. The occurrence of trematodes in fresh-water fish, and the conditions that determine the same, is made the subject of memoirs by HAUSMANN (103) and RATZ (208). JÄGERSKIÖLD (121) describes a new one-suckered trematode with anatomy like that of a two-suckered one. The minute anatomy of the muscular and nervous system of trematodes is ably treated by BETTENDORF (14), while COHN (54) has a note on the arrangement of nerves in the proglottids of cestodes.

The part on *Nemertinea* for Bronn's 'Thierreich' has been begun, and has fortunately been assigned to BÜRGER (40). JOUBIN has written the article on the group for Blanchard's Treatise on Zoology (131). The anatomy of some of Verrill's so-called "new" species is described by MONTGOMERY (184), who also has papers on the histology of the central nervous system and connective tissues (181 & 182). He criticises (182) Bürger's classification of the Metanemertines, and both he and LEBEDINSKY (147) give information to throw light on the morphological significance of the body cavity in that group. Interesting excretory organs and their relation to the vascular system are described in *Stichostemma* by MONTGOMERY (183) and in a *Tetrastemma* by BÖHMIG (25).

New land-planarians from Australia (239), New Zealand (64), the Fiji Islands (240), the Celebes (96), and S. America (95) have been described. Freshwater ones from E. Africa (24), and Illinois (266); and brackish-water ones from the Mediterranean (41). WILLEY (264) describes a most interesting new rhabdocæl which is asymmetrical and probably belongs to his group of originally radially symmetrical rhabdocæls (*Archiplanoidea*), see (263). JANDER'S investigations on the nature of the epithelium of the pharynx in Tricladis is important (123), as are also those of HESSE (109 II) on the organs for perception of light in all the different groups of *Platyhelminthes* in which such occur. BERGENDAL publishes an elaborate monograph on the genus *Uteriporus* (12).

v. LINSTOW (154) suggests a new classification of the *Nematoda*, and describes new species (152 & 154). STOSSICH (244) has an important monograph on the *Filaria* and *Spiroptera* giving a good bibliography and describing 317 spp. belonging to the genera *Filaria*, *Spiroptera*, *Oxyspirura*,

Filaroides, *Spiroxys* and *Gongylonema*. CAMERANO (45) has one on the *Gordiidae* for which group he proposes a new classification (see also 44), and he describes new species (42 & 43), as does also JÄGERSKIÖLD (120). The excretory organs of nematodes have been investigated experimentally by METALNIKOFF (174) and NASSONOW (189), lymphatic glands by NASSONOW (191); the structure of the œsophagus is described by JÄGERSKIÖLD (119).

Several papers on the maturation and cleavage of the egg have appeared for which see for the Polychæta Nos. 50, 51, 52, 166, 250 & 251, for Myzostoma No. 262, for Nemertines No. 147, for Polyclads Nos. 139 & 79, for Nematodes Nos. 226 & 245, and for Rotifers Nos. 284, 286, 294.

I. TITLES.*

[ANNELIDA, PLATYHELMINTHES AND NEMATHELMINTHES.]

1. AIDA, T. (1) Chætognaths of Misaki Harbor. Annot. Zool. Japon. i, pp. 13-21, pl. 3 and 1 fig. in text. Abstract, J. R. Micr. Soc. 1897, pp. 386 & 387.
 2. *——. (2) On the growth of the ovarian ovum in Chætognaths (Prelim. Note). Annot. Zool. Japon, i, pp. 77-81, pl. iv.
 3. ALBARRAN, J. & BERNARD, L. Sur une tumeur épithéliale d'origine parasitaire (*Bilharzia hæmatobia*). C.R. Soc. Biol. (10) iv, pp. 645-647.
 4. ANDREWS, E. A. Spinning in *Serpula* eggs. Amer. Natural. xxxi, pp. 818-20.
 5. APÁTHY, S. Die Beschaffenheit und Funktion der Halsdrüsen von *Hirudo medicinalis*, mit Rücksicht auf die klinische Verwendung ihres Sekretes. SB. Siebenburg. Ver., Medicin. Abth. xix, pp. 37-77, pls. iv-vi. See Biol. Centrbl. xviii, No. 6, p. 218.
- ARNONE. [See COLUCCI & ARNONE (56).]
6. ARWIDSSON, J. Zur Kenntniss der Gattungen *Glycera* und *Goniada*. Bih. Svenska Ak. xxiii, Afd. iv, No. 6, 30 pp., 2 pls.
 7. ASKANAZY, M. Berichtigung der Bemerkungen P. Cerfontaines. Centrbl. Bakter. (1) xxi, pp. 405-407.
[Cf. CERFONTAINE (49).]
 8. AURIVILLIUS, C. W. S. Das Plankton der Baffins Bay und Davis Strait, eine thiergeographische Studie. Lilljeborg's Festschr., Upsala, 1896, pp. 179-212, pl. x.
2 spp. *Chætognatha*, 1 new.
 9. BEDDARD, F. E. On a collection of earthworms from South Africa belonging to the genus *Acanthodrilus*. With an Appendix: on a new genus of earthworms belonging to the family *Eudrilidae*. P. Soc. zool. London, 1897, pp. 336-349 and 3 figg. in text.
 10. BENHAM, W. B. New Species of *Perichæta* from New Britain and elsewhere; with some remarks on certain diagnostic characters of the genus. J. Linn. Soc. Lond. xxvi, pp. 198-225, pls. xv & xvi, & 4 figg. in text.
 11. BENSLEY, R. R. Two forms of *Distomum cygnoides*. Centrbl. Bakter. (1) xxi, pp. 326-331, pl. ii.

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

12. BERGENDAL, D. (1) Studier öfver Turbellarier. II. Om byggnaden af *Uteriporus*, Bgdl., jämte andra Bidrag till Trikladernas anatomi. Acta Univ. Lund. xxxii, No. iv, pp. 1-124, 6 pls. German Abstract, pp. 111-115.
13. —. (2) Zur Parovariumfrage bei den Tricladen. Lilljeborg's Festschr., Upsala, 1896, pp. 281-300, pl. xv.
BERNARD. [See ALBARRAN & BERNARD (3).]
14. BETTENDORF, H. Ueber Muskulatur und Sinneszellen der Trematoden. Zool. Jahrb. Anat. x, pp. 307-358, pls. xxviii-xxxii, & 1 fig. in text.
15. BIRULA, A. (1) Zamyetka o vidakh roda *Amphicteis* Grube, vodyashchikhysya v Chernom i Kaspiiskom moryakh. (Note on the species of the genus *Amphicteis*, Grube, of the Black and Caspian Seas.) Bull. Ac. St. Petersb. vii, pp. 9-26. In Russian.
16. —. (2) Materiliu dlya biologhii i zoogeographii preimushchestvenno russikh morei. II. Hydrozoa, Polychæta i Crustacea, sobranniuya Dr. A. L. Botkine v Enisejskoï i Obskoï ghubakh lyetom 1895 gh. (Researches on biology and zoogeography, chiefly in Russian Seas. II. Hydrozoa, Polychæta and Crustacea, collected by Dr. A. L. Botkine in 1895 in the Gulfs of Yenesei and Obi.) Ann. Mus. zool. St. Petersb. 1897, No. 1, 116 pp., 10 pls. In Russian.
17. *BLANCHARD, R. (1) Hirudineen. Die Thierwelt Ost-Africas, iv, Lfg. ii, Berlin (Dietr. Reimer), 1897, 8 pp., 1 pl., & 3 figg. in text.
18. —. (2) Hirudinées du Musée de Leyde. Notes Leyden Mus. xix, pp. 73-113, pls. iv-vi, & 23 figg. in text.
Including MS. notes of the date 1821-3, by KUHLE & v. HASSELT, concerning Leeches of Dutch E. Indies, with identification of their spp.
- 19.* —. (3) Le *Davainea madagascariensis* à la Guyane. Bull. Ac. med. Paris, Jan. 1897, 5 pp. Abstract, Zool. CB. iv, p. 350.
20. —. (4) Hirudinées des Indes néerlandaises. Weber's Zool. Ergebn. in Nederl. Ost-Indien, iv, pp. 332-355, 11 figg. in text.
21. — & RICHARD, J. Sur la faune des lacs élevés des Hautes Alpes. Mem. Soc. zool. France, x, pp. 43-61.
22. BLOCHMANN, F. Zur Epithelfrage bei Cestoden. Zool. Anz. xx, pp. 460-463, 1 fig.
23. BOCK, M. v. Ueber die Knospung von *Chaetogaster diaphanus*. Jena. Zeitschr. xxxi, pp. 105-152, pls. vi-viii.
- 24.* BÖHMIG, L. (1) Turbellarien. Die Thierwelt Ost-Africas, iv, Lfg. ii, Berlin (Dietr. Reimer), 1897, 12 pp., 1 pl.
25. —. (2) Vorläufige Mittheilung über die Excretionsorgane und das Blutgefässsystem von *Tetrastemma græcense*, Böhmig. Zool. Anz. xx, pp. 33-36. English translation: Ann. Nat. Hist. xx, pp. 324-326.
26. BOLSUS, R. P. H. (1) Les défenseurs de la continuité actuelle des néphridies et des "entonnoirs" dans les Hirudinées. Ann. Soc. Bruxelles, xix, Mém., pp. 197-202.
27. —. (2) Note préliminaire sur des parasites de quelques Hirudinées. T. c. pp. 203-207, 1 pl.
28. —. (3) "Anatomie des organes ciliés des Hirudinées du genre Glossiphonides." Report by HAHN & BUISSERET. Op. cit. xix, C.R., pp. 18-20.

29. [BOLSIUS, R. P. H.] (4) Sur le canal néphridien dans les Glossiphonides et 'l'entonnoir' néphridien dans les Herpobdellides. Résumé. *Op. cit.* xx, C.R., pp. 117 & 118.
30. BORELLI, A. Viaggio del Dott. Alfredo Borelli nel Chaco boliviano e nella Repubblica Argentina. v. Planarie d'acqua dolce. *Bol. Mus. Torino*, xii, N. 288, 4 pp.
31. BOS, J. RITZEMA. Eenige opmerkingen over de bietenmoehheid van den grond en de oorzaak van deze; de bietenmematode (*Heterodera schachtii*). *Maandbl. Genoot. Amsterdam*, xxi, pp. 1-16, 11 figg.
32. BOTT, A. Ueber einen durch Knospung sich vermehrenden *Cysticercus* aus dem Maulwurf. *Zeitschr. wiss. Zool.* lxiii, pp. 115-140, pls. vi & vii. Abstract, *Zool. CB.* v, pp. 42-45.
33. BRAUN, M. (1) Zur Entwicklungsgeschichte der *Cysticercus longicollis* Rud. *Zool. Anz.* xx, pp. 1 & 2.
34. ———. (2) Ueber *Distomum lucipetum* Rud., *t. c.* pp. 2 & 3.
35. ———. (3) Bronn's Klassen und Ordnungen des Thier-reichs. Bd. iv, Würmer.
Continuation: pts. 1-iv, pp. 1407-1534, pls. liii-lviii, & figg. in text.
36. BRISTOL, C. L. The metamerism of *Nepheleis*. A contribution to the morphology of the nervous system, together with a description of *Nepheleis lateralis*. *Zool. Bull.* i, pp. 35-39.
37. BROWN, A. Fragmentation in *Lineus gesserensis*. *P. R. Soc. London*, lxi, pp. 28-29. (Abstract only.)
38. *BROWN, T. R. Studies on Trichinosis. *Bull. Johns Hopkins Hosp. Med. Soc.* viii, No. 73.
39. BRUMPT, E. Sur un Copépode nouveau (*Saccopsis alleni*, n. sp., parasite de *Polycirrus aurantiacus*, Grube). *C.R. Ac. Sci.* cxxiv, pp. 1464-1467, 6 figg.
40. BÜRGER, O. Bronn's Klassen und Ordnungen des Thier-reichs, iv, Würmer., Suppl. Nemertini (Schnurwürmer), Lfg. 1-4, pp. 1-64, pls. i-iv, 2 figg. in text.
41. CALANDRUCCIO, S. Anatomia e sistematica di due specie nuove di Turbellarie. *Atti Acc. Gioen.* (4) x, Mem. xvi, 17 pp. & 1 pl. Abstract, *Bull. Acc. Gioen.* (n. s.) Fasc. 49, pp. 29 & 30.
42. CAMERANO, L. (1) Viaggio del Dr. Enrico Festa nella Repubblica dell'Ecuador e regione vicine. iii. Gordii. *Bol. Mus. Torino*, xii, N. 293, 2 pp.
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II. BIOLOGY.

(OF ANNELIDS, PLATYHELMINTHES AND NEMATHELMINTHES.)

GENERAL.

Anatomy and histology of the *Ampharetidæ*; FAUVEL (3): of *Eupolyodontes cornishii*; FAUVEL (1).—Anatomy of the genus *Spirorbis*, external and internal asymmetry in 20 different species from different parts of the world; MÉSNIL & CAULLERY (4): of *Spirorbis borealis*; SCHIVELEY.

Structure of *Epibdella hippoglossi*; SCHÖTT.

Anatomy of *Distomum patellare*, n. sp.; STURGES.

General anatomy of Nemertines; BÜRGER; JOUBIN.

Anatomy and systematic of 2 new species of Rhabdocœl planarians; CALANDRUCCIO: of *Ctenoplana*; WILLEY (1): of *Heteroplana*, a very asymmetrical new genus of the Archiplanoidea; WILLEY (2).

Monograph of *Filaria* and *Spiroptera*; STOSSICH (2): of the *Gordiida*; CAMERANO (4).

EXTERNAL FEATURES.

External anatomy of *Ampharetidæ*; FAUVEL (3) pp. 14, 135, 155 & 163: of *Spionidæ* and *Disomidæ*; MÉSNIL (2).

Right-handed and left-handed twisting in different species of *Spirorbis*, greater development of chætæ on the concave side in each case; MÉSNIL & CAULLERY (4) p. 219.

Segmentation and annulation in Leeches; BLANCHARD (2).—Metamerism of *Nepheleis*; BRISTOL.

Homoplastic modification of form in commensal Nereids; HARRINGTON.

A cestode with parapodia-like lobes on the side of the body; DIAMARE (1); and JACOBI (1).

An asymmetrical Planarian, one side of the body atrophied; WILLEY (2).—Axial relations of *Ctenoplana*; WILLEY (1).

INTEGUMENT.

Cuticle of *Sternaspis*, its chitinous nature, the ventral shields and chaetae not chitinous; GOODRICH (2).—Histology of cuticle and epidermis in *Ampharetidae*; FAUVEL (3) pp. 36–53; of a new *Distomum*; STURGES.

Spinning organs of two kinds in *Spiophanes*; MÉSNIL (2).

Chaeta of *Chaetogaster* formed from several ectoderm cells each; BOCK.

A new Echiuroid Gephyrean with very thick gelatinous pigment-containing layer underlying the epidermis; HERDMAN.

Epithelium of Cestodes represented by branching cells which can be distinguished by staining, and by their relation to the cuticle, from the parenchyme cells; BLOCHMANN: see also BOTT who is criticised by BLOCHMANN.

Peculiar curved refractive bodies in the epithelium of a nemertine; MONTGOMERY.

Remarkable unicellular glands in integument of a Rhabdocœl planarian consisting almost entirely of nucleus; HASWELL.

MUSCULAR SYSTEM.

Of *Sternaspis*; GOODRICH (2).

Of *Ampharetidae*, with histology of muscles; FAUVEL (3) pp. 59–65, 144, &c.

Arrangement of muscles in the *Dibothridæ* and their relation to the form of the body; LÜHE.—Muscles and muscle-forming cells ("Giant-cells" auct.) in adult Trematodes and in certain cercariae, rediae and sporocysts; BETTENDORF, p. 318: in a new *Distomum*; STURGES.

Arrangement of muscles in different species of Tricladæ and their histological structure; JANDER.

DIGESTIVE SYSTEM.

Alimentary canal and its functions in *Ampharetidae*, ciliated groove in stomach, diverticula of intestine, vascular supply; FAUVEL (3) p. 80.—Pharynx of *Eupolyodontes cornishii*; FAUVEL (1).—Pigment of intestinal wall of *Chaetopterus*; LANKESTER.

Median ventral cœcum to alimentary canal in a new species of *Perichæta*; BENHAM.—Opening of calciferous glands into œsophagus in earthworm; HURST.—Fusion of posterior cœca in a leech; JOHANNSON (1).

Mouth in asexually-produced *Chaetogaster* at first paired; BOCK.

Structure of neck glands of *Hirudo medicinalis*; APÁTHY.

Functions of different parts of alimentary canal in leeches; KOWALEWSKY.

A new Polyclad with the alimentary canal opening to the exterior by pores; PLEHN.—Pharynx-epithelium of Tricladæ and its development from the ordinary epithelium of the embryo; regeneration of pharynx after injury; JANDER.

Œsophagus of nematodes and its dorsal gland; JÄGERSKIÖLD (1).

BODY CAVITY AND ITS CONTENTS, PARENCHYME, GLANDS, &C.

Cœlom and its divisions in *Ampharetidae*; FAUVEL (3) pp. 65–69.—Extension of cœlom into "branchiæ" of *Eupolyodontes*; FAUVEL (1).

"Urns" and "enigmatical bodies" in the cœlomic fluid of *Sipunculus*, discussion as to whether they are to be regarded as separate organisms or not; GRUVEL & KUNSTLER.

Cœlomic corpuscles, and dorsal pores in Oligochætes and the functions thereof; CUÉNOT (1).

Phagocyte organs—amœbocytes and special cœlomic epithelium cells in each segment—in Polychætes; CANTACUZÈNE.—Lymphatic glands in Ascarids; NASSONOW (3).

Different kinds of connective-tissue cells in Nemertines, and the presence or absence of body cavity; MONTGOMERY (2).

VASCULAR SYSTEM AND ITS CONTENTS.

Presence of vascular system in some species of *Glycera* and *Goniada*, its absence in most species regarded as due to degeneration; ARWIDSSON.

Vascular system and circulation in *Amphictenidæ*; FAUVEL (2): in *Ampharetidæ*; FAUVEL (3) p. 99.

Cardiac body and its functions in *Ampharetidæ*; FAUVEL (3).—Pear-shaped bodies, two in each segment, projecting into lumen of dorsal vessel in a *Criodrilus*; MICHAELSEN (1): in Enchytræids; NUSBAUM & RAKOWSKI.

Vascular system and circulation of blood in leeches, the sinus round the intestine serving as propelling organ; JOHANSSON (2) & (1).

Vascular system of Nemertines, valves in the vessels of *Tetrastemma gracense*; BÖHMIG (2).

Blood corpuscles of Gephyrea, Polychæta, Oligochæta, Hirudinea and Nemertinea, summary of recent researches; CUÉNOT (2).—Blood corpuscles of Oligochæta and their function; CUÉNOT (1).

RESPIRATORY SYSTEM.

In leeches: lateral vesicles of vascular system serving as respiratory organs; JOHANSSON (2).

EXCRETORY SYSTEM.

Discussion as to whether the brown sacs of *Sternaspis* may be regarded as nephridia or not; GOODRICH (2).—Absence of internal aperture to nephridium and presence of peculiar flagella-bearing cells in *Nephtys scolopendroides*; GOODRICH (1).—Nephridia of *Ampharetidæ*; FAUVEL (3) p. 121: Nephridia and Ciliated Organs of *Hesione*, *Tyrrhena* and *Nephtys*; GOODRICH (1).—Nephridia as phagocyte organs in *Nephtys*, *Glycera*, *Arenicola* and *Spirographis*; CANTACUZÈNE.

Excretion in Oligochætes and the different organs subserving this function; CUÉNOT (1): in leeches; KOWALEWSKY.

Relation between nephridia and funnels in leeches; BOLSIUS (1), (3) & (4).—Structure of nephridium in *Nephtis* and *Clepsine*; GRAF: in Discodrilids, comparison with other annelids; MOORE.

Cytology of the excretory organs in leeches; GRAF.

Flame cells and capillaries of the excretory system in *Distomum patellare*; STURGES.

Excretory organs of nemertines, asymmetry of pores to the exterior, absence of connection between it and vascular system in *Tetrastemma gracense*; BÖHMIG (2): in *Stichostemma eilhardi*,—peculiar "cuticular alinond" in terminal bulb; MONTGOMERY (3).

Organs serving for excretion—lateral lines and mid-gut—and 4 special phagocyte organs, each consisting of a huge branching cell, in *Ascaris*; METALNIKOFF; in Ascarids and Oxyurids: NASSONOW (1): see also SPENGLER (1) & (2) and SHIPLEY (1).

NERVOUS SYSTEM.

Of *Ampharetidæ*; FAUVEL (3) p. 69, &c.—Cephalic lobe and encephalon of Polychætes (review of Racovitza's work); JACQUET.

Physiology of the central nervous system in *Nereis*, *Lumbricus* and *Hirudo*; STEEN-MAXWELL.

Morphology of the nervous system (central, sympathetic and inter-muscular) in *Nepheleis*; BRISTOL.

Arrangement of nerves in proglottids of *Tænia crassicollis* and *T. saginata*; COHN.—Arrangement of nervous system and its symmetry in Trematodes, young and adult; BETTENDORF, p. 332.—Nervous system of freshwater dendrocæls; MONTI.

Histology of the central nervous system in the Heteronemertines; MONTGOMERY (1).—Nerve-cells with centrosome and sphere in a Polychæt; LEWIS (1).

SENSE ORGANS.

Eyes: of *Ampharetidæ*; FAUVEL (3): of free-living Polychætes; SCHREINER.—Light-perceiving organs in the parapodial gill-lobes, bases of palps, prostomium and several of the anterior segments of *Nereis*; LANGDON.—Organs of sight in Platyhelminths, especially in Triclad Turbellarians, and in leeches; HESSE (2, ii & iii).—Sensitiveness of pigment-cells to light in leeches; JOHANNSON.

Auditory sense-cells: in *Pontoscolex*; EISEN.—Multicellular sense-organs with hairs at peripheral end of cells in *Maldanidæ*; LEWIS (3).

Sense-cells of suckers of Trematodes; BETTENDORF.

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Opening of genital sac into cœlom in *Sternaspis*; GOODRICH (2).—Ciliated Organs of Polychætes; GOODRICH (1).—Similarity of copulatory apparatus in both sexes in a Capitellid; MÉSNIL (1).—Leech-like penis in a new species of *Perichæta*; BENHAM.

Genital system of Cestodes; BRAUN (3) pp. 1407–1461: of a genus with the vagina opening both dorsally and ventrally; DIAMARE (1), JACOBI (1).—Genital organs of a monostomous trematode like those of a Distomid; JÄGERSKIÖLD (3).

Origin of gonads in nemertines; MONTGOMERY (2).

Genital organs of a prorrhynchid turbellarian with the gonad on one side, and penis of ♂ directly piercing the body wall and ovary of the ♀ without there being any special aperture; HASWELL.—Structure of male genital organs in *Stenostoma*; SABUSSOW.—Two ♀ apertures, one in a backward prolongation of the oviduct, in a new genus of Polyclad (*Polyporus*); PLEHN.

“Parovarium” of certain Triclads distinguished from the true ovarium; BERGENDAL (2).

Genital organs (♂ only) of *Ctenoplana*; WILLEY (1).

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Of *Ampharetidæ*; FAUVEL (3) p. 127.

Asexual reproduction: (by branching) in *Dodecaceria concharum*; MÉSNIL & CAULLERY (1).—Asexual reproduction in *Chatogaster diaphanus* (histological account); BOCK: in a cysticercus in the mole; BOTT: of another in the mouse; BRAUN (1): in Nemertines (fission in *Lineus gesserensis* and its relation to the process of sexual reproduction); BROWN, A.

Ovigenesis in *Sternaspis*; CHILD (3).—Reduction of chromatin in ovi-

genesis of *Ascaris megalocephala bivalens*; SEBASCHNIKOFF.—Growth of ovum in the *Chaetognatha*; AIDA (2).

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The origin of the centrosomes and first segmentation spindle in *Myzostoma*; KOSTANECKI (1).—Maturation, fertilisation and early cleavage in *Myzostoma*; WHEELER.

Fertilisation of egg in *Ascaris megalocephala*; CARNOY & LEBRUN, ERLANGER (1), KOSTANECKI (2) and KOSTANECKI & SIEDLECKI: of *Rhabditis*; ERLANGER (2).—Maturation of egg, fertilisation and segmentation in Polyclads—the first polar body being very large and penetrated by a spermatozoon as well as the egg-cell, after each giving off their second polar body, thus giving rise to two fertilised eggs and two gastrulæ in about half the number of eggs of six large specimens of *Prosthecereus vittatus*; FRANCOTTE.—Maturation and fertilisation of egg in this same species; KLINCKOWSTRÖM.

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Development of *Spirorbis borealis*; SCHIVELEY.

Early development in marine annelids, influence of heat and light on cleavage; MEAD.—Cytogeny of 4 marine annelids with equal cleavage; TREADWELL.—Cleavage of *Arenicola cristata* and the mosaic theory; CHILD (1) & (2).—Pseudopodial filaments of cleavage cells in *Serpula*; ANDREWS.

Embryology of Cestodes; BRAUN (3) pp. 1461–1534.—Variations in the development of the 6-hooked embryo in *Cysticercus T. microstomæ*; v. LINSTOW, Arch. mikr. Anat. xlviii, p. 109.—Post-embryonic development of *Aspidogaster*; STAFFORD.

Development of *Tetrastemma vermiculus*, Qfg; LEBEDINSKY (1): and other nemertines; LEBEDINSKY (2).

Share taken by the different germinal layers in the formation of organs in the asexually-produced *Chaetogaster*; BOCK.

Embryonic development of *Ascaris megalocephala*; ZUR STRASSEN.

Life-history of *Anchylostomum duodenale*; LOOSS: of Gordiidae; CAMERANO (4). [See also under REPRODUCTION.]

REGENERATION.

In earthworms, shewing that there is an anterior limit at which reproduction of a new tail does not take place; HESCHELER (1), MORGAN, MICHEL (1) p. 336.—Regenerative power shewn to be much less limited in some species and to be the greater the smaller the piece regenerated from, and the nearer it is to the middle region of the body; KORSCHULT.—Regeneration after transplantation in earthworms; JOEST.

In Polychætes: in *Nephthys*; HESCHELER (1): in *Typosyllis*, *Phyllodoce*, *Spiophanes*, *Cirratulus*; MICHEL (1) pp. 313, 315, 385.

Histological processes in the regeneration of chætopods: origin of the new cerebral ganglion and commissures and of the stomodæum; HESCHELER (2): of Stomodæum in *Lumbriculus*; v. WAGNER.—Ectodermic origin of caudal bud maintained; MICHEL (3), and (in Nais) HEPKE.—Persistence of aperture of posterior section as the anus in earthworms and marine worms; MICHEL (2). [See also under REPRODUCTION (asexual) p. 22.]

Regeneration in Nemertines (*Lineus*); BROWN, A.

Reproduction of the whole animal from very minute pieces in Planarians; RANDOLPH.—Regeneration of pharynx in Triclad; JANDER.

A probable case of Heteromorphosis in a Cirratulid; MÉSNIL & CAULLERY (1).

VARIATION AND ANOMALIES.

A specimen of *Dodecaceria* with a second tail (of 32 segments) growing out of the anterior region of the body, probably an instance of heteromorphosis; MÉSNIL & CAULLERY (1).—Specimen of *Spiophanes* with a half-segment replaced by a new head; MICHEL (1) p. 385.—A *Harmothoë* with an elytron-like structure replacing the ventral cirrus on one side in one of the posterior segments; EHLERS (1) p. 14.—An abnormal earthworm; LATASTE.

Double-headed and double-tailed earthworms, produced artificially by grafting, either as a direct or an indirect consequence; JOEST: produced artificially by partial longitudinal section in Planarians; RANDOLPH.

Anomalies in segmentation of earthworms (produced artificially); JOEST, KORSCHULT, MICHEL (1) p. 353: of leeches (not artificially produced); BLANCHARD (4).

Anomalies in maturation and fertilisation of ovum in *Myzostoma glabrum*; WHEELER.

Variations in process of development in the same species (pœcilogony) in the *Gordiidae*; CAMERANO (4).—Variations in mode of development from 6-hooked embryo to scolex, sometimes one, sometimes several scolices being formed, in *Cysticercus T. microstomæ*; v. LINSTOW, Arch. mikr. Anat. xlviii, p. 109.

PHYSIOLOGY AND EXPERIMENTAL OBSERVATIONS.

Physiology of Oligochætes and *Branchiobdella*,—reserve cells, cœlomic corpuscles, blood corpuscles, dorsal pores, phagocytosis and excretion; CUÉNOT (1).—Physiology of *Clepsinidae*; KOWALEWSKY.—Functions of neck-glands of *Hirudo*; APÁTHY.—Excretion and phagocytosis in *Ascaris*; METALNIKOFF, NASSONOW.

Effects of extirpation of different parts of the central nervous system in *Nereis*, *Lumbricus* and *Hirudo*; STEEN-MAXWELL.

Experiments with transplantation of part of one earthworm to another; JOEST, MORGAN.—Artificial section in Chætopods and effects thereof; MICHEL (1, i–iii), MORGAN, HESCHELER, KORSCHULT, v. WAGNER, HEPKE: in Planarians; RANDOLPH.

Influence of heat and light on rate of cleavage in marine annelids; MEAD: on reproduction of lost parts; HESCHELER.—Rapidly of regeneration; MICHEL (1, iv), MORGAN.

Perception of light in earthworms, leeches, turbellarians, nemertines and trematodes; HESSE (1) and (2).—Behaviour of pigment-cells to light in Leeches; JOHANSSON.

Nature and properties of the pigments *chætoplerin* and *bonellin*; LANKESTER: of *thalassemine* (a new pigment); HERDMAN.

MEDICAL AND ECONOMIC NOTES.

Clinical uses of the secretion of the neck-glands of *Hirudo*; APÁTHY.

Tumour in bladder due to *Bilharzia* eggs; ALBARAN & BERNARD.

Treatment of sheep infested with liver fluke; COBB.

Trichinosis: its diagnosis by the kinds of white corpuscles in the blood; BROWN, T. R.: see also ASKANAZY and CERFONTAINE (dispute on priority only), and HUBER (drawing attention to older works on the subject).—Life-history of *Trichina spiralis*; GRAHAM, REEKER.

Strongylosis in lambs; JULIEN: in hares in France; MÉGNIN.

Significance of earthworms in agriculture; HOLDEFLEISS.

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[See also p. 29.]

CLASSIFICATION.

Systematic Phylogeny of the Invertebrata; the *Platyhelminthes* regarded as Cœlenterates; the *Rotatoria*, *Strongylaria* and *Frontonia* as composing a Phylum *Vermalia*; the *Chaetopoda* as forming one of the two branches of the Phylum *Articulata*; HÆKEL.

Position of *Spirorbis* amongst *Serpulidæ* (p. 218) and Phylogeny of the different species of *Spirorbis*; MÉSNIL & CAULLERY (4) pp. 202–207.

Connecting links between *Arenicolidæ* and *Maldanidæ*, either serving to unite these two families into one or to be regarded as the types of a new, intermediate, family; MÉSNIL (2, iii).

Systematic position of *Ctenodrilus* and its relation to Cirratulids; MÉSNIL & CAULLERY (2).

Genealogical tree to shew the relation of the parasitic platyhelminthes to one another and their derivation from Rhabdocœl Turbellarians; LÖNNBERG.

Relations of Nemertines to other animals, especially to Turbellarians; LEBEDINSKY (2).—Classification of Nemertines, agreeing with Bürger; JOUBIN: of Metanemertines, criticising Bürger; MONTGOMERY (2).

New classification of the Nemathelminthes proposed: dividing them according to the form of the lateral field when present, those in which this contains an excretory vessel forming the family *Secernentes*, those in which it contains no vessel the *Resorbentes*, and those forms which have no lateral fields at all forming a third family *Pleuromyaria*; v. LINSTOW (3).

New classification of *Gordiidæ*:—their relation to the Nemathelminthes; CAMERANO (3).

HABITS, &C.

Tube-building in *Ampharetidæ*; FAUVEL (3) p. 25.

Commensalism and symbiosis of Polychætes in different parts of the world; GRIFFIN & HARRINGTON, and HARRINGTON.

Self-amputation in earthworms; HESCHELER (1), JOEST, MICHEL (5), MORGAN: in marine worms; HESCHELER (1): in Planarians; RANDOLPH.

Tenacity of life in earthworms; JOEST, WEIR.—Resistance to drought of aquatic oligochætes and leeches in Mexico; SEURAT.—Habits of *Bipalium kewense*; HOGG.

Phosphorescence in Polychætes; MCINTOSH (2.—1): in earthworms; LLOYD-BOZWARD.

Egg-laying in *Sagitta*, at different hours of the day in different species; KENYON (1).

PARASITES.

Of Polychætes: a new Copepod parasitic on *Polycirrus aurantiacus*; BRUMPT.—Effects of *Monstrillidæ* on their hosts in causing wounds and possibly thus assisting in the process of fission; GIARD (1) & (2).—Three Sporozoa parasitic in *Capitella capitata*; CAULLERY & MÉSNIL (1).—A new parasite in the gregarines parasitic in *Spio*; CAULLERY & MÉSNIL (2).

Of leeches: *Protozoa* parasites; BOLSIUS (2).—Green algæ parasitic in oviducts of *Epibdella hippoglossi*; SCHÖTT.

A glugeid (*Pleistophora* sp.) infesting the *Brachycælium* sp. living inside the shells of *Donax* and *Tellina*; LÉGER.

Seven species of Infusoria commensal on Oligochætes, Polychætes and Planarians; CRAIG.—Phagocytosis in Oligochætes; CUÉNOT (1).

Life-history of Ciliated “urns” of *Sipunculus* and of certain “enigmatical vesicles” also found in the celomic fluid; GRUVEL & KUNSTLER.

METHODS.

Methylene blue method in Trematodes; BETTENDORF.
 For histology of *Ampharetidæ*; FAUVEL (3) p. 10.
 For eggs of Polyclads; FRANCOU.
 On collecting and preserving land-planarians; STEEL (1).

III. DISTRIBUTION.

1. GEOGRAPHICAL.

(a) MARINE FORMS.

Distribution of *Ampharetidæ*; FAUVEL (3), pp. 22, 140, &c., BIRULA (1) & (2): of *Spirorbis*; MÉSNIL & CAULLERY (4), p. 227: of Polychætes in general; EHLERS (1), pp. 9-12.

Arctic Ocean.

Gulfs of Yenesei and Obi: Polychætes; BIRULA (2).
 Spitzbergen: Polyclads; PLEHN.
 Baffin Bay and Davis Straits: 2 spp. of Chætognaths (1 new); AURIVILLIUS.—Surface plankton; VANHÖFFEN.
 Coasts of Greenland: Polychætes; VANHÖFFEN: *Spirorbis*; MÉSNIL & CAULLERY (4).

Atlantic Ocean (East).

Surface plankton of N. Atlantic, North Sea & Davis Straits; VANHÖFFEN.
 Rockall: a new Polynoid (*Evarne*); MCINTOSH (2.--2).
 Faroe Channel: Polychætes; FOWLER.
 Moray Firth: *Dactylocotyle palmatum* on gills of the Ling; SCOTT.
 British Coasts: the species of Pholoë; MCINTOSH (2.—3).—L.M.B.C. district: Polychætes; HORNELL: Turbellarians; JAMESON.
 Coast of Ireland: Polychætes; MCINTOSH (1).
 English Channel: a new species of Polydora; MÉSNIL (2): a new Capitellid; MÉSNIL (1).—Polychætes of Villers, 30 spp.; SAINT-JOSEPH.
 North Sea: Triclad; BERGENDAL (1).
 Coast of Norway: 3 Polynoids, 1 new: comparison with British species; MCINTOSH (2.—4).
 Coast of Sweden: Leeches; JOHANSSON.
 Mediterranean: 2 new species of sinistral *Spirorbis*; MÉSNIL & CAULLERY (4).
 Hydrobiological investigations at the mouths of the great rivers in the S. of Russia; OSTROUMOFF (1).
 Black Sea: The species of *Amphicteis*, Gr.; BIRULA (1).—Sea of Azof (G. of Taganrog): a new species of *Amphicteis*; OSTROUMOFF (1).
 Caspian Sea: 4 (? 5) species of *Amphictenidæ* recognised, viz.: *Amphicteis brevispinis*, Gr. and (?) *A. kowalewskii*, Grimm., *Hypania invalida*, Gr., *H. oculata*, Schm. and *H. antiqua*, Ostr.; these compared with the arctic species and with those of the Black Sea; BIRULA (1).

Atlantic Ocean (West).

E. Coast of U. S. A.:—In sand-flat of one of the tributaries of Vineyard Sound: a new *Clymene*, with large number of segments; LEWIS.—Newport (R.-I.), Wood's Holl (Mass.), and Sea Isle (N. J.): marine nemertines of shallow water, notes on anatomy; MONTGOMERY (4).—Synopsis of the 9 American species of *Chætognatha*; KENYON (2).

Indian Ocean.

Zanzibar Coast: Polychætes, 22 spp. (2 new); EHLERS (2) & (3).

Pacific Ocean (West).

New Caledonia; *Eupolyodontes cornishii*, Buch., which only known from W. coast of Africa before; FAUVEL (1).

Japan: Chætognaths of Misaki Harbour; AIDA.

Pacific Ocean (East).

Puget Sound: Several Polychætes, a few Gephyreans, Nemertines, and Turbellarians, and a *Sagitta*, none of them identified specifically; GRIFFIN & HARRINGTON.—A new species of Polychæte (*Nereis*) associated with hermit-crabs, points of resemblance between Pacific- and Atlantic-coast commensal species; HARRINGTON.

Monterey Bay: a new Polyclad; PLEHN.

Panama: 2 new species of *Spirorbis*; MÉSNIL & CAULLERY (4).

Southern Oceans.

Coasts of Patagonia round Cape Horn: Polychætes, 70 spp. (24 new), absence of *Amphinomidæ*, *Hesionidæ*, and *Amphictenidæ*, and of genus *Eunice*; EHLERS (1).—6 new spp. of sinistral *Spirorbis*; MÉSNIL & CAULLERY.

Near Falkland Is.: Polychætes, 4 spp. (3 new); EHLERS (1).

S. Georgia: Polychætes, 24 spp. (13 new); EHLERS (1).

Kerguelen: Polychætes, 21 spp.; EHLERS (1).

(b) LAND AND FRESH-WATER FORMS.

Palæarctic Region.

British Isles:—Yorkshire: List of Earthworms; HODSON.—Lincolnshire: the land-planarian; KEW.

Neighbourhood of Paris: Oligochæt; RICHARD.

Cantons of Vaud and Geneva: Turbellarians (Rhabdocæls, 12 gen. and 24 spp., and 2 uncertain spp.; Alloicæls, 3 gen. and 3 spp.; Dendrocæls, 4 gen. and 7 spp.); DU PLESSIS.—Alpine Lakes: Leeches and Gordiidæ; BLANCHARD & RICHARD.

The Campagna Romana: 7 spp. *Echinorhynchus* (2 new); CONDORELLI-FRANCAVIGLIA.

Sicily: Brackish sand of Faro, Messina, 2 new spp. of Rhabdocæls; CALANDRUCCIO.

Brooks of Mountains of W. Central Germany: distribution of 3 species of *Planaria*; VOIGT.

Austro-Hungary:—Bohemia: Oligochætetes, a leech, turbellarians, and nematodes, from the Schwarz-See; FRITSCH & VAVRA.—Galicea: Oligo-

chætes; NUSBAUM.—The Tatra Lakes: 22 Nematodes, 4 Turbellarians, and 2 Oligochætes; DADAY (1).—Hungary: free-living fresh-water nematodes, 64 species enumerated and briefly described; DADAY (2).—L. Balaton: Turbellarians; SZIGETHY: Oligochætes; VÁNGEL: Nematodes; DADAY (3): Earthworms of Austro-Hungary, Bulgaria and Roumelia, 3 new species; ROSA (2).

Neighbourhood of Moscow: Turbellarians; ZYKOFF.

C. Verde Is.: a new species of *Acanthodrilus*; ROSA (3).

Japan: Parasites of Ruminants; JANSON (1): New genus of leech; BLANCHARD.

Oriental and Australian Regions.

India: Earthworms; FEDARB.

Dutch E. Indies:—Leeches, 14 species; BLANCHARD (2) & (4).—Celebes: Land-planarians, 21 spp. (19 new), predominance of Australian genera over Oriental; v. GRAFF (2).

Sumatra: a new Moniligastrid of the genus *Desmogaster*; ROSA (1).

Singapore, Borneo, Philippines: Earthworms; BENHAM.

Australia: Land-planarians; STEEL.

New Britain: new species of *Perichæta*; BENHAM.

New Zealand: Land-planarians, 12 spp. (4 new); DENDY.—A Prorhynchid Turbellarian from deep wells; HASWELL.

Fiji Islands: Land-planarians; STEEL (2).

Loyalty Is.: a peculiar new planarian belonging to the ARCHIPLANOIDEA; WILLEY (2).

Ethiopian Region.

East Africa:—Polychætes; EHLERS (2) & (3): Leeches; BLANCHARD (1): Turbellarians; BÖHMIG (1): parasitic nematodes and a cestode larva; COLLIN: parasitic cestodes, 7 spp. (4 new), trematodes, 3 spp. (all new) and nematodes, 4 spp. (1 new); SETTI.

South Africa:—Earthworms belonging to the genus *Acanthodrilus*, and to a new genus of *Eudrilidæ*; absence of *Benhamia*; BEDDARD: 2 n. spp. of *Microchæta*; ROSA (4).

Madagascar:—Earthworms; MICHAELSEN (2): Nemathelminthes (including 1 new sp. of *Mermis*); v. LINSTOW (1).

Seychelle Islands: Earthworms; MICHAELSEN (2).

West Africa:—a new *Gordius* from Cameroon; JÄGERSKIÖLD (2): Leeches; BLANCHARD (1): new genus of *Eudrilidæ*; BEDDARD.

Cape Colony: Earthworms—all *Acanthodrilus*, s. str.—9 new species; BEDDARD.

Neotropical Region.

Straits of Magellan: Polychætes; EHLERS (1): Oligochætes (indigenous and imported species); MICHAELSEN (2).

Argentine Republic and Bolivia: 2 fresh-water planarians (1 new); BORELLI: Land-planarians, 6 spp. (5 new); v. GRAFF (1): *Gordiidæ*, 5 species (1 new); CAMERANO (2).

S. Brazil: a giant Geoscolecid; MICHAELSEN (1).

Ecuador and neighbouring region: *Gordiidæ*, 3 species (1 new); CAMERANO (1).

Columbia: a *Criodrilus* with peculiar genital region; MICHAELSEN (1).

W. Indies:—Oligochætes; MICHAELSEN (1). *Bipalium kewense* at Kingston, Jamaica, Amer. Nat. xxxi, p. 155.

Central America: new species of *Pontoscolex*; EISEN.

Nearctic Region.

United States:—Washington: New species of *Megascolides*; SMITH.—Illinois: Turbellaria; WOODWORTH.—Nebraska: animal Parasites; WARD (1) & (2).

Greenland: Oligochætes, Turbellarians and Nematodes; VANHÖFFEN.

2. GEOLOGICAL.

Silurian: of Tasmania, Polychætes; ETHERIDGE.

3. IN OR ON OTHER ORGANISMS.

Mammals.

In Man.—Entozoa of man in Normandy; SPALIKOWSKI. Intestinal parasites of children in Holland; OVERDUIN. *Tæniarhynchus saginatus* in a child; ROCHEBRUNE. List of recorded cases of occurrence of *Cysticercus cellulosæ* in man; PARONA & CUNEO. *Echinococcus multilocularis* in the Tyrol; POSSELT. Urine parasites of man in S. Africa; STRUBE. Eggs of *Bilharzia hæmatobia* causing cancer of bladder in man at Cairo; ALBARRAN & BERNARD. Life history of *Anchylostomum duodenale*; LOOSS. *Filaria loa* in eye; LUDWIG.

In other Mammals: Nematodes and *Echinorhynchus* in several different mammals; v. LINSTOW (1). Cattle of Cochin China: liver infested by *Amphistoma explanata*; RAILLIET & GOMY. Ruminants of Japan: animal parasites; JANSON (1). Lambs: 2 species of *Strongylus* causing anæmia; JULIEN. *Mustela*: skull bored through by worms; LANDOIS. Boar: a rare nematode; COLUCCI & ARNONE. Pig: an *Ankylostomum*; v. LINSTOW (3): 3 other nematodes; PIANA: 2 trematodes and 5 nematodes in Japanese pigs; JANSON (2). *Distomum pulmonale* in dogs and pigs in Japan; JANSON (3). Liver fluke of dog and cat; JONG. *Strongylus vasorum*, in dog in Paris; RAILLIET & DROUIN. New cestodes in African dogs; SETTI. New cestodes in cats; RATZ; SETTI. Fur-seal: *Uncinaria* sp.; LUCAS. *Hydrax*: a new Cestode; SETTI. *Hystrix*: a new Nematode; SETTI. Mole: a cysticercus, reproducing by fission; BOTT. Mouse: a two-headed and proliferating cysticercus; BRAUN (1). Skunk: (from Ontario) with frontal bone of skull deformed by nematodes; WOODWORTH (1).

Birds.

Parasites of domestic birds; WARD. Of some African birds; SETTI. *Cittotania* for the first time in a bird (*Anas* sp.); FUHRMANN. A new cestode from the wild duck; JACOBI (1). Experimental infection of ducks with 3 different cysticerci; ROSSETER (1) and (3). *Ascaris megalcephala* in the duck; STOSSICH (1). A new Cestode in *Hemignathus*; SHIPLEY. *Distomum lucipetum*, between the eye and its lid of *Larus maculipennis*, from Brazil; BRAUN (2). Trematodes, Cestodes and Nematodes of birds; MÜLLER, p. 23.

Reptiles.

Nematodes and *Echinorhynchus* in Reptiles; v. LINSTOW (1).

Ophidia: *Trichosoma*; PARONA. *Strongylus viperæ* in *Coluber æsculappi*; STOSSICH (1).

Lacertilia: a cysticercoid in the Gecco; SONSINO (2).

Amphibians.

2 spp. of *Distomum* in frogs; BENSLEY.

Fish.

Occurrence and distribution of 45 cestode-parasites in fish; LINTON (2): of cestode larvæ; LINTON (1).

Fresh-water fish:—of Rhine, near Basel, (29 species),—18 species of trematodes, the influence of the food of the host, of temperature, season, and of locality of the host on their occurrence; the predominance of different species of parasites in different hosts; the proportion of fish infested and the organs attacked; viability of parasite outside its host—; HAUSMANN: of L. Balaton, (14 spp. of fish),—7 Cestodes, 2 Trematodes, 5 Nematodes, 2 *Echinorhynchus*, and the leech *Ichthyobdella fasciata* Dies.—117 specimens belonging to the 14 different species examined and all except the Carp found to be infested. Effects of parasites on hosts; RATZ (2).

Anatomy of leeches of Swedish fish (5 genera); JOHANSSON (1).

Dactylocotyle, a leech-like trematode, on gills of ling, off Scotland; SCOTT.

A new Cestode from *Genypterus* in Chili; RIGGENBACH. A new Trematode from *Triturus* of Japan; STURGES. Nematodes of African fish; SETTI.

Arthropods.

Insecta: *Gordius* and *Mermis*; v. LINSTOW.

Crustacea: Nereids commensal on Hermit Crabs; HARRINGTON. Leeches in branchial cavity of *Spatha* and *Paratelphusa*; BLANCHARD (1) & (4).

Molluscs.

Gastropods: of fresh-water round Pisa,—Trematodes; SONSINO (1).

Lamellibranchs: with *Distoma*-parasites infested by Myxospores living inside their shells; LÉGER. *Cercariae* of *Brachycœlium*; GIARD (3) & (4). A n. sp. of *Malacobdella* in mantle-cavity of *Mactra*, Japan; TAKAHURA.

“*Vermes.*”

Planarians preying upon earthworms and other planarians; STEEL (1) p. 109.

Plants.

Earthworms on plants from W. Indies; MICHAELSEN.

Enchytræids as plant pests; FRIEND (1); STOKLASA.

The disease of beet-root caused by *Heterodera schachtii*; BOS.

IV. SYSTEMATIC.

ANNELIDA.

A. GEPHYREA.

A. INERMIA.

Phyosoma, n. n. for *Phymosoma*, auct., on account of the latter name being already appropriated; SELENKA, Zool. Anz. xx, p. 460.

B. ARMATA.

For *Sternaspis*, see under *Polychæta*, p. 35.

Thalassema lankesteri, n. sp., ♀, off I. of Man, 50 fths., differing from other species of *Thalassema* in having branched cloacal nephridia like *Hamingia*; enumeration of other species; HERDMAN, Quart. J. Micr. Sci. xl, p. 381; P. Liverp. biol. Soc. xi, p. 28.

B. CHÆTOPODA.

a. POLYCHÆTA.

Amblyosyllis granosa, n. sp., Straits of Magellan; EHLERS, Magal. Reise, p. 58.

Ammotrypane aulopyge, n. sp., S. Georgia, ? type of a new genus; EHLERS, Magal. Reise, p. 100.

Ampharetidæ, held to be much more nearly allied to the *Terebellidæ*, than to the *Amphictenidæ*, but with no connecting link with either family. The family divided into 4 groups, viz.: those with palæ (including the type *Ampharete* and the type *Amphicteis*), those without palæ (including the type *Sabellides* and the type *Samytha*), those with numerous body segments with *Melinna* only as type, and those with *Auchenoplax* as type; FAUVEL (3).

Ampharete grubei, Mgrn., external morphology, distribution, formation of tube, internal anatomy and histology; FAUVEL (3), pp. 13-132. *A. vega* (Wirén), description and figure; BIRULA (2), p. 102: *A. patagonica*, Kbg., and *A. kerguelensis*, McInt., distinguished from one another; EHLERS, Magal. Reise, p. 129.

A. kowalewskii, Grimm, probably = the young of *Hypania* (*Amphicteis*) *invalida*; BIRULA (1), p. 18.

Amphicteis brevispinis, Grube, considered the only well defined species of the genus *s. s.* in the Caspian; BIRULA (1), p. 17. *A. antiqua*, n. sp., G. of Taganrog, and Caspian Sea, regarded as a collective sp. or (?) as the type of a new genus *Hypania*; OSTROUMOFF (1), p. 114. Also described and its relation to *A. invalida* dwelt upon by BIRULA (1). (*A. invalida*, Gr., referred to genus *Hypania*, Ostrooum., distribution of the sp. in the Caspian Sea and identification with it of (*Ampharete kowalewskii*, Grimm), and of (*Sabellides octocirrata*, Kow.); BIRULA (1). (*A. invalida* (var. *occidentalis*, n. var.), Caspian Sea; OSTROUMOFF (2), p. 359; identified with *Hypania* (*Phenacia*) *oculata*, Schmank.; BIRULA (1), p. 21.

A. gunneri, Sars, external and internal anatomy; FAUVEL (3), pp. 135-154.

Amphitrite ornata, Verr., early development and metamorphosis from free-swimming to creeping larva; MEAD, pp. 229-259.

Aonides (*gracilis*, Taub.), and *A. (fulgens*, Lev.), referred to n. g., *Levinsonia*, MÉSNIL (2).

Arenicolidæ: relation of the family to the *Maldanidæ*; suggested fusion of the 2 families to form a new fam. *Arenicolo-maldanidæ*, to include also his own fam. *Clymenidæ*; MÉSNIL (2), p. 164.

Arenicola assimilis, n. sp. for *A. marina*, Cuv., var., Gr. ("Gazelle" annelids), Straits of Magellan, Uschuaia, S. Georgia and California; EHLERS, Magal. Reise, p. 103. *A. ecaudata*, near Port Erin, P. Liverp. biol. Soc. ix, p. 30. *A. cristata*, cleavage; CHILD. Resemblance of post-larval stage of *Arenicola* to genus *Clymenides*; MÉSNIL (2), p. 161.

Aricia cirrata, n. sp., near Falkland Is., p. 94, *A. marginata*, n. sp., S.

- Georgia, p. 95, *A. michaelsoni* and *A. tribulosa*, n. spp. and fragment of another sp., ? new, Straits of Magellan; EHLERS, Magal. Reise.
- A. arctica*, Hans., *A. armigera* (Müll.), *A. kuppferi*, Ehl., *A. quadricuspida*, Oerst., defined and distinguished; BIRULA (2), p. 96.
- Autolytus gibber*, n. sp., Straits of Magellan and S. Georgia; EHLERS, Magal. Reise, p. 55.
- Axiothea torquata*, Leidy, for (*Clymenella torquata*, Verr.) *q. v.*; LEWIS (2).
- Branchiomaldane*, Lnglms., genus shewn to be intermediate between *Clymenides* and *Arenicola*; MÉSNIL (2), p. 156.
- Capitellides*, n. g. of *Capitellidae*, with modified dorsal chætæ forming a copulatory apparatus in both sexes, for *C. giardi*, n. sp., Wimereux and St Martin's Bay; MÉSNIL, Zool. Anz. xx, p. 441.
- A peculiar *Capitellid* ?, (incomplete specimen only), Straits of Magellan, with body segmented like a Maldanid but with Capitellid-like chætæ; EHLERS (1), p. 117.
- Chætopterus (antarcticus*, Kbg.) = *C. variopedatus*, Ken.; EHLERS (1), p. 109. (*C. insignis*, Baird) = *C. variopedatus*; HORNELL, p. 255. *C. pergamentaceus*, Cuv., early development; MEAD, p. 271.
- Clymene producta*, n. sp. in sand-flat of one of the tributaries of Vineyard Sound, Cotuit, Mass., with as many as 70 segments; LEWIS, P. Boston Soc. xxviii, p. 111.
- C. (Praxilla) kerguelensis*, McInt., and *C. (P.) assimilis*, McInt., amended description; EHLERS (1), p. 122.
- (*Clymenella*, Verr.) = *Axiothea*, Mgrn.; LEWIS (2). (*Clymenella torquata*, Verr.), habits and early development (cleavage); MEAD.
- Clymenidae* as a name for a new family intermediate between *Maldanidae* and *Arenicolidae*, to include the genera *Clymenides* and *Branchiomaldane*; MÉSNIL (2), p. 164.
- Clymenides*, definition of genus; its relations to *Arenicola*, especially to the young stages thereof; *C. ecaudatus* and *C. incertus*, n. spp., S. Martin's Bay, (on *Lithothamnion*), and further description of *C. sulfureus*, Clp.; MÉSNIL, Bull. Sci. France Belgique, xxx, pp. 148-156.
- †*Cornulites tasmanicus*, n. sp., casts, in Silurian blue schistose rock, Heazlewood, Tasmania; ETHERIDGE, P. Soc. Tasmania, 1896 (7), p. 37.
- Ctenodrilus*, see under ARCHIANNELIDA, p. 37.
- Dexiospira*, n. subg. of *Spirorbis*, *q. v.*; MÉSNIL & CAULLERY (4) & (3).
- Diopatra dorsalis*, n. sp., Straits of Magellan and E. coast of Patagonia; EHLERS, Magal. Reise, p. 71.
- Disoma carica*, n. sp., Gulf of Obi; BIRULA, Ann. Mus. St. Petersb., 1897, p. 99.
- Disomidae*, n. fam. for the 2 genera *Disoma*, Oerst., and *Pæcilochætus*, Clp.; allied to the *Chætopteridae*, intermediate between them and the *Spionidae*; MÉSNIL, Bull. Sci. France Belgique, xxx, p. 94.
- Dodecaceria concharum*, Oerst., an instance of heteromorphosis in; MÉSNIL & CAULLERY (1).
- Epicaste*, Kbg., ? = *Glycinde*, Fr. Müll.; EHLERS (1), p. 82.
- Eteone sculpta*, n. sp., S. Georgia, and *E. spathocephala*, Straits of Magellan and E. coast of Patagonia; EHLERS, Magal. Reise, pp. 32 & 33.
- Eulalia subulifera*, n. sp., Straits of Magellan and S. Georgia; EHLERS, Magal. Reise, p. 29.
- Eunice (Claparedi*, Qfg.), *E. (harassii*, Gr.), *E. (laurilardi*, Qfg.), and *E. (torquata*, Clp.), all referred to *E. fasciata*, Risso; EHLERS, *l. c.* p. 11. *E. (schizobranchia*, Clp.), and *E. (simplex*, Pet.), both referred to *E. siciliensis*, Gr.; EHLERS, Nachr. Ges. Gottingen, p. 169. *E. (collaris*, Gr.), *E. (leucosticta*, Gr.), and *E. (punctata*, Pet.), all referred to *E. afra*, Pet.; EHLERS, *l. c.* p. 166.
- Eupolyodontes cornishii*, Buchanan, specimen from New Caledonia, amended description; FAUVEL (1).

- Eurythoe complanata*, Pall., synonymy and geographical distribution: (*E. pacifica*, Kbg.) and (*E. alcyonia*, Sav.) identified with it; EHLERS, Nachr. Ges. Gottingen, p. 163.
- Evarne atlantica*, n. sp., off Rockall; McINTOSH, Ann. Nat. Hist. (6) xx, p. 168: and *E. normani*, n. sp., from the coast of Norway; *Ib.*, t. c. p. 174.
- Exogone heterosetosa*, McInt., amended description; EHLERS (1) p. 51.
- Fabricia alata*, n. sp., Straits of Magellan, and S. Georgia; EHLERS, Magal. Reise, p. 135.
- Flabelligera induta*, n. sp., Straits of Magellan, and S. Georgia; EHLERS, Magal. Reise, p. 105.
- Gattyana*, n. nom. for *Nychia*, Norman; *G. (Nychia) cirrosa*, phosphorescence in; McINTOSH (2.—1).
- Glycera alba*, Rtk., anatomy, p. 14, and *G. capitata*, Oerst., anatomy, p. 23: *G. gæsi*, Mlgrn., description and distribution, p. 4, anatomy, p. 19: *G. siphonostoma*, D. Ch., anatomy, p. 21; ARWIDSSON. *G. longipinnis*, Gr.?, from Zanzibar; EHLERS (3) p. 170.
(*G. kerguelensis*, McI.)=*G. capitata*, Oerst.; EHLERS (1) p. 80.
- Goniada maculata*, Oerst., anatomy; ARWIDSSON, p. 8.
- Grubea rhopalophora*, n. sp., Straits of Magellan; EHLERS, Magal. Reise, p. 53.
- Harmothoë fraser-thompsoni*, n. sp., S. W. Ireland, 93 fathoms; McINTOSH, P. Dublin Soc. viii, p. 401. *H. spinosa*, Kbg., Kinberg's specimens re-examined and his figure of a parapodium shown to be incorrect; EHLERS, Magal. Reise, p. 13.
- (*Hemipodus magellanicus*, McInt.), and (? *H. roseus*, Qfg.)=*Hemipodia patagonica*, Kbg.; EHLERS (1) p. 81.
- Hermadion molluscum*, n. sp., S. Georgia; EHLERS, Magal. Reise, p. 16.
(*H. kerguelensis*, McInt.)=*H. magalhaensi*, Kbg.; EHLERS, l. c. p. 15.
- Hesione sicula*, D. Ch., nephridia; GOODRICH (1).
- Hydroides dianthus*, segmentation; TREADWELL.
- Hypania*, n. g. of *Amphictenidæ*; OSTROOUMOFF (2) p. 358. Including the spp. *H. (Amphicteis) invalida* Gr., *H. (Phenacia) oculata* Schmank. and *H. antiqua* Ostrooum.; BIRULA (1) p. 23.
- Læospira*, n. subg. of *Spirorbis*, *q. v.*; MÉSNIL & CAULLERY (4) & (3).
- (*Lagisca magellanica*, McInt.) and its varr. (*grubei*) and (*murrayi*, McInt.) all referred to *Harmothoë spinosa*, Kbg.; EHLERS, Magal. Reise, p. 12.
(*L. antarctica*, McInt.)=*L. ("Polynoe") vesiculosa*, Gr.; EHLERS, l. c. p. 14.
- Laonome antarctica*, Kbg., amended description; EHLERS, l. c. p. 135.
- Leodora*, see under *Spirorbis*.
- Lepidonotus*, sp., influence of temperature and light on cleavage; MEAD, p. 265.
- Leprea streptochæta*, n. sp., Straits of Magellan; EHLERS, Magal. Reise, p. 130.
- Levinsenia*, n. g. for (*Aonides*) *gracilis*, Tauber, and (*A.*) *fulgens*, Lev., probably allied to *Cirratulidæ*; MÉSNIL, Bull. Sci. France Belgique, xxx, p. 93.
- Lumbriconereis cingulata*, n. sp., Straits of Magellan; EHLERS, Magal. Reise, p. 76. *L. vanhoeffeni*, n. sp., Mchlsn., Little Karajakfjord, Greenland; VANHOEFFEN, p. 222.
- Maldane amphiglypta*, n. sp., S. Georgia; EHLERS, Magal. Reise, p. 119.
- Melinna cristata*, Sars, and *M. palmata*, Gr., external and internal anatomy; FAUVEL (3), pp. 163-172.
- Micromaldane*, n. g. of *Maldanidæ* for *M. ornithochæta*, n. sp., on *Lithothamnion polymorphum*, S. Martin's Bay; MÉSNIL, Bull. Sci. France Belgique, xxx, p. 146.

- Microspio atlantica*, Lngghns., at C. de la Hague; MÉSNIL (2) p. 85.
- Neottis rugosa*, n. sp., Zanzibar (without eyespots); EHLERS, Nachr. Ges. Gottingen, 1897, p. 171, and (2) p. 108.
(*N. spectabilis*, Verr.) and (*N. antarctica*, McInt.) = *Thelepus spectabilis* (Verr.); EHLERS (1) p. 133.
- Nephtys serratifolia*, n. sp., near Falkland Islands; EHLERS, Magal. Reise, p. 24. *N. (trissophyllus*, Gr., and McInt.) = *N. virgini*, Kbg., description of species; EHLERS (1) p. 19. *N. scolopendroides*, D. Ch., nephridia; GOODRICH (1).
- Nereis cyclurus*, n. sp., atochous *Nereis*-form and epitochous *Nereis*- and *Heteronereis*-form (♀s only), commensal on hermit crabs in *Pteronotus*-, *Fisus*- and *Natica*-shells on Pacific coast of N. America; HARRINGTON, Tr. N. York Ac. xvi, p. 219.
N. fucata β *inquilina*, ? = the epitochous ♀ form of the ordinary *Nereis fucata*; HARRINGTON, l. c. p. 218. *N. (antarctica*, Verr.) and *N. (eatoni*, McL.) = *N. magalhaensis*, Kbg.; EHLERS (1) p. 63.
N. camiguina, Gr.?, from Zanzibar; EHLERS, Nachr. Ges. Gottingen, p. 165.
N. eugeniæ, Kbg., char. emend.; EHLERS (1) p. 67.
- "*Nerine vulgaris*, Johnston?" (M. Sars), ? = *Scolecolepis vulgaris*, Johnst., and Sars?; EHLERS (1) p. 86.
- Notocirrus lorum*, n. sp., near Falkland Islands; EHLERS, Magal. Reise, p. 78.
(*Nychia*), reasons given for replacing this generic name by another, for which the name *Gattyana*, Norman, is proposed; MCINTOSH (2.—1).
- Oria limbata*, n. sp., Straits of Magellan; EHLERS, Magal. Reise, p. 137.
- Pallasia sexungula*, n. sp., Straits of Magellan; EHLERS, Magal. Reise, p. 125.
- Paradexiospira*, n. subg. of *Spirorbis*, q. v.; MÉSNIL & CAULLERY, C.R. Ac. Sci. cxxiv, p. 50.
- Paralæospira*, n. subg. of *Spirorbis*, q. v.; *Ib. t. c.*
(*Phenacia oculata*, Schmank.), referred to genus *Hypania*, Ostrooum.; BIRULA (1) p. 19.
- Pholoë*, only one British species recognised, viz. *P. minuta*, Fabr. *P. (inornata)* and *P. (eximia*, G. Johnst.), to be regarded as varieties of it only; MCINTOSH, Ann. Nat. Hist. xx, p. 169.
- Phyllodoce polyphylla*, n. sp. with three first segments fused on ventral surface, S. Georgia; EHLERS, Magal. Reise, p. 26.
- Phyllosyllis*, n. g. of *Syllidæ* (leading on from *Autolytidæ* to *Phyllodocidæ*), for *P. albida*, n. sp., S. Georgia; EHLERS, Magal. Reise, p. 61.
(*Phyzelia agassizi*, Kbg.), referred to genus *Nicolea*; EHLERS (1) p. 132.
(*Platynereis antarctica*, Kbg.) and (*P. patagonica*, Kbg.) = (*P.*) *Nereis magalhaensis*, Kbg.; EHLERS (1) p. 63.
- Podarke obscura*, segmentation; TREADWELL.
- Pæcilochætus*, Clp., referred to a new family *Disomidæ*; MÉSNIL (2) p. 94.
- Polydora caulleryi*, n. sp., in *Pomatoceros* tubes, C. de la Hague, and another n. sp.?, fragment only, and remarks on *P. quadrilobata*, Jacobi; MÉSNIL, Bull. Sci. France Belgique, xxx, p. 88.
- Polynoe*, n. sp.?, like *P. impatiens*, Sav., but with edge of elytra not fringed, Zanzibar; EHLERS, Nachr. Ges. Gottingen, p. 164.
(*P. fullo*, Gr.) = *Harmothoë spinosa*, Kbg.; EHLERS, Magal. Reise, p. 12. *P. (trissochætus*, Gr.) = *P. glauca*, Peters.; EHLERS, Nachr. Ges. Gottingen, p. 163.
- Prionospio*, only 2 spp., viz. *P. steenstruppi*, Mgrn., and *P. malmgreni*, Clp., recognised, the others being too badly defined to be placed; MÉSNIL (2) p. 90. *P. cirrifera* (Wirén), amended description; BIRULA (2) p. 102.
- Promenia fulgida*, n. sp., S. Georgia, and *P. jucunda*, Kbg.; EHLERS, Magal. Reise, p. 114.

- Pygospio*, 2 spp., viz. *P. seticornis*, Oerst., and *P. elegans*, Clp., recognised; MÉSNIL (2) p. 85.
- Romanchella*, n. subg. of *Spirorbis* for *S. (R.) perrieri*, n. sp., and ? for *S. verruca*, Fabr., possibly coinciding with the subg. *Leodora*, St.-J.; MÉSNIL & CAULLERY (4) p. 210.
- Sabella sulcata*, n. sp., Zanzibar, ? to include (*S. fusca*, McL.) non Gr.; EHLERS, Nachr. Ges. Gottingen, 1897, p. 173 & (2) p. 109.
- Sabellides*, position of genus in the *Ampharetidae*; FAUVEL (3) p. 179. (*S. kowalewskii*, Grimm) = *Hypania invalida*; BIRULA (1).
- Samytha adspersa*, Grube, external and internal anatomy; FAUVEL (3) pp. 155-162.
- Scalibregma inflatum*, Rathke, var. *corethrurus*, n. var., Mchlsn., Little Karajakfjord, Greenland; VANHOEFFEN, p. 223.
- Scolecopsis glutæa*, n. sp., Straits of Magellan; EHLERS, Magal. Reise, p. 83. *S. viridis*, Verr., early development (cleavage); MEAD, p. 270. (*Serpula narconensis*, Baird) and (*S. n.* var. *magellanica*, McL.) and (*S. patagonica*, Gr.), all = *S. vermicularis*, L.; EHLERS (1) p. 140.
- Sphaerosyllis hirsuta*, n. sp. (? the type of a new genus), and *S. retrodens*, n. sp., Straits of Magellan; EHLERS, Magal. Reise, pp. 48 & 46.
- (*Spio seticornis*, Oerst.) non Fabr., referred to genus *Pygospio*: (*S. rathbuni*, Webst. & Ben.) = *Pygospio elegans*, Clp.: *Spio filicornis*, Fabr., compared with *S. martinensis*, Mesn.; MÉSNIL (2) p. 84. *S. martinensis*, Mésnil, gregarine-parasite with another new kind of parasite inside it; CAULLERY & MÉSNIL (2).
- Spiophanes*, 2 spp., viz. *S. kröyeri*, Gr., and *S. bombyx*, Clp., recognised, and distinguished from one another; MÉSNIL (2) p. 91.
- Spirorbis*, splitting up of genus into the following subgenera:—
- Subg. *Dexiospira*, for species with right-handed twist and 3 thoracic segments, with 6 species, including *S. marioni*, n. sp., Panama, p. 199;
- Subg. *Laospira*, for species with left-handed twist and 3 thoracic segments, with 10 species, including *S. bernardi*, n. sp., probably from the Indian Ocean, p. 214, *S. koehleri*, n. sp., Mediterranean, p. 214, *S. langerhansi*, n. sp., Panama, p. 217, *S. mediterraneus*, n. sp., Mediterranean, p. 211;
- Subg. *Paradexiospira*, for species with right-handed twist and 3½ thoracic segments, with 3 species, all from Iceland or Greenland, p. 195;
- Subg. *Paralaospira*, for species with left-handed twist and 3½ thoracic segments, with 6 spp., viz.: *S. aggregatus*, *claparedei*, *lebruni*, *levinsemi*, *patagonicus*, n. spp., Coast of Patagonia, and *S. maldardi*, n. sp., St Vaast-la-Hougue, pp. 202-207;
- Subgg. *Romanchella* and *Leodora*, for left-handed species with characteristic chætæ in first chætiferous segment, with 3 species, including *S. (R.) perrieri*, n. sp., with 3 varr., all from Coast of Patagonia, pp. 208-211; MÉSNIL & CAULLERY, Bull. Sci. France Belgique, xxx.
- S. borealis*, anatomy; SCHIVELEY.
- Sternaspis thalassemoides*, Otto, genital organs, nephridia, muscular system and cuticle; GOODRICH (2).
- Stenelais haddoni*, n. sp.?, S. W. Ireland, at depth of 328 fathoms; McINTOSH, P. Dublin Soc. viii, p. 403. *S. sarsi*, n. sp., Hardanger Fjord, and *S. heterochæta*, n. sp., also from Coast of Norway; McINTOSH, Ann. Nat. Hist. xx, pp. 174 & 176.
- S. picta*, segmentation of egg; TREADWELL.
- Syllides articulatus*, n. sp., Straits of Magellan, and another, ? n. sp.; EHLERS, Magal. Reise, p. 42.
- Syllis anops*, n. sp., Straits of Magellan, *S. brachycola*, n. sp., Straits of Magellan and S. Georgia; EHLERS, Magal. Reise, pp. 39 & 38.

- (*S. gigantea*, McInt.), referred to genus *Trypanosyllis*; EHLERS, Magal. Reise, p. 35.
 (*Thelepus mcintoshii*, Gr.) = *T.* ("Neottis") *spectabilis*, Verr.; EHLERS, *l. c.* p. 133.
Thoracophelia, n. g. for *Opheliidae* with body divided into two regions, *i. e.* for *T. furcifera*, n. sp., Straits of Magellan; EHLERS, *l. c.* p. 101.
Timarete, char. emend., p. 111, *T. nasuta*, n. sp., Straits of Magellan, p. 112; EHLERS, *l. c.*
Tomopteris, probable identity of the three European species: *onisciformis*, (*vitrina*), and (*scolopendra*); FOWLER, P. Zool. Soc. London, p. 523.
Travisia oleus, n. sp., Straits of Magellan, and amended description and figure of *T. kerguelensis*, McInt.; EHLERS, *l. c.* p. 98.
Trophonia kerguelarum, Gr., char. emend.; EHLERS, *l. c.* p. 107.
Tyrrhena claparedii, Qfg., nephridia; GOODRICH (1).

b. OLIGOCHÆTA.

- Acanthodrilus africanus*, n. sp., p. 344, *A. arenarius*, n. sp., p. 340, *A. arundinis*, n. sp., p. 339, *A. excavatus*, n. sp., p. 342, *A. falcatus*, n. sp., p. 341, *A. lucifuga*, and *A. photodilus*, n. spp., p. 343, *A. purcelli*, n. sp., p. 337, and *A. sclateri*, n. sp., p. 342, Cape Colony; BEDDARD, P. Zool. Soc. London, 1897. *A. majungianus* and *A. voeltzkowi*, n. spp., Majunga, Madagascar, and *A. braueri*, n. sp., Mahé, at a height of 300–400 m.; MICHAELSEN, Abh. Senckenb. Ges. xxi, pp. 218–224. *A. exul*, n. sp., I. of S. Antonio (C. Verde Is.); ROSA, Boll. Mus. Torino, xii, N. 308.
Allolobophora auriculata, n. sp., Gutenstein (Lower Austria), *A. handlirschi*, Unterberg (Lower Austria), and *A. rebelii*, n. sp., Bulgaria, and remarks on *A. lissaensis*, Mich.; ROSA, *op. cit.* N. 269.
Benhamia aitkeni, n. sp. (or ? type of n. g.), Travancore, p. 431, and *B. poonensis*, n. sp., Poona, p. 434, and *B. travancorensis*, n. sp., Travancore, p. 433; FEDARB, J. Bombay Soc. xi.
Bohemilla comata, Vejd., in France (S. of Aigremont); RICHARD (1).
Criodrilus breymanni, n. sp., Columbia; MICHAELSEN, Zool. Jahrb. Anat. x, p. 383.
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Desmogaster schildi, n. sp. (the 3rd of the genus), Sumatra; ROSA, Ann. Mus. Genova, xvii, p. 339.
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- P. biserialis*, E. Perr., *P. dyeri*, Bedd., and *P. mauritiana*, Bedd., descriptions and synonymy of spp.; MICHAELSEN (2) pp. 226-237.
- Perionyx*, sp. ? , Madagascar (probably imported from E. Indies); MICHAELSEN (2).
- Pontoscolex*, table of spp. and description of *P. lilljeborgi*, n. sp., Antigua, and of *P. corethrurus*, var. *mexicanus*, n. var.; EISEN, Lilljeb. Festskr. *P. (hawaiensis)*, Bedd., = *P. corethrurus*, Fr. Müll.; MICHAELSEN (2) p. 280.
- Tykonus perigrinus*, n. sp., West Indies, detailed anatomy, pp. 360-376: *T. wiengreeni*, n. sp., Brazil, p. 376; MICHAELSEN, Zool. Jahrb. Anat. x.

c. MYZOSTOMIDÆ.

Early development in *Myzostoma*; WHEELER, KOSTANECKI.

C. ARCHIANNELIDA.

- Bdellodrilus*, nephridia described and figured of 4 spp.; MOORE.
- Branchiobdella*, physiology; CUÉNOT.
- Ctenodrilus*, referred to the Polychæt family *Cirratulidæ*, comparison with *Dodecaceria*; MÉSNIL & CAULLERY (2).

D. HIRUDINEA.

- Abranchus*, n. g., with six eyes and no lateral hearts, for *A. brunneus* and *A. microstomus*, n. spp., coast of Sweden, and for *A. (Platybdella) sexoculata*, Malm; JOHANSSON, Akad. Afh., Upsala, 1896.
- Callobdella*, v. Ben. and Hesse, amended definition of genus, and of a species hitherto insufficiently diagnosed; JOHANSSON, l. c.
- Dina weberi*, n. sp., Java, Sumatra, and Celebes; BLANCHARD, Weber's zool. Ergebn. iv, p. 353.
- Epactodesminæ*, n. subf. of *Herpobdellidæ*; BLANCHARD (2).
- Glossiphonia weberi*, n. sp., Lake of Manindjan (Sumatra); BLANCHARD, l. c. p. 332. *G. stuhlmanni*, n. sp., wood near Kasja (Karague); BLANCHARD, Thierwelt Ost-Afr. p. 1.
- Hæmopis weberi*, n. sp., Kaju tanam R., Sumatra; BLANCHARD, Weber's zool. Ergebn. p. 352.
- Haplodesminæ*, n. subf. of *Herpobdellidæ*; BLANCHARD (2).
- Helobdella*, n. g. of *Glossiphonidæ* for *H. tricarinata*, n. sp., parasitic in branchial cavity of *Spatha wahlbergi*, Bubu stream near Mbahi (Ugogo); BLANCHARD, Thierwelt Ost-Afr. p. 4. *H. gracilis*, n. sp., in branchial cavity of *Paratelphusa* sp. ?, Java (Buitenzorg); BLANCHARD, Weber's zool. Ergebn. iv, p. 334. *H. javanica*, n. sp., Java; BLANCHARD, Notes Leyden Mus. xix, p. 80.
- Hirudo hildebrandti*, n. sp., Mombas and Bussisi (Victoria Nyanza); BLANCHARD, Thierwelt Ost-Afr. p. 5. *H. timorensis*, n. sp., freshwater lakes in Timor; BLANCHARD, Notes Leyden Mus. xix, p. 82.
- Limnatis africana*, n. sp., Schiefelinsville, Liberia and Senegal; BLANCHARD, Notes Leyden Mus. xix, p. 108. *L. (Pacilobdella) granulosa*, Sav. & Bl., synonymy, distribution and description; BLANCHARD (4) pp. 338-349, *L. (P.) javanica*, *Ib. t. c.* pp. 349-352.
- Malacobdella japonica*, n. sp., from mantle cavity of *Mactra sachalinensis*; TAKAHURA, Annot. zool. Japon. i, p. 105.
- Mimobdella*, n. g., resembling *Trocheta*, but with an even number of short annuli instead of an uneven, for *M. japonica*, n. sp., Japan, and *M. büttikoferi*, n. sp., Borneo; BLANCHARD, Notes Leyden Mus. xix, pp. 92-96.

- ("Nephelis (species dubia)" Horst) = *Scaptobdella horsti*, n. g., n. sp.; BLANCHARD (2) p. 97. *N. lateralis*, description; BRISTOL, Zool. Bull. i, pp. 35 & 36.
- Phytobdella moluccensis*, n. sp., Morotai I., Moluccas; BLANCHARD, Notes Leyden Mus. xix, p. 88.
- Piscicola (perspicax* Ols.) and *P. (lippa* Ols.) = *P. geometra*; (*P. picta* Ols.) = *Ichthyobdella elegans*, SAUS; JOHANSSON.
- Planobdella quoyi*, n. sp., Menado (Celebes); BLANCHARD, Notes Leyden Mus. xix, p. 91.
- Platybdella*, A. W. Malm, amended diagnosis of the genus and 3 of the spp.; (*P. sexoculata*, Mgrn.) referred to a new genus *Abranchus*; JOHANSSON.
- Salifer*, n. g. of *Herpobdellidæ* for *S. perspicax*, n. sp., Kiriwia (N. W. of Albert Edward Lake), and another (unnamed) species from Madagascar; BLANCHARD (1) p. 7.
- Scaptobdella*, n. g., resembling *Trocheta* but without pseudognaths and with intercalary annulus formed at the expense of the 4th (not 3rd) large annulus, for *S. horsti*, n. sp., Sumatra, Java and Borneo; BLANCHARD, Notes Leyden Mus. xix, p. 96.

PLATYHELMINTHES.

A.—CESTODA.

Adult Forms.

- Amabilia lamelligera*, Owen, detailed anatomy of genital system; DIAMARE (1). [See also under "*Diploposthe*."]]
- Anoplocephala pagenstecheri*, n. sp., intestine of *Hyrax*, near Asmara; SETTI, Atti Soc. Ligustica, viii, p. 223.
- (*Bothriocephalus zschokkei*, Fuhrm.) = *Schistocephalus dimorphus*, Creplin; LÜHE (1).
- Bothriotænia chilensis*, n. sp., from intestine of *Genypterus chilensis*, Chili; RIGGENBACH, Act. Soc. Chili, vii, p. 66.
- Cittotænia avicola*, n. sp., in a bird (*Anas*), genus only known in rodents before: anatomy; FUHRMANN, Rev. Suisse Zool. v, p. 107.
- Davainea madagascariensis*, Blanch., in Guiana; BLANCHARD (3).
- Dibothrium hastatum*, n. sp., from *Polyodon spatula*; *D. laciniatum*, n. sp., from *Tarpon atlanticus*; and *D. occidentale*, n. sp., from *Sebastodes* sp.; LINTON, P. U. S. Mus. xx.
- Dicranotænia coronula*, Duj., description of *Cysticercus*; ROSSETER (3) p. 399.
- Diploposthe*, n. g. for *Tænia lævis*, Dies; JACOBI (1). Distinction of genus from *Amabilia*; JACOBI (2) and DIAMARE (2).
- Dipylidium chyzeri*, n. sp., intestine of cat,—distinguished from *D. caninum* and from *D. pasqualei*; RATZ, Termes. Fuzetek, xx, p. 259, and Centrbl. Bakter. (1) xxi, p. 468.
- Drepanidotænia hemignathi*, n. sp., from intestine of *Hemignathus procerus*, Sandwich Is.; SHIPLEY, Quart. J. Micr. Sci. xl, p. 620. *D. gracilis* and *tenuirostris*, descriptions of *cysticerci*: ROSSETER (3) p. 400.
- Mesocestoides longistriatus*, n. sp., intestine of Selvatican cat, Ghinda; SETTI, Atti Soc. Ligustica, viii, p. 235. *M. lineatus* (Goezo), intestine of Jackal, near Massaua, amended description; SETTI, l. c. p. 227.
- Monobothrium heyacotyle*, n. sp., from *Catostomus* sp.; LINTON, P. U. S. Mus. xx.

- Ophryocotyle proteus*, distinguished from *O. lacazci*, with which (*O. insignis*, Lönnb.) is identified,—criticism of Blanchard's & Styles' descriptions; VILLOT (1).
- Orygmatobothrium paulum*, n. sp., from *Galeocerdo tigrinus*, and *O. crenulatum*, n. sp., from *Dasyatis centrura*; LINTON, P. U. S. Mus. xx.
- Otobothrium dipsacum*, n. sp., from *Pomastomus saltatrix*; LINTON, P. U. S. Mus. xix.
- Plerocercus echicola*, n. sp., larva, from mesentery of *Echis*, sp.; COLLIN.
- Rhynchobothrium agile* and *brevispine*, n. spp., from *Rhinoptera bonasus* (?); LINTON, P. U. S. Mus. xx. *R. speciosum*, n. sp., in fish, larval stage only; LINTON, P. U. S. Mus. xix.
- Tænia brauni*, n. sp., p. 210, and *T. serrata*, Goeze ?, p. 214, intestine of dog, Ghinda, *T. erythræa*, n. sp., from small intestine of a *Canis mesomelus* in Massaua, p. 220, *T.* sp. ?, in a Carnivor, Massaua, p. 218; SETTI, Atti Soc. Ligustica, viii. *T. venusta*, n. sp., in intestine of duck, with its *cysticercus* in body cavity of *Cypris cinerea*, pond near Canterbury; ROSSETER, J. Quekett Club, vi, p. 312. *T. salvelini*, n. sp., from *Cristivomer namaycush*; LINTON, P. U. S. Mus. xx. *T. triangularis*, n. sp., from intestine of *Scolopax galinula*; MÜLLER, Arch. Naturg. lxiii, p. 24.
- (*T. demerariensis*, n. sp.? Daniels) = *Davainea madagascariensis*, Blanch.; BLANCHARD (3). (*T. lavis*, Dies), referred to a new genus *Diploposthe*; JACOBI (1). *T. confusa*, note on; WARD (3). *T. liophallus*, discovery of *cysticercus* in *Cypris cinerea*, in Kent; ROSSETER (2).

Young Forms. [See also under *Tænia*, *Drepanidotænia*, *Plerocercus* and *Rhynchobothrium*.]

- Cysticercoid*, n. sp., in a Gecco (*Ascolobotes mauritanica*); SONSINO, Atti Soc. Tosc. x, p.-v. p. 257.
- Cysticercus longicollis*, Rud., a new variety, characterised by budding, in mole; BOTT, Zeitschr. wiss. Zool. lxiii, p. 137. [Cf. Zool. Rec. 1896, Vermes, p. 37.]
- C. venustus*, in *Cypris cinerea* [see under "*Tænia*"]; ROSSETER (1). Discovery of *cysticercus* of *Tænia liophallus* in *Cypris cinerea*, Kent; ROSSETER (2).
- (*C. talpæ*, Bendz) = *C. longicollis*, Rud.; BOTT, p. 135.

B.—TREMATODA.

Adult Forms.

- Amphistomum explanatum*, Creplin, refound, in Cochin-China cattle, and redescribed; RAILLIET & GOMY.
- Brachycælium luteum*, P. J. v. Ben.: identification of the *cercaria*, in *Donax trunculus* and *Pholas candida*, Arcachon and Wimereux; GIARD (3). Another species, differing only from *B. luteum* in the relative sizes of the anterior and posterior suckers, in *Donax* and *Tellina* (4 spp.); GIARD (4).
- Diplozoon paradoxum*, v. Nordm., difference of size in different hosts (Cyprinoid fish); HAUSMANN, p. 36.
- Distomum pancreaticum*, n. sp., salivary glands of cattle; JANSON, Mt. Ges. Tokio, 1895, p. 272. *D. patellare*, n. sp., bladder of *Triturus pyrrhogaster*, Japan, allied to *D. folium*, v. Olf.; STURGES, Zool. Bull. 1, p. 57.
- D. (Dicrocælium) angusticolle*, n. sp., intestine of *Cottus gobio*, Rhine, p. 24, and *D. perlatum*, v. Nordm., var. *exspinosum*, n. var. from Rhine, p. 29: anatomy; HAUSMANN, Rev. Suisse Zool. v.

- D. (Polyorchis) ragazzi*, n. sp., from "Squali," L. Massaue; SETTI, Atti Soc. Ligustica, viii, p. 203. *D.*, n. sp. ? intestine of Pelican, Massaua; *ibid.* p. 207.
- D. cygnoides*, Zeder., 2 distinct spp. ?, or at least 2 varr., included under the name by Looss and other authors. Their respective characteristics; BENSLEY, Centrbl. Bakter. (1) xxi, p. 326. *D. globiporum*, Rud., list of 20 hosts, p. 39, and *D. (Apoblema) appendiculatum*, Rud., remarks on anatomy, p. 38; HAUSMANN. *D. caudale*, Rud., from intestine of *Coracias garrula* (30 specimens), and *D. minutum*, Cobb., in an oyster catcher; MÜLLER, p. 16.
- Echinostoma tabulatum*, n. sp., from intestine of *Numenius arquatus*, p. 21, and *E. columbæ liviæ*, ? n. sp., p. 23, and *E. spinulosum*, Rud., to be broken up into several spp., p. 20; MÜLLER, Arch. Naturg. lxiii.
- Epibdella hippoglossi*, O. F. M., anatomy; SCHÖTT.
- Gasterostomum fimbriatum*, v. Sieb., remarks on anatomy; HAUSMANN, p. 34.
- Mesostomum balatonicum*, n. sp., from a fish, L. Balaton; SZIGETHY.
- Monostomum lacteum*, n. sp., in cysts from the dura-mater of the brain of *Cottus scorpius*, Bohusland; JÄGERSKIÖLD, Lilljeb. Festskr., p. 167.
- Otiotrema*, n. g. of *Distomida* for *O. torosum*, n. sp., intestine of a "Squalo," L. Massaue; SETTI, Atti Soc. Ligustica, viii, p. 199.
- Podocotyle*, n. sp., from *Numenius arquatus*; MÜLLER, Arch. Naturg. lxiii, p. 23.
- Tetracotyle*, sp. ? in *Cobitis barbatula*; HAUSMANN, p. 36.

Young Forms.

- Identification of the setigerous *Cercaria* of Donax as that of *Brachycælium luteum*; GIARD (3).
- Cercaria monostomi*, n. sp., in 2 spp. of *Lymnæa* in brook near Göttingen; v. LINSTOW, Arch. mikr. Anat. xlviii, p. 376.
- Distomum isoporum*, Looss: what is probably the larva found in water insects near Göttingen; *D. endobium*, Duj., larva in *Phryganidæ*; v. LINSTOW, Arch. mikr. Anat. xlviii, pp. 377 & 379.

C.—NEMERTINEA.

- Amphiporus greenmani*, n. sp., Ludlam Bay, Sea Isle, N. J., p. 6, and *A. glutinosus*, Verr., p. 8; (*Amphiporus virescens*, Verr.) referred to a n. g. *Zygonemertes*, p. 2; MONTGOMERY, Zool. Jahrb. Syst. x.
- Proneurotes*, n. g. with *P. multioculatus*, n. sp., single specimen, at low tide level, Sea Isle, N. J.; MONTGOMERY, Zool. Jahrb. Syst. x, p. 4.
- Prosorhochmidæ*, Bürger.—Objections to retaining such a family; MONTGOMERY (2) p. 39.
- Stichostemma*, definition of genus, its distinction from *Tetrastemma*, its nephridia, p. 38, connective tissue, p. 32; and description of *S. eilhardi*, n. sp., Montg. (with several nephridia, not in pairs, on each side of body, not all opening to the exterior); MONTGOMERY (2) & (3). [See also Amer. Nat. xxxi, p. 722.]
- Tetrastemma flagellatum*, n. sp., Ludlam Bay, Sea Isle, N. J., p. 11, and notes on anatomy of *T. elegans*, Verr., and *T. vermiculum*, Qtrf.; MONTGOMERY, Zool. Jahrb. Syst. x, pp. 9–11. *T. catenulatum* (Verr.), n. sp., for *T. (vermiculum catenulatum)*, Verr.; MONTGOMERY (2) and (4).
- T. vermiculus*, Qfg., development; LEBEDINSKY.
- Zygonemertes virescens* (Verr.), n. g., for (*Amphiporus v.*, Verr.); MONTGOMERY, Zool. Jahrb. Syst. x, p. 2.

D.—TURBELLARIA.

- Amblyceræus*, n. g. of *Euryleptidæ*, connecting this family with the *Pseudoceridæ*, for *A. luteus*, n. sp., Monterey Bay, California; PLEHN, Jena. Zeitschr. xxxi, p. 94.
- Archiplanoidea*, new order of Planarians for the genera *Cæloplana*, *Ctenoplana* and *Heteroplana*, each ? the type of a new family; WILLEY (1) & (2).
- Bipalium ellioti*, *layardi*, *piceum*, *salvini*, *shipleyi* and *wrighti*, n. spp. and 2 other spp., N. and Central Celebes; v. GRAFF, Verh. d. zool. Ges. vii.
- Chæradoplana langi*, for (*Geoplana langi*, v. Graff); v. GRAFF (1).
- Cotyloplana diesingi*, *dugèsi* and *sharpi*, n. spp., S. Celebes; v. GRAFF (2).
- Ctenoplana korotneffi*, n. sp., and *C. rosacea*, n. sp. (? or else *C. kowalevskii* Korot. refund), Conflict Is., New Guinea Group; WILLEY (1).
- Dolichoplana harmeri*, n. sp., S. Celebes; v. GRAFF (2) p. 114.
- Geoplana albo-lineata*, n. sp., Bundanoon, p. 109, *G. atrata*, n. sp., Upper Manning River, p. 105, *G. elegans*, n. sp., Nerang River, Queensland, p. 111, *G. hillii*, n. sp., Bundanoon, p. 105, *G. parva*, n. sp., Nerang River, p. 107, *G. ponderosa*, and *G. robusta*, n. spp., Bundanoon, pp. 106–108, *G. quinquelineata*, var. *accentuata*, n. var., Victoria and Queensland; STEEL, P. Linn. Soc. N. S. Wales, xxii. *G. trifasciata*, n. sp., Navua River, Viti Levu (first representative of genus from South Pacific Is.); STEEL, t. c. p. 120. *G. gamblei*, *leuckarti*, *metschnikoffi*, and *sieboldi*, n. spp., Celebes; and *G. ferrussaci*, n. sp., Brazil, referred to; v. GRAFF, Verh. d. zool. Ges. vii, p. 113. *G. brittlebanki*, *carrièrei*, and *eugeniæ*, n. spp., S. America; v. GRAFF (1). *G. cucullata*, n. sp., L. Mahinapua (near Hokitika, N. Z.), p. 259, *G. flavimarginata*, n. sp., greenhouse in Wellington, p. 259, *G. jacksoniana*, n. sp., Jackson B., N. Z., p. 262, *G. suteri*, n. sp., Dunedin, p. 263, *G. graffii*, var. *occidentalis* and var. *otiraensis*, n. varr., Otira and L. Mahinapua; DENDY, Tr. N. Zealand Inst. xxix.
- G. graffii*, Dendy, and *G. iris*, ? to be referred to *G. moseleyi*; DENDY, t. c. p. 262. (*G. langi*, v. Gr.), to the g. *Chæradadoplana*; v. GRAFF (1).
- Graffila buccinicola*, n. sp., Irish Sea; JAMESON.
- Gyrator hermaphroditus*, Ehrb., from Bukoba, description; BÖHMIG (1).
- Heteroplana*, n. g., and type of new family of Planarians belonging to the Order *Archiplanoidea*, characterised by the atrophy of the one side of the body, hypertrophy of the other, with *H. newtoni*, n. sp., a single specimen on a *Madrepora* stock, Sandal Bay, Lifu; WILLEY, Quart. J. Micr. Sci. xl, p. 203.
- Hypotrichina*, n. g. of Rhabdocœl, ciliated on the ventral surface only, for *H. circinnata* and *H. sicula*, n. spp., fine sand near Messina, and for *H. tergestina*, Triest and Naples, and *H. marsiliensis*, Marseilles, n. spp. (Repiachoff); CALANDRUCCIO, Atti Acc. Gioen. x, Mem. xiv.
- Leptoplana californica*, n. sp., Monterey Bay, California; PLEHN, l. c. p. 93.
- Mesostomia wardii*, n. sp., Bull. Michigan Fish Comm. No. 6.
- Mesostomum balatonicum*, n. sp., L. Balaton; SZIGETHY.
- Monotus*, sp.?, stalked eggs and embryos attached to shell or siphon of *Donax* and *Tellina*, near Boulogne; *M. fuscus*, eggs on valves of *Balanus*; GIARD (5).
- Pelmatoplana martensi*, n. sp., S. Celebes; v. GRAFF (2).
- Phæcephalus cantori*, n. sp., China, and *B. floweri*, n. sp., Ceylon, referred to; v. GRAFF, Verh. d. zool. Ges. vii, p. 112.
- Phonaria simplex*, n. sp., Bull. Mich. Fish Comm. No. 6. [See Amer. Nat. xxxi, p. 241.]
- Planaria dorotocephala* and *P. unionicola*, n. spp., Illinois; WOODWORTH (2), Bull. Mus. Harvard, xxxi, pp. 3–16. *P. laurentiana*, n. sp., San

- Lorenzo, Jujuy, and *P. andina*, Borelli, also in Argentine Republic; BORELLI, Boll. Mus. Torino, xii, N. 288. *P. venusta*, n. sp., in a tributary of the Ituri in West Lendu, 1250 m. above sea-level, and *P. brachycephala*, n. sp., in another subtributary of the Ituri; BÖHMIG, Thierwelt Ost-Africa, iv, pp. 12 & 13.
- Platydemus leidyi*, n. sp., S. Celebes, first representative of the genus in the Indo-Malay region; v. GRAFF, Verh. d. zool. Ges. vii, p. 113.
- Polyporus*, n. g. of *Leptoplanidae* with *P. cæcus*, n. sp., single specimen from Advent Bay, Spitzbergen; PLEHN, Jena. Zeitschr. xxxi, p. 90.
- Prorhynchus putealis*, n. sp., or, ?, the type of a new genus, from deep wells, New Zealand; HASWELL, Quart. J. Micr. Sci. xl, p. 644.
- Rhynchodemus demani*, *lubbocki* and *rubrocinctus*, n. spp., N. Celebes; v. GRAFF, Verh. d. zool. Ges. vii, p. 114. *R. hectori*, n. sp., S. America; v. GRAFF (1). *R. scriptus*, n. sp., Navua R., Viti Levu, Fiji; STEEL, P. Linn. Soc. N. S. Wales, xxii, p. 121. *R. guttatus*, F. & H., its identity with (*R. victoriae*, var. *steelii*, Dendy); STEEL, t. c. p. 114.
- Stenostoma gilvum*, n. sp., *S. stuhlmanni*, n. sp., and *S. leucops*, O. Schm., Bukoba (L. Victoria); BÖHMIG, Thierwelt Ost-Africa, pp. 5-8. Genital organs of *S. leucops*; SABUSSOW.
- Uteriporus*, structure of ♂ and ♀ genital apparatus; systematic position of genus amongst the Triclad; points of analogy with the *Cestodaria*; BERGENDAL (1).
- Vortex quadridens*, n. sp., Bukoba, L. Victoria; BÖHMIG, l. c. p. 10.

NEMATHELMINTHES.

A.—NEMATODA and GORDIIDÆ.

(a) NEMATODA, S.S.

- Anchylostomum duodenale*, Düb., Life-history, transformation of free-living larva into adult; LOOSS, Centrbl. Bakter. (1) xxi, p. 913.
- Angiostomum rubrovenosum*, Schneider, parthenogenetic form, and ♂ and ♀, described; v. LINSTOW (3) p. 616.
- Ascaris madagascariensis*, n. sp., from *Potamochoærus edwardsii*, Madagascar, and *A. pigmentata* from *Arctomys marmita*, n. sp. (in Zoological Gardens, Königsberg); v. LINSTOW, Arch. Naturg. lxiii, p. 27. *A. rostrata*, n. sp., œsophagus of *Sciæna aquila*; *A. macrolabium*, n. sp., from *Serranus gigas*; *A. mænæ zebrae*, n. sp., a larval form, ? of *A. adunca*, and 3 other larval forms mentioned; STOSSICH (1). *A. ammocætis*, n. sp., larva, in *Ammocætes* (wrongly recorded as a *Filaria* last year); v. LINSTOW, Arch. mikr. Anat. xlvi, p. 375.
- A. rubicunda*, Schneid. ?; MÜLLER, Arch. Naturg. lxiii, p. 9.
- Aucyracanthus bihamatus*, n. sp., from wall of stomach of *Sterna risoria*; MÜLLER, Arch. Naturg. lxiii, p. 7.
- Chromadora tatraica*, n. sp., White Kezsmark Lake, 1600 m. above sea-level, Hungary; DADAY, Termes. Fuzetek, xx, p. 192.
- Cucullanus dumerilii*, Perrier, from *Emys*, description of ♀ for first time; v. LINSTOW (3) p. 615.
- Deontolaimus tatricus*, n. sp., 4th Kohlbach Lake, Tatra Mts., 2000 m. above sea-level; DADAY, Termes. Fuzetek, xx, p. 190; and Zool. Jahrb. Syst. x, p. 92.
- Dispharagus cordatus*, (= *D. anthuris*, Rud., Molin., Duj.), in two spp. of *Lanius* and one of *Coracias*; MÜLLER, Arch. Naturg. lxiii, p. 5.
- Ethmolaimus tatricus*, n. sp., 4th Kohlbach Lake, 2000 m. above sea-level; DADAY, Termes. Fuzetek, xx, p. 192.

- Filaria australis*, n. sp., body-cavity of *Petrogale penicillata*, Gray, Australia; v. LINSTOW, Arch. mikr. Anat. xlix, p. 610. *F. effilata*, n. sp., from abdominal cavity of *Tragulus pygmaeus*; v. LINSTOW, Arch. Naturg. lxiii, p. 30.
(*F. involuta*, v. Linst.) = *F. laticeps*, Duj.; MÜLLER, l. c. pp. 1 & 6.
(*Globocephalus*), Molin. = *Ankylostomum*; v. LINSTOW (2).
Heterakis brevicauda, n. sp. in *Lucioperca sandra*, Cuv., L. Balaton; RATZ, Centrbl. Bakter. (1) xxii, p. 450. *H. ornata*, n. sp. from *Stellio vulgaris*; v. LINSTOW, Arch. Naturg. lxiii, p. 29.
H. vesicularis, Fröhlich; v. LINSTOW (3) p. 618.
Monhystera pseudobulbosa and *M. tatrica*, n. spp., 4th and 2nd Kohlbach L. resp., 2000 m. above sea-level, Hungary; DADAY, Termes. Fuzetek, xx, pp. 190 & 191; and Zool. Jahrb. Syst. x, p. 97.
Mononchus macrostoma, Bast., var. *armatus*, n. var., shore of L. Balaton; DADAY, Zool. Jahrb. Syst. x, p. 108.
Monotus lacustris, in Bohemia Lakes; FRITSCH & VAVRA, p. 51.
Oxyuris mamillata, n. sp. from *Plestiodon aldrovandi*, and *O. cincta*, n. sp. from *Stellio vulgaris*; v. LINSTOW, Arch. Naturg. lxiii, p. 30. *O. stossichi*, n. sp., intest. of *Hystrix cristata*, Massaua; SETTI, Atti Soc. Ligustica, viii, p. 241.
Physaloptera caelebs, n. sp. from *Centetes ecaudatus*; *P. circularis*, n. sp. from *Mus rattus*, Madagascar, and *P. sp.* ? from *Erinaceus*; v. LINSTOW, Arch. Naturg. lxiii, p. 28. *P. dilatata*, Rud., from *Cynocephalus hamadryas*, description; STOSSICH (1).
Prismatolaimus dolichurus, de M., var. *bulbosus*, n. var., Triangle Lake, 1600 m. above sea-level, Kezsmark, Hungary; DADAY, Termes. Fuzetek, xx, p. 193.
Simondsia paradoxa, Cobb., from pig, anat. of ♂ and ♀; PIANA: from wild boar; COLUCCI & ARNONE; SONSINO (2).
Spiroptera brauni, n. sp. from Madagascan rat; v. LINSTOW, Arch. Naturg. lxiii, p. 30. *S. pigmentata*, n. sp., intest. of *Cercopithecus albigularis*, Sykes; v. LINSTOW, Arch. mikr. Anat. xlix, p. 608.
Strongylus brauni, n. sp., lung of *Viverra zibetha*, L.; v. LINSTOW, Arch. mikr. Anat. xlix, p. 611.
S. trigonocephalus, Rud., p. 11, and *S. nodularis*, Rud., (= *S. mondon*, v. Linst.) p. 1, description of mouth capsule and cirrhi; MÜLLER.
Teratocephalus pallustris, de M., var. *crassicauda*, n. var., Triangle Lake, Kezsmark, Hungary, 1600 m. above sea-level; DADAY, Termes. Fuzetek, xx, p. 194.
Trichocephalus unguiculatus, Rud.; v. LINSTOW (3) p. 618.
Trichosoma modigliani, n. sp., from intestine of *Trimeresurus formosus*, Schleg., Mentawai, and *T. sonsinoi*, n. sp., fr. intestine of *Zamenis viridiflavus*, comparison with the already known spp. inhabiting Ophidians; PARONA, Atti Soc. Ligustica, viii, pp. 380-385. *T. contortum*, Crepl.; v. LINSTOW (3) p. 618.
Tripyla gigantea, n. sp., Kleine Plattensee; DADAY, Zool. Jahrb. Syst. x, p. 101.

(b) GORDIIDÆ & MERMIDÆ.

- Chordodes*, amended definition of genus, 27 spp. recognised, including *C. ferox*, n. sp.; CAMERANO, Mem. Acc. Tor. xlvii, p. 389, and Zool. Anz. xx, p. 225. *C. festæ*, n. sp., Cuenza, Ecuador; CAMERANO, Boll. Mus. Torino, xii, No. 293. *C. kallstenii*, n. sp., Cameroon; JÄGERSKIÖLD, Bih. Svenska Ak. xxiii, No. 7, p. 140. *C. talensis*, n. sp., Argentine Republic and Bolivia; CAMERANO, Boll. Mus. Torino, xii, No. 294, p. 2.

- Gordiidae*, splitting up of family into 4 genera, and enumeration of 27 spp. which cannot, as yet, be assigned to any of these; CAMERANO, Mem. Acc. Tor. xvii, p. 389, and Zool. Anz. xx, p. 225.
- Gordius*, definition of genus, 13 spp. recognised; CAMERANO, *l. c.*—*G. granulatus*, n. sp., 23½ cm. long, free living ?, Madagascar; and *G. sp. ?* from *Polyspilota pustulata*; v. LINSTOW, Arch. Naturg. lxiii, p. 31.
- Mermis præmatura*, n. sp., from *Stenobothrus sp. ?*, Madagascar, containing embryos; and *M. acrididarum*, n. sp., 2 larvæ from *Orthocris sp. ?*; v. LINSTOW, Arch. Naturg. lxiii, p. 32.
- Parachordodes*, n. g. for 15 spp. of *Gordiidae*, including *P. kaschgaricus*, n. sp.; CAMERANO, Zool. Anz. xx, p. 227, and Mem. Acc. Tor. xvii, p. 289.
- Paragordius*, n. g. for 4 spp. of *Gordiidae*; CAMERANO, *l. c.*

B.—ACANTHOCEPHALA.

- Arhynchus hemignathi*, Shipl., rectification as to locality of attachment in host; SHIPLEY (2) p. 620.
- Echinorhynchus*, table of the 15 known spp., description of *E. carruccioi* and *E. paronai*, n. spp., and 5 other spp. from the Campagna Romana; CONDORELLI-FRANCAVIGLIA.—*E. curvatus*, n. sp. from *Plestiodon aldrovandi*, *E. ovocristatus*, n. sp. from *Centetes ecaudatus*, and *E. rotundatus* from *Centropus madagascariensis*; v. LINSTOW, Arch. Naturg. lxiii, pp. 33 & 34.
- Gigantorhynchus hamatus*, n. sp. from *Potamochærus edwardsii*, and 3 other spp. from Madagascan mammals; v. LINSTOW, Arch. Naturg. lxiii, p. 33.

C.—CHÆTOGNATHA.

- Krohnia foliacea* and *pacifica*, n. spp., Misaki Harbour; AIDA, Annot. zool. Japon. i.
- Sagitta neglecta*, and *regularis*, n. spp., Misaki Harbour, Japan; AIDA, *t. c.*
- S. arctica*, n. sp., Seas of Greenland and Skagerak; AURIVILLIUS, Lilljeb. Festskr. pp. 188 & 195.

V. HEMICHORDA (including *Phoronis*).

TITLES.*

268. HARMER, S. F. On the Notochord of *Cephalodiscus*. Zool. Anz. xx, pp. 342-346.
269. HILL, J. P. The *Enteropneusta* of Funafuti. Mem. Austral. Mus. (Sydney) iii. Part i, pp. 203-210, pl. ix.
Part ii, pp. 333-346, pls. xix-xxii.
270. MACBRIDE, E. W. The relationship of *Amphioxus* and *Balanoglossus*. P. Cambridge Soc. ix, pp. 309-313.
271. MASTERMAN, A. T. (1) On the Diplochorda.—1. The Structure of *Actinotrocha*.—2. The Structure of *Cephalodiscus*. Quart. J. Micr. Sci. xl, pp. 281-366, pls. xviii-xxvi.

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

272. [MASTERMAN, A. T.] (2) On the "Notochord" of *Cephalodiscus*. Zool. Anz. xx, pp. 443-450.
273. *SCHULTZ, E. Obrazovanie mezodermy u *Phoronis*. [On the formation of the mesoderm in *Phoronis*.] Trudui St Petersburg. Protok., 1897, pp. 31-34, 3 figg. German Resumé, pp. 47-50. Abstract Zool. CB. iv, pp. 781 & 782.
274. SPENGLER, J. W. Bemerkungen zu A. T. Masterman's Aufsatz "On the 'notochord' of *Cephalodiscus*" in No. 545 des Zoologischen Anzeigers. Zool. Anz. xx, pp. 505 & 506.
275. WILLEY, A. (1) On *Ptychodera flava*, Eschscholtz. Quart. J. Micr. Soc. xl, pp. 165-184, pl. v.
276. —. (2) *Spengelia*; a new Genus of *Enteropneusta*. T. c. pp. 623-630, pl. xlvii.
277. —. (3) Some zoological Results of a voyage to Melanesia during the years 1894-1897. P. Cambridge Soc. ix, pp. 397-400.

BIOLOGY.

MACBRIDE discusses the relationship of *Balanoglossus* and *Amphioxus*, criticising Lwoff's description of the development of cœlom and mesoderm in *Amphioxus*. SCHULTZ discusses the relationship of the *Enteropneusta* as a whole to the Ectoproctous Bryozoa, coming to no very definite conclusion. He describes the formation of the mesoderm in a species of *Phoronis* occurring near Sebastopol. It is apparently formed by the arrangement of mesenchyme cells into an epithelium, and would therefore have a different origin to what it has in the species whose development has been described by Caldwell. Schultz does not give the name of his species.

The anatomy of *Cephalodiscus* is fully described by MASTERMAN (1), and compared with that of the *Actinotrocha*-larva of *Phoronis*.

The homology of the "notochord" of *Cephalodiscus* with the "proboscis gland" of *Balanoglossus* and "subneural gland" of *Actinotrocha*, maintained by Masterman, is disputed by HARMER, who still regards it as homologous with the "Eicheldarm" of *Balanoglossus*. MASTERMAN (2) upholds his own views and criticises some of the figures in Spengel's monograph. SPENGLER objects to these criticisms.

The relationships of the different genera of *Enteropneusta* to one another are discussed by WILLEY (1, 2 & 3). He concludes, in opposition to Spengel, that the genus *Ptychodera*, with an outer layer of circular muscles and synapticulæ, is the most primitive, then follow *Schizocardium* and *Glandiceps*, with an inner layer of circular muscles and no synapticulæ, *Balanoglossus*, characterised by the absence of circular muscles and of synapticulæ, being the least primitive. He describes a new genus, *Spengelia*, resembling *Glandiceps*, but approaching *Ptychodera* in the possession of synapticulæ and of the remains of dorsal-roots arising from the collar nerve-cord, and especially characterised by a well-defined layer of splanchnic nerve-fibres round the buccal cavity and œsophagus, and by the occurrence on each side of the dorsal median line of a series of deep dermal pits in the post-branchial region of the body. He proposes (2) the term "proboscis-cœcum" for the process extending forwards from the anterior end of the notochord in *Glandiceps* and *Schizocardium* ("Eicheldarm" auct.).

HILL (Pt. II) describes a new species of *Ptychodera* without circular muscles in the trunk and having its genital-pleuræ rudimentary, with the dorsal diverticula of the intestine glandular, with the two longitudinal

ciliated grooves of the intestine covered by epidermis, and with the axial-canal in the dorsal nerve-cord opening to the exterior both anteriorly and posteriorly.

DISTRIBUTION.

Ptychodera flava, Esch., on Funafuti Atoll, off Noumea (New Caledonia), and from a rock-pool on Lifu (Loyalty Is.), on the I. of Admédée (inside Great Barrier Reef of New Caledonia), and I. of Pines; HILL; and WILLEY (1) & (2).

SYSTEMATIC.

Ptychodera (s. str.) *hedleyi*, n. sp., Funafuti Atoll, external and internal anatomy; HILL, Mem. Austral. Mus. iii, pp. 203 & 333.

P. caledoniensis, provisional new species, for what is probably to be identified with *P. (chlamydothorax) flava*, Esch., I. of Admédée (inside Great Barrier Reef of New Caledonia), and I. of Pines; WILLEY, Quart. J. mikr. Sci. xl, p. 182. HILL, finding the same species on Funafuti Atoll, identifies it with *P. flava*, Esch., and WILLEY (2) accepts this identification, with the proviso, that if it should not turn out to be the same as the species occurring in the Marshall Is. (the original locality of Eschscholtz' species) the latter will have to be renamed.

VI. ROTIFERA AND GASTROTRICHA.

TITLES.*

278. BRYCE, D. Contributions to the non-marine fauna of Spitzbergen. Part ii. Report on the *Rotifera*. P. Zool. Soc. London, 1897, pp. 793-799.
279. *COLLIN, A. Eingeweidewürmer und Räderthiere. Die Thierwelt Ost-Africas, iv, Lifg. v, Berlin (Dietr. Reimer), 1897, 13 pp. and 14 figg. in text.
280. DADAY, J. (1) Új-Guineai Rotatoriák (*Rotatoria* Novæ Guineæ). Math. term. Ertes. xv, pp. 131-148, 12 figg.
281. *——. (2) Rotatorien [des Plattensees]. Result. wiss. Erforsch. Balatonsees, pp. 123-133. (See Zool. Anz. xx, p. 620.)
282. ——. (3) Beiträge zur Kenntniss der Microfauna der Tátraseen. Termes. Fuzetek, xx, pp. 149-196.
283. DUNLOP, M. F. On *Metopidia pterygoida*, a new Rotifer. J. Quekett Club, vi, pp. 325-327, pl. xvii.
284. ERLANGER, R. & LAUTERBORN, R. Ueber die ersten Entwicklungsvorgänge im parthenogenetischen und befruchteten Räderthier-ei (*Asplanchna priodonta*). Zool. Anz. xx, pp. 452-456.

* An asterisk prefixed to a quotation indicates that the Recorder has not seen the Journal or Work referred to.

285. FRANCÉ, R. A *Brachionus quadratus*, Rouss. szervezete. Potfuz. Termes. Kozl. xlv, pp. 206-218, 8 figg.
286. JENNINGS, H. S. The early development of *Asplanchna herrickii*, Guerne: a contribution to developmental mechanics. Bull. Mus. Harvard, xxx, pp. 1-118, pls. i-x.
 I. Mechanics.
 II. Morphology of the Rotifera.
 III. Materials and methods.
287. KELLICOTT, D. S. The *Rotifera* of Sandusky Bay. (2nd paper.) Tr. Amer. micr. Soc. xix, pp. 43-54, 3 figg.
288. LAMBEERE, A. Notes du laboratoire de biologie ambulante de l'université de Bruxelles, i. Expédition à Kinroy. Ann. Soc. Belg. Micr. xxi, pp. 33-41.
289. LEUSSEN. Sur la présence de Sporozoaires chez un Rotateur. Zool. Anz. xx, pp. 330-333.
290. NUSBAUM, M. Ueber Versuche, das Geschlecht an einem Räderthiere, *Hydatina senta*, willkürlich zu bestimmen. SB. niederrhein. Ges., 1896, p. 40. Full paper, Arch. mikr. Anat. xlix, pp. 227-308. Abstract, J. R. micr. Soc. 1898, pp. 306-308.
291. PITARD, E. Sur le Plankton du lac de Chavonnes. Arch. Sci. Nat. (4) iii, 3 pp.
292. ROUSSELET, C. F. (1) *Brachionus bakeri* and its varieties. J. Quekett Club, vi, pp. 328-332, pl. xvi.
293. ———. (2) On the male of *Proales wernecki*. *T. c.* pp. 415-418, pl. xix. [See also two papers in J. R. micr. Soc. recorded last year.]
294. SADONES, —. Zur Biologie (Befruchtung) der *Hydatina senta*. Zool. Anz. xx, pp. 515-517.
295. SCHERREN, H. Rotifers commensal with Caddis-worms. Nature, lvi, p. 224.
296. SHEPHARD, J. A new Rotifer, *Lacinularia elliptica*. Victorian Natural. xiv, pp. 84-86, pl. i.
297. STOKES, A. C. Some new forms of American Rotifera, II. Ann. Nat. Hist. xix, pp. 628-633, pl. xiv.
298. VANHÖFFEN, E. Die Fauna und Flora Grönlands. Grönl. Exped. d. Ges. Erdkunde zu Berlin, 1891-1893, Berlin (Kühl), 4to., 1897, II. Pt. 1.
 IV. Kap. Wirbelloser Landtiere und Süßwasserplankton, pp. 175-223.
 VI. Das Plankton des Karajak-Fjordes (Rotifers, p. 276).
299. WEBER, E. F. Note sur quelques mâles de Rotateurs. Rev. Suisse Zool. v, pp. 91-99, pl. iv.
300. ZACHARIAS, O. (1) Neue Beiträge zur Kenntniss des Süßwasserplanktons. Forschber. Plon, v, pp. 1-9, pl. i.
301. ———. (2). Zur Mikrofauna der Sandforter Teiche. *T. c.* pp. 112-114.
302. ZOGRAF, N. DE. Sur une méthode de préparation des Rotateurs. C.R. Ac. Sci. cxxiv, pp. 245 & 246.

BIOLOGY.

The early development (maturation of egg, orientation, cleavage, and gastrulation) of *Asplanchna herrickii*, de Guerne, considered from the

mechanical point of view, but found not to be determined by any simple mechanical factors or relations of form; JENNINGS.

The first stages in development (formation of centrosomes, nutrition of ovum, and its maturation) in the three kinds of ova, viz.:—the parthenogenetic ones which become females, the parthenogenetic ones which become males, and the fertilized ones which become winter eggs—, of *Asplanchna priodonta*; ERLANGER & LAUTERBORN. Experiments for producing the different kinds of eggs at will in *Hydatina senta*, showing that a female, when well fed after leaving the egg, produces females parthenogenetically and continues so to do even if it is afterwards badly fed, whereas if badly fed to begin with male eggs are produced parthenogenetically however the after-conditions be changed; NUSBAUM. The influence of the oxygenation of the water on rate of development and of temperature on the number of eggs produced is also shewn experimentally.

Impregnation of the ova in *Hydatina senta*, the spermatozoa boring their way through the membrane of the ovary from the colon of the female, into which they were injected by the male; SADONES [compare a similar process in a Turbellarian, p. 22 of this record].

Sporozoa (stages of *Euglena*?) parasitic in intestinal cells of *Hydatina senta*; LEUSSEN.

Commensalism: of Rotifers with caddis worms; SCHERREN.

Tube-building of *Melicerta ringens*. Int. J. Micr. (3) vii, pp. 285–287.

Method of preparing rotifers: modification of Rousselet's; ZOGRAF.

GEOGRAPHICAL DISTRIBUTION.

Spitzbergen: Fresh-water rotifers, 19 species *Bdelloida*, 6 *Ploima*, in ponds which often frozen for nine months of the year; BRYCE.

Greenland: 84 species of fresh-water Rotifers, 4 of them new to Greenland; VANHÖFFEN, p. 175, &c.; presence of *Synchaeta baltica* and *Mastigocerca stylata*, Gosse, which only known before in the North Sea and Baltic; VANHÖFFEN, p. 276.

Arran: a new Rotifer; DUNLOP.

Schleswig-Holstein: rotifers; ZACHARIAS (1). Ponds of Sandfort, 14 species; ZACHARIAS (2).

Belgium: Kinroy: 6 spp. *Rhizota*, 8 spp. *Bdelloida*, and 23 spp. *Ploima*; LAMEERE.

Switzerland: Rotifers of L. of Chavonnes; PITARD. Geneva neighbourhood: 6 male rotifers, not previously described; WEBER.

Hungary: L. Balaton: 41 species (12 new); DADAY (2). 18 Lakes in the Tatra Mountains: 23 species rotifers; DADAY (3).

New Guinea: list of species; DADAY (1).

E. Africa: 16 spp. Rotifers (5 new), and 3 *Gastrotricha* (1 new); COLLIN.

America:—New Jersey: shallow pool near Trenton, 6 new species; STOKES. L. Erie: Sandusky Bay: enumeration of 39 additional species making a total of 106 species; KELLCOTT.

SYSTEMATIC.

A.—*ROTIFERA*, s.s.

Asplanchna papuana, n. sp., New Guinea; DADAY, Math. term. Ertes. Magyar Ak. xv, p. 132.

A. priodonta, development of parthenogenetic and fertilised eggs; ERLANGER & LAUTERBORN. *A. herrickii*, early development, includ-

- ing gastrulation, up to a later stage than hitherto described for other Rotifers; JENNINGS.
- Brachionus mirabilis* and *papuanus*, n. spp., New Guinea; DADAY, Math. term. Ertes. Magyar Ak. xv, pp. 140-143. *B. tetracanthus*, n. sp., Victoria Nyanza, near Djuma I.; COLLIN, Thierwelt Ost-Afr. iv, Lf. v, p. 8.
- B. bakeri*, O. F. M., definition of species, the type-species and 8 varieties described and figured, 5 ancient and 8 more recent species referred to it as varieties; ROUSSELET. *B. quadratus*, Rouss., anatomy; FRANCÉ.
- Callidina venusta*, n. sp., for (*Macrotrachela elegans*, Milne); BOYCE, P. Zool. Soc. London, p. 796.
- Cathypna glandulosa*, n. sp., and *C. scutaria*, n. sp., shallow pool near Trenton, N. J.; STOKES, Ann. Nat. Hist. xix, pp. 631 & 632.
- Copeus labiatus*, Gosse, near Geneva, description of ♂; WEBER, p. 92.
- Diarthra*, n. g. with a horn-like process on each side of the body anteriorly, for *D. monostyla*, n. sp., New Guinea; DADAY, Math. term. Ertes. Magyar Ak. xv, p. 143.
- Diglena contorta*, n. sp., shallow pool near Trenton, N. J.; STOKES, Ann. Nat. Hist. xix, p. 630.
- D. forcipata*, Ehr., near Geneva, description of ♂ (1 specimen); WEBER, p. 94.
- Dinocharis pocillum*, Ehr., near Geneva, description of ♂; WEBER, p. 96.
- Diplax ornata*, n. sp., New Guinea; DADAY, Math. term. Ertes. Magyar Ak. xv, p. 135.
- Diplois sculpturata*, n. sp., New Guinea; DADAY, t. c. p. 135.
- Euchlanis longicaudata*, n. sp., Bukoba; COLLIN, l. c. p. 6.
- Hydatina senta*, parasites of; LEUSSEN.—Experiments in producing sex; NUSBAUM.—Impregnation of ova; SADONES.
- Lacinularia elliptica*, n. sp., Lagoon near the Yarra River, Heidelberg, Victoria; SHEPHARD, Vict. Nat. xiv, p. 84.
- (*Macrotrachela elegans*, Milne) = *Callidines venusta*, n. sp.; BRYCE.
- Mastigocerca hamata*, n. sp., pond near Tillowitz in Upper Schleswig; ZACHARIAS, Forschber. Plon, v, p. 8. *M. multierinis*, n. sp., Sandusky Bay, closely allied to *M. lata*; KELLCOTT, Tr. Amer. micr. Soc. xix, p. 50. *M. spinigera*, n. sp., shallow pool near Trenton, N. J.; STOKES, Ann. Nat. Hist. xix, p. 631.
- Megalotrocha binotata*, n. sp., New Guinea; DADAY, Math. term. Ertes. Magyar Ak. xv, p. 133.
- Metopidia pterygoida*, n. sp., pool, 500 ft. above sea-level, Arran; DUNLOP, J. Quekett Club, vi, p. 325.
- Monostyla bicornis*, *incisa* and *pygmæa*, n. spp., New Guinea; DADAY, Math. term. Ertes. Magyar Ak. xv, pp. 136-139. *M.*, 2 spp. (nov. ?), Bukoba; COLLIN, Thierwelt Ost-Afr. p. 7.
- Noteus stuhlmanni*, n. sp., Bussisi; COLLIN, l. c. p. 8.
- "*Notommata*" *vorax*, n. sp., more probably the type of a n. g. (to include also *Taphrocampa clavigera*, Stokes), shallow pool near Trenton, New Jersey; STOKES, Ann. Nat. Hist. xix, p. 628.
- Pedalion mirum*, in Holstein Lakes, and in several ponds in both Schleswig and Holstein; ZACHARIAS (1) p. 8.
- Philodina* (? ?) *emini*, n. sp., Bukoba; COLLIN, l. c. p. 4.
- Plasoma truncata*, n. sp., Sandusky Bay (surface); KELLCOTT, Tr. Amer. micr. Soc. xix, p. 47.
- Proales algicola*, n. sp. in mucilaginous matrix of *Anabaena gelatinosa* (an Alga), Sandusky Bay; KELLCOTT, Tr. Amer. micr. Soc. xix, p. 48.
- P. hyalina*, n. sp., shallow pool near Trenton, New Jersey; STOKES, Ann. Nat. Hist. xix, p. 629.
- P. (Notommata) wernecki*, Ehr., figures of ♂ with further description; ROUSSELET (2).

Rotifer, sp. (nov. ?), Bukoba; COLLIN, *l. c.* p. 4.

Sacculus orbicularis, n. sp., Biemüller's Cove, Sandusky Bay; KELLICOTT,
Tr. Amer. micr. Soc. xix, p. 46.

Salpina brevispina, Ehr., and *S. mucronata*, Ehr., description of ♂s;
WEBER, p. 98.

Scaridium longicaudum, Ehr., near Geneva, description of ♂, from 2
specimens; WEBER, p. 97.

Stephanops tenellus, n. sp., Spitzbergen; BRYCE, P. Zool. Soc. London, p.
798.

B.—GASTROTRICHA.

Chaetonotus ornatus, n. sp., New Guinea; DADAY, Math. term. Ertes.
Magyar Ak. xv, p. 145. *C.*, 2 spp., Bukoba; COLLIN, *l. c.* p. 9.

Ichthydium macrurum, n. sp., Bukoba; COLLIN, *l. c.* p. 9.

Lepidoderma biróii, n. sp., New Guinea; DADAY, Math. term. Ertes.
Magyar Ak. xv, p. 147.

VII. MESOZOA.

(*Nothing.*)

XVI. CŒLENERATA.

[VACANT.]

It is intended that the literature of 1897 shall be given in the next
Volume together with that of 1898.

XVII. SPONGIÆ.

BY

PROFESSOR R. VON LENDENFELD.

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INTRODUCTION.

THE most important papers on Sponges published in 1897 are :—(26) in which MINCHIN discusses the different views on the nature of Sponges and their position in the animal kingdom; (6) in which DÖDERLEIN publishes a detailed description of his *Petrostroma*; (14) and (34) in which IJIMA and F. E. SCHULZE treat of Hexactinellids; (21) in which LENDENFELD publishes the results of his researches on the Adriatic *Clavulina*; (5), (20) and (37) in which DENDY, LENDENFELD and TOPSENT describe a number of new species from the South Coast of Australia, Zanzibar and Amboina, respectively; (32) in which ROUSSEAU acquaints us with a new method of

dissolving the spicules without injury to the histological structure; and (29) and (42) in which OPPLIGER and ZEISE respectively describe a number of new Fossil Sponges.

I. TITLES.*

1. AUSTEN, E. Notes on a recent zoological expedition on the Lower Amazon. P. Zool. Soc. London, for 1896, pp. 768-779.
BRANDT, K. (7) Zool. Rec. 1896. Summary: J. R. Micr. Soc. 1897, p. 116.
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II. BIOLOGY.

1. MORPHOLOGY and PHYSIOLOGY.

A. GENERAL [cf. Titles 18, 21, 26, 28, 30, 39].

LENDENFELD (21) does not consider it feasible to assume that—in the *Clavulina* at least—a Sponge is composed of as many “individuals” as there are oscules.

B. CANAL-SYSTEM [cf. Titles 20, 21].

LENDENFELD (21) finds the inhalant pores of *Tethya* situated on the sides of the inverted cones which protrude from the surface. In *Placospongia* these pores are confined to the bandshaped zones free from Pseudosterrasters, that separate the superficial armour-plates from each other. In *Vioa*, *Papillella* and *Latrunculia* they are situated on the summits of the papillae. In *Vioa* they sometimes form a ring round an osculum. In certain free forms of *Vioa viridis* (*Osculina polystomella*, O. Schmidt) the poregroups are, like the oscules, surrounded by serrated lips. In the cortex of his new *Cinachyra voeltzkowi*, LENDENFELD (20) has found the same ovoid cavities with perforated walls which Sollas had previously described in *Cinachyra barbata*. According to Sollas, there are no other pores than the pores in the walls of these cavities, whilst LENDENFELD found pores also on the exposed parts of the surface. He therefore does not consider (as Sollas had done) the ovoid cavities as partly belonging to the inhalant system, but assumes that all these cavities belong to the exhalant system and that the pores on the exposed parts are the inhalants.

LENDENFELD (21) finds the inhalant canals of *Vioa*, *Papillella* and *Tethya* just below the surface narrow and slit-like. The *Vioas* and *Papillellas* are traversed by wide, branching canals which probably anastomose and in some forms have a vestibular character: inhalant canals arising from them and oscular apertures opening out into them. In *Vioa ramosa* these canals attain a width of 4 mm.

The ciliated chambers of *Clavulina* are, according to LENDENFELD (21) mostly spherical and 0·02—0·05 mm. in diameter. The smallest chambers are those of the *Suberitidæ*.

The oscular tubes of *Astromimus luteus* pervade, according to LENDENFELD (21), the whole of the massive Sponge in the shape of straight and wide vertical canals. They are very numerous and run close together, side by side. The oscules of several species of *Vioa* and *Papillella* are covered with sievemembranes and surrounded by serrated lips.

C. SKELETON [cf. Titles 6, 14, 20, 21, 34, 35].

According to DÖDERLEIN (6) the skeleton of *Petrostroma schulzei* is composed of a firm network and of free spicules, both of carbonate of lime. The network is structurally and genetically similar to the network of siliceous rods forming the skeleton of the Dictyonine Hexactinellids. It consists of stout triactines firmly cemented together by carbonate of lime. During the cementing process the shape of these triactines is entirely lost. Herein *Petrostroma* differs from the fossil *Pharetrones*. Among the free spicules the two-pronged forks—they are triactines—which form bundles are particularly interesting as occurring only in *Petrostroma*, *Lelapia* and the *Pharetrones*.

In spite of the fact that sometimes, as for instance in *Asteropus incrustans* and *Vioa vastifica*, so many spicules of all transitional dimensions are met with, that no sharp limit can be drawn between the Megascleres and the microscleres, LENDENFELD (21) thinks that this distinction should be upheld. It shows however that there is no real, qualitative, difference between the large (megascleres) and the small (microscleres) spicules of siliceous sponges.

F. E. SCHULZE (35) draws attention to the fact that the shape of some Hexactinellid spicules indicates certain relations to crystals of the regular system. Thus the Discoctaster-rays of *Acanthascus* and *Rhabdocalyptus* mark the positions of the corners of a cube; the oblique connecting rods at the joining-points of the dictyonal network of *Aulocystis* etc. represent

the edges of an octahedron; and the terminal branches (spines) of the hexactin-rays of *Lophocalyx philippensis* and the terminal hooks of the oxyhexactin-rays in *Hyalonema apertum* and *Bathydorus uncifer* (n. sp.) appear to be situated in the secondary symmetry-planes of the regular crystal-system.

IJIMA (14) corrects some statements concerning Hexactinellid spicules.

The microscleres of Tetractinellids and *Clavulina* usually form—when present at all—an armour on the external surface and are here generally much more numerous than in the interior. Only in species of *Vioa* LENDENFELD (21) finds the microscleres confined to the interior and absent in the cortex.

All the megascleres of the *Clavulina* have, according to LENDENFELD (21) an axial thread, which in the tylostyls widens out in the centre of the "head" to form a head-nucleus. This nucleus is composed of the same substance as the thread and contains granules of various sizes. If the "head" is not situated terminally, the axial thread is continued beyond the head-nucleus. In the monactine spicules the axial thread terminates abruptly some distance from the blunt end. The relative thickness of the spicules and the position of the head in the tylostyles (whether terminal or not terminal) are subject to considerable variation even within one and the same specimen, so that these characters cannot be used for systematic purposes to such an extent as was formerly supposed. The Clavuline megascleres are on an average 60 times as long as thick. The stoutest spicules (1 : 34) were met with in *Suberites aaptus*; the most slender (1 : 200) in *Stelligera nux*.

It is according to LENDENFELD (21) a remarkable fact that the pointed end of the radial monactines is in the *Clavulina* always situated distally, whilst the point of the shaft of the radial triaens of Tetractinellids, from which the *Clavulina*-monactines are supposed phylogenetically to have been developed, is always directed inwards. In *Clavulina* the monactines very often project beyond the surface and form a sort of fur. LENDENFELD (21) also considers the large spicules forming the halo in *Trichostemma* as such radial "fur-spicules" (Pelznadeln) and not as tangential spicules. The same applies to *Tentorium*. Really tangential megascleres are found in the dermal layer of *Suberanthus*, *Polymastia* and other genera. In the boring forms of *Vioa* and *Papillella* the megascleres are very much more numerous in the exposed portions of the sponge, than in the interior. Also in *Polymastia* the spicules are very much more numerous in the cortex than in the pulpa.

The following new spicule-names have been introduced :

Pseudosterraster (LENDENFELD, 21): thick sausage-shaped, Sterraster-like Spicule developed from a Spiraster.—Strongylaster (LENDENFELD, 21): Euaster with cylindrical, blunt rays.—Centrotyl (LENDENFELD, 21): a small rod with a swelling at or near the centre.—Microrhabd (LENDENFELD, 21): a small cylindrical rod blunt at each end.—Discospiraster (SCHULZE, 34): Discohexaster with spirally wound terminal rays.—Aspidoplumicom (SCHULZE, 34): Plumicom with shield-like basal plates.—Rhopalaster (SCHULZE, 34): large Hexaster with club-like terminal rays.—Subtylostyl (LENDENFELD, 21): Tylostyl, the head of which is barely thicker than the shaft.

D. EPITHELIA, CUTICULA [cf. Titles 20, 21].

LENDENFELD (21) finds a well-developed cuticle on those surfaces of boring *Vioa*- and *Papillella*-specimens that are in contact with the stones, shells, etc. in which they dwell. This cuticle is comparable to the basal sponginplate of Horny Sponges. In preserved specimens of *Chondrilla* a continuous cuticle was found on the outer surface covering all the

inhalant pores and interrupted only at the oscules. In *Chondrilla nucula* the portions of this cuticule covering the pores show fine transverse (radial) lines which perhaps are the expression of slender tubes traversing this cuticule in the living sponge.

LENDENFELD (20, 21) thinks that the recent researches on Sponge-epithelia tend to demonstrate their diversity in different species. In *Suberites fugax* and *Polymastia robusta* he finds (21) a simple "Platten-epithel"; in *Suberites massa* thin and flat ("Platten") cells which here however possess processes extending down into the interior of the sponge. On the surface of *Phacellia weltneri* (20) massive, granular pavement-cells with centripetal processes were met with. Somewhat similar cells, much blackened by osmic acid, occur in *Papillella quadrata*. "Flask"-cells were observed by LENDENFELD (20) on the surface of *Phyllospongia dendyi* var. *spiculifera* and *Stelospongia operculum*. These cells are similar to the "flask-shaped cells" discovered by BIDDER in a horny sponge from Naples. The dermal cells of *Phyllospongia dendyi* are however not all flask-shaped: some are destitute of the neck and adhere with a broad base to the superficial plate to which they belong. All these cells have processes extending into the interior of the sponge.

Large multipolar, granular cells underlie the cuticule in *Vioa* and *Papillella* (21).

The inhalant pores of *Axinyssa topsentii* (21) are surrounded by ring-shaped cells; these pores are intracellular.

In the canal-walls of many *Clavulina* (21) a single layer of low, flat ("Platten") cells has been observed. Sometimes stouter pavement or cylindrical cells were met with in the canal-walls of *Vioa*, *Astromimus* and the oscular tubes of *Papillella*.

The flagella of the collar-cells often cross in the centre of the chamber, being more than half as long as the diameter of the latter (21). In sections they sometimes appear joined to form a sort of plasmodium in the centre of the chamber. In several cases processes were observed arising from the corners of the polygonal bases of the collar-cells and extending for some distance tangentially.

Free on the surface of the canals readily stained cells were observed in several *Clavulina* (21). Some of these had a nucleus, in others a nucleus could not be made out. These cells might be compared to Masterman's nephrocytes.

E. CHONES [cf. Title 21].

When SOLLAS made us properly acquainted with the chones in Tetractinellids, they were supposed to be confined to that order. LENDENFELD then discovered them in an Australian Monaxonid and established for this species, in consequence of its possession of chones, the new family *Sollasellidæ*. Now (21) LENDENFELD has found well developed chones in quite a number of monaxonid, clavuline Sponges, so that their presence in that Australian species can no longer be considered as a reason sufficient for separating it from the other Monaxonids. The chones of *Tethya* are situated in the floors of the cortical cavities. Both in the inhalant and in the exhalant system chones are met with. The *Tethya*-chones consist of an inner zone of roundish, massive cells, a middle zone of radial, and an outer zone (ring) of circular spindle-cells. In *Polymastia* the lacunæ occupying the fistular processes are separated from the canals of the interior by membranes in each of which one or more chones are situated. These chones consist chiefly of circular spindle-cells. In several species of *Vioa* and *Papillella* large chones were observed at the level of the limit between cortex and pulpa. These chones are generally simple; sometimes, however, as in *Vioa vastifica* two or three chones are found

together in a group connecting a cortical cavity with a canal of the interior. The subcortical chones of *Vioa* and *Papillella* consist of an inner zone of massive cells and an outer ring of circular spindle-cells. Outside the latter radial spindle-cells are observed traversing the longitudinal spicule bundles which usually surround the chones. Transverse membranes traverse the main canals of *Vioa* and *Papillella* at frequent intervals. These membranes are thickened towards the centre and perforated in the middle. They are (in *Vioa*) covered with numerous scattered microscleres and composed of an inner zone of massive, often radially elongated, more or less cylindrical cells, a middle zone of circular spindle-cells and outer zone of radial spindle-cells, occupying the distal, thin portion. In consequence of their similarity to the chones LENDENFELD has named these structures "chonal membranes." Doubtlessly the radial and the circular spindle-cells of all these chones and chonal membranes are to be considered as contractile elements, the former as dilatatores and the latter as constrictores of the chonal canal.

F. CORTEX [cf. Titles 20, 21].

In most *Clavulina* LENDENFELD (21) finds a cortical layer destitute of ciliated chambers. In *Tethya*, in some species of *Suberites*, in *Placospongia*, etc. this layer is dense and fibrillar. In *Suberanthus*, *Astromimus*, etc. the cortex is so rich in lacunose cavities, that it appears more or less foam-like. The fistulose appendages of *Polymastia* are composed of an inner lacunose, foam-like tissue and an outer dense fibrillar rind. The limit between cortex and pulpa is usually very well defined. Spindle-cells, probably of contractile nature, are often met with in the cortex, chiefly around the cortical canals. Sometimes radial dilatatores and circular constrictores can be distinguished. The soft tissue between the armour-plates of *Placospongia* consists chiefly of transverse fibres. In the cortex of *Suberites aaptus* two layers of nodulose masses of some organic, probably reserve-nourishing material are met with. Heaps of rounded granular cells, which may be young buds, are observed in the cortex of *Tethya*. In the cortex cells occur containing the pigment granules which give to the sponges their colour. Different *Clavulina* show a great diversity in the structure of their cortex (LENDENFELD, 20, 21).

G. PULPA [cf. Titles 20, 21].

LENDENFELD (21) finds the larger canals in many *Clavulina* surrounded by tissue similar to that of the cortex. Usually circular spindle-cells form the innermost layer of the canal wall. Sometimes also longitudinal and radial spindle-cells occur in the deeper layers. The longitudinal spindle-cells are met with chiefly round the canals which traverse the papillæ of *Vioa* and *Papillella* longitudinally. They cause the retraction of the papillæ.

Massive granular cells, probably spongoblastic in nature, were observed by LENDENFELD (21) overlying the basal sponginplate in *Suberites fugax*. In *Phyllospongia dendyi* LENDENFELD (20) observed long-necked spongoblasts similar to the superficial flask-cells. In the sections each of these spongoblasts appeared attached to a small sponginplate, the latest addition to the fibre, but these sponginplates were torn from the fibre by the action of the reagents employed and separated from it by a little space in the sections.

H. SEXUAL CELLS, PROPAGATION and DEVELOPMENT [cf. Titles 3, 21].

BREITFUSS (3) describes the ripe ovum of *Ascandra hermesii* as a sphere 0.17 mm. in diameter containing a large nucleus with one large and

several small chromatin-granules (nucleoli). A well defined endoplasmatic layer surrounds the nucleus.

According to LENDENFELD (21) the ova of *Vioa vastifica* possess pseudopodia and a large nucleus with a tangled chromatin thread.

LENDENFELD (21) describes groups of granular cells in the cortex of *Tethya* which are probably young buds.

I. PHYSIOLOGY [cf. Title 21].

The fact that the surfaces of boring sponges in contact with the stone, shell, etc., in which they live, are covered with semispherical protuberances fitting into corresponding pits of the stone, etc. appears, according to LENDENFELD (21), to be in favour of LETELLIER'S theory concerning the boring action of sponges.

K. HABITS, BIONOMICS [cf. Titles 20, 21].

The great differences observed in the structure of the surface in *Vioas* and *Papillellas* are, according to LENDENFELD (21), to a great extent merely due to differences in the degree of retraction of the papillæ. When these are extended, the sponge-surface appears highly papillous; when they are retracted, honeycombed.

Several species of *Vioa* and *Papillella* occur, both as free and as boring forms. It can hardly be doubted, thinks LENDENFELD (21), that many, if not all, boring sponges are able to grow out in the form of a free sponge, which may attain a very large size (*Vioa* [*Raphyrus*] *hixonii*), after having destroyed the stone, shell, etc. which they originally attacked.

Several cases of Symbiosis were observed by LENDENFELD (20, 21). The specimens of *Phyllospongia dendyi* var. *spiculifera* examined contained numerous Oscillarian Algæ (20). *Stelospongia operculum* appears to grow on an ascidian and to cover its mouth with a moveable lamellar outgrowth (20). *Ficulina ficus* has the same habit of growing on shells inhabited by a hermit crab, as *Suberites domuncula*. In both the entrance to the cavity of the shell always remains open (21). Numerous commensals, Hydroids, Worms, etc. (21) live in *Suberites domuncula*. The varieties of *Suberites fugax* contain three kinds of symbiotic plants, *Beggiatoa*.

2. GEOGRAPHICAL DISTRIBUTION.

A. GENERAL [cf. Titles 4, 12, 19, 21, 40].

BREITFUSS (4) draws attention to the poverty of tropical seas in Calcareous Sponges. In lat. 30° S. and N. the Calcareous become more numerous and from thence they constantly increase in numbers towards the poles.

GÜNTHER (12) mentions the abundance of Sponges on old cables from abyssal depths.

LENDENFELD (19) considers the Rockall-Sponge fauna nearly allied to the British.

LENDENFELD (21) states that of 30 Adriatic species of *Clavulina* only 10 have been found in the Mediterranean outside the Adriatic, but 20 outside the Mediterranean. This shows how little is known of the extra-Adriatic, Mediterranean sponge fauna.

Of the six species of Spongillids found in Eastern Africa only one, according to WELTNER (40), has also been found in other parts of the world.

B. FAUNISTIC [cf. Titles 1, 2, 3, 4, 5, 8, 10, 11, 13, 14, 17, 19, 20, 21, 22, 24, 27, 31, 37, 38, 40, 41].

Continent of Europe.—FRIČ & VÁVRA (10) mention two species of Spongillids from Bohemian lakes.—GARBINI (11) found spicules of four species

of Spongillids in the Lago di Garda, two of which (*Ephydatia robusta*, Potts and *Carterius tubisperma*, Potts) are new to the European fauna.—VANGEL (38) enumerates 5 species of Spongillids from the Platten-lake in Hungary.

Continent of Asia.—HOERNES (13) considers *Lubomirskia baicalensis*, Dyb. as a relict marine sponge and its presence in the Baikal a proof of the marine nature of that lake.

Continent of Africa.—MOORE (27) mentions sponges growing on *Neothauma* shells in Lake Tanganyika.—WELTNER (40) mentions 6 species of Spongillids from Eastern Africa.

Continent of South America.—AUSTEN (1) mentions two Spongillids from the lower Amazon.

European coast of North Atlantic and Rockall.—BRANDT (2) states that 26 species of Sponges occur in the Cattegat and 13 in the Bay of Kiel.—MARSHALL (24) enumerates the Sponges most frequently occurring on the German coast.—LENDENFELD (19) describes 7 species of Sponges from Rockall.

Mediterranean.—RICHARD & NEUVILLE (31) describe Sponges from the Alboran Island.—LENDENFELD (21) describes 30 species of *Clavulina* from the Adriatic. Of the 10 families and 26 genera of *Clavulina* recognized by him, 8 families and 15 genera occur in the Adriatic.—BREITFUSS (3) describes a Calcareous Sponge from the Adriatic.

Northern Pacific, Asiatic coast and Islands.—IJIMA (14) describes 9 species of Hexactinellids from Sagami Bay.—LINDGREN (22) describes 30 species of *Silicea* from the Chinese sea.—ELERA (8) mentions 14 species of *Silicea* from the Philippines.

East Indies.—LINDGREN (22) describes 31 species of *Silicea* from the coast of Java.—TOPSENT (37) describes one calcareous Sponge and 80 species of *Silicea* from Ambon.—BREITFUSS (4) describes 6 species of *Calcarea* from Ternate.

African coast of Indian Ocean.—LENDENFELD (20) describes 17 species of *Silicea* from Zanzibar.

South Pacific, Australia and Islands.—DENDY (5) describes 40 species of *Silicea* from Port Phillip Heads.—LENDENFELD (17) mentions 5 species of *Cornacuspongia* from the Auckland Islands.—WHITELEGGE (41) describes 16 species from Funafuti.

3. GEOLOGICAL DISTRIBUTION [cf. Titles 7, 29, 41].

Lower Silurian.—DUN (7) describes a *Protospongia* from Stockyard Creek, co. Alexander, New South Wales.

Jurassic.—OPPLIGER (29) describes 39 Hexactinellids, 22 Lithistids and 10 Pharetrones from Baden, Switzerland.

Cretaco-Jurassic.—ZEISE (41) describes 29 *Silicea* and 27 *Calcarea* from Stramberg.

4. PHYLOGENY and CLASSIFICATION [cf. Titles 6, 9, 14, 18, 21, 25, 26, 34, 36].

FRANCÉ (9) does not believe that the Sponges are related to the choano-flagellate Protozoa.

MINCHIN (26) discusses the views held by different authors concerning the phyletic relationship of Sponges with other organisms and their systematic position. He thinks that every one of the existing hypotheses on this subject is open to grave objections. The least objectionable seems to him the one according to which the Sponges form a separate phylum within the Metazoa.

LENDENFELD (18) shortly discusses the arrangement of Sponges in six orders.

MINCHIN (25) upholds the name *Ascandra* versus LENDENFELD.

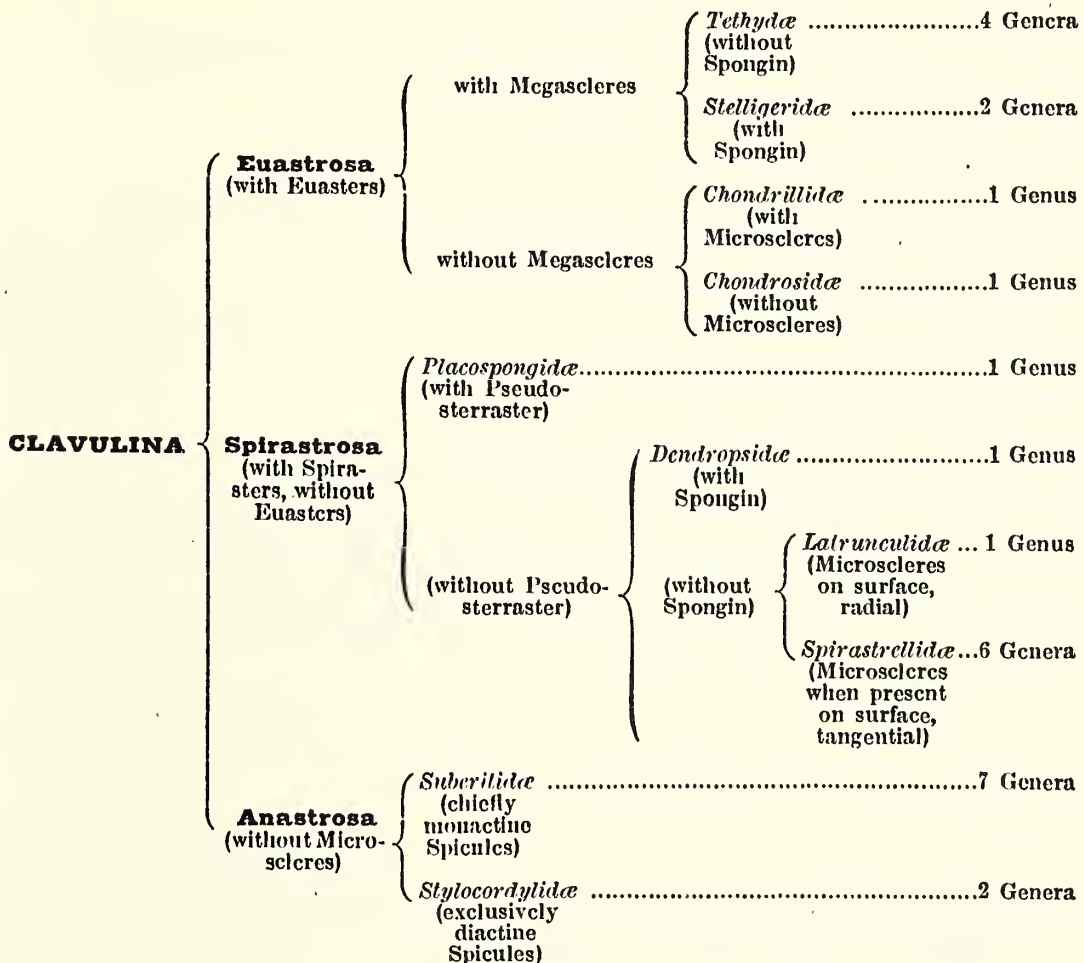
DÖDERLEIN (6) considers his *Petrostroma* allied to the Pharetrones and to *Lelapia*.

IJIMA (14) wishes to combine all Hexactinellids with discoctasters in one subfamily. He thinks that this group is natural and divided by a wide gap from the other Rossellidæ.

F. E. SCHULZE (34) has now come to the conviction that the deeply situated microscleres are peculiarly conservative in character. He therefore considers their shape as being of greater systematic value than was hitherto supposed, and he now attaches less value to external characters than he did formerly. The diagnoses of some families are modified and some genera joined or suppressed in consequence: *Balanella* joined to *Caulophacus*; *Pleorhabdus* suppressed; *Craterochone* joined to *Aulochone*.

LENDENFELD (21) accepts Vosmaer's division of the *Monaxonida* into *Clavulina* and *Cornacuspongiæ* with some emendations. Asterose Microscleres, monactine Megascleres and the want of Spongin are characters of the *Clavulina*; meniscoid Microscleres, diactine Megascleres and Spongin characters of the *Cornacuspongiæ*. The *Suberites*, *Tethydæ* and *Spirastrellidæ* form the types of the *Clavulina*, the *Desmacidonidæ*, *Renieridæ* and *Spongidæ* the types of the *Cornacuspongiæ*. The doubtful forms are so arranged, that all which have asterose Microscleres (whether they possess a horny skeleton or not) and also the forms with diactine Megascleres which resemble the typical *Clavulina* in the structure of their soft parts, are placed in the *Clavulina*; the rest in the *Cornacuspongiæ*. The *Cornacuspongiæ* are supposed to be descended—polyphyletically—from the *Clavulina*.

The scheme of classification of the *Clavulina* proposed by LENDENFELD (21) is the following:



According to this the Order *Monaxonida* is divided into two suborders, *Clavulina* and *Cornacuspongiae*, and the *Clavulina* into three tribes, 10 families and 26 genera.

TOPSENT (36) proposes to place the genus *Halicnemia*, which he now considers nearly related to *Higginsia*, in the *Axinellidæ*.

5. *METHODS* [cf. Title 32].

ROUSSEAU (32) has successfully decalcified calcareous Sponges without injuring the soft parts by imbedding in celloidin, treating the imbedded piece with 85% alcohol and nitric acid and washing out in the presence of carbonate of lime; and finally sectioning. An analogous method with hydrofluoric instead of nitric acid gives good results when applied to siliceous Sponges.

III. SYSTEMATIC.

CALCAREA.

HOMOCCELA [cf. Titles 3, 18, 25].

Ascandra hermesi, BREITFUSS, Zeitschr. wiss. Zool. lxiii, p. 39, n. sp.
Ascetta primordialis, LENDENFELD, Zool. Garten, xxxviii, p. 11, re-described.

HETEROCCELA [cf. Titles 6, 18, 41].

ZEISE, Palæontogr. ii (Suppl.) establishes the following new genera:

- †*Strambergia*, n. g., p. 330;
- †*Rauffia*, n. g., p. 326;
- †*Euzittelia*, n. g., p. 329.

ZEISE, Palæontogr. ii (Suppl.) describes the following new species:

- †*Peronidella tithonica*, p. 315;
- †*Corynella moravica*, p. 321;
- †*Myrmecium grande*, p. 324;
- †*Crisispongia conica*, p. 325;
- †*Rauffia clavata*, p. 326;
- †*Euzittelia magnifica*, p. 329;
- †*Tremacystia hindei*, p. 331, *tithonica*, p. 332;
- †*Thalamopora zitteli*, p. 336, *hoheneggeri*, p. 338; and several other new fossil genera and species, to which however he gives no names because he considers the material at his disposal insufficient.

Petrostroma schulzei, DÖDERLEIN, Zool. Jahrb. Syst. x, p. 15, re-described.
Sycandra raphanus, LENDENFELD, Zool. Garten, xxxviii, p. 44, re-described.

SILICEA.

TRIAXONIA.

HEXACTINELLIDA [cf. Titles 14, 18, 29, 34, 41].

Mellonympha, n. g., F. E. SCHULZE, SB. Ak. Berlin, xxvi, p. 547 (sep. p. 28),
for *Rossella velata*, Wyv. Thoms.
Staurocalyptus, n. g., IJIMA, Annot. zool. Japon, i, p. 53.

IJIMA, Annot. zool. Japon, i, describes the following new species :

Rhabdocalyptus capillatus, p. 51, *victor*, p. 52;

Staurocalyptus ræperi, p. 55, *heteractinus*, p. 56, *glaber*, p. 57.

†*Trematodictyon regulare*, ZEISE, Palæontogr. ii (Suppl.), p. 297, n. sp.

†*Craticularia intrasulcata*, ZEISE, t. c. p. 299, n. sp.

ZEISE, t. c., describes several other new fossil genera and species, to which however he gives no names because he considers the material at his disposal insufficient.

OPPLIGER, Abh. Schweiz. pal. Ges. xxiv, describes †*Pachyteichisma mæandrina*, p. 15, and *turbinatum*, p. 16, hitherto only known as MS. names of ZITTEL; also a new species :

†*Trochobolus cuneiformis*, p. 19; and several other apparently new fossil species, to which however he attaches no names.

Bathydorus uncifer, F. E. SCHULZE, Verh. Deutsch. zool. Ges. vii, p. 37, n. sp. (no diagnosis).

Euplectella aspergillum, LENDENFELD, Zool. Garten, xxxviii, p. 46, re-described.

HEXACERATINA [cf. Title 18].

Dendrilla rosea, LENDENFELD, Zool. Garten, xxxviii, p. 50, re-described.

TETRAXONIA.

TETRAXONIDA.

TETRACTINELLIDA [cf. Titles 15, 18, 20, 22, 37].

LINDGREN, Zool. Anz. xx, describes the following new species :

Stelletta tenuis, p. 485 ;

Erylus decumbens, p. 485 ;

Caminus chinensis, p. 485 ;

Geodia distincta, p. 486, *arripiens*, p. 486 ;

Isops nigra, p. 486.

TOPSENT, Rev. Suisse Zool. iv, establishes the new genus :

Placinolopha, n. g., p. 429 ;

and describes the following new species :

Placinolopha Bedoti, p. 429 ;

Sydonops picteti, p. 431 ; and

Pilochrota brevidens, p. 433.

Pachastrella stylifera, LENDENFELD, Tr. Irish Ac. xxxi, p. 82, n. sp.

LENDENFELD, Abh. Senckenb. Ges. xxi, describes the following new species :

Ancorina simplex, p. 96 ;

Isops carcinophila, p. 99 ;

Cinachyra voeltzkowi, p. 101.

Stelletta hispida, LENDENFELD, Zool. Garten, xxxviii, p. 71, re-described.

LITHISTIDA [cf. Titles 29, 42].

OPPLIGER, Abh. Schweiz. pal. Ges. xxiv, describes the following new species:

†*Platychonia wittingensis*, p. 46, *tumida*, p. 46, *conchiformis*, p. 47;
 †*Lecanella complanata*, p. 49;

besides other fossils to which he gives no names. He describes also a new fossil genus, which however he does not name.

ZEISE, Palæontogr. ii (Suppl.), describes the new species:

†*Siphonia strambergensis*, p. 305;
 †*Ierea tithonica*, p. 306; and

several other new fossil genera and species, which however he does not name.

MONAXONIDA.

CLAVULINA [cf. Titles 5, 20, 21, 22, 36, 41].

DENDY, P. Soc. Victoria, ix, describes the following new species:

Suberites spirastrelloides, p. 247, *difficilis*, p. 248;
Spirastrella fibrosa, p. 254, *areolata*, p. 255;
Pronax carteri, p. 257.

LINDGREN, Zool. Anz. xx, describes the new species:

Dorypleres biangulata, p. 483;
Spirastrella aurivillii, p. 484, *semilunaris*, p. 484;
Latrunculia lævis, p. 484.

Spirastrella carnosus, TOPSENT, Rev. Suisse Zool. iv, p. 441, n. sp.

LENDENFELD, Abh. Senckenb. Ges. describes the new species:

Tethya globostellata, p. 104;
Chondrilla nuda, p. 105;
Vioa florida, p. 108.

TOPSENT, Mém. Soc. zool. France, x, redescribes:

Halicnemia patera, p. 235, *verticillata*, p. 243, *constellata*, p. 245.

LENDENFELD, Acta Ac. German. lxi, establishes the new genera:

Suberanthus, n. g., p. 144;
Astromimus, n. g., p. 148; and

describes the following new species:

Asteropus incrustans, p. 31;
Stelligera nux, p. 46;
Placospongia græffei, p. 48;
Vioa topsentii, p. 78, *ramosa*, p. 81;
Suberites gracilis, p. 130;
Astromimus luteus, p. 148;

and redescribes:

Tethya lyncurium, p. 15;
Xenospongia johnstoni, p. 30;
Chondrilla nucula, p. 34;
Chondrosia reniformis, p. 38;
Stelligera stuposa, p. 43;
Placospongia melobesioides, p. 53;

Spirastrella bistellata, p. 55 ;
Vioa viridis, p. 58, *schmidtii*, p. 72, *vastifica*, p. 86 ;
Ficulina ficus, p. 94 ;
Papillella suberea, p. 99, *quadrata*, p. 106 ;
Polymastia robusta, p. 111, *bursa*, p. 117 ;
Suberites domuncula, p. 118, *massa*, p. 127, *fugax*, p. 132, *longispinus*,
 p. 137, *arcicola*, p. 139, *aaptus*, p. 140 ;
Suberanthus flavus, p. 144.

WHITELEGGE, Mem. Austral. Mus. iii, p. 330, describes :

Polymastia dendyi, n. sp.

CORNACUSPONGIÆ.

Marine Forms [cf. Titles 5, 18, 19, 20, 22, 33, 37, 41].

DENDY, P. Soc. Victoria, ix, establishes the new genera :

Sigmaxinella, n. g., p. 240 ;

Pseudoclathria, n. g., p. 258 ;

and describes the following new species :

Axinella clathrata, p. 233, *kirkii*, p. 235 ;

Phakellia tumida, p. 236 ;

Acanthella tenuispiculata, p. 238 ;

Sigmaxinella australiana, p. 240, *ciocalyptoides*, p. 242 ;

Rhaphisia pallida, p. 257.

LINDGREN, Zool. Anz. xx, describes the following new species :

Halichondria variabilis, p. 480, *armata*, p. 480, *aura*, p. 480 ;

Petrosia nigricans, p. 480 ;

Chalina pulvinata, p. 481 ;

Siphonochalina truncata, p. 481 ;

Gellius strongylatus, p. 481 ;

Esperella macrosigma, p. 482 ;

Dendoryx mollis, p. 482 ;

Clathria ramosa, p. 482 ;

Raphidophlus Ridleyi, p. 483.

SCHULZ, Anatomische und Histologische Untersuchungen... describes the new species :

Euspongia distans, p. 15 ;

Cacospongia erecta, p. 23.

TOPSENT, Rev. Suisse Zool. iv, describes the following new species :

Desmacella fortis, p. 463 ;

Stylotella cornuta, p. 464, *conulosa*, p. 466 ;

Oceanapia amboinensis, p. 467, *fragilis*, p. 469 ;

Gellius toxius, p. 470, *glaberrimus*, p. 471, *hispidulus*, p. 472 ;

Pellina integra, p. 472 ;

Reniera pulvinar, p. 475 ;

Halichondria cavernosa, p. 477 ;

Pachychalina joubini, p. 480 ;

Cacochalina mollis, p. 481 ;

Chalina similis, p. 481 ;

Dysideopsis palmata, p. 482.

LENDENFELD, Abh. Senckenb. Ges. xxi, establishes the new genera :

Strongylacidon, n. g., p. 110 ;

Axinyssa, n. g., p. 116 ;

and describes the following new species :

- Strongylacidon sansibarense*, p. 110 ;
Tedania digitata, p. 112 ;
Phacellia weltnerii, p. 114 ;
Axinyssa topsentii, p. 116 ;
Reniera baviana, p. 119 ;
Stelospongia operculum, p. 124.

LENDENFELD, Tr. Irish Ac. xxxi, describes the new species :

- Thrinacophora microdragma*, p. 84 ;
Gellius styliferus, p. 87.

Euspongia officinalis, LENDENFELD, Zool. Garten, xxxviii, p. 74, redescribed.

WHITELEGGE, Mem. Austral. Mus. iii, describes the following new species from Funafuti :

- Spinoseella glomerata*, p. 326 ;
Gellius aculeatus, p. 326 ;
Clathria pellicula, p. 327 ;
Agelas gracilis, p. 328 ;
Ciocalypta incrustans, p. 329.

SPONGILLIDÆ.

(Nothing.)

XVIII. PROTOZOA.

BY

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INTRODUCTION.

THE Record for 1897 is again somewhat smaller than its predecessors. The steady decline in the number of papers published on Protozoa for the past four years is noteworthy and is principally due to a diminution of the energy with which certain pathological problems were till recently attacked.

Perhaps the event calling most for remark here is the conclusion of RUPERT JONES' "Monograph of the *Foraminifera* of the Crag" (20) begun so many years ago; whilst the same author and Mr FREDERICK CHAPMAN conclude their joint work on "The Fistulose *Polymorphinæ* and on the genus *Ramulina*" (71). LISTER (96), in the Proceedings of the Cambridge Philosophical Society, has attempted an explanation of the arrangement of the chambers in the biloculine and triloculine

Foraminifera. BURROWS & HOLLAND (12) have monographed the *Foraminifera* of the Thanet Beds of Pegwell Bay.

CAYEUX (19) has published a lengthy paper on the *Radiolaria* found in certain sedimentary deposits.

Amœba has come in for a good deal of attention during the year; many experiments on culture having been made with it. The papers of BEYERINCK (5), CASAGRANDE and BARBAGALLO (15), SCHARDINGER (136) and TISCHUTKIN (158) should be consulted in this connection. The importance of *Amœba* in pathology is receiving increased recognition, as reference to the subject-index will shew. Under this heading, BEHLA's (4) pamphlet on "Amœba from a parasitic standpoint" requires special mention. PROWAZEK (126) publishes a number of notes on the same animal, that dealing with contractile vacuole is most important, and SMITH (151) describes the sporular development of "*Amœba villosa*."

Various aspects of Protozoan physiology have been dealt with during the year. The first volume of DAVENPORT'S "Experimental Morphology" (31) deals almost entirely with results obtained from experiments on this group. JENNINGS (68) in the first part of a series of papers discusses the "Reactions to stimuli in unicellular organisms." HERRERA'S experiments on artificial *Infusoria* should be noted (62), and DANTEC'S work on the regeneration of the Nucleus (30).

HERTWIG has given us two valuable and interesting contributions, one on the reproduction of *Rhizopoda* (63) and the other on karyokinesis in *Actinosphaerium* (64).

A miscellaneous series of papers must be next dealt with. DALLINGER (29) replies to certain criticisms of his work on the "*Biflagellata*" in the Biol. Centrbl. LUSTRAC (98) describes "*Trypanosoma balbiani*," DOFLEIN (33) "*Kentrochona*" and "*Kentrochonopsis* n. g." and WALLENGREN "*Trichodina*" (163) and "*Pleurocoptes hydractinice*," whilst BORGERT (9) gives an account of certain parasitic forms.

The pathological and parasitic questions connected with this group receive their due share of attention. JANOWSKI (67) in a series of papers discusses the Ætiology of Dysentery. The *Hæmatozoa* of Malarial Fever form the subject of many contributions of which those by CELLI & SANTORI (20, 21), DOMINICI (35), FACCIOLA (41), LAVERAN (77), LEWKOWICZ (93), MACCULLUM (99) and ZIEMANN (171) appear to be the principal. The *Hæmatozoa* of Birds are described by MACCULLUM (100 and 101) and OPIE (117), and of Nematodes by MANSON (103), who also publishes directions for staining these peculiar flagellates.

The *Sporozoa* still appear to command more interest than other classes. New and other forms are considered by CAULLERY & MESNIL (17, 18 and 107), LABBÉ and RACOVITZA (76), LAVERAN (78, 79), LÉGER (84-87 and 89), MESNIL and MARCHOUX (108), PENARD (118) and PORTER (125), LENNSEN (90) announces the discovery of a Sporozoon in *Rotifera*, whilst CUÉNOT describes those in the cœlom of the cricket. METSCHNIKOFF (109) discusses the flagellated phase of *Coccidia*. LÉGER in other publications has studied the origin of the plasmodium of *Lithocystis* (80), the biology of the same animal (82), the life-history of *Coccidia* of *Arthropoda* (81) and also gives some account of his experimental studies on *Coccidia* (83).

Systematic works on the Protozoa are few this year. FRANCÉ (44) describes new and other forms from the Balaton Sea, and FUHRMANN (51) lists the fauna of the Alpine Lakes of Tessin.

The increase in papers dealing with Plankton is noteworthy. Of importance are AURIVILLIUS (2) on the Plankton of Baffin's Bay, PITARD (119-123) and ZACHARIAS (169). Plankton methods are considered by FRENZEL (47) and HENSEN (58) and severely criticised by KOFOID (74).

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APSTEIN, C. [See HENSEN & APSTEIN (59).]
2. AURIVILLIUS, C. W. S. Das Plankton der Baffin's Bay und Davis' Strait, ein thiergeographische Studie, pp. 179-212, pl. x. Zoologische Studien. Festschrift W. Lilljeborg, Upsala, 1896.
BARBAGALLO, P. [See CASAGRANDE & BARBAGALLO (15).]
3. BAUMGARTEN, P. & TANGL, F. Jahresbericht über die Fortschritte in der Lehre von den pathogenen Mikroorganismen, umfassend Bakterien, Pilze und Protozoen, 11 Jahrgang, 1895, 8vo, xi, 794 pp., Braunschweig, 1897.
4. BEHLA, R. Die Amöben insbesondere vom parasitären und culturellen Standpunkt, pp. i-vi & 73, 1 pl., Berlin.
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BLACKMAN, V. H. [See MURRAY and BLACKMAN (114).]
6. BLOCHMANN, F. Trichitenapparat und Reusenapparat. Zool. Anz. xx, pp. 133 & 134.
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8. BOLSIVS, H. Nota préliminaire sur des parasites de quelques Hirudinées. Ann. Soc. Bruxelles, 1895, pp. 203-206, 1 pl.
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12. BURROWS, H. W. & HOLLAND, R. The Foraminifera of the Thanet beds of Pegwell Bay, with notes on other microscopic organisms; a description of the section at Pegwell Bay; and remarks on the correlation of the Thanet beds. P. Geol. Ass. xv, pp. 19-52, pls. i-v.
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14. BUTSCHINSKY, P. Die Protozoen-Fauna der Salzsee-Limane bei Odessa. Zool. Anz. xx, pp. 194-197.
15. CASAGRANDE, O. & BARBAGALLO, P. Ueber die Kultur von Amöben. Centrbl. Bakter. Abt. i, xxi, pp. 579-589.
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