UNITED STATES GEOLOGICAL SURVEY
J. W. POWELL, DIRECTOR

A

CLASSED AND ANNOTATED

BIBLIOGRAPHY OF FOSSIL INSECTS

BY

SAMUEL HUBBARD SCUDDER

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The present work is an extension to date of a bibliography published in 1882. It has, however, been altered in a few details, and, besides being fuller, differs from that in being a classed list, the works and essays which cover the entire field (which embraces not only insects proper, but also myriapods and arachnids) being placed first, followed by the more special memoirs grouped first by times, next by classes, orders, etc., the classification employed in my Systematic Review of Fossil Insects, being used as a convenient basis. This will also form the basis of the Index to Known Fossil Insects, forming a later complementary bulletin. The occasion for the publication of both of these at this time is the completion of the first extended account of the American Tertiary insects given in Vol. XIII of the Hayden series of geological reports, by which the numbers of the European and American insects bear for the first time some sort of proper relation to each other, at least in the lower groups. This makes an immediate "account of stock," to employ a commercial term, desirable.

The points wherein the present bibliography differs from its predecessor, besides its classification and its inclusion of later material, are the somewhat fuller and otherwise altered notes, and the discontinuance of references to later treatises on the relations which Limulus and its allies bear to the arachnids. For the same reasons as before, viz, that the study of the Merostomata is ordinarily confined to a different group of paleontologists from those who are engaged on fossil insects, and because it would unduly, and, in my opinion, unwisely, extend the scope and special purpose of this bibliography, no attention is given to this side of the subject beyond the earlier and largely controversial papers; though it is not intended that this action shall be in any sense an expression of opinion, for this, not having specially studied the subjects, I am not prepared to give.

I have thought it best to retain the works upon amber given in the earlier bibliography, even when they make only the broadest allusion to insect inclusa, since the fossil insects of the European amber form such a predominating element in the teriaries of the Old World, and I have even added a few later entries. Perhaps not one-half the works or papers concerning amber referred to in bibliographies are procurable in this country, and of those seen comparatively few contain references
to insect inclosures. The scattered allusions to amber insects, taken from older authors and published later than the seventeenth century, have in general been left unnoticed as wholly valueless and uninteresting; but all others, where possible, have been introduced into the list in a more or less perfect form. The best notice of the early literature of amber will be found in Boehmer's Bibl. Script. Hist. Nat., 4, i, 468-477. 8º. Lipsiae. 1788.

The Index of Authors at the end contains over five hundred names.
BIBLIOGRAPHY OF FOSSIL INSECTS.

I.—GENERAL AND MISCELLANEOUS.


See also Buckland, W.


The section, p. 700, De verminibus in lapidibus, & metallis nascentibus cap. 8, contains nothing original.


In a chapter (4) on "insects and flowers," he discusses briefly the antiquity of insects and their relation to the earliest entomophilous flowers. See especially pp. 38, 42-46, 66-69, 78-80. See also Wallace, A. R.

André, Édouard. See Brongniart, C. J. E.


The introduction of thirty pages, gives a general review of fossil insects. I have seen only the separate edition. See same title in Section VI, and Section VIF.

Barrois, Charles. See Scudder, S. H.

Blanford, W. T. See Medlicott, H. B., and Blanford, W. T.

Brauer, Friedrich. See Fritsch, A.


Insects are referred to on pp. 47, 231, and 375, mostly from the lias.


A very general account of fossil insects, followed (pp. 12-19) by a Tabular view of British and foreign fossil insects chiefly in the secondary rocks, omitting the foreign tertiaries. Only separate paper seen.


An enlargement of the last, principally in the tabular view. Like the preceding, it is much disfigured by typographical errors.
Brodie, P. B.—Continued.
A general account of what is known of fossil spiders, read before the Warwickshire naturalists’ field club in March, 1882.
Contains slight additions.
——— On the character, variety, and distribution of the fossil insects in the palaeozoic (primary), mesozoic (secondary), and Cainozoic (tertiary) periods; with an account of the more recent discoveries in this branch of palaeontology up to the present day. 16°. Warwick. [1890.] pp.22.
Read to the Warwickshire naturalists and archæologists’ field club in March, 1889. It is of a general nature, and is remarkable as having been read more than a century later than his first paper treating of fossil insects.
——— See also Murchison, R. I.
Bromell, Magnus. Lithographie sve­
cane continuato. Specimen II.— Sectio II. De animalibus fossilibus, illorumque variis partibus petrificatis.—Caput pri­
num. De lapidibus insectiferis & tubul­
is vermicularibus.—Articulis primus.
holmiae. 1729.
A general notice of the discovery of insects, "Scarabaei" and "Papillones," in rocks of Kar­
bysunga, Glarstadt, Knista, Olstorp, and Aikinge in Westrogothia.
Bronnhaart, Charles J. E. Recherches pour servir à l’histoire des insectes fos­
Forms an Annexe au Speces des hyménoptères d’Europe par M. Ed. André. The single livraison published contains introductory remarks on the rôle of insects in the world, and the mode of their preservation in a fossil state, followed by a list of the paleozoic, triassic, and classic insects. No special reference is made to Hymenoptera, excepting in a brief note at the end.
——— See also Girard, M.
Contains references to fossil insects on pp. 210, 481, 794, 809–814, 1159–1161. A second edition, which I have not seen, was published in 1838. The third was by Bronn, H. G., and Roemer, F., q. v.
Bromn, H. G.—Continued.
B. (pp. 583–632) refers to the geological distribu­tion of insects.
This also appeared as Bd. 3 of the author’s Handbuch der geschichte der natur. 8°. Stuttgart. 1841–49.
See the next.
German text of the preceding. The insects will be found treated in the original edition of this justly celebrated essay on pp. 438–53, 634–38, 810–12, 866–69.
——— See also Gerstaecker, C. E. A.
Brockl, H. G.—Continued.


Brückmann, Francis Ernestus. De fabulosisimae originis lapide, arachneolitho dicto, epistola ad virum clarissimum... Albertum Rittervm. 4°. Wolfenbüttelae. 1722. pp. 16, pl. 1.

Not seen; referred to by Kundmann.


On pp. 100-101 under the heading: Von denen tubulis vermiculairbus des closters St. Marien-thal, certain tubes composed of globular pellets are referred to water-insects and figured on pl. 19.


A studied review of the knowledge at that time, from which the conclusion is drawn that nearly all fossil insects are generically, and part of them specifically, identical with living types, and that in these particulars they agree with other fossil animals.


See the next.

— Geologie und mineralogie in beziehung zur natürlichen theologie... Aus dem englischen, nach der zweiten ausgabe des originals, übersetzt und mit anmerkungen und zusätzen versehen von Dr. Louis Agassiz. 2 vols. 8°. Bern, Chur und Leipzig. 1838.

Vol. i, [text]; t. p., pp. 26, 506; vol. ii, [plates]; t. p., pp. 4, pl. 1-69 (= 88 pl.) and from 1-10 pp. of explanation of each. Pl. 46' and 46'' are devoted to fossil insects, mostly arachnids, copied from Corda. The others are insects from Coalbrook-Dale, Stonesfield, and Aix. The brief text concerning them is found in the London edition at 1: 406-413, and ii: 74-79; in the American edition at 1: 306-311, and ii: 74-79; in the German at pp. 483-483. The additions to the insects by Agassiz consist of a couple of unimportant notes. A new edi-

Buckland, W.—Continued.

tion by Frank Buckland (London, 1855) I have not seen, and the London edition examined is the second, apparently agreeing in every respect with the first, published in 1836.


Contains fossil arachnids (with opinions of Gray [J. E.] quoted), pp.162-163 (pp.504-505). Fossil insects, p. 163 (p. 505). Notices the arachnids described by Corda as well as specimens from Solenhofen and Aix; and the discovery of various insects the previous year from the wealden, Stonesfield slate, and Staffordshire coal, together with Hymenoptera from coal near Glasgow.

Buckman, James. See Murchison, R. I.


See same title in Section VII.


Refers to insects on pp. 430, 445-46. The five subsequent editions not examined.


A note on p. 142 discusses the ancestral line of the arthropods.

Cronstedt, Axel Fredric. An essay towards a system of mineralogy. Translated from the original Swedish with notes by Gustav von Engeström. To which is added a Treatise on the pocket laboratory, containing an easy method, used by the author, for trying mineral bodies, written by the translator. The whole revised and corrected, with some additional notes by Samuel Mendes Da Costa. 16°. London. 1780. t. p., pp. 36, 329.

Refers, p. 264, to fossil insects found in the alum slate at Andrarum in Skåne; I also find p. 257 of the "old ed." referred to, but have been able to examine neither it nor the original Swedish.

Mainly devoted to showing that the insects of the carboniferous period were not less completely developed than the existing forms.

Da Costa, Samuel Mendes. See Cronstedt, A. F.

Dallas, William S. See Müller, F.


Insects mentioned on pp. 273, 274, 334-336, 342, 343, 350, 351, 388, 411, 416; many figures of American, especially paleozoic, species given. The first edition (1862) gave much less space to insects; the second (1874) does not differ from the third, as regards the insects.


In the chapter on the first air breathers a considerable number of insects are mentioned and figured, pp. 139-151, figs. 123, 126-132, including for the first time Prodryas, a fossil butterfly from Colorado.


A review of the older authors, questioning the validity of many of the fossils preserved in the rocks, although accepting those entombed in amber.

Demole, Isaac. See Heer, O.


Contains a chapter on fossil ephemerida, pp. 38-40, and a figure, pl. 1, fig. 16, of a single unnamed species from Solenhofen.

Esper, Eugen Johann Christoph. Ad avdiendam orationem pro capessendo munere philosophiae professoris pvbliei extraordinarii a rectore academia... Christiano Friderico Carolo Alexander... gratiosissime sibi collato d. martii, 1783, recitandam omni qua decet observantia invitatis simulque de animalibus oviparis et sanie frigida preeditis in catalacsimo qvem sybiiit orbis terrarum plerisque salvis disserit Evgen. Joann. Christoph. Esper. 4°. Erlange, 1783. pp. 20.

Refers in a general way to fossil insects, pp. 18-19.


Species fossils, pp. 55-57, contains a bibliography of fossil orthoptera and alolist of the species.


Notice a few articles on fossil insects, tom. 2, pp. 219-20, 438.


Contains slight additions to the preceding, with the notices on pp. 305, 372.


A general statement derived from Goss's papers.


Refers only to the use to which "lapides araneorum" are put in medicine.

Fric, Anton. See Fritsch, A.


Describes and figures arachniferous ephemerid, Palingenia felsmanteli, and three beetles, mines of a Tinea, eggs of a saw fly, and cases of a phryganid from the cretaceous beds of Bohemia; a résumé of the very few known cretaceous
Fritsch, A. — Continued.
Insects is added from Goss. Brauer and Fritsch both compared the may-fly, p. 3, to the living Palingenia longicauda.


Refers pp. 103-104 to "globuli arenacei" which he apparently considers as eggs of insects.

Geinitz, F. Eugen. Uebersicht über die geologie Mecklenburgs; nebst geologischer karte der flözformation Mecklenburgs. 4°. Güstrow. 1885. 30 pp., 1 pl.

Contains slight notices of fossil insects.


B. Arthrozaa, pp. 172-193, pl. 8; gives a brief general systematic account of fossil insects, with descriptions of a few forms and figures of Euchna longiota and Gidipoda melanosticta. The second edition, 8°, Leipzig, 1856, not seen; according to Hagen the insects are upon pp. 179-90.


Some passing references to fossil insects on pp. 34-35.


Contains in the introduction to the arthropoda in general: viii. Zeitliche verbreitung, divided into: 1. Allgemeiner charakter der fossilien arthropoden, pp. 287-292. 2. Aufeinanderfolge der formen in den verschiedenen erschichten, pp. 292-295. Published in 1867! Under the first section the author notices the extremely small number of known fossil forms as compared with living types, and their almost complete typical agreement with existing forms; insisting that even the oldest not only fall into the orders, but even into the families of insects now extant.

Gerstaecker, C. E. A. See also Packard, A. S.

Gervais, Paul. See Walckenaer, C. A. et Gervais, P.


The insects, mentioned only by generic names, are systematically treated under each period: the period of water life on pp. 58-59, the transition period on pp. 144-148, and the period of land and air life on pp. 268-288.


Brief mention of insects on pp. 160, 266, 323, 442.

Blattina didyma is figured on pl. 5, fig. 26.


5. Insecten, pp. 92-95, is mostly taken up with a notice of the first volume of Heer's Oeningen insects.

—— Deutschlands petrefacten; ein systematisches verzeichniss aller in Deutschland und den angrenzenden ländern vorkommenden petrefacten, nebst angabe der synonymen und fundorte. 8°. Leipzig. 1852. pp. 13, 706.


—— Allgemeine palaeontology; ent­wurf einer systematischen darstellung der fauna und flora der vorwelt; zum geb­rauche bei vorlesungen und zum selbst·stunterrichte. 8°. Leipzig. 1852. pp. 8, 413.

Insects treated on pp. 117-118, 204-208, 276-286, under the same general divisions as in the author's Paläozoologie. The genera are enumerated.


Contains: i. Die palaeontologie Deutschlands auf ihrem gegenwärtigen standpunkt, pp. 1-71 [287-357]. A tabular view of the genera found in Germany with the number of species of each includes, pp. 63-66 [349-352], the insects, 169 genera, and 377 or more species.—v. Bericht über den fortschritt der palaeontologie während der jahre 1850-52, pp. 108-192. An analysis of the literature on fossil insects will be found on pp. 124-126 [410-412].
Giebel, C. G.—Continued.

--- Die insecten und spinnen der vorwelt mit steter berücksichtigung der lebenden insecten und spinnen ; monographisch dargestellt. (Fauna der vorwelt mit steter berücksichtigung der lebenden thiere. 2er band: Gliederthiere ; erste abtheilung: Insecten und spinne.) 8°. Leipzig. 1856. pp. 18, 511.

A systematic treatment of all the fossil insects then known with descriptions of nearly all ; many are described and named for the first time from published plates. Notice especially the treatment of the illustrations of Brodie's fossil insects of England. Some new amber insects also appear. See also Schlechtendal, D. von, in Section VI.


Brief notice of recent papers by Brongniart, including that on Protomyia ostailet.


The series of twelve papers of which the above form the first two covers much the same ground as the earlier series of three given in Section VI; but the formations are followed in an ascending order, and the progress of insect life at each epoch is compared to that of other contemporary animals and plants. The lists of the other series are omitted, and the references to insects are mostly by genera.

The other papers of the series are entered under Section II, Section IV, and Section VI.


The preceding series, collected into a pamphlet.

Goss, H. See also Bargagli, P.; Scudder, S. H.; and Fossil insects.

Gray, John Edward. See Buckland, W.


A review of past writers, containing nothing new excepting an attempt to indicate the genera of amber insects figured by Sendel.


In the introduction insects are treated on pp. 94–102, and the views entertained of the primeval forms of the different groups supported in part by paleontological evidence.


Insects are treated on pp. 490–501 (transl., 2: 178–191) and their pedigrees considered, partly from geological considerations.


A revision and brief description of the fifteen species then known.

--- Ueber die lebensweise der termieten und ihre verbreitung. (Königsb.
Hagen, H. A.—Continued.

Page 71 treats of the fossil species in amber, and from the tertiary beds of Oeningen and Radoboj, as proving a warmer climate in ancient Europe; of the sixty known species of white ants one-third were fossil.


Includes a treatment of the (14) fossil species with the others. Besides this, under the head Literatur (palaeontologie), 10: 302-310; 12: 294-298, an analysis is given of works in which the fossil species have been previously treated. See also (in Section VIIe.


Contains the fifteen fossil species described in the Monographie der termieten, from which indeed the whole was compiled [by Adam White] without the knowledge of the reputed author. None of the fossil species are recorded as in the collections of the British museum.


A synonymic list of the known species of which fifty are recorded, ten of them (one, however, doubly recorded) fossil, all but one being from amber.

— See also Packard, A. S.; and de Selys-Longchamps, E., et Hagen, H. A.


A popular address, presenting a sketch of the sequence of insect life and the development of special groups, with general considerations based on a broad survey of the subject; by far the best account of the knowledge of that time. An abstract is given in Haidinger’s Berichte, 6: 133-156. 8°. Wien. 1849.


Translation by T. R. J(ones).

Heer, O.—Continued.


The first attempt to classify the cockroaches of the carboniferous period, followed by a catalogue of the fifty-four known fossil species from all formations, and descriptions and figures of ten new species.


Contains a general account of the lias insects, pp. 81-96, pl. 7-8; of those of Oeningen, pp. 355-397, figs. 215-223; and of the pleistocene of Utz­nach, etc., pp. 560-563, figs. 332-339. Many forms are described and figured for the first time.


The insects occupy p. 22, fig. 16 c (carboniferous); pp. 99-117, pl. 7-8 (lias); pp. 436-486, figs. 215-223 (Oeningen); and pp. 615-616, figs. 332-358 (Utz­nach, etc.). Some few additions are made by the author.


The insects occupy i: p. 20, fig. 16 c (carboniferous); pp. 81-85, pl. 7-8 (lias); ii: pp. 9-56, figs. 211-223 (Oeningen); and pp. 167-170, figs. 352-358 (Utz­nach, etc.)


The insects are here somewhat enlarged over the previous editions, occupying pp. 24-25, fig. 34 (carboniferous); pp. 91-105, pl. 7-8 (lias); pp. 389-422, figs. 250-295 (Oeningen); and pp. 530-533, figs. 393-402 (Utz­nach, etc.)

— Flora fossilis arctica. Die fossile flora der polarländer. 6 v. 4°. Zürich. 1868-80. Bd. 1, 1868, pp. 7, 192, map, pl. 50;— bd. (2), 1869-71 (no t. p.), pp. 7; (i.) pp. 445-488, pl. 39-56; (ii.) pp. 41, pl. 10; (iii.) pp. 98, pl. 16; (iv.) pp. 51, pl. 15;— bd. 3, 1875, t. p., pp. 6; i. pp. 11, pl. 6; ii. pp. 133, (2), pl. 38; iii. pp. 29, pl.
Heer, O.—Continued.
5; iv. pp. 24;—bd. 4, 1877; i. pp. 7, 141, pl. 32; ii. t. p., pp. 122, pl. 31; iii. pp. 15, pl. 2.—bd. 5, 1878; i. pp. 4, 38, front., pl. 9; ii. t. p., pp. 58, pl. 15; iii. t. p., pp. 61, pl. 15; (iv.) pp. 11, pl. 4; (v.) pp. 6, pl. 1.—bd. 6. i, 1880, pp. (4), t. p., 34, 17, 38, pl. 9, 6, 3.

The contents will be found under the special papers.


Mentions or describes and figures three Coleoptera from the cretaeaces of Kome and Ivannguit, eight Coleoptera, two Orthoptera, one Neuropteron, and two Hemiptera from the various tertiary deposits, but mostly from Atnakerruk.

Extracted from Grönländs geol. untersögelse, which I have not been able to consult.


Heywood, James. See Heer, O.


Contains, p. 360, a reference to insects.


A brief account of fossil insects under the heading Entomoliten, pp. 138-141, with description of two species of Formica from amber.

—— Handbuch der petrefaktenkunde; eine beschreibung aller bis jetzt bekannten versterinungen aus dem thier- und pflanzenreiche zur leichten erkennung und auffindung der fossilien; mit einer einleitung über die vorwelt der organischen wesen auf der erde, von Dr. Ludwig Choulant. Neue ausgabe. 16°. Quedlinburg and Leipzig. 1843. pp. 8, 459. Published in four parts with continuous pagination, the t. p. of pt. 2-4 not included.

Appears to differ from the preceding only in title.

Horn, George Henry. See Le Conte, J. L., and Horn, G. H.

Hunter, R. See Hislop, S., and Hunter, R.

Jones, Thomas Rupert. See Heer, O.; and Mantell, G. A.


Not seen; said to contain, on p. 199, some reference to fossil insects.


Abteilung 2 (paläontologie), sechster abschnitt: Die fossilen insekten, pp. 325-347; under 7ter abschnitt the myriapods and arachnids, Fpond, G, pp. 370-371, 373-376, 378. The species are enumerated in the two last-mentioned groups, but only the genera in the hexapods; the names are very frequently misspelled. See also Vollmar.


Has a few words only on paleontological evidence.

—— Einführung in die kenntnis der insekten. 8°. Berlin. 1889-1890.

The prospectus of this work, now in the course of publication, promises a section vii. entitled Die ausgestorbenen insekten (Paläontologie).

Lankester, Edwin Ray. See Haeckel, E. H. P. A.


The distribution of certain North American beetles directly indicates a survival from cretaceous or even earlier times, pp. 4-7.


On p. 10 of the Introduction is a succinct account of the appearance of fossil insects.
Lemoine, Dr. [Insectes fossiles des environs de Reims.] (Bull. soc. ent. Fr., 1887: 17.) 8°. Paris. 1887.

Exhibition of drawings; no details.


The known paleozoic insects are catalogued with a few of later date, their horizon indicated, and copies of illustrations given in many cases. Four hundred pages of the second volume have been printed but not yet published. The pagination is continued throughout the two volumes.


In the seventh chapter, fourth division, fifth book: Von versteinerten thieren auf erden, so kein blut haben, pp. 533-561, he reviews what is known of fossil insects in his day.

In the Hamburg edition of 1751 (pp. 48, 1488, pl. 10) the same appears on pp. 633-639.

Lhwyd, E. See Luidius, E.


Contains a mere mention, p. 59, of finding some small insects in a fossil state near Glömminge in Öeland.


The same on p. 68.


Account of the discovery of supposed bee-cells (probably corals) in the rocks of the Montagnes de Siout, Upper Egypt.

It is somewhere stated that Lippi has mentioned the fossil insects of Oeningen.

Lochnerus, Johannes Henricus et Michael Fridericus. Rariora vssei beslerian quae olim Basilius et Michaelis Rupertvs Besleri colledgerant aenescisque tabulis ad vivvm incisa evvigavunt: nune commentario illustrata a Johanne Henrico

Lochnerus, J. H. et M. F.—Continued. Lochnero, vt virtutyi toy makaritoy exstaret monumentvm, denvo lvci publicae commissit & laudationem ejys fnvnbrem adjunct maestissimvs pars Michael Friderievs Lochnervs. folio. n. p. 1716. (pp. (22), 112], pl. 40, portr. 2.

Not seen; according to Kundmann, contains references to fossil insects on pp. 34, 100.

— Michael Fredericus. See Lochnerus, J. H. et M. F.


Records, pp. 128-129, the progress during the year in the study of fossil insects.


His second chapter, miscalled Chapter III, is On the importance of the Collembola and Thysanura in relation to the evolution of the Insecta, pp. 46-54, and takes into consideration the facts then known of the geological history of the latter. It will be found suggestive.


Contains a chapter [v] on the origin of insects, in which, on p. 86, is a general statement of the geological appearance of the different orders of insects.


Refers, pp. 12-13 (50-51), to recent researches on fossil insects, particularly by Goss and Sander.

BIBLIOGRAPHY OF FOSSIL INSECTS.

Luidius, E.—Continued.
Epistola 3. Summarium literarum V. C. D. Richardi Richardson, M. D. De entrocho lapide, conchitis, et lithophytis seu plantis mineralibus agri eboracensis; de bufonibus medius saxis inclusis, et depictis aliquid in schisto carbonarii insectis, pp. 107-114, pl. 4, fig. 197 (4 figs.). First edition, Lipsiae, 1699, not seen.

Contains references to fossil insects and some illustrations of them on pp. 243, 250, 255, 331, 425, 491. Earlier editions not examined.

Vol. 2 contains Part VI: Fossil spiders; chap. xv; pp. 466-469, figs. 372-401: Ancestral spiders and their habits. It gives a general review of fossil spiders, accompanied by several illustrations, with the general conclusion that the structure and habits of spiders have not greatly differed from the earliest times from which they are known.

Contains a paragraph, p. 141, on the Antiquity of insects.

"Fossil insects" (of Aix). 1: 247-250, tab. 45.
"Insects of the coal formation." 2: 673-698.


Fossil insects and spiders, pp. 570-584, with wood-cuts 122-124.

Mantel, G. A.—Continued.

— Geological excursions round the Isle of Wight and along the adjacent coast of Dorsetshire; illustrative of the most interesting geological phenomena, and organic remains. 16°. London. 1847. pp. 428, pl. 39.
Refers to the discovery of fossil insects in tertiary and wealden beds at pp. 140, 490.

Notices two or three papers on fossil insects.
Notices Scudder's papers on fossil insects.

Contains brief notices, among others, of about twenty papers on fossil insects.

A general account of what is known of fossil insects, arranged in geological succession.

On pp. 152, 154, 314 are references to insects found in the Mesozoic and Tertiary deposits of central India.

A review of the literature, with nothing new.
See also Reuss, A. E., und Meyer, C. E. H. von.

Morris, John. A catalogue of British fossils, comprising all the genera and spec-
Morris, J.—Continued.
ies hitherto described: with references to their geological distribution and to the localities in which they have been found.


Insecta, p. 69.


Insecta, pp. 116–118.

The recent third edition not examined.


Refers in three brief paragraphs (1: 123, 144) to the insects reported from the coal by van Beneden and de Boorre, and from the coalite by the latter; the carboniferous species are also catalogued (2: 57) as well as larvae of insects from the coalfield of Hainaut (2: 82).

Müller, Fritz. Facts and arguments for Darwin; with additions by the author; translated by W. S. Dallas. 16°. London. 1859e pp. (8), 144.

Argues in favor of the late acquisition of “complete” metamorphoses in insects partly from palaeontological data, in a footnote to pp. 110–121; it does not occur in the original, entitled Für Darwin.


Mentions the reception of a beetle from Solenhofen and insects from Oenningen.


The first edition makes no allusion to fossil insects. The additions upon that subject in this are by Brodie (q. v. in Section IV), and Buckman. The insects are catalogued on pp. 68, 81–82, and figured on pl. 4, 8, 9. Reference is also incidentally made in several places to the insect beds of the district, but without special mention of their contents.

Mylius, G. F. Memorabilium Saxoniae subterraneae, pars prima; i. e. Des unterirdischen Sachsens weltsamer wunder der natur; erster theil. Worinnen die auf denen steinen an kräutern, bäumen, bluh-

Mylius, G. F.—Continued.
men, fischen, thieren und andern dergleichen besondere abbildungen, so wohl unser Sachsennlandes als deren so es mit diesen gemein haben, gezeiget werden, mit vielen kupffern geziert. 4°. Leipzig. 1709. pp. (6), 89, (19), front., pl. (13), fig.

Remarks on a fossil “wurm, welcher einem seidenwurm nicht ungleich scheinet,” p. 56.


Chapter xvii, Arachnida, Myriapoda, and Insecta, occupies pp. 181–187 and figs. 124–130. This very brief notice is mostly confined to the older insects.


Vol. 1 contains a chapter (20) on Arachnida, Myriapoda, and Insecta, pp. 388–409, figs. 250–258; slightly enlarged from the preceding. See also Nicholson, H. A., and Lydekker, R.


Contains nothing original in insects; a few are figured.

--- See also White, C. A., and Nicholson, H. A.


Chapt. 31, pp. 572–586, figs. 430–440, and chapt. 32, pp. 587–602, figs. 441–449, deal respectively with the arachnida and myriapoda, and the insects. The figures, when of fossils, are all borrowed, excepting one showing the skin structure of a Carboniferous scorpion. This is one of the best summary accounts of fossil insects which has been published. The invertebrata are all by Nicholson alone.


Describes Paleococcus jurassicus from the brown Jura of Siberia, and characterizes the
Oppenheim, P.—Continued.
Rhipidophorabdi of the Bavarian white Jura with two genera and six species; these he regards as the ancestors of later Lepidoptera. A list of known tertiary Lepidoptera is appended, grouped by strata; a single species is described.


Insects are treated on pp. 232–233, and on both tables.


A good general account of fossil insects from the older to the newer strata.


The insects are briefly treated, without illustrations, on pp. 51–52. Nothing new is given except the expression of a doubt by Waterhouse whether the industrious limestone of Anvergne is to be referred to the cases of Phryganeida.

The first edition of this work was an excerpt from vol. 17 of the Encyclopædia Britannica (6th ed., 1859), where the article occupied pp. 91–176, and the insects, in nearly the same words as in the later edition, occurred on pp. 102, 103.

Packard, Alpheus Spring. Guide to the study of insects, and a treatise on those injurious and beneficial to crops; for the use of colleges, farm-schools, and agriculturalists; with eleven plates and six hundred and fifty wood-cuts. 8°. Salem. 1869 [1868–69], pp. 8, 702, pl. 11.

Has a section on geological distribution, pp. 77–81, with a plate (I) in the introduction, besides treating of the fossil species in the body of the work; especially in the Neoptera, where pp. 582–584 are given to a discussion of Eugereon, with a figure (572) and quotations from opinions expressed by Hagen and Gerstaecker in letters from the former. In the third edition (1872) an appendix is added, in which, pp. 710–711, a description and figure are given of Paolia. A figure of Arthrocyosia is added in the fourth edition (1874). The preface to sixth edition (1878) contains on its second page a paragraph on the fossil insects published in America since the previous edition [furnished by S. H. Scudder].

—. Our common insects; a popular account of the insects of our fields,

Packard, A. S.—Continued.
forests, gardens, and houses; illustrated with four plates and 263 wood cuts. 16°. Salem. 1873.

Contains a chapter (xiii) entitled Hints on the ancestry of insects, in which, and especially on pp. 157–159, the geological question is briefly discussed.


Entomolithi are treated in vol. 3, pp. 265–267, and pl. 17, figs. 2–6; larva of Odonata from Oppenheim being figured and some indistinguishable insects copied from Luidius.


IV° classe, Arachnides, pp. 87–89; V° classe, Insectes, pp. 91–114; VI° classe, Myriapodes, pp. 115–116. No insects are figured.

—. Traité de paléontologie ou Histoire naturelle des animaux fossiles considérés dans leurs rapports zoologiques et géologiques. 2e édition. 4 vol. 8°; atlas, 4°. Paris, 1853–57. T. 2 (1854), t. p., pp. 727; atlas, pl. 32, p. 56.

Insectes, pp. 301–405; Myriapodes, p. 465; Arachnides, pp. 406–410; Atlas, pl. 40–41. A few additions from Serres MS. are quoted.


Forms the supplementary volumes of Griffith’s Animal kingdom of Cuvier. Insects are treated in a summary manner on pp. 493–495, but nothing new is added, and none are figured.


As translated by Bostock and Riley (8°. London, 1857) that part of the passage which may re-
Plinius Sec., C.—Continued.

fer to fossil insects reads as follows: “Other stones, again, derive their names from various animals * * * scorpions, from either the color or the shape of the scorpion * * * Myrmecitid presents the appearance of an ant crawling within, and cantharias of a scarabæus.”

Quenstedt, Friedrich August. Handbuch der petrefaktenkunde. 8°. Tübingen. 1852. pp. 6, 792, pl. 62.


The first three chapters of book v are devoted to a popular and picturesque though often faulty account of the geological development of insects. The work has been translated into German by Cotta and passed through several French editions, the first in 1869 (?).


Not seen; according to Deyhmüller, this article contains some reference on p. 46 to the occurrence of fossil insects in certain Bohemian localities.


Contains Geognostische skizze der tertären sisswasserschichten des nördlichen Böhmens, pp. 1-15, by Reuss alone, in which are recorded the discovery of Coleoptera at Kutschen (p. 6), and of insects, principally Coleoptera, at Luschitz (p. 7).


A few insects are figured on plates 31, 47, and 56.

— See also Bronn, H. G., and Roemer, F.


Under insecta diluviana on p. 336 is a paragraph saying that while the author is acquainted with fossil insects he has seen none from Switzerland; quotes Langius.

Schlotheim, Ernst Friedrich von. Die petrefaktenkunde auf ihrem jetzigen standpunkte durch die beschreibung seines sammlung versteinerner und fossilier überrreste des thier- und pflanzenreichs der vorwelt erläuert; mit 15 kupferstifeln. 8° (atlas, 4°). Gotha. 1820. pp. 64, 438.

Pp. 42-44 relate to insects, specified under six heads.


The second part contains on pp. 60-61, taf. 22, fig. 10, what the author looks upon as the larva and nest of a Myrmecoleon.


Describes Entomolithus coleopteri from Rothenburg, pp. 51-52.


A compilation from the writings of the older authors.


General remarks of no present value.

— Neue litteratur und beyträige zur kenntniss der naturgescihte vorzüglich
Schröter, J. S.—Continued.
V. Ueber einige merkwürdige versteinerungen. A. Von versteinerten insecten, 410-413, pl. 3, fig. 10.

A popular account of those then known.


Reprints, with other matter, two papers containing notes on fossil insects, mentioned elsewhere in this bibliography.

A review of Goss’s papers.

"More than four hundred authors are represented as having concerned themselves more or less with fossil insects."

[miscellaneous notes of fossil insects.]

Exhibition at meeting of the Cambridge entomological club of a cast of the first paleozoic insect ever found (p. 277), and of illustrations of the tertiary insects of North America (p. 278); as well as remarks on fossil species of Termes (p. 278); on some carboniferous insects, and on tertiary spiders from Florissant (p. 279).

Notice of Pithancoris, found in Missouri, and of the discovery of triassic cockroaches in Colorado.

Description of four genera and eleven species from the triassic (8 species) or carboniferous (3 species) rocks.

Scudder, S. H.—Continued.
Much the same as the general remarks in Zittel’s Handb. d. palaeont. See also de Borre, A. P. de.

The first comprehensive review of these groups since the work of Pictet, in 1846, and Giebel, in 1856. Figures are given for nearly every family treated.

Translated by Mr. A. Six.

The original text furnished Dr. Zittel for his Handbuch, where the modern groups were more condensed. No illustrations, however, are given.


A popular review of our present knowledge of extinct cockroaches, closing with a table of the 177 species known.

A review of the advance that has been made in palentology during the previous ten years, directing attention to the more important or interesting papers.

A collection of the author’s quarto publications on fossil insects. The separate volumes have independent title pages and are elsewhere noted, vol. 1, on pretertiary insects, in the next entry, vol. 2, on tertiary insects, in Section VI.

— The pretertiary insects of North America, including critical remarks on and descriptions of some Eu-
Scudder, S. H.—Continued.

ean forms. 4°. New York. 1890. pp. 10, 455, pl. 1-7, 7a, 8-34.

Forms Vol. 1 of the author's Fossil Insects of North America, with notes on some European species. Includes all the papers on the other insects, published in quarto form by the author between 1866 and 1890, together with a final chapter of a bibliographical nature. The separate papers, excepting the last, are elsewhere noticed.

See also Marcon, J. B., Packard, A. S., Trouessart, E.; White, C. A.


Contains, pp. 355-364, Énumération des odonates fossiles d'Europe, by Dr. Hagen, with a few notes by Baron de Selys; and pp. 365-368, Note sur l'énumération des odonates fossiles d'Europe, by de Selys. In the former, 39 species are enumerated with synonymy and brief notes; in the latter they are discussed by formations, and the conclusion reached that 'Eschnüde preceded the Agrionide and Libellulide.'

Sendel, Nathaniel. See Guérin-Méneville, F. E.

Serres, Pierre Marcel Toussaint de. See Picquet de la Rive, F. G.

Six, A. See Scudder, S. H.

Spener, Christian Maximilian. See Vallisneri, A.


Abstract of remarks on the geological development of Arachnida.


Entitled on cover of separate: On fossil Orthoptera. Claims to show that the carboniferous Corydalis bronniarii is a Gryllacris, and discusses the tertiary species which have been referred to Gryllacris.

Insect variety: its propagation and distribution; treating of the odours, dances, colours, and music in all grass-hoppers, cicadæ, and moths; beetles, leaf insects, bees, and butterflies; bugs, flies, and ephemera; and exhibiting the bearing of the science of entomology

Swinton, A. H.—Continued.
on geology. 8°. London, etc. [1880.] pp. 10, 326, pl. 7.

Notices the stridulation of extinct insects, pp. 163-164; and reviews the strata containing insect remains in a discursive manner, pp. 200-271.


Points out "a broad parallelism between the appearances of the more differentiated types of the vegetable kingdom and the development or appearance of various orders of insects," and on pp. 43-44 gives an account of the general distribution of insects in geological times.


Notices Coleoptera from Stonesfield slate, coal shale of Yorkshire, peat beds of Norfolk, Yorkshire, and Lincolnshire coasts, in a submarine forest at Mount's Bay, and at the Danby coal pits, Yorkshire.


Contains remarks on fossil spiders, pp. 220-233, in which the affinities of the described species are discussed, and some new genera are founded.


Principally occupied with an analysis of Scudder's contribution to Zittel's Handbuch.


Contains, pp. 181-190, an Epistola to Vallisneri by Spener upon various fossils, including insects, which are mentioned from the rocks of Thüringen on pp. 188-187, and from amber on p. 187. In the latter he recounts as in his possession "muscas, culices, araneas, forniculas volantes, scolopendras affine animalcula."


A general review of fossil insects, in geological sequence, and their correlation with vegetable life.

Vogt, Karl. Lehrbuch der geologie und petrofactskunde. Zum gebrach
BIBLIOGRAPHY OF FOSSIL INSECTS.

Vogt, K.—Continued.

Insects are meagerly treated, with two or three figures copied from other works, 1, pp. 336, 482, 638-693; 2, pp. 450, 461, 500-511.


Of a general nature, closing with a list of fossil Coleoptera, borrowed from Keferstein.


Abtheilung III. Der petrifactolog (1843), contains a chapter on Fossiler insecten, pp. 534-539, in which, especially in foot-notes, the genera then known are enumerated; nothing new is added.


References to fossils, all at second hand, will be found in vol. 3, pp. 6, 70-72, 84, 128, 283, 449; and vol. 4, pp. 329-330, 345, 356, 360. Attas fossill from amber is described in vol. 1, p. 462.


In a section entitled: Antiquity of the genera of insects, 1, pp. 166-168 (both editions), he concludes that "many of the larger and more important genera of insects date back to the beginning of the tertiary period, or perhaps beyond it; but the family types are far older." The section abounds in errors.


Review of Grant Allen’s Colour sense, in which, p. 501, he contends for the probability of flowering plants and accompanying butterflies in the Carboniferous.


§ 154, 2, pp. 538-546: Entomolithi, contains, under the heads of Typolithi and Entoma, a catalogue of the fossil insects then known.


Brief notice of the fossil arthropods of Teyler’s museum.

White, Adam. See Hagen, H. A.


Notices papers by Scudder.

—— and Nicholson, H. A. Bibliography of North American invertebrate paleontology, being a report upon the publications that have hitherto been made upon the invertebrate paleontology of North America, including the West Indies and Greenland. 8°. Washington. 1872. pp. 132. (Misc. publ. U. S. geol. surv. terr., 10.)

Includes descriptive notes to most of the entries.


Literature of 1878 with omissions from the previous list.


Arachnides, p. 421; Insectes, pp. 422-429. 265 numbers are given, including over two hundred undetermined species.


A résumé, by the editors of the journal, of papers that have appeared on the subject in their magazine, by Phillips, Kirkby, Scudder, Wood ward, and Butler.

Zittel, Karl A. See Scudder, S. H.
II.—GENERAL FOR PALEOZOIC TIME.


Contains, p. 330, a section (ix) of a single paragraph on what was then known of palæozoic insects.


Borre, Alfred Prendhomme de. Note sur des empreintes d’insectes fossiles, découvertes dans les schistes houillers des environs de Mons. (Comptes rendus soc. ent. Belg., (2), xii: 4-7; and discussions on same by Breyer and others, 7-8.) 8°. Bruxelles. 1875.

Describes and discusses the affinities of a fossil insect which he considers orthopterous; and of a third which he compares to a carboniferous Termes. Breyer considers one of the first wings as lepidopterous.


Notice of the discovery of two Neuroptera from the same beds as Breyeria and of a supposed dip teron from the Jurassic beds of Luxembourg; M. de Borre informs me that closer examination proves the latter to be an homopteron.


Now maintains the correctness of Breyer’s belief that one of the wings is lepidopterous, or pro lepidopterous, and changes the generic name from Pachytylopsis, formerly given, to Breyeria. Fologne and Lafontaine contend that there are two

Borre, A. P. de—Continued.

overlapping wings. Plateau at first thought it the tip of a coleopterous wing of gigantic size, but withdrew his opinion. Breyer maintained the latter view impossible, and de Selys thought it rash to refer a reticulated wing to the Lepidoptera. These two papers, without the discussion, were republished separately as follows:


Première note, pp. 1-6 (39-42). Seconde note, pp. 6-10 (56-60). Second note reprinted as follows:


Unaccompanied by the plate. Gervais adds brief notes.


—— See also Scudder, S. H.; Gab es schon u. s. w.


Contains p. 196. a list of the carboniferous insects of Mason Creek.


Discusses in several places the relationship of many of the older insects, and especially of Eugenere, with remarks on synthetic types.


Expands his previously expressed views at greater length, reviewing in detail the structure of many of the older types, and strenuously opposing the views of Scudder upon their general classification.
Breyer, Albert. See Borre, A. P. de.


A brief enumeration of the different forms known to the author.


An account of the insects of Commentry, with a description of Titanophasma, which is also figured, and ending with a general account and classified list of carboniferous insects.


A brief general review, followed by an account of the rich locality of Commentry, largely based on his paper of the previous year read before the Geological society.


The same as preceding, with slight additions, especially in the description of Titanophasma, which is also figured, the description taken from his Geological society’s paper.


Forms part of the Compte rendu de la 23e réunion de délégués des sociétés savantes à la Sorbonne (1888) par Henri Gadeau de Ker ville.

The paper is principally concerned with the carboniferous insects of Commentry, for which a large number of family, generic, and specific names are proposed. The separate copy contains two (unnumbered) plates not in the society’s issue, and a sheet of errata. Many of the Commentry insects are figured on these plates for the first time. (See also Borre, A. P. de.)


Contains no plates.

Translation: The fossil insects of the primary group of rocks: a rapid survey of the entomological fauna of the


A discussion, participated in by Messrs. Stirrup, Ormerod, Dickinson, Burnett, Boyd Dawkins, Wild, and Watts, will be found on pp. 267-269, 289-292, 328-331. No plate appeared in the separate.


The plate is the same as plate 4 of the original, and is wrongly said to have been published by the Rouen Society.


By Herbert Goss.


The same in substance as the earlier paper with a similar title, but with some modifications due to subsequent researches.


Very general remarks.


Myriapoda found in nodules in the valley of the Irwell near Clifton; Trigonocarpha bored by insects.

Dawson, Sir J. W. On the conditions of the deposition of coal, more especially as illustrated by the coal-formation of Nova Scotia and New Brunswick. (Quart. journ. geol. soc. Lond., 22: 95-169, pl. 5-12.) 8°. London. 1866.

Merely refers (p. 145) to the occurrence of a myriapod and one insect at the Joggins.

— On some remains of palæozoic insects recently discovered in Nova Scotia and New Brunswick. (Can. nat. [n. s.],
Dawson, Sir J. W.—Continued.
(Geol. mag., 4: 385–388, pl. 17, figs. 1–5.) 8°. London. 1867.
Haplophlebium barnesi and four of the Devonian insects are described and figured for the first time by Scudder.

Taken from the Montreal Gazette of May 1, 1867. An abstract also appears in Amer. journ. sc., (2), 44: 116. 8°. New Haven. 1867.


Pages 386–388, 534–526, figs. 152, 181–184, contain descriptions and illustrations of carboniferous and devonian insects by Scudder. There is also a note on the myriapods of the coal formation on pp. 495–496, by the same.


This supplement bound with reissue of 2d ed. forms 3d ed. Mentions and figures, pp. 52, 55, 56, some carboniferous insects and myriapods which had been described by Scudder since the previous edition.


Notice of Paleophonops nunicus and Paleoblatina douvillei.

Believes all the paleozoic insects to be amphibious.

Further discussion of Eugereon and description of two new Carboniferous insects. It is proposed to extend the new order Pteroptera, so as to embrace a number of the earlier insects.

Fuller discussion of the affinities of Eugereon and its bearings on Haeckel's views of the genealogy of insects.

Fleck, Hugo. See Geinitz, H. B., Fleck, H., und Hartig, E.

Fletcher, John. A dreadful phenomenon described and improved; being a particular account of the sudden stoppage of the river Severn, and of the terrible desolation that happened to the birches between Coalbrook Dale and Buildwas Bridge in Shropshire on Thursday morning, May 27, 1773. (Works of John Fletcher, Vicar of Madeley, 1: 229–246.) 12°. London. [1773 ?]

On p. 237 "a great many [fossils] were found bearing the impression of a flying insect, not unlike the butterfly into which silk-worms are changed."

Folognè, Egide. See Borre, A. P. de.

Note (not original) on Xenonera and Palaeocampa.

Describes Palaranecora bosassifoliae for the first time, and gives new figures and descriptions of four previously-known insects, including the famous scorpions described by Corda.

Contains pp. 26–31: Vorlängige uebersicht der in der gaskohle und den kalksteinen der performation in Böhmen vorgefundenen thierreste. On p. 31 appears a list of five insects, to three of which (Myriapoda) names are given, from Nyfan and Kounová.

An account of the discussion of this subject, by Wallace, MacLachlan, de Borre, etc., in Nature and elsewhere.

Geinitz, Hans Bruno, Fleck, Hugo, and Hartig, Ernest. Die steinkohlen
Geinitz, H. B., etc.—Continued.

Contains (bd. 1, pp. 146-150). Organische überreste der steinkohlenformation des Saarbrücken-schen, in which, pp. 149, 150, appear lists of the Carboniferous and Dyas insects of the basin of the Saar.


Insects at pp. 66, 116, 140; nothing new.

The second part, pp. 90-94, pl. 13, describes and figures four cockroaches and a neuropteroidea insect from the coal measures. See also Voigt, C. G. See also the same title in Section IV.

Die versteinerungen des steinkohlengebirges von Wettin und Löbejün in Saalkreise. Also entitled: Petrifhatica stratorum lithanthuracum Wettini et Lobejuni in circulo Sale reperta. f°. 8 hefte [fasc.]. Halle. 1844-53. pp. 4, 116, taf. [tab.], 40. 1® hefft, pp. i.–iv., 1-12, pl. 1-5, 1844; 2® hefft, pp. 15-28, pl. 6-10, 1845; 3® hefft, pp. 29-40, pl. 11-15, 1845; 4® hefft, pp. 41-48, pl. 16-20, 1847; 5® hefft, pp. 49-60 (59), pl. 21-25, 1848; 6® hefft, pp. 61-80, pl. 26-30, 1849; 7® hefft, pp. 81-102, pl. 31-35, 1851; 8® hefft, pp. 103-116, pl. 36-40, 1853.

Ueberreste von insekten [Insectorum vestigia], pp. 81-88, pl. 31, 39 (1851), almost entirely devoted to the cockroaches of the paleozoic rocks, on which it is the first important publication.

Gervais, Paul. See Borre, A. P. de.

Goldberger, F. See Goldenberg, F.


A nominal list, without description, of six new Orthoptera and Neuroptera. The author's name is accidentally given as Goldberger.


Much the same as the preceding, but with a few more details and comparisons, and without mention of specific names.


Only the first half relates to insects in which a general account of his discoveries at Saarbrück is given; the latter half refers to the plants found in the same deposits.


A careful description and excellent illustration of the species mentioned in his previous papers, with as many more. The remarkable genus Dictyoneura is introduced with three species.


The insects occupy pp. 7-20 and swell the number of Saarbrück insects to seventeen. References are made to two plates, but these are not given until the same paper appears as the first heft of his Fauna saraeop. fossa.


Description and illustration of ten new Blat-tine and two Homoptera.


The first part, with the exception of the introduction and the addition of the plates referred to
Goldenberg, F.—Continued.
in the text, is an exact reproduction of the paper
published six years earlier in the report of the
Saarbrück gymnasium, no mention being made of
the author’s own additions to the Carboniferous
fauna since it was issued. These and others ap­
pear in the second part, where the insects occupy
pp. 8-34 and pl. 1. The order Paleodictyoptera is
here instituted for the Dictyoptera (nom. praecoc.)
of Dohrn. The number of species treated is
twenty-seven, not, however, all confined to Saar­
brück; this brings the number of Saarbrück in­
sects as given in the catalogue, pp. 50-51, to
thirty-eight, and renders this work, for its time,
the most important contribution to palaeozoic en­
tomology that had ever appeared. A nominal list
of 76 fossil cockroaches, based on that of Heer, is
given on pp. 19-21. A supplement- heft was prom­
bised, but has never appeared.

Goss, H. Introductory papers on fossil
entomology. No. 3. Palaeozoic time. On
the insects of the Devonian period, and
the animals and plants with which they
were correlated. (Entom. monthl. mag.,

The same.—No. 4. Palaeozoic time. On
the insects of the Carboniferous period,
and the animals and plants with which they
were correlated. (Entom. monthl.

The same.—No. 5. Palaeozoic time. On
the insects of the Permian period,
and the animals and plants with which they
were correlated. (Entom. monthl.

See the same title in Section I, Section IV, and
Section VI.

Three papers on fossil insects,
and the British and foreign formations in
which insect remains have been detected.
No. 3. The insect fauna of the primary
or palaeozoic period. 8°. [London. 1880.]
pp. 32. (Proc. geol. assoc., 6, no. 6, pp.

ABSTRACT: The insect fauna of the
primary or palaeozoic period and the
British and foreign strata of that period
in which insect remains have been de­
tected. (Geol. mag. (n. s.), 6: 230-332.)

The papers, of which this is the third, contain
a careful review of the literature of fossil insects;
each geological formation is separately treated,
containing references to all the genera, and in
very many cases to the species found in it, with
full bibliographical references. It will be found
very useful to the general student.

The other papers are given in Section IV and
Section VI, q. v.

Goss, H.—Continued.

On some recently discovered
Insecta from carboniferous and Silurian
London. 1885.

A general résumé of the progress of discovery
since his previous collation, in which the de­
posits of Great Britain, the continent of Europe,
and America are separately treated, followed by
a general summary.


TRANSLATION OF ABSTRACT. Fossile
insekten. Stett. ent. zeit., 46: 380-381.)

Gutbier, August von. See Geinitz,
H. B., und Gutbier, A. von.

Hartig, Ernst. See Geinitz, H. B.,
Fleck, H., und Hartig, E.

Higgins, H. H. President’s address
[to the Liverpool naturalists’ field club].

Mention, p. 10, of a few insect remains found
in carboniferous rocks in the Ravenhead cutting
near Liverpool; one wing is figured.

Humbert, Alois. See Scudder, S. H.

James, Joseph Francis. Remarks on a
supposed fossil fungus from the coal
measures. (Journ. Cine. soc.,

Considers Rhi zomorpha sigillaris the burrow
of an insect larva.

Kliver, Moritz. Ueber einige neue
Blattinarien, zwei Dictyoneura- und
zwei Arthropleur-aarten aus der Saar­
brücker steinkohlenformation. 4°.
Cassel. 1883. 3. 19 pp., 3 pl. (Paleontogr.,
1883.

The Blattinaria are seven in number, of which
all but two are new, as are the species of Dict­
yoneura; all are figured.

Ueber einige neue arthropode­
resten aus der saarbrücker und der
wettin-löbejüner steinkohlenformation.
Stuttgart. 1886.

Eleven different objects are described and fig­
ured, including some uncertain fragments of
bodies; most are wings and include two Termes,
a Dictyoneura, an Acridites and three Blat­
tinaria.

K[ ušta, Johann]. Novi členovci z čes­
kého útvaru kamenouhelného. Vesmir
Kušta, J.—Continued.

Popular account of the older insects of Bohemia with a list of a dozen species and figures of four or five.


Describes Eolycosa and Eojulus and gives a list of seventeen species of arthropods from the carboniferous beds of Rakonitz.

Lacoë, R. D. List of paleozoic fossil insects of the United States and Canada, alphabetically arranged, giving names of authors, geological age, locality of occurrence, and place of preservation, with references to the principal bibliography of the subject. 8°. Wilkes-Barre, Pa. 1883. 21 pp. Publ. Wyom. hist. geol. soc., No. 5.

Catalogues forty genera and seventy-two species.

Lafontaine, Jules de. See Borre, A. P. de.

McLachlan, R. See Gab es schon u. s. w.


Describes the wing of Geronnura wilsoni from the Devonian of Lancaster and a supposed larva, Archoesocolx, from the Devonian of St. John; a short section on the "Geological age of the insect remains" refers them to the middle Devonian.


Afterwards described more fully in the Geological survey of Illinois. Among the "other fossils" are two myriapods.


Describe and figure, pp. 556-565, two myriapods and two arachnids, with a Note on the genus Paleocampa, p. 565, first described as a caterpillar, but here considered a worm.

Miller, Samuel Almond. The American paleozoic fossils: a catalogue of the


The Arachnida occupy pp. 590-571 with 3 figures; the Myriapoda pp. 572-574 with 6 figs.; and the Insecta pp. 574-581 with 23 figures, not all rightly named. Only paleozoic species are considered and it is not complete for those.


Notices a "carbonaceous impress on a piece of shale from the Silurian coal field, Tipperary," which "appears" to him "to be a butterfly.


—— Siluria. The history of the oldest known rocks containing organic remains, with a brief sketch of the distribution of gold over the earth. 8°. London. 1854. pp. 12, 523, pl. 37.

Notices insects of the coal, p. 284.


Brief reference to and figure of an insect "allied to Corydalis" from Coalbrookdale on pp. 320-321.


Not seen; quoted from Hagen's Bibliography.

Popular account of Paleophonus and Paleoblatina, with extracts from the original accounts.


The Commentry insects are preserved beside leaves.


A sketch of the history of the formations at Mazon Creek, with a mention in most general terms of the animals and plants.

Plateau, Félix. See Borre, A. P. de.


In a notice of the fossils a beetle and a spider are mentioned, p. 376 (20), as occurring in the iron-stone nodules at that place.


Contains a notice, p. 446, of three fossil insects (Carculloides [sic] austṣici, C. prestivicæ, and a neuropteroid) from the locality; also entered in the table on p. 490.


Refers the Devonian insects to new families of Neuroptera and the Carboniferous Haplophlebium probably to the Ephemeroidea.


Scudder, S. H.—Continued.


Reprint of the preceding paper, with others.


Describes nine new Carboniferous insects, mostly neuropteroid. It is also marked as a Supplement to Descriptions of Arthropodidae.


Notices the discovery of cockroach wings and the larva of a supposed dragon-fly at Sidney.


Description of the cockroach and supposed larval dragon-fly mentioned in a preceding paper.


Gives a list of thirty species. Entitled in table: On fossil insects from the coal measures.


As intimately related as now.


Reprint, among other matter, of three short papers on fossil insects elsewhere mentioned.


A general review of palæozoic insects, attempting to show "that the laws of succession of the insect tribes are quite similar to those which have long been known to hold in other groups of the
Scudder, S. H.—Continued.
animal kingdom; and that the facts are, in the main, such as the theory of descent demands."
The general conclusions are summarized under

The translation is by A. Humbert. Some notes, especially the bibliographical, are omitted.


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Two new British Carboniferous insects, with remarks on those already known. (Geol. mag., (2), 8: 293-300, fig.) 8°. London. 1881.

The only two hexapods hitherto known (excepting a cockroach) are Neuroptera and non Orthoptera as had been recently maintained. Two new species are described, Archaeoptilus ingen, the largest paleozoic insect known, and Brodia prisctancta, remarkable for the preservation of the colored bands of the wing. Separates (without change of pagination) bear on the cover the title: New Carboniferous insects.

**ABSTRACT:** Upon the Carboniferous insects of Great Britain. (Harv. univ. bull., 2: 175.) 4°. Cambridge. 1881.

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Forms vol. 1, pp. 235-246, pl. 11, of the Fossil insects of North America.

Brodia, Archaeoptilus and Lithosialis are described at length; a list of 7 species is given.

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On additional remains of articulates obtained by Dr. Dawson from sigillarian stumps in the coal field of Nova Scotia. (Phil. trans., 1882: 469-650.) 4°. London. 1883.

Notices some new myriapods and scorpions without giving names.

Scudder, S. H.—Continued.

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Forms vol. 1, pp. 283-315, pl. 15-18, of the Fossil insects of North America.

The winged insects of paleozoic times are grouped under the terms orthopteroid, neuropteroid and hemipteroid Palaeodiaptera, and separated into several families. A large number of new genera and species are described and figured from American rocks.

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Forms vol. 1, pp. 317-322, of the Fossil insects of North America.

The division of insects into two great groups, Metabola and Heterometabola, is urged upon new grounds; but ordinal features were not differentiated in the earliest period. "Insects continued through paleozoic time as a generalized form of Heterometabola , ... which had the front wings as well as the hind wings membranous. On the advent of mesozoic times a great differentiation took place, and before its middle all of the orders [of insects] ... were fully developed in all their essential features as they exist to-day."

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Brodia prisctancta and Archaeoptilus ingen described.

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See also Borre, A. P. de, Brauer, F., Dawson, J. W., Selys-Longchamps, M. E. de. See Borre, A. P. de.


Describes and figures Blattina (Eotoballina) lanceolata and Termes (Mixoterme?) ingaenensis.


Explanation of the conditions under which insects were found at Commenry; the excellence of their preservation; perforations in fossil woods in Lancashire.

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See also Brongniart, C. J. E., Verneuil, Philippe Édouard Poulletier de. See Archiac, E. J. A. V., d', et Verneuil, P. É. P. de.

Exhibition of four species of Blattina from Wettin and Lübechun, and of an insect to be called Acridites carbonatus by Germar; these were afterwards described by Germarin Münster's Beiträge.

Wallace, A. R. See Gab es schon u. s. w.


Discusses the amphibious nature of the Commentry fossils.


Expresses his belief that there were insects in Carboniferous times; fossils from Oldham show insect borings.

Woodward, H. Notes on some fossil

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IIIa.—Paleozoic Myriapoda.

* * * See also under Sections I and II.


An analysis of his Archipolypoda, also entitled: Analyse d'un mémoire... sur les archipolypodes, nouvel ordre de myriapodes fossiles.

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Tentamen catalogi Lysilotetid—

darum, Julidarum, Archiulidarum, Polyzoidarum atque Siphonophoridarumetus


Six fossil species of Archiulidae are catalogued on p. 38 (79).

Dawson, J. W. On a terrestrial molusk, a chilognathous myriapod and some new species of reptiles from the coal for-

Bull. 69—3


auth, and a chilognathous myriapod, from the coal measures of the west of Scotland. (Trans. geol. soc. Glasgow, 2: 234-


Describes a Xylobius on pp. 233-237, and enumerates the true insects from the coal formation on pp. 237-240.

ABSTRACT: Notes on a chilognathous myriapod and some fossil crustacea from the coal measures of the west of Scotland. (Geol. mag., 4: 130-131.) 8°. London. 1867.

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On some supposed fossil re-


Separate also entitled: On British fossil arthropoda. 8°. London. 1873. pp. 9, figs. II. Discusses the affinities of "Eurypterus (Euphor-

beria) ferox," referring it to the myriapods.

Worthen, Amos Henry. See Meek, F. B., and Worthen, A. H.

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III—SPECIAL FOR PALEOZOIC TIME.

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Dawson, J. W.—Continued.


Describes and figures Xylobius sigillarius.

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Same as the following.

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Air breathers of the coal pe-

riod: a descriptive account of the re-

mains of land animals found in the coal formation of Nova Scotia, with remarks on their bearing on theories of the formation of coal and of the origin of species, with illustrations. 8°. Montreal. 1863. t. p., front., pp. 4, 81, pl. 6, and a plate of photogr.

Contains, section xii, Invertebrate air breath-

ers, pp. 62-63, and pl. 6 (pars) which describes Xylobius sigillarius. See also p. 67.

Dohrn, A. Julus brassi n. sp. ein

myriapode aus der steinkohlenformation.
Dohrn, A.—Continued.

Description of a species from Lebach with mem- oranda of previously described species. The note by Weiss is purely geological, on the probable equivalence of the Lebach beds and those yielding Xylobius.


Contains, pp. 128-131, taf. 1, fig. 4-7: iii. Fossil myriapod in dem rothliegenden bei Chemnitz. Palaeojulus dyadicus is described.


In response to Sterzel, defends the myriapodan character of Palaeojulus. The identity of his Palaeojulus with Sclecopterus elegans Zenk. is acknowledged by the author in 1886. See his Nachträge zur Dyas, I. (Mitth. k. min. geol. prähist. mus. Dresden, heft. 3: 1-4). 4°. Cassel. 1880. See also Sterzel, J. T.


Heathcote points out that the relations of the dorsal and ventral regions of the body of the young Julius correspond exactly with their permanent condition in Euphoberia, a Carboniferous myriapod; and he further holds that the traces of the division of the dorsal plates found in the Archipoly- poda lend additional strength to the belief that they are composed in modern diplopods of two fused segments originally distinct; which the doubling of the internal organs and of the mesoblastic segmentation also indicates.


Meek, F. B., and Worthen, A. H.—Continued.

Describe Anthracerpes typus as a myriapod and Palaeocampa anthrax as a lepidopterous larva, both afterwards considered by them as worms. See also Worthen, A. H.


Considers that these Carboniferous myriapods should not be separated from the Chilognatha, but that they should form a group under the Chilognatha distinct from modern types.


At the close discusses the probable affinities of Palaeocampa, which he regards as probably a neuropodous larva.


On p. 135 figures Kampecaris.


Describes the genera Kampecaris and Archi- desmus with one species of each.


Describes and figures as a Eurypterus some Carboniferous fragments since recognized as myriapods.


Briefest abstract of the next paper published four years later.


Scudder, S. H.—Continued.
Forms p. 31 of the Fossil insects of North America, vol. 1. Description of figures of the different species, omitted from the preceding paper.


Points out the distinction between the Carboniferous and modern diplopods myriapods, and proposes a distinct suborder, Archipolyapoda, for the former.


Archipolyapoda from Illinois.


They form a distinct suborder.


Forms vol. 1, pp. 195-234, pl. 7, 8-10, of the Fossil insects of North America.

Discusses their relation to modern diplopods and monographs the known species, adding several new ones; twelve species are recognized, divided into four genera. The first plate contains a restoration of the largest species with other animals and plants of Mazon Creek. See also Borré, A. P. de.


Critical examination of the structure of Palaeocampa formerly regarded as a lepidopterous larva or a worm, to show that it must be referred to the myriapods, but form an independent group therein.


Forms vol. 1, pp. 247-261, pl. 12-13, of the Fossil insects of North America.

Trichilinus (afterwards discovered to be a folded fern-leaf), with three species, is described, and Palaeocampa, whose structure is described at length, is classed with myriapods as a new suborder, Protoanygnatha.


Scudder, S. H.—Continued.
Forms part of p. 330, vol. 1, of the Fossil insects of North America.

Trichilinus proves to be the tip of an unfolding fern-leaf.


Sixteen species are described and three genera, besides notes on five species previously known.

— See also Latzel, R.


Considers the fossil described by Geinitz as a myriapod to be a fern-leaf, of a species of Scolecopteres.


Mainly devoted to showing that no animal remains have been found which possess the characters assigned to Palaeojulus dyadicus; but this so-called myriapod is the half of a leaf of Scolecopteres elegans, a fern.


Has a brief reference to Palaeojulus dyadicus on pp. 1-2.

Weiss, Christian Ernest. See Dohrn, A.


Translation by Weyers of a passage of Westwood's from Brodie's work on the secondary insects of England, in which a supposed caterpillar (since recognized as a myriapod) is described. Weyers adds a few comments.

Weyers, Joseph Leopold. See Westwood, J. O.

Includes, pp. 171-174, in part iv (1872), Euphytota (Euphoboria) ferox, since held by Woodward and others to be a myriapod.

On Euphoboria brownii H. Woodw., a new species of myriapod from the coal-measures of the west of Scotland. (Geol. mag., 8: 102-104, pl. 3, figs. 6-7.) 8°. London. 1871.

Describes and compares with E. armigera of the Illinois Carboniferous beds.


Separate under the title: Myriapods of the coal period. Gives a historical summary of published data concerning Carboniferous myriapods and discusses at length with the aid of figures the structure of Euphoboria ferox.


The illustration in Brodie's work is faulty, so that E. ferox can not be referred to Acanthepides.


In Section II, Descriptions of invertebrates from the carboniferous system by F. B. Meek and A. H. Worthen, occur on pp. 409-411 descriptions of Anthracerpes, a supposed myriapod, and Paleocampa, regarded as a caterpillar, but since shown to be a myriapod. Both are figured on pl. 32.

See Meek, F. B., and Worthen, A. H.

IIIb.—Paleozoic Arachnida.
"" See also under Sections I and II.


"It seems necessary to exclude the genus from the order Aranaromarti, and at present a strict interpretation of any of the orders will not admit this form."


Beneden, É. van—Continued.


Concludes from a study of the embryonic development of Limulus that it presents the greatest analogy to that of scorpions and other arachnids from which the king crabs can not be separated. "The Trilobites as well as the Eurypterida and the Pseudopoda must be separated from the class Crustacea, and form, with the Scorpions and the other Arachnida, a distinct branch, the origin of which has still to be ascertained."

Brief notice.


Description of Microlabis sternbergi. An abstract will be found in the Neues jahrh. f. miner., 1841: 854-855. 8°. Stuttgart. 1841.


Gives, p. 66, a brief account of the Chomle scorpions described by Corda, and notices the discovery of Palaranea borassifolia without description.


Contains an announcement of the discovery of remarkably perfect scorpions in the coal measures of Scotland, with some results of their study by Mr. B. N. Peach. An abstract entitled New Carboniferous fossils in Scotland, extracted from the London Times, will be found in Amer. nat., 15: 1021-1022. 8°. Philadelphia. 1881. See also Priestmeal Scottish scorpions.

Geinitz, H. B. Kreischeria wiedei H. B. Gein., ein fossiler pseudoscorpion aus der steinkohlenformation von
Gelnitz, H. B.—Continued.

Besides a full description and figures of both dorsal and ventral surface comparisons are made with Architarbus and other allied forms.


Mere reference to the discovery of the Scottish scorpion.


Extended description of Arthrolycosa antiqua with discussion of its affinities.


Note on the geological position with a brief description of the fossil.

Haughton, Samuel. Description of a fossil spider, Architarbus subovalis, from the middle coal measures, Burnley, Lan-caster. (Journ. geol. soc. Ireland, n. s., 4: 222-223, figs.) 8°. Dublin, etc. 1877.

Gives a figure, without description, both of the original and of the new and better specimen.


Brief statement regarding the manner and place of discovery with nothing of paleontolo-gical importance.


Description with geological notes. Plate not published.


Describes Anthracomartus and makes the first essay at a classification of paleozoic Arachnida.

Kinnear, W. T.—Continued.

Wholly geological, except for notes on the condition of specimens found.


Introducing Woodward's communication on Brachypyge carbonis.


A scorpion which he compares to Cyclophthal- mus.


Extended descriptions and comparisons.


Description of a specimen found near Rakonitz.


Describes at length and figures excellently the first known Carboniferous pedipalp.


Describes Rakonviclia and two species of Anthracomartus with additional remarks on Cyclophthalmus and Thelyphonus.


Describes Geralycosa, Scudderia, Eotarbus, a new Anthracomartus, three species of Geralinura and an Anthracoscorpio. A German abstract is added, with a list of arthropods from Rakonitz.

An extended argument to show, mainly on anatomical and morphological grounds, that the king crabs are not Crustacea but Arachnida. With the Triobita and Eurypterina he considers the Xiphosura as the precursors of the higher Arachnida.


Contains the same as the preceding with another paper.


First announcement of Palaeophonus.


Brief account of Palaeophonus nuncius, based on a letter from Lindström to Milne Edwards, and accompanied by a woodcut.


Palaeophonus placed at the head of the list.


Brief description of the condition and organs of the specimen. The plate was not published.

—— See also Thorrell, T., and Lindström, G.


A simple notice of Sternberg's, or rather Corda's scorpion.

Mosely, H. N. See Packard, A. S.


In answer to Lankester, attempts to prove that Limulus is a crustacean, chiefly from the discovery by Willemoes of a nautiluss-stage in the development of an East Indian species: a discovery which he afterwards acknowledges to be false, p. 436. See, also, Mosely in Nature, 25: 582.

Peach, B. N. — Continued.


Description and illustration of five distinct forms referred to Eoscorpius, with a characterization of the group.


General account of the Swedish and Scottish discoveries of Palaeophonus, with figures of both.

—— See also Geikie, A.

Primæval Scottish scorpions. (The scotsman, no. 11960, p. 3.) 4°. Edinburgh. 1881.

An anonymous communication, of more than a column in length, based on Geikie's article in Nature, with special reference to Peach's discoveries.


Refers, p. 59, to two scorpions and a spider from the Carboniferous rocks of Bohemia.


These two are essentially the same, with slightly differing titles; and are practically an abstract of the following.


Describes at length and figures Protolycosa anthracophila.


Describes Architarbus silesiacus.


A systematic revision of the known forms, with descriptions of many new genera and species.
Scudder, S. H.—Continued.


Woodward's Brachyptyce carbonis is not a crustacean but an arachnid.


Forms pp. 419-432, pl. 31-32, of the fossil insects of North America, vol. 1. Ten species of eight genera are described and figured.


Contains, pp. 23-34, a history of the discovery of the scorpion described in samevolume by Corda.


Figures and describes, p. 5, note, Euphrynus salmi.


Regards it as more nearly allied to Palaeophonos than to the Carboniferous scorpions, with which Whitfield had classed it.


Extended description and detailed illustration of Paleophonos nuncius, followed by a classification of known fossil scorpions, and a characterization of the extinct groups.


First description and figure of Paleophonos osborni.


Whitfield, R. P.—Continued.

Full description and illustration of Proscorpus osborni, the first known Silurian scorpion in America.


A rejoinder to Thorell's criticism of the author's opinion of the systematic position of Proscorpins.


Describes and figures a new specimen of the arachnid, to which Buckland, supposing it a beetle, formerly gave the name of Cureuloides prestvickii. A list of fifty-four palaeozoic insects is appended. An abstract will be found in Rep. Brit. assoc. adv. sc., 41, not., 112-113. 8°. London. 1872.


Describes Architarbus subovalis and compares it with A. rotundatus from the Carboniferous beds of Illinois. Also entitled on cover of separata: On a new fossil arachnid.


Describes and figures three distinct fragments of a scorpion, referred to one species called Ko-scorpurus anglicus. An abstract, under the title: The discovery of a fossil scorpion in the English coal measures is given in Harv. sc. gossip, 1876; 20. 8°. London. 1876.

— Discovery of the remains of a fossil crab (Decapoda-Brachyura) in the coal measures of the environs of Mons, Belgium. (Geol. mag., 2, 5: 433-436, pl. 11.) 8°. London. 1878.

Separate under the title: Discovery of a fossil crab in the coal measures of Belgium. 8°. London. 1878. pp. 4, pl. 11.

Description and illustration of Brachyrrype carbonis, presumed to be the abdomen of a female brachyuran, but since shown to be that of an arachnid.


Much the same as the preceding, with the same plate. See also Koninck, L. G. de; and Scudder, S. H.
IIIc.—Neuropteroidea.

* * See also under Section I and Section II.


Describes and figures Eroectile priescus.

Assmann, A. See Roemer, F.


The first mention of a paleozoic insect. It is said to have been shown by Audouin at the meeting of the Association of German naturalists at Bonn in 1835, but I have been unable to examine the report of that meeting. Also mentioned by Boué in his Résumé des progrès de la géologie, 1833, p. 146, and in the Journ. d. géol., 3: 105 (neither seen).


Describes in detail and figure Omalia macroptera, which the authors consider allied to Heme-robins.


Borre, A. P. de. See Volxem, C. van.

Boué, Ami. See Audouin, V.


Refers, p. 253, to a species of Micromus from the Carboniferous rocks near Georgetown.


Brief notice of Palaebatina douvillei.


A Carboniferous thysanuran.


Brongniart, C. J. E.—Continued.


Brief description of a Carboniferous insect from Commentry, remarkable for the lateral appendages of the abdomen.


The same as the last in popular form and with figures.


First description of Palaebatina douvillei.


Virtually the same as the last paper in the Comptes rendus, but with figures.

Coemans, Eugène. See Beneden, P. J. van, et Coemans, E.


Contains, pp. 40-44, a letter from Dr. Hagen, criticizing the treatment of the fossil Termites in Goldenberg’s paper in Palaeontographica.


Description and figures of two neuropteroid insects, the first recorded from the American coal formations.


Shows the Devonian age of the coridae shales of New Brunswick, in which the then oldest known insects occur, from stratigraphical and botanical evidence, in opposition to the assumption of Hagen.


Gives a résumé of Hagen’s criticism of Send-der’s Devonian insects.

Reply to Scudder's criticisms (in Devonian insects) of remarks on fossil Ephemeroidea in Eaton's Monograph.


Popular account of interesting remains of Ephemeroidea from the Carboniferous schists of Votovice.

Geinitz, H. B. Ueber einige seltenste versteinerungen aus den unteren dyas und der steinkohlen-formation. (Neues jahrb. f. miner., 1865: 385-394, taf. 2, 3.)

Describes Ephemeroidea collected with a letter upon the same from Dr. Hagen.


Notice of Paleoblatinae douvillei.


Makes reference to Paleoblatinae, but has little to say on paleontological ground.


Disputes unfilledly the conclusions of Scudder concerning the Devonian insects.


Is chiefly concerned with the determination of a species of Pecosopterus found in the Devonian insect beds, and the conclusion is drawn that “those oldest insects will have to be considered as belonging to the lower Carboniferous.” See also Dawson, J. W.


After a “detailed comparison of a majority of the types,” arrives at conclusions “radically different from the views entertained by Mr. Scudder,” in his memoir on the subject.


Criticism of Scudder’s paper of 1885 on Devonian insects.

Hagen, H. A.---Continued.


Discussion of the systematic position of the forms described by Scudder.

--- See also Dohrn, C. A.; Cornelius, C.; Geinitz, H. B.; Scudder, S. H.

Heer, O. Fossile flora der Bärentiisel. 4°. Stockholm. 1871. pp. 51, pl. 15. (Kongl. svensk. vetensk. akad. handl., 9, no. 5.)

In a section on the equivalents of the Bear Island beds in America, he refers the Devonian of St. John to the lower Carboniferous and mentions four species of insects described from there by Scudder.

Humbert, Alois. See Scudder, S. H.

Krause, Ernst. See Scudder, S. H.

McLachlan, R. See Woodward, H.


Compares the new species with Gryllacris brunnigartii (Mantell), which also is figured, and to which it is closely allied. Reviewed by Scudder. (Proc. Bost. soc. nat. hist., 21: 107.) 8°. Boston. 1881.


Referred by Assmann to the vicinity of Chanlides.


Short statement of the probable affinities of the then oldest known insects, several species of which are distinguished.


Discussion of the affinities of two carboniferous insects, previously described by Dana.
Scudder, S. H.—Continued.


Merely an abstract of the two preceding papers.


Full treatment of the structure and relationship of Miamia and Hesperia, which are referred to separate families, distinct from recent types. The wing structure of the modern families is also systematically reviewed.


Describes Euphemerites primordialis (which is probably a plant).


Describes Termes continuus.


Forms vol. 1, pp. 155-193, pl. 7, of the Fossil insects of North America.

Detailed description of six species, the oldest then known, with a study of their affinities. A Jurassic may-fly is also described and the general conclusions summarized at the close. An extended analysis (by H. A. Hagen) is given in ZoöI. jahresb., 1880, ii : 188-192. 8°. Leipzig. 1881.


Giving the general conclusions in full.


Scudder, S. H.—Continued.


A translation of the general conclusions, with an abstract of the other portions, and comments by the editor, Ernst Krause.


Reviews Novák's description of Gryllacris bohemica, showing that it is neuropteron not orthopteron.


Forms vol. 1, pp. 275, 282, pl. 14, of the Fossil insects of North America.

A reply to the criticisms of Hagen.

See also Dawson, J. W.; Eaton, A. E.; Hagen, H. A.


This posthumous note is introduced by explanatory remarks of Weyers. The author concludes that it is doubtful whether the fossil is the wing of an orthopteron; that it certainly is not an acridian, and has nothing in common with Pachytylus.

Also published separately entitled: Note critique sur le Pachytylopsis persenarei (de B.) par feu M. Camille Van Volxem. 80. pp. 7.

Waterhouse, C. O. See Woodward, H.
Westwood, J. O. See Woodward, H.

Weyers, J. L. See Volxem, C. van.

Woodward, H. On a remarkable fossil orthopterous insect from the coal measures of Scotland. (Quart. journ. geol. soc. Lond., 32: 60-64, pl. 9.) 8°. London. 1876.

Describes and figures Lithomantis carbonarius, which with Westwood, Waterhouse, and McLachlan, he considers as belonging in "the neighborhood of the Mantidae." Corydalus (Gryllacris) bronniarti and a modern species of Blepharis are also figured for comparison as related to it. A list of fifty-eight paleozoic insects is appended. An abstract, under the title: Remarkable fossil orthopterous insect from the coal measures of Britain, appeared in Hardw. sc. gossip, 1876: 20. 8°. London. 1876.

IIId.—Orthopteroidea.

See also under Section I and Section II.


Mere mention of a Blattina.


Considers Breyeria an homopterous insect, and maintains that the lack of flowers in Carboniferous times is not proof of the absence of Lepidoptera.


Maintains Breyeria to be an ancestral stock of the type of Lepidoptera.

—— See also Giard, A.


See the next entry.


Text substantially the same as the preceding.

A discovery carrying this group of Orthoptera back at once from the tertiary to the carboniferous. Noted by Dr. Hector George in the Feuilleton de Le constitutionnel, Nov. 6, 1878; see also Girard, M.


Brief description of Titanophasma.


Notice of a wing probably belonging to this Carboniferous insect.


Additions and corrections to former statements.
Brongniart, C. J. E.—Continued.

Un nouvel insecte fossile.
(Véo de los minas et de la métallurgie viii: 5-6.) 4°. Lyon. 1883.

Much the same as his paper upon Titanophasma, with similar title, read before the Geological society in 1882, but with the omission of the list of Carboniferous insects.


Brief description of Dictyoneura ingens, with notice of the fauna of Commeny.


Nearly six hundred cockroaches have been found in the Carboniferous deposits of Commeny, among which the Mylacridera, not before recognized in the Old World, are as numerous as the Blattinaria, and the structure of other parts of the body supports the division above mentioned, which had been based on characters drawn from the wings only.


Notices discovery of a cockroach.


Notices the occurrence of cockroaches from the Nova Scotia coal measures.


Describes and figures two species of Eotobaltina and one of Oryctobaltina.


Describes two species of Eotobaltina.

Deichmüller, J. V. See also Geinitz, H. B.


Breyeria is an ephemerid.


The geological position of Paolia vetusta is shown on pp. 206, 221.


Contains a description, p. 104, and a figure, pl. 38, figs. 5, 6, of Gerablattina balteata, by S. H. S[udder].


Describes two Blattina. See same title in Section III.


II. Insecten, pp. 4-6; describes four species of Blattina, one of them as new.


Gives a full description, with figures, of the diversity in nutrition in opposite wings, of a species of cockroach, together with criticisms of Scudder’s Palaeozoic cockroaches, and notes and figures of seven other forms.

Geinitz, H. B.—Continued.
Describes, with Dieichmüller, pp. 12-13 (two figures in text), Blattina dreanensis from the coal beds near Klein-Opitz, Saxony.

George, Hector. See Brongniart, C. J. E.


Discusses the affinities of Breyeria, concluding that it is not a lepidopteron but belongs to the Archiptera.

See also Borre, A. P. de.


Mention of the cockroaches described by Giebel.


Popular account of Protophasma dumasi.


Contains p. 289: D. Beiträge zur fauna der permischen formation, in which he mentions and names two wings and a body of insects regarded as cockroaches (localities not specified) which are figured on plates 28 and 64.


Blattina winteriana is described and figured on pp. 288-289.


Describes Anthracoblattina scudderii.

Hagen, H. A. See Borre, A. P. de.


Notes some omissions of fossil cockroaches in the list of Carboniferous insects attached to Woodward's paper with a similar title.

See also Borre, A. P. de.


Describes, among other things, Adolpholithalmenus (Eurypterus) granulosus, pp. 8-12, pl. 2, figs. 1-2, afterwards considered a cockroach by Goldenberg and others.

Kirkby, James W. On the remains of insects from the coal measures of Durham. (Geol. mag., 4: 388-390, pl. 17, figs. 6-8.) 8°. London. 1867.

Describes and figures without names two or three orthopterous insects from near Clayheugh.


Describes Blattina (Anthracoblattina) lubnensis, and makes extended comparisons.


Three species are described and two named.


Describes Oryctoblattina arnati.


Contains description, p. 314 and figure, p. 5, fig. 11, of Blattina venusta from Carboniferous rocks of Frog Bayou.

McIntire, E. S. See Elrod, M. N., and McIntire, E. S.


Considers the insect an ephemerid.


Breyeria is an ephemerid.
McLachlan, R.—Continued.


Response to Mr. Wallace, disputing the lepidopterous nature of Breyeria borinensis.


Description and figure of two species of Blattina from Ilmenau.


Mere mention of the name of a Carboniferous cockroach from Rhode Island.


Germar's Blattina dialyma is described as a fern under the generic name Dictyopteris.

Saporta, Marquis Gaston de. See Borre, A. P. de; also Section Vh.


Describes Blattina heeri and B. bretonensis.


Describes Blattina fascicera.


Expressing an opinion against the lepidopterous character of Breyeria. Translation by Selys.

Palaeozoic cockroaches; a complete revision of the species of both worlds, with an essay toward their classification. (Mem. Bost. soc. nat. hist., 3: 23-134, pl. 2-6.) 4°. Boston. 1879.

Forms vol. 1, pp. 43-153, pl. 2-6, of the Fossil insects of North America.

The first attempt to classify any group of palaeozoic insects of both worlds by characters drawn from the venation of the wing. More than

Scudder, S. H.—Continued.
sixty species (thirteen of them new) are described and figured; they are divided into two tribes and eleven genera, and separated as a whole from modern cockroaches under the name Palaeoblattaria. See also Geinitz, F. E.


Showing difference in venation of opposite wings.


Describes Etoblattina mazona, the neuration of the wings of the two sides differing. Also separately printed, with a title-page and same pagination.

A gigantic walking-stick from the coal. (Science, 1: 95-96, fig.) 8°. Cambridge. 1883.

Notice of Triananephus fayoli.


Forms vol. 1, pp. 263-273, pl. 13, of the Fossil insects of North America.

Ten species are enumerated and tabulated and six described at length.


Systematic revision of the species which had been referred to Dictyoneura with descriptions of many new genera and species, separated by analytical tables.


Criticism of Woodward's conclusions concerning some British species.


Description of eight new species of Etoblattina.


Forms pp. 377-391, pl. 23-24, of the Fossil insects of North America, vol. 1. Ten species and two genera are described.
Scudder, S. H. See also Borre, A. P. de; Fontaine, W. M., and White, I. C.

Selys-Longchamps, M. E. de. See Scudder, S. H.


Describes Paelia vetusta.


Maintains the lepidopterous nature of Brayera. See also McLachlan, R.

Weyers, C. J. See Borre, A. P. de.

White, I. C. See Fontaine, W. M., and White, I. C.


After a historical résumé of Carboniferous cockroaches, with figures of a few species, borrowed from Miall's work, three British species are described referred to Etoablattina, Lithomyelacris, and Leptoblattina. See Scudder, S. H.


Separate under the title: On Etoablattina peachii. Full description; placed provisionally in Etoablattina.

IIIe.—Hemipteroidea.

* * * See also under Section I and Section II.


Contains, p. 19 [317], a slight reference to the structure of Eugerone.

IV.—GENERAL FOR MESOZÖIC TIME.

* * * See also under Section I.


A brief statement of his views of the modern groups in which Gernar's species should be placed.


Merely mentions (p. 291) the discovery of insects in the upper members of the series, referred to the wealden.

Binfield, Henry. See Binfield, W. R. and H.


The insects are mentioned only by suborders, and the paper is mostly made up of geological sections of the places where insects were found.

Blake, J. F. See Tate, R., and Blake, J. F.

Bouvé, Thomas Tracy. See Deane, J.


The authors describe and figure about a couple of dozen insects, mostly aquatic and larval forms. They regard Paleontina and Phragmatoclitcs as Céadidae.


A section of the locality with a general account of its fossil remains, those of the insects belonging to several orders. An extended notice will be found in the Neues Jahrb. f. mineral., 1843: 238-239. 8°. Stuttgart. 1843.

Brodie, P. B.—Continued.


General notice of the finding of a few insect remains, mostly coleopterous, near Cheltenham.


Sufficiently described by the title.


Same as the preceding.


Notice of the discovery and geological position of insects near Gloucester and Cheltenham, at Wainhode Cliff and at Westbury: an extension of the paper mentioned from the British association report.


Brodie, P. B.—Continued.
Accompanied by a particular account of the strata in which they occur, and of the circumstances connected with their preservation. 8°. London. 1845. pp. (18), 130, pl. 11.

The introductory observations, explanation of plates, notes, and many names, are by Westwood. Thus, the only separate work on fossil insects ever published in England, is still the chief source of our too inexact knowledge of the lias and other secondary insects of that country. The body of the work, Mr. Brodie's part, is divided into four chapters, of which the first deals with the wealden, the second with the ololite, the third with the lias, and the fourth with miscellaneous matter, including insects of continental strata.

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Simply a discussion of the mode of deposition of these rocks.

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A geological paper, giving no further account of the insects than appears in the title.

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On the insect beds in the purbeck formation of Dorset and Wilts; and a notice of the occurrence of a neopterous insect in the Stonesfield slate of Gloucestershire. (Quart. journ. geol. soc. Lond., 9, proc., 344.) 8°. London. 1853.

Published only by title; probably same as next.

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Mostly occupied with geological sections, but p. 481 gives an account, in general terms, of the condition and character of the insects discovered, most of which were Coleoptera.

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Mostly occupied with the geology of the insect-beds, but with occasional reference (especially on pp. 18-19) to the insects contained in them.

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Simply notices the discovery of certain insects at Copt Heath near Knowle.

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The lower lias at Eatington and Kineton, and on the rhaetic in that neighbourhood, and their further extension in Leicestershire, Nottinghamshire, Lincolnshire, Yorkshire, and Cumberland; ... being a paper read at the annual meeting of the Warwickshire natural history and archaeological society, held at the museum, Warwick, April 2nd, 1875. 8°. Warwick. [u. d.] pp. 14. (Ann. rep. Warw. nat. hist. arch. soc.)

Principally occupied with geology, but with a few special references to insects, particularly on p. 10; separate only seen.

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See also Strickland, H. E.


Notices Aeschna brodici, without description, and the occurrence of two Coleoptera and a Tipula at Dumbleton.


Compares recent and fossil "mines" of lepidopterous larvae, referring to Hagen's statement on a previous page.

Dana, J. D. See Deane, J.


On pl. 19 are figured tracks of what the author presumes are articulated animals, in which he is supported by the opinions, quoted on p. 177, of Professors Leidy, Wyman, and Dana, the latter believing them probably crustacean. Some are possibly the tracks of insects.

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Ichnographs from the sandstone of Connecticut River. 4°. Boston. 1861. pp. 61, pl. 46.

Contains introduction, pp. 3-4, by A. A. Gould; biographical notice (of Dr. Deane) by H. L. Bodditch, pp. 5-14; a memoir upon the fossil footmarks and other impressions of the Connecticut River sandstone, by James Deane (compiled by
Deane, J.—Continued.
Thomas Tracey Bouvé, with a note by the compiler, p. 17, and the memoir, pp. 19-32; description of the plates, pp. 33-61 (by T. T. Bouvé).
References to insect tracks are made on p. 26, and in the descriptions of pls. 40-42 (pp. 57-58).


Describes at length over fifty species, of which thirty-six are figured with many rectifications of earlier authors.


Mentions, p. 395, the occurrence of insect larvae in this wealden deposit.


P. 136 compares trails found in Trias, some of which he figures, with those of living insects.


Briefly notices and figures elytra of four beetles, eggs of a sawfly, and larval cases of a caddis fly and a tineid from the cretaceons of Bohemia. Reference is made to an earlier notice of the beetles named Silphites in the Archiv pro vyzkum čech., dil. 1, odd. 2, str. 170, which I have not seen.


Mention of impressions considered to resemble the antennæ of an insect.

Ganglbauer, Ludwig. See Brauer, F., Redtenbacher, J., and Ganglbauer, L.


Geinitz, F. E.—Continued.
Contains, pp. 519-531, Insectenfauna des dobbertiner unteren jurra, in which seventeen insects are described, the greater part of them new. The plate is wholly devoted to insects.


A few insects are described on pp. 29-31 and figured on pl. 6.


describes or mentions over forty species, the Coleoptera only by reference to similar forms from the Swiss and English Liassic. Twenty-seven specimens are figured.


Germar compares the few insects then known from Solenhofen with the tertiary insects, and concludes that: 1°, none of the jurassic species are identical with the living; 2°, there are no strikingly strange forms; 3°, the general facies of the fauna is that of middle Europe and the United States, and indicates a similar climate; 4°, all are wood or leaf eaters, excepting some water beetles and a Geotrupes. This paper appears to have been read before the Jena meeting of the Deutschser naturforscher und ärzte, in 1836, but I have been unable to consult the report of that meeting.


Describes rudely figures seventeen insects of various orders, of which eleven are credited to Münster. The descriptions are preceded by some general remarks, historical and otherwise, upon Solenhofen and other fossil insects.


The first part, pp. 79-90, pl. 9, 13, describes and figures nine insects of various orders from Solenhofen, being the first memoir on the subject. See the same title in Section II.

——— See also Assmann, A.

Abstract: The insect-fauna of the secondary or mesozoic period, and the British and foreign strata in which insect remains have been detected. (Geol. mag., (n.s.), 5: 134-136.) 8°. London. 1878.

See same general title in Section II and Section VI, with note in former.


The same. No. 7, part 1. Mesozoic time. On the insects of the jurassic period, and the animals and plants with which they were correlated. (Entom. monthl. mag., 16: 7-10.) 8°. London. 1879.


The same. No. 8. Mesozoic time. On the insects of the cretaceous period and the animals and plants with which they were correlated. (Entom. monthl. mag., 16: 58-60.) 8°. London. 1879.

See same title in Section I, Section II, and Section VI.

Gray, O. W. See Walling, H. F., and Gray, O. W.


A brief note recording the discovery of galls and mines in fossil leaves from Kansas and Nebraska.

Hasselt, A. W. M. van. See Weyenberg, H.

Heer, O.—Continued.

Heer's portion, pp. 1-15, pl. 1, is largely devoted to insects, the greater part of which are wood-boring Coleoptera, and indicate a warm tropical climate. Twenty-two species are described and figured, of which nineteen are beetles.


Insekten der homschichten, pp. 91-92, pl. 17, describes two Coleoptera. Myriopoden, pp. 120-121, pl. 33, describes Julopsis cretacea.

Forms vol. 3, no. ii, of Heer's Flora fossilia arctica.


Describes, p. 76, and figures, pl. 27, a single beetle from the keuper of Rüthard, canton Basel, and a neuropteran on p. 77, pl. 29, from the trias of Mythen, canton Schwyz.


Refers to the discovery of Blattaria and Coleoptera at Kotá, probably classic.


Discovery of more insects at Kotá.


Refers to prints, supposed to be those of insects, on pp. 147-160, 165-166, 188-189, and mentions an insect larva, pp. 7-8. The figures of these are distributed on plates 24, 25-24, 42.


Appendix B. Descriptive catalogue of the specimens in the Hitchcock ichnological cabinet of
Hitchcock, E.—Continued.

Leidy, Joseph. See Deane, J.

His collection of lias insects consists of about 1,000 specimens. "The families represented at Ilminster include Libellula, Neuroptera, Orthoptera, Homoptera, Diptera, and Coleoptera."

Mentions the occurrence of insects on p. 324 and note.

Gives a list of the fossils known to him, among which, on p. 579, occurs "10 arten insecten darunter 2 arten lib.-ilen." Germar's paper referred to has nothing on insects.

Has discovered lias insects in the neighborhood of Brzezina.
- See also Germar, E. F.

Description of about forty-five species, including several new genera; nearly half of them are Coleoptera and the remainder distributed among the other orders excepting Lepidoptera and Dip tera. A full discussion of the Rhipidophalidi and their systematic position closes the paper.

A paragraph, p. 204, is given to the insects of the Stonesfield slate.

Contains, p. 123, fossils of the liassic period, pp. 173-174, fossils of the Stonesfield beds, in both of which insects are referred to.

Redtenbacher, Jos. See Brauer, F., Redtenbacher, J., and Ganglbauer, L.

Forms pp. 438-448, pl. 33-34, of the Fossil insects of North America, Vol. i. The fauna consists almost exclusively of cockroaches, of which eighteen species of seven genera are described and figured, besides three Hemiptera.

A general account of what had been published by Brodie, with a few general deductions.

Tate, Ralph, and Blake, J. F. The Yorkshire lias. 8°. London. 1876, pp. 12, 475, 12, pl. 19, 4, map.
Class Insecta by J. F. Blake, p. 426, pl. 16 (pars). Figures without description a Buprestes and a Chauliodites.

The geological description on pp. 17-23 by C. H. Hitchcock, contains, p. 21, a list of Ichneumon.

On p. 37 he refers some of the impressions as perhaps made "by the feet and bodies of large insects."

Unpublished; apparently the same as the next.

About one hundred and fifty specimens are figured and fifty-nine species named. They are nearly all from Purbeck strata, about half of them Coleoptera, and the remainder are referred mostly and about equally to Hemiptera, Orthoptera and Neuroptera. The separate have a title on reverse of p. 378.
- See also Brodie, P. B.

Describes forty-eight species, many of them new; preceded by a list of the sixty previously known jurassic hexapods, and followed by five pages of general considerations.


A list of one hundred and four insects is given, followed by general remarks, including, pp. 12-14 (241-243), a comparison of the secondary insects of England and Bavaria; pp. 231-234 are printed 131-134.


Further discussion of the affinities of four species included in the preceding paper, especially of Hassertidae primigenius (with the opinions of van Hesselt on this species) and of Sphinx snelleni.


Weyenbergh, H.—Continued.

“Insectes fossiles,” pp. 81-107, lam. 3, includes descriptions and discussion of a half-dozen Solenhofen insects, of which two or three are new, followed by the list mentioned under the next entry, and a list, p. 107, of the secondary insects of Bavaria not represented in the Musée Teyler.


Contains two hundred and sixty-five numbers, of which about thirty are undetermined; full references to descriptions and illustrations are added.


A note calling attention to the caterpillar of the jurassic Sphinx snelleni previously described by him.

Wyman, Jeffries. See Deane, J.


Exhibition of drawings of insect cells like beecomb from jurassic (l) beds at Chaussee-ban near Harsleben.

V.—SPECIAL FOR MESOZOIC TIME.

Va.—Mesozoic Myriapoda.

* * See under Section I and Section IV, there being no separate titles under this head.

Vb.—Mesozoic Arachnida.

* * See also under Section I and Section IV.


Contains, col. 229-236, tab. 12, figs. 13-14, art. 28: Von einem geglaubten und wahren spinnen-stone, in which supposed spiders from the jurassic rocks of Eichstädt are figured.


A brief notice of seven new specimens of Palpipes, which regarded as an arachnid.


A detailed description of this supposed arachnid from several specimens.

BIBLIOGRAPHY OF FOSSIL INSECTS.

Roth, J. R.—Continued.
Describes two species of a new genus, Palpipes, regarded as an arachnid.

Shows that Phalangites or Palpipes is a crustacean, and not, as formerly supposed, an arachnid.

**—Mesozoic Neuroptera.
* * * See also under Section I and Section IV.

Includes the fossil genera and species. and contains, p. 738 (86), a list of the fossil Libellulina.

Brodie, P. B. Notice on the discovery of a dragon-fly and a new species of Leptolepis-in the upper lias near Cheltenham, with a few remarks on that formation in Gloucestershire. 8°, pp. 4, pl. (Quart. journ. geol. soc. Lond., 5, proc., 31-37, pl. 2.) 8°. London, 1848.
The description (2 pp.) is by Westwood, but the name, Libellula (Heterophlebia) dislocata, is by Brodie. The rest of the paper is on the geology of the district. I have not seen the separate paper.

Buch, Christian Leopold von. See Erichson, W. F.

Brief notice of Hemerochoioides giganteus.

Abstract by Malepeyre.

Claims Eschne brodiei, Libellula (Heterophlebia) dislocata, and Agrion buckmani to be one insect which should bear the name in title.

Under the section De libellulinis petrofactsis, pp. 170-173, pl. 48, the author gives a résumé of what was then known on the subject, and describes and figures some new forms. All mentioned are from the secondary rocks. In the explanation of the plates, p. 180, he speaks of fig. 1 as Libellulites solenhofensis, which Kirby has wrongly quoted as a specific term, but which the context shows was merely meant to designate its source.

Suggests that "Eschne liassina" Strickland is nearer Cordulagastor or Petalura.

Quotes an opinion from Dr. J. L. Leconte that Hitchcock's figure of Mormoloodleis articulatus resembles the larva of an ephemerid; and the consequent wish of Dr. E. Hitchcock that the name should be changed to Palephemerida mediaeva.

Describes Ephemeropsis tristalis, pp. 21-22. The deposit was thought by Müller to be Eocene.

An abstract by Ralph Tate.

Notices, p.170, the ephemerid larva described by him as Ephemeropsis, found in calcareous schists on the banks of the Tungus in Siberia.

Eichwald, E. d'.—Continued.
plates. 1853.
The few insects are contained in vol. 2, ii, pp.
1191-1195, tab. 37 (1868).

Erichson, Wilhelm Ferdinand. Zur
abbildung der libelle von Solenhofen.
(Buch, Jura in Deutschl., p. 135, pl. (3).
Abhandl. kön. akad. wiss. Berlin, 1837,

Considers the insect figured by von Buch as part-
taking of the characters of the genera Æschna
and Libellula. It was afterwards named Anax
buchi by Hagen.

Fritsch, A. Palaeontologische unter-
suchungen der einzelnen schichten in der
bömischen kreideformation. (Archiv
naturw. landesdurchf. Böhmen, bd. 1,
1869.

Refers on p. 187 to the discovery of an elytron
of a beetle, and a tube of a phryganid larva
in clay schists at Konnic.

Germar, E. F. See Hagen, H. A.

Giebel, C. G. Zur fauna des lithogra-
phischen schiefer von Solenhofen. (Zeits-
shr. gesamm. naturw., 9 : 373-388, taf.

Contains long descriptions and figures of two
dragon-flies.

— Eine neue Æschna aus den litho-
graphischen schiefer von Solenhofen.
(Zeitschr. gesamm. naturw., 16: 127-131,

Describes very fully Æschna witteli.

Hagen, H. A. Ueber die fossile odonate
Heterophlebia dislocata Westwood, nebst
abbildung. (Stett. ent. zeit., 10: 226-231,

An extended description, showing that it repre-
sents a new genus of Gomphidae. Dr. Hagen in-
forms me that the most important vein is given
in the wrong place by the lithographer.

— A comparison of the fossil in-
sects of England and Bavaria. (Entomol.
annual, 1862, pp. 1-10.) 16°. London.
1862.

Devoted almost exclusively to a comparison of
the Neuroptera of the Bavarian Jura and the En-
lish flas-insects, by which he concludes the two
faunas to be "extremely closely allied," and to
be very different from the tertiary or existing
forms.

Hagen, H. A.—Continued.
— Comparison of fossil insects of
England and Bavaria. (Report Brit.
assoc. adv. sc., 31, notices, 113-114.) 8°.
London. 1862.

Dealing mostly with Odonata. The same given
more fully in the Entom. annual. See preceding
entry.

— Ueber die neuroptera aus dem
lithographischen schiefer in Bayern. (Pal-
Cassel. 1862.

An introduction of nine pages, containing be-
sides other interesting matter the comparison of
the mesozoic insects of England and Bavaria
given the previous year in England (see the pre-
ceding entries), is followed by a list of thirty-
seven species, mostly Odonata, found at Solenhofen
and Eichstädt, by five pages of a review of
earlier writers, especially Germar, and by the ex-
tended description of twenty-four species, pp. 114-
145.

— Notes on Tarsophlebia west-
woodii Giebel, a fossil dragon-fly. (Entom.
1864.

Heterophlebia believed to belong to the Gom-
phidae. Tarsophlebia to the Calopterygidae. The
latter differs from all living Odonata in the length
of the first tarsal joint.

— Die Neuroptera des lithographi-
schen schiefer in Bayern. Pars I:
Tarsophlebia, Isophlebia, Stenophlebia,
Cassel. 1866.

Extended generic and specific descriptions of
eight dragon-flies.

Herold, Johann Moritz David. See
Koechner, F.

Hessel, Johann Friedrich Christian. See
Koechner, F.

Hitchcock, E. See Dana, J. D.

Joly, Nicolas. Incontestablement, le
Prospistoma de Latreille est un éphéme-

At the end of his paper, p. 189, he refers to
this genus a secondary fossil figured by Brodie.

Kirby, W. F. See Charpentier, T. von.

Koechner, Friedrich. Ueber den libel-
lull von Solenhofen. (Zeitschr. f. min-
eral. [Taschenb. ges. mineral., Jahrg.
20] bd. 2: 231-233, pl. 7, fig. 3.) 16°.
Frankfurt a. M. 1826.

With note by Hessel giving the opinion of
Herold. The insect is referred to Æschna.
Koehler, F.—Continued.

TRANSLATION: Account of a libellulite found at Solenhofen. (Edinb. new phil. journ., 2: 195, pl. 3, fig. 4.) 8°. Edin-

borough. 1826.

The note is not appended.

LeConte, J. L. See also Dana, J. D.


Bruxelles. 1827.

Describes and figured Echna antiqua.

Malepeyre. See Buckland, W.


Refers in three lines, p. 231, to the ephemeral larva found by Middendorff, which is figured pl. 11, fig. 7.


Considers Palephemera mediaeva an aquatic coleopterous insect "belonging perhaps near the family Heteroceridae."


Describes and figures Libellula westwoodii from the Stonesfield slate, and compares it with Echna brodiei from the lias.


Describes, p. 36, and figures, pl. 19, fig. 2, a dragon-fly from Solenhofen, which he compares with Libella grandis.


Considers this triassic species to be a coleopterous larva.


Boston. 1886.

Forms vol. i, pp. 322-339, pl. 19, of the Fossil insects of North America.

Mormolocoides regarded as the larva of a siallid neuropteron.


Bruxelles. 1877.

On p. 64 under the description of Hemiplebia, he compares its structure with Tarsoplieliea from the Jura.


Refers to it Heteropliea, Stenoplielia, and a living Japanese form.


Description of "Echna liassina."

Tate, R. See Eichwald, E. d'.

Westwood, J. O. See Brodie, P. B.


Contains a notice of Corydalis feenlandum and its geological position.

Woodward, H. On the wing of a neopterous insect from the cretaceous limestone of Flinders River, North Queensland, Australia. (Geol. mag., (3), 1: 337-339, pl. 11, fig. 1.) 8°. London. 1884.

Describes and figures Echna findersiensis.

Vd.—Mesozoic Orthoptera.

* * See also under Section I and Section IV.


Simple description. See same title in Section Vf.


General account of the cockroaches found near Fairplay, Col., and their relation to older and to modern types.
Scudder, S. H.—Continued.

The genera Pterinoblattina (with 6 sp.), Neocorrobobblattina (4 sp.), and Scanitobiblattina (3 sp.), are described, and the old genera Blattidium, Elishama, Rithma, and Mesoblattina characterized.


Forms vol. 1, pp. 331-376, pl. 20-22, of the Fossil insects of North America. Thirteen genera and seventy-nine species, many, especially British, species new.

Ve.—Mesozoic Hemiptera.

**•** See also under Section I and Section IV.


See same title in Section I and Section VII.


Description and illustration of three species, including for the first time Palæontina oolitica. The figure of the latter was copied into the Graphic, of Feb. 22, 1873, with a brief account of it, under the title: "The oldest fossil butterfly in the world." A similar account appeared in Hardw. sc. gossip, 1873: 260-261, under the title: "The oldest fossil butterfly."


A rejoinder to Scudder, and in favor of the lepidopterous character of Palæontina.


Considers Palæontina oolitica Butler as homopterous rather than lepidopterous. See also Butler, A. G.

Vf.—Mesozoic Coleoptera.

**•** See also under Section I and Section IV.


No further details of the insect than are given in the title.


Refers the borer reported by Lartigue to Bostrychus. See also Lartigue.


Describes the borings of a xylophagid allied to Bostrychus. Noticed by Dr. Hector George in the Feuilleton of Le constitutionnel for 21 Nov., 1877. See also Girard, M. See same title in Section IIIf.


Brief mention of the coleopterous remains in the calcareous slate of Stonesfield (oolite) will be found on pp. 207-209.


Refers on p. 187 to the discovery of an elytron of a beetle, and a tube of a phyagnid larva in clay schists at Konnie.

—— Dva noví brnoci z českého útvaru křídového. (Vesmír, 18: 8, fig. 5.) 4°. [v. Praze.] 1888.

Describes and figures, much enlarged, two Coleoptera referred to the genera Lamilites and Velonovskya. A brief list of the nine species recognized in the Bohemian chalk is added.
BIBLIOGRAPHY OF FOSSIL INSECTS. [BULL. 69]


Under the head of Insecten, pp. 12-13, taf. 3-6, are described and figured borings of insects which the author, supported by Reichenbach and Ger- mar, refers to Cerambycidæ; and describes under the generic appellation Cerambycites. Dr. Gei- nitz now informs me that these belong to Gastro- chena amphibera Goldf., a burrowing mollusk.

George, H. See Brongniart, C. J. E.

German, E. F. See Geinitz, H. B.


Popular account of Brongniart's two papers on the subject, with figures. See same title in Section III.f.


B. Insekten, pp. 18-21 (132-135), taf. 7. Describes two beetles from the trias of Vaduz.


Elaterites sibiricus is described on p. 41.

Forms vol. 4, no. ii, of Heer's Flora fossilia arcticæ.


Description and figures of eight Coleoptera.


Simple description. See same title in Section V.d.


Exhibition of fossil wood perforated by insects, afterward reported on by Brongniart, C. J. E. (q.v.)


Refers, on p. 24, to finding beetles in the lime- stone of Kinnekulle.


Not seen. The same (probably) is found on p. 30.

Mantell, G. A. Notes on the wealden strata of the Isle of Wight, with an account of the bones of iguanodons and other reptiles discovered at Brook Point and Sandown Bay. (Quart. journ. geol. soc. Lond., 2, i: 91-96.) 8°. London. 1846.

In the closing paragraphs brief reference is made to elytra of "two or more species of Coleoptera" at Wateringbury.


A brief notice, p. 39, of elytra of Coleoptera from the "fresh-water strata above the oolite in Buckinghamshire;" two of these are figured in detail, but no suggestion is made of their affini- ties.


On p. 533 mentions the occurrence of Carabide at Vallis.


Refers merely, p. 393, and in explanation of plates, p. 417, to elytra of a Buprestis? figured pl. 18, fig. 26.

Reichenbach, Heinrich Gottlieb Lud- wig. See Geinitz, H. B.

Describes and figures three species of Coleoptera, of which one is not named.


Regards the elytra figured by Buckland (pl. 46°, figs. 4-9) as pimoides, not hupprestoides.

Vg.—Mesozoic Diptera.

* * * See under Section I and Section IV, there being no separate titles under this head.

Vh.—Mesozoic Lepidoptera.

* * * See also under Section I, Section IV, and Section Ve.


Lepidoptera could not have appeared before phanerogamous flowers. See also Section IIId.

Vi.—Mesozoic Hymenoptera.

* * * See under Section I and Section IV, there being no separate titles under this head.

VI.—GENERAL FOR CENOZOIC TIME.

* * * See also under Section I.


Cap. 18, De svecino, sev electro, pp. 403-418, refers briefly to insect inclusa on p. 406, under the side heading Quae animantes in svecino sint.

[Argenville, Ant. Jos. Desallier, d'J] L'histoire naturelle éclairée dans une de ses parties principales, l'ortyctologie, qui traite des terres, des pierres, des métaux, des minéraux et autres fossiles, ouvrage dans lequel on trouve une nouvelle méthode latine et françoise de les diviser, et une note critique des principaux ouvrages qui ont paru sur ces matières. En­richi de figures dessinées d’après nature.


Mentions some fossil insects on pp. 83, 353; and on p. 306, pl. 21, refers to what is called a "che­nille" and "deux papillons."


Assmann, A.—Continued. 1-62, taf. 1. (Zeitschr. entom. ver. schles. insektenk., (2) 1.).

The first paper contains an account of the geology and paleontology of Schossnitz with full descriptions of ten species of insects.

See same title in Section I and Section VII.

Aurifaber, Andr. Succini historia, oder Bericht woher der agt- oder bärn­stein ursprünglich komme. 4°. Königs­berg. 1551.

Not seen. Dr. Hagen informs me that it contains references to insects in amber, and is therefore one of the earliest works mentioning them. He thinks, indeed, that Münster’s earlier men­tion of them may have been due to information received direct from Aurifaber; both were disciples of Luther. Later editions were published in 1557 and 1572 in 4°, and, rendered into Latin verse by Scholzins, in 1593 and 1671 in 8°.


Contains a section: In bernstein eingeschlos­sene organische gegenstände, pp. 58-64, where the author states that insects occur most frequently in transparent amber and in such as shows a concentric structure; often also in amber brought up from the sea and only rarely in that dug from the earth. He also critiques various authors and especially Schweigiger for founding copal and other gums with amber.

Aymard, Auguste. La découvrir d’un assez grand nombre d’insectes dans les
Aymard, A.—Continued.

A brief announcement with a consideration of its geological import.

——— Rapport sur les collections de

Not seen; quoted from Oustalet. Names, but neither describes nor figures, seven insects from Le Puy, of which three belong to Coleoptera, three to Diptera and one to Neuroptera.

Ballenstedt [Johannes Georg Justus].

A very full abstract of Troost's paper, with comments.


A very full abstract of the first of Goss's series of three papers (q. v.).


An account of three or four insects from Sini-gaglia in the Milan museum, to only one of which a name—Chelornithus antiquus—is given. None of them are properly described.

An abstract entitled "Ueber die wichtigkeit des studiums der fossilen klochen [koref!] für die geologie" will be found in Oken's Isis, 1843, pp. 418-419. 4°. Leipzig. 1843.

Beck [H.]

Contains a paragraph relating to tertiary deposits of Jutland "older than the erratic blocks" and containing "the elytra of beetles, the cases of the larvae of Phryganea, and a hymenopterous insect which the author has called Cleptis stenstrupii."


Concludes with a list of Coleoptera 26 sp., Hemiptera 1, Diptera 1, and Neuroptera 2, from peat in England.

Berendt, Georg Carl. Die insekten im bernstein. Ein beitrag zur thierge-

Berendt, G. C.—Continued.

Only pp. 29-39 deal with the insects themselves, and the remarks are of a very general nature, but give the first published information concerning amber insects based on considerable collections. Hagen (Bibl. ent., 1: 42) records plates to a second part.

Die im bernstein befindlichen organismen reste der vorwelt, gesammelt in verbindung mit mehreren bearbeitet


Contains four parts; the first volume has the plants by Goeppert and Berendt (with general chapters on amber by Berendt), and the Crusta-cea, Myriapoda, Arachnida, and Aptera by Koch and Berendt; the second volume, the Hemiptera and Orthoptera by German and Berendt; and the Neuroptera by Priet and Hagen. (See these authors, the last named in Section VII.)

——— See also Hope, F. W.; and Troost, G.


Nearly half of the plates contain grossly exaggerated, worthless figures of insects, the text for which is crowded on p. 94 by mere descriptive titles to the plates. The specimens from which the plates were drawn are said to have been fabrications. Weigel's sale catalogue, n. f. 33, for 1887, records a copy with 22 plates.


Regards these two insects as closely related and as belonging to the Galgulidae. The article forms pp. 4-5 of an untitled collection (6 pp.) of the author's papers from the Sitzungsberichte.

Under the heading Entomolites, vol. 1, pp. 201-202, is a very brief account of those then known, with bibliographical references.


Records, pp. 226-227, the occurrence at Ronnach of insects, referred to Cicadaria and Hymenoptera, and of an apterous articulated, probably an isopod crustacean, but perhaps a cockroach.


Gives on pp. 138-146 a list of some insects and other animals found in amber.


Ed. 2 (1783) contains a short passage, pp. 196-197, on insects in amber.


Mentions only a few insects determined in a general way by Mr. Henry Tibbats Stainton.


Concludes amber to be formed on the land from its inclusion of terrestrial animals "comme des mouches, des fourmis," etc.


Mentions, 3: 105, and figures, pl. 2, some insects of Radoboj.


Div. 6, Insecta, p. 71, mentions three insects from the braunkohl.


Suggestions for further search.


Notices of the insect inclusions are mostly confined to pp. 8-12, and are of a general nature; separate only seen.


A general popular account; only the separate paper seen.


Mentions in general terms (pp. 233-234) the insects most commonly found in amber.


The introductory part, pp. 215-225, gives an account of the different beds of the Oeningen quarries and the animals as well as plants characteristic of each. Insects are mentioned on pp. 217 and 222. The appendix (Ibid., 8: 232-234,—1852) refers only to plants.

Brydone, Patrick. A tour through Sicily and Malta, in a series of letters to
Brydone, P.—Continued.

Vol. 1, pp. 282-284 contains a short account of the animal found at the mouth of the Giaretta containing 18 flies and other insects. The first edition was published in 1774; another in 1775; another with precisely the same pagination as in the one quoted, in 1799; another in 1806; a French translation in 1775 at Paris, and in 1819 at Frankfort; and a German translation in 1777 at Leipzig.


A brief résumé of what was known at that time, with some original statements concerning the insects observed by him in amber.


— See also Hünelfeld, L.

Buttner, David Sigismund. Rudera diluvii testes, i. e. zeichen und zeugen der sindfluth; in ansehung des itzigen zustandes unserer erd- und wasser-kugel; insonderheit der darinnen vielfältig auch zeither in querfurtschen revier unterschließlich angetroffenen; ehemahls verschwemten thiere und gewächse; bey dem lichte natürlicher weissheit betrachtet; und nebst vielen abbildungen zum druck gegeben. 4°. Leipzig. 1710. front., t. p., pl., pp. (6), 314, (20), pl. 30.

Figures a few insects on plates 16 and 23, briefly referred to on page 226.

Capellini, Giovanni. Pesci ed insetti fossili nella formazione gessosa del Bolognese. (Gazz. dell' Emilia, no. 141.) 1869.

Not seen; quoted from Malfatti.


Gives on p. 285 a list of six insects found in the diatomaceous schista of Gabbro, two identical with Oenigen species.


Refers in several places to the occurrence of insects, and especially of larvae of Libellula in different strata and localities.

Chantre, Ernest. See Lartet, L., et Chantre, E.


Description, figure, and discussion of the affinities of a beautifully preserved dragon-fly's wing from Radoboj.


Descriptions and (poor) illustrations of seven tertiary insects.


On pp. 439-440 he refers to the horizon of the insect-bearing "Green-river shales," and records "insects and their larvae"—some of the latter "nearly an inch long, and others minute and in prodigious numbers"—from Fontanelle Creek, and the "east side of Green River above the mouth of Labarge Creek."


He announces on p. 807 the discovery of fossil insects "near the mouth of Labarge Creek," Wyoming Territory, and at another locality "nearer the main line of the Wasatch Mountains."


Announces also the occurrence of insects in the same locality, and reviews what is known of them from the papers of Boisduval and Curtis.

A notice, not seen, will be found in Frieriep's Neu notizen, 37: 33-36. 4°. Erfurt. 1846.


Not seen; said to contain references to fossil insects from Oenigen.
Costa, Achille. See Hope, F. W.


A list, with occasional brief descriptions, of forty-seven species; the first important notice of the Aix insects.

— See also Murchison, R. I.; Murchison, R. I., and Lyell, C.


Refers, p. 6 (162), to the general conclusions furnished by the tertiary insects of the interior plateau.

— See also Selwyn, A. R. C., and Dawson, G. M.


Describes and figures thirteen species, all but one of them new, and mostly Coleoptera. They indicate a warmer climate at the time.

Desmarest, Anselme Gaetano. Insectes dans le succin.


Ehrenberg, C. G.—Continued.


Erichson, W. F. See Maravigna, C.


Records, pp. 264-265, the discovery of two insects "welche einige ähnlichkeit mit der wasser­ spinne (Argyroneta aquatica) und mit Cimex haben," in the miocene fish beds of Unterkirchberg.

Fischer (of Mühlhausen). See Foerster, B.


Mentions half a dozen insects, mostly Coleoptera, found in the "marnes à cyrènes," nearly related to those of Oeningen.


The insects on p. 165 were determined with the aid of Herr Fischer of Mühlhausen.


A bare list of genera recognized among the eighty-five species found; of these species, forty are Hemiptera, twenty-nine Coleoptera, and ten Diptera.


Mentions the occurrence in amber, of "ants, spiders, &c."


Notices a fossil chrysalis and a fly.

Gaudin, Charles-Théophile. See Heer, O.
Goebel, Severinus. De succeno libr. II. quorum prior theologicos, posterior de succini origine agit. 80°. Francfort. 1558.

Not seen: Dr. Hagen informs me that it contains references to insects in amber, among the earliest known.


A paragraph only on the insects, p. 102, specifying the orders and numbers of insects found.


Six insects are figured on pl. 26, with a brief statement concerning them on p. vii.


On p. 4 (58), he reviews the literature of the insects of Sicilian amber.

--- und Berendt, George Carl. Der bernstein und die in ihm befindlichen pflanzenreste der vorwelt. 1°. Berlin. 1845. pp. (6), 4, 126, tab. 2. (Berendt, Org. reste bern., bd. 1, abth. 1.)

Contains an important chapter, pp. 41–60, by Dr. Berendt, on Die organischen bernstein-einschüsse im allgemeinen, treating of insects from p. 46 on, with many details and generalizations of interest, giving the first extended review of amber insects.


On p. 118 will be found a list of genera of insects found in the Rhenish braunkohl at Stösschen, Frieddorf, and Orsberg.


Mainly a description of its physical qualities, but mentions "ants, a fly, and probably small species of Coleoptera" in a fragment picked up on the shore of Nantucket, Mass.


Merely mentions a few species by generic names.
Goss, H.—Continued.
— Three papers on fossil insects, and the British and foreign formations in which insect remains have been detected. No. 1. The insect fauna of the recent and tertiary periods. (Entom. Soc. Lond. 1879.) pp. 334-343. London, 1878.

Abstract: The insect fauna of the tertiary period, and the British and foreign formations in which insect remains have been detected. (Proc. geol. assoc., 5, no. 6, pp. 282-343.) London, 1878.

First read before the Brighton and Sussex natural history society; afterwards before the association. This abstract, and those of the succeeding papers of this series, were published previous to the full papers. See also Bargagli, P.

See same general title in Section II and Section IV, with note in former.


The same. No. 10. Cenozoic time. On the insects of the miocene period and the animals and plants with which they were correlated. (Entom. monthl. mag., 16: 176-181.) London, 1880.

The same. No. 11. Cenozoic time. On the insects of the post tertiary or quaternary period and the animals and plants with which they were correlated. Entom. monthl. mag., 16: 198-201.) London, 1889.

See same title in Section I, Section II, and Section IV. See also Scudder, S. H., in Section I.


On pp. 92-93 is given a list of genera of a collection of about 760 insects in amber exhibited before the entomological society of the section.

This communication has been frequently referred to Schilling, but apparently upon no proper grounds; his name does not appear.

See also Rathke, M. H.

Grew, Nehemiah. Musæum regalis societatis; or, a Catalogue and description of the natural and artificial rarities belonging to the Royal society and preserved at Gresham college; whereunto is subjoined the comparative anatomy of stomachs and guts. 1st. London. 1681. pp. (12), 386, (2), (2), 43, pl. 31.

On p. 341 (misprinted 334), he mentions amber containing cicadas, gnats, emmetes, flies, and other insects. The addition of 1686 does not differ. Neither, apparently, do the editions of 1685 and 1694 which I have not seen.

Guérin-Méneville, F. E. See Mara-vigna, C., and Rondani, C.


A brief statement of the amber insects is given on pp. 121-125. The species are all extinct, the genera mostly still exist.


Contains an account of the Sicilian amber in the Hope collection, with a notice of three species of white ants found therein.

Insekten im sizilianischen bernstein im oxforde museum. (Stett. entom. zeit., 23: 512-514.) Stettin, 1862.

More particularly concerned with a notice of three species of white ants, which is much the same as that given in the preceding.


Recalls Troost's paper of 1821 on amber in Maryland and its reported inclusion of insect-nests; collects other references to American amber, and, pp. 308-309, refers to the resemblance of the fauna and flora of Prussian amber to that of the present time in North America, instancing the occurrence of Termopsis and Amphilentomon among Neuroptera. See also Troost, G.

See also Hassencamp, E.; and Krantz, A.


Argues, p. 209, from the nature of the insects entombed in it, that amber is the gum of a tree.

Haidinger, Wilhelm. See Heer, O.

Hartmann, Philipp Jacob. Siccini prussici physica et civilis historia cum demonstratione ex autopsia et intimiori rerum experientia deducta. 16°. Francofurti. 1677. front., pp. 291, pl. 3.

In book 1, chap. 5, sect. 8, De inclusis, he mentions, p. 99, the occurrence in amber of 'aranea-rum non umanum species; museas majora, minores; culices, crabrones, apes, tinaes, blattas.
Hartmann, P. J.—Continued.
formicas, locustas;” and in book 2, chapt. 5, sect. 8, pp. 278–281, he endeavors to account for the occurrence of inclusions in general.

Another edition of the same date and place differs only in the plates, of which there are twenty according to Boehmer.

Noticed in Ephem. nat. ear., 3, 1: 156.


Sect. 3, c. iii: Animalculorum succincto inclusorum demonstratio, pp. 19–21 (19–22 sep.), mentions in general terms the different sorts of insects known to be found in amber.

According to Boehmer (4: 469) the separate edition was accompanied by six plates, but they do not exist in the two copies I have seen; the eight preliminary pages do not appear in the Philosophical transactions.


Contains MS. names of fossil insects by Heer, Hagen, and Heyden.


A few fossil insects are specified on p. 256, and a “libella” figured pl. 13, fig. 2.


A catalogue of the beetles described in the first part of his classical work, with brief remarks on the general aspect of the fauna.


Catalogue and concluding remarks omitted.

Physiognomie des fossilen Oeningen. 8°. [Winterthur. 1847.] pp. 29. (Verhandl. schweiz. naturf. ge-

Heer, O.—Continued.

A general report on the insects will be found on pp. 167–174. Separate copy not seen.


This classical work is the most important ever published upon fossil insects, and may be called the first serious attempt at the classification of the tertiary species. Most of the material came from Oeningen and Radoboj, but it included all the author could examine from Aix and other localities. 462 species are described and figured, divided as follows: 119 Coleoptera, 39 Gymnognatha, 3 Neuroptera, 80 Hymenoptera, 9 Lepidoptera, 80 Diptera, and 133 Hemiptera. There are very few general observations, but attention should be called to an important excursion on the arrangement of the veins in the wings of insects and the elytra of Coleoptera, in the first part, pp. 76–95.


Notice of the more remarkable insects belonging to the Vienna museum, and which are described in his great work, followed by brief remarks on the Radoboj insect fauna as a whole; and by comments of Haidinger.


Notice of some peculiarities in the insect fauna of Radoboj in a letter to Unger.

— Nachricht über die ersten ergebnisse einer durchsicht der reichen suite fossiler insecten, die von Herrn custos Freyer in Radoboj gesammelt . . .
Heer, O.—Continued.

worden waren. (Haidinger, Berichte, 6 : 5-7.) 8°. Wien. 1849.

Cursory report of his first examination of a considerable collection of Radoboj insects, three-fifths of which were found to be ants.


A similar report to the last in the same volume; the ants bear the same proportion as before and make the tertiary european species equal in number to the living.


Bd. 1 refers to Oenigen insects on pp. 10-11. The latter half of bd. 3 was republished in 1860 under the title: Untersuchungen über das klima u. s. w. (q. v.). See also the next entry, and the climatological conditions, u. s. w., 1860.


A translation of the preliminary matter in the first volume of the preceding; running references to the insects of the period occur here and there, especially on pp. 310, 311.


The first important paper on Aix insects, cataloguing and describing sixty species of all orders, preceded by remarks on the general characteristics of the fauna, which is considered to have marked Mediterranean features.


A review of the subject based on the insects described in his general work. The author found a commingling of European and Indian forms; perfect dragon-flies but no larvae, showing the deposit to be marine; the occurrence of plants in the same beds, with which the insects have special relations; a closer connection of Radoboj with Aix than with Oeningen.

Heer, O.—Continued.


Insects are treated of on pp. 11, 12.


Contains a couple of paragraphs, pp. 134-135 (334-335 of the original) upon the tertiary insects and the testimony they bear to the tropical and American nature of the time in which they lived. Another paragraph on pp. 60-61 (260-261) shows how the condition of preservation of insects indicates the season of their entombment.

TRANSLATION. Recherches sur le climat et la végétation du pays tertiaire.


The paragraphs on pp. 134-135 of the original are very much expanded on pp. 196-205 of this translation, and include full tables of the families of insects and their numerical representation in the different European deposits of tertiary time. Besides this, the Marquis Gaston de Saporta in his included Examen des fossiles tertiaires de Provence, pp. 133-171, gives a paragraph, pp. 152-133, concerning the insects of Aix. The remaining paragraph referred to above appears unchanged on p. 61.


Insects from Bovey, p. 1082, pl. 68.


Contains: Fossil insecten von Nordgrönland, pp. 129-136, pl. 19, 50; four species described. Miocene flora von Island: Gliederthiere, pp. 154-155, pl. 27; one beetle described.

Forms vol. 1 of Heer's Flora fossilis arctica.

— Die miocene flora von Spitzbergen. Vorgetragen ... bei der versammlung der schweizerischen natur-
Heer, O.—Continued.


Notices insects briefly at p. 12 (Verhandl. 165, Zeitschr. 323).


Two insects mentioned on p. 10, the same as in the next.


Contains description, pp. 484–485, and figures, pl. 44, fig. 9, and pl. 56, fig. 14, of two insects, Cistonites and Cerepodium, under the heading: Animals from Atanekerduk. A. Insecta.

The paper forms vol. 2, no. i. of Heer's Flora fossilia arctica.


Zweiter abschnitt: Beschreibung der miocenen thiere Spitzbergens. I. Insecten, pp. 73–78, pl. 16; contains description of twenty-three insects, of which twenty are Coleoptera.

Forms vol. 2, no. iii. of Heer's Flora fossilia arctica.


Mentions the discovery of fossil insects in the tertiary beds of Tallya.

See also Hassencamp, E.

Helwing, G. A.—Continued.

succincta consideratio additis rario rum aliquot figurit aeri incisis, cum praefatione antoris & indicibus necessariss. 4°. Regimonti. 1717. pp. (14), 96, (13), front., pl. 11.

The same. Pars II. In qua de lapidibvs figvtratis ad triplex regvnum minvralc, vegetable et animale redactis allisqve fossilibus in districtv angervburgensi ejvsqve vicinia noviter detectis, et in specie de origine lapidvm literas experimentum, occasione lapidis cvyvsdam re savienisis, literas latinas L. V. R. repraesentantis, uccincinte disseritv; additis iconibvs rario rum. 4°. Lipsiae. 1720, pp. 132, pl. 6.

On p. 78 is given a short notice of insects (formicæ, blattæ, tipulæ, millipedes alaquee insecta) in amber.


Contains reference to insect inclusions on p. 316. Also said to be given in his Kleine miner. chym. stud., p. 539. 8°. Dresden und Leipzig. 1744; the latter not seen.


History of the growth and present extent of the collection, rich in insect inclusions.


Contains 8853 specimens with insect inclusions, of which over 6000 are Díptera; tables of the different groups are given on pp. 211–213.


Under the head of diluvial deposits, he refers, p. 501, to a bed of peat in the parish of Kirk Baliach, "containing a vast number of the exuviae of beetles, bees and their nests, crushed together with seed vessels, rotten, but having their external coating well preserved. . . . In general the hard wings are the only parts of the beetles which are preserved, and these are in appearance as fresh as on a living insect. Dr. Leach was enabled to identify a few with species at present existing in England."

Divided into: Dioreca taschei Heyden aus der braunkohle von Salzhausen, pp. 198-199, pl. 37, figs. 1-4.—Gänge von insekten-larven in hölzern der braunkohle von Salzhausen, pp. 199-200, pl. 38; borings of an Anobium, a Prionus, and a buprestis.—Fliegen aus der braunkohle der grübe Wilhelm'sfund bei Westerburg in herzog-thum Nassau, pp. 200-201, pl. 37, figs. 6-8; three species described.


Description of ten species, mostly beetles.


Description of twenty-five insects of various orders.


Description of a crustacean, two arachnids, and thirty-two hexapods of various orders.

—— See also Hassencamp, E.; Meyer, O. H. von; and Rathke, M. H.


Description of twelve insects, mostly Coleoptera, and remarks on three others.

—— See also Krantz, A.


General remarks on the insects found in amber and gum animé, followed by a list of insects hitherto noticed by the author or known to Berendt. The species are all claimed as distinct from the recent, and to be tropical in their affinities.


Contains a list of genera occurring at Aix and "descriptions of three fossil species of insects" (Balainus, Rhynchaenus, Corizus) from the same locality.


Five species described and figured.

Hueber, Georgius Ludovicus. See Beringer, J. D. A.


A list of insects is given by Burmeister.

Ittiologia veronese del museo Bozziano ora annesso a quello del conte Giovambattista Gazola e di altri gabinetti di fossili veronesi con la versione latina. 4°. Verona. 1796. pp. 52, 323, pl. 76.

Part I, § 27, p. 31, records in the Boza museum, "duo Asili, Cicimus unus Americanus, omnes inde effossi."


A list of insects found in amber, arranged by genera, will be found in 1, pp. 221-223; and in 1, pp. 168-176, a bibliography of amber literature.


Remains of insects are recorded from Eger (p. 477), Krottensee (p. 482), Grasseth (p. 502).


Correction of geological horizon of certain insects described by Westwood.

—— See also Heer, O.


Not seen. It contains references to the insects, and is mentioned by Heer.
Kawall, H. Der bernsteinsee in Kur­
lund. (Correspondenzbl. naturf. ver.
Not seen; said to contain something on amber
insects.

Knorr, Georg Wolfgang. Lapides, ex
celberrimorum virorum sententia dulvii
universalis testes, quos in ordinem ac
species distribuit, suis coloribus expressit
acris incisos in lucem mittit et alia na­
turae miranda addit. Also entitled: Samm­
lung von merkwürdigkeiten der natur
und den alterthümmern des erdbodens, zum
beweis einer allgemeinen sündinthe nach
der meijnung der berühmtesten mannner
aus des reiche der steine gewiesen und
nach ihren wesentlichen arten, eigen-
schafften, und ansehen, mit farbenausge­
druckt, und in kupper herausgegeben, in
Nürnberg 1750. With second title: Samm­
lung von merkwürdigkeiten der natur
und alterthümmern des erdbodens welche
petrifizierte körper enthält ausgewiesen
und beschrieben (erster theil). P. Nü­
remberg. 1755. 2 t. p., pp. (2), 32, t. p. to
atlas, tab. 1-38 (=57 pl.).

Pl. 33 contains six figures, five of insects from
Oeningen, the only distinguishable ones being
tree of odonate larvae, explained on p. 27. To
this work is appended, pp. 29-32, a letter from
Mylius to von Haller, entitled Beschreibung einer
neuen gründländischen thierpflanze. Bound up
with the same is the following:

Die naturgeschichte der ver­
steirnungen zur erläuterung der knorri­
schen sammlung von merkwürdigkeiten
der natur, herausgegeben von Johann
Ernst Immanuel Walch. Erster theil.

This contains a further explanation of the
plate on p. 181, in which the insects are called
libellen, and which is preceded by an account
(pp. 171-180) of what was then known of fossil
insects, entitled Die entomolithen und helmin­
tholithen.

Koch, (Friedrich) Carl Ludwig, und
Berendt (Georg Carl). Die im bernstein
befindlichen crustaceaen, myriapoden,
arachniden und apteren der vorwelt. P.
Berlin. 1854. t. p., pp. 4, 124, pl. 17.
(Berendt, Bernst. beindl.org. reste vorw.,
1, i.)

Edited with additions of importance by Menge.
10 Myriapoda, 123 Arachnida, and 21 Thysanura
are described and figured, besides numerous
others briefly described in the notes which
Menge adds to nearly every species, nearly or
Koch und Berendt, etc.—Continued.
quite doubling the extent of the text. Menge
adds on pp. 7-8 a list of the species in his col­
collection. Plates 1, 2, and 15 were different in
earlier impressions. Plates 16 and 17 are sup­
plementary.

Kollar, Vincent. See Reuss, A. E.

[Krantz, August.] Verzeichniss der
von Dr. Krantz gesammelten, von Herrn
Senator v. Heyden und Herrn Haupt­
mann v. Heyden in Frankfurt a. M.
und von Herrn Dr. Hagen in Königsberg
in der Paleontographica bis jetzt beschrie­
benen und abgebildeten insecten, etc.,
aus dem braninkohlengebirge von Rott
im Siebengebirge. (Verhandl. naturh. ver.
reuss. Rheinl. u. Westph., 24: 313-316.)
8°. Bonn. 1867.

Enumirates 73 Coleopt., 25 Dipt., 11 Neuropt.,
4 Hymenopt., 3 Arachn., 1 Hemipt., 1 Lepidopt.,
1 Orthopt. =129 species.

Lartet, Louis, et Chantre, Ernest.
Études paléontologiques dans le bassin
du Rhône; période quaternaire. (Arch.
Lyon. 1876.

Mentions the occurrence of insects at La

Leach, William Elford. See Henslow,
J. S.

Lindner. See Schöberlin, E.

Lyell, C. See Murchison, R. I., and
Lyell, C.

MacCulloch, John. On animals pre­
served in amber, with remarks on the
nature and origin of that substance.
(Quart. journ. sc. lit. arts, 16: 41-48.) 8°.
London. 1823. (Forrieip, Notizen, 6, no.
114, pp. 49-51.) 4°. Erfurt. 1823.

Mainly devoted to describing the methods of
distinguishing amber from other gums; insects
and other animals are only mentioned in a gen­
eral way.

Malfatti, Giovanni. Osservazioni so­
pria alcuni insetti fossili dell' ambra e del
copale. 8°. Milano. 1878. pp. 15. (Attu
lan. 1878.

Of a general nature, but contains at the close a
list of additions to the Museo civico with re­
marks; and three pages of bibliography are ap­
peared.

Bibliographia degli insetti fossili
italiani finora conosciuti. 8°. Milano.
Malfatti, G.—Continued.
A valuable résumé of what has been published concerning the fossil insects of Italy, arranged by deposits. None are older than the tertiarys. Mention is made of three or four specimens in Italian museums, not before published.

Maravigna’s note is upon the conditions of occurrence of Sicilian amber. Guérin figures, enumerates and occasionally names about fifteen species, mostly Coleoptera, Hymenoptera, and Diptera.


See also Rondani, C.

Refers on p. 12 (196) to the occurrence of Neuroptera, similar in form and size to the living Libellula, with “alcune piccole api” at Monte Bolca. The only copy I have seen is that of the separate paper, in which pp. 17-end are replaced by those of the academy’s memoir.

Monografia delle nereide fossili. 8°. Verona. 1855, pp. 37, pl. 6.
In an appendix, pp. 31-32, he enumerates five species of insects from Monte Bolca.

— Prodomo di un’ entomologia fossile del M. Bolca. (Studi paleont., pp. 11-21, tab. 1 (pars.), 2.) 8°. Verona. 1856. Describes seven insects of different orders.
Omboni says of this paper “che fu parte dei miei studi paleontologici, pubblicati nel 1856 a Verona, nel Programma dell’ I. R. Ginnasio livuale di quella città (tipografia Antonelli).”

— Compendium faunae et flora fossilis bolcensis.
Not seen; nor have I been able to find a single reference to it in bibliographies, and presume it is still unpublished. It is referred to as above in several places by the author in other publications: see Studi paleont., p. 14, etc. It is not mentioned in Sordello’s Bibli. paleont. vegt. ital. (1831.) Malfatti says of it (Bibl., 12) “rimasto inedito.”

Parte 1, Geologia stratigrafica is by Scarabelli; parte 2, Flora fossile by Massalongo. Insetti on p. 26, contains a nominal list of species.

Massmann. See Schöberlin, E.

The insects of the beds at Aix are referred to in general terms on p. 454, and their relative position pointed out.

Not seen; gives, according to Oustalet, some notice of Aix insects.

Melgen, Johann Wilhelm. See Rathke, M. H.

The first part, pp. 186-189, is devoted to amber as occurring in which he mentions various in­sects and Gryllus domesticus in particular.

Menge, A. Lebenszeichen vorweil­licher, im bernstein eingeschlossener thiere. (Progr. petrischule Danzig, 1856, pp. 1-32.) 4°. Danzig. [1856.]
Contains a valuable systematic review of the species in the author’s collection, with occasional brief descriptions. The collection is one of the largest ever made, containing 67 Myriapoda of 31 species, 674 Arachnida of more than 150 species, and 3,162 Insects, of which even the genera are rarely enumerated, but only separated by fami­lies.

The strepsipteron is described and figured under the name of Triena terraria, and figures are given of a Chironomus to which a Mermis is found attached.

— See also Koch, F. C. L., und Berendt, G. C.

Mercati, Michael. Michaelis Mercati samminiatensis Metallotheca opus post­humum, auctoritate & munificentia Clem­entis XI. pontificis maximi et tenebris in lucem educutum; opera autem, & studio Joannis Mariae Langisi archiatri
Mercati, M.—Continued. pontificii illustratum. ff. Romae. 1717. pp. 64, 378, (18), pl. 6, figs.

Arm. 5, cap. 2: De succino, pp. 87-90, contains on p. 89 figures of some half dozen insects in amber which are enumerated in a single line on p. 88.


Notices, p. 467, Heyden's Diecker taschei; his discovery of insect borings in wood from the brown coal; and his statement that Xylophagus antiqua is a Bibio.

Millar, George Henry, editor. A new, complete, and universal body or system of natural history; being a grand, accurate, and extensive display of animated nature . . . written by a society of gentlemen. f°. London. n.d.

Not seen; according to Dr. Hagen the work mentions, p. 421, the presence of insects in amber.


Gives lists of the tertiary insects described from North America.


Brief notice of the insects, about ten species of beetles, which are figured. An abstract with the same title (excepting the omission of the word Notes) on p. 2 of same, with discussion, which does not touch the insects. An abstract will also be found in Phil. mag., 39: 463. 8°. London. 1870.


Contains, pp. 25-30, a notice of Menge's collection of amber insects with descriptions, pp. 25-27, and figures (in the single plate) of thirteen Coleoptera. Also, p. 34, a brief notice of Heer's collection of Oeningen insects.


Liber III contains, pp. 783-784, a section De succino quod in Prasia legitur, in which, p. 784, amber is said to contain "bestiolae, ut muscae, culices, apes, formicae, lacertae, etc."

The German edition of 1568 contains this reference on pp. 1145-1146, and that of 1628 (I) on p. 1297.

Dr. Hagen has called my attention to this reference as perhaps the earliest mention of insects in amber. The same reference is doubtless contained in the Latin edition of 1550, perhaps in the German edition of 1554. See Harv. univ. bull., 2: 285.

Murchison, R. I. On a fossil fox found at Oeningen near Constance; with an account of the deposit in which it was imbedded. (Trans. geol. soc. Lond., (2), 3: 277-290, pl. 33-34.) 4°. London. 1832.

The insects, pp. 286-287, pl. 34, are described by Curtis, with a mention of others determined by Samonelle; only a dozen species in all are mentioned; those figured are Odonata.


A companioned, p. 151, by "Observations on the fossil insects" mentioned, by John Curtis, afterwards described and figured by the same. See Curtis, J.


Descriptions and illustrations of nineteen insects of various groups, but mostly Diptera.


Refers to his fossil insects and particularly the larvae of Odonata.


Figures and describes a few species from Monte Bolca described previously by Heer and Massalongo and adds descriptions and figures of two Diptera and Coleoptera from Chiavon, Bolca, and Novale.

BIBLIOGRAPHY OF FOSSIL INSECTS. [Bull. 62.]


Studied descriptions of forty-five species, most of them new; they are mostly Diptera, especially Protomyiaæ and Bibiones, and Coleoptera, especially Rhynchemphora. The characteristics of the groups to which the insects belong are given in detail, and references made to other fossil insects of the same groups. The whole is preceded by a chapter of 48 pages, containing a good history of our knowledge of fossil insects, and is followed by one of 17 pages of general results reached by a study of the Anvergne fossil insects, which are found to show a mingling of indigenous and of exotic forms, a Mediterranean and American aspect, and a warmer climate than now.

An extended notice will be found in the Revue scient. France, (2), 4: 130-137. 4°. Paris. 1874.

See also Giard, A., in Section VII.


A brief notice of various insects inclosed in a single block of amber in which Vaillant had detected a reptile. The insects are mentioned still more briefly in Vaillant’s paper.


A popular account of the tertiary insects of France, with figures of Bibio edwardsii, Calosoma agassizii and Cyillo sepulcta.


Analogies between the insect fauna of the oligocene of southern France on the one hand, and that of southern N. America at the present time, or of the oligocene of the Rocky Mountains on the other.


Contains, p. 535, notice of the discovery of insects on Twin Creek, Wyoming Terr.; and pp. 633-639 a reprint of Scudder’s description of Inclusia culpabilis from Horse Creek Valley, Wyoming; see also p. 528.


Amber insects altogether differ specifically from living forms; a considerable number of genera are also distinct and there are two peculiar families: Archaeidae in the Arachnida and Pseudoperipla in the Neuroptera; a warmer climate than the present is indicated.

Translation: General considerations on the organic remains, and in particular on the insects, which have been found in amber. (Edinb. new phil. journ., 41: 391-401.) 8°. Edinburgh. 1846.


Describes 1 species of Cynips, 6 Formica, 1 Tinea, 3 Tipula, 4 Musca, 2 Araneus, 1 Phalangium, and 1 Acarus. Noticed in Oken’s Isis, 1823, 374-375. 4°. Jena, 1823.


Refers, p. 210, to a fossil insect which is figured with a leaf, pl. 5, fig. 1; no details are given and the figure is unrecognizable.


A general paper, in which on p. 449 it is stated that Coleoptera, Hemiptera, Lepidoptera, Neuroptera, Hymenoptera, Diptera, and Aptera have been found at Sinigaglia.

Rathke, Martin Heinrich. Untersuchung über die bernstein-insecten. (Oken’s Isis, 1829, 413.) 4°. Leipzig. 1829.

Mentions his large collection of amber insects collected in company with Berendt; the Coleoptera had been studied by Heyden and Schmidt, the Ichneumonidae by Gravenhorst, the Diptera by Meigen and Wiedemann.

**BIBLIOGRAPHY OF FOSSIL INSECTS.**

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**Reuss, A. E.—Continued.**

Not seen; according to Dieichmüller this work contains a reference on p. 143 to the occurrence of fossil insects at Bilin.


Mentions, p. 58, the occurrence of impressions of Coleoptera and Diptera, generally very indistinct, in the cyprismergel of Krottensee. An exception is noted in a single Dipteron, which is figured and which Kollar places near Penthetria.


Not seen; said to contain something on Oenigen insects.


Merely mentions, pp. 772-773, the occurrence of remains of insects in the plicocene beds of Ober Erlenbach.


Followed, p. 370, by remarks by Guérin-Ménéville. Rondani makes some corrections of generic determinations in Guérin’s supplement to Maravigna’s paper. Guérin speaks only of the imperfectness of the specimens. See also Maravigna, C.

**Roy, C. W. van.** Ansichten über entstehung und vorkommen des bernsteins, so wie praktische mittheilungen über den werth und die behandlung desselben als handelswaare. 8°. Danzig. 1840.

Not seen.

**Samouelle, George.** See Murchison, R. I.


At the end of the section on the flora of Aix he refers, pp. 152-153, to the insects of the gypsum beds and their relations to the vegetation of the epoch.


**Saporta, G. de—Continued.**

Notices the insects of Aix on pp. 70-71 [342-343]. Gives also a note by A. Giard, p. 69 [341], suggesting the presence at Aix of certain plants, from the occurrence of beetles presumed to feed upon them.

--- See also Heer, O.

**Scarabelli, Giuseppe.** See Massalongo, A. B. P., e Scarabelli, G.

**Schau-platz der natur oder gespräche von der beschaffenheit und den absichten der natürlichen dinge, etc.** Dritter theat. 8°. Wienn und Nürnberg. 1748. pp. (22), 592, (11), front., pl. (33).

Refers to the occurrence of flies and beetles in amber, p. 347. A figure of a fossil odonate larva also appears on the plate opposite p. 416 (fig. F).

**Scherper.** See Schöberlin, E.

**Scheuchzer, J. J.** Beschreibung der natur-geschichten des Schweizerlands dritter theat enthaltende vornemlich eine aber die höchsten alpgebirge an. 1705 getahne reise. 4°. Zürich. 1708. pp. (4), 208, pl. (9).

Refers, p. 68, to the occurrence of flies and spiders in amber (agastin).


Records four fossil insects, p. 106, from Oenigen, Monte Bolca, and Querfurt.

--- Physique sacrée, ou Histoire naturelle de la bible. Traduit du latin; enrichie de figures en taille douce, gravées par les soins de Jean-André Pfeffel. 8 vol. F. Amsterdam. 1732-1737.

Vol. i, tab. 53, figs. 23-25, p. 68, gives figures of a beetle and odonate larva from Oenigen, and an odonate from Verona, which Heer afterwards determines. Original edition not seen.

**Schilling, Peter Samuel.** See Gravenhorst, J. L. K.


Subjects nearly all the originals of Germar's paper to a new and careful study, with one or two new illustrations.

**Schmidt, Wilhelm Ludwig Ewald.** See Rathke, M. H.

A general account of the insects found at Oeningen, based mainly on Heer’s researches. Nearly eleven hundred species are now known and several genera are here for the first time recorded, the result of studies by Lindner, Massmann, and Scherper.


The Bemerkungen über den bernstein occupy pp. 101-127 and pl. 8, and contain in foot-notes extended descriptions of a few insects, figured carefully on the plate, but part at least of which have since been recognized as copal insects.


Mentions in general terms the affinities of an ant and a couple of flies.


Describes twenty-four species of various orders.

Scudder, S. H.—Continued.


Describes the insects obtained by Denton in the White River beds, Colorado. Thirty-three species, mostly Diptera, are described and others enumerated.


Describes six more species of different groups.


Describes ten insects of different orders, among them a remarkably perfect butterfly, Prodryas persephone, and eggs and egg clusters of a gigantic stolid, Corydalites fecondum, the last from the Laramie beds.


Describes fifty-five species of different groups with notes on seventeen others.


Describes sixteen species of different orders. Also published separately with half-title on cover: Insects from the tertiary beds of the Nicola and Similkameen rivers, British Columbia. 8°. [Montreal. 1879.] pp. 11.

Scudder, S. H.—Continued.
—— The insect basin of Florissant.
Exhibition of plates of fossils.
—— The tertiary lake basin at Florissant, Colorado, between South and
    Hayden Parks. ( Bull. U.S. geol. geogr.
    surv. terr., 6: 279–300, map.) 8°. Wash-
    ington. 1881.

The first half is descriptive of the locality and its
géology; the paleontological portion is mainly
devoted to insects and plants, of which a running
systematic review is given. The conclusion is
reached that the beds, the most prolific of insects
in the world, “belong in or near the oligocene.”
An abstract will be found in Harv. univ. bull., 2:
267. 4°. Cambridge. 1881. It was also read before
the Natural History Society of Boston. ( Proc.

**EXTRACT:** Insects of the amyzon shales of Colorado. ( Amer. nat., 16: 159–160.)
Quotes some of the general results obtained.

**REPRINT:** with same title as original.
(Twelfth Rep. U.S. geol. geogr. surv. terr.,
1883.
Contains considerable additions, especially in
the Arachnida and Neoptera, where compar-
sions are instituted with European and other
American fossils.
It is also reprinted with slight additions and
omissions in the introduction to the author’s Ter-
tiary Insects of North America, 1880.

—— Administrative report U. S.
geological survey for the year 1885–1886.
Washington. 1888.
Progress of work on tertiary Coleoptera and
Diptera.
See also Section VII.

—— The fossil insect localities in
the Rocky Mountain region. (Psyche, 5:
The relative abundance of individuals in the
various orders of insects and especially in the
Hymenoptera and Coleoptera is very different at
Florissant from what it is at the other localities,
while the latter are similar to one another.

—— The tertiary insects of North
America. pp. 734, pl. 28. 4°. Washing-
terr., xiii.)
Forms vol. 2. of the Fossil insects of North
America.
Treats in full the Myriapoda, Arachnida, and
lower orders of Hexapoda from all American

Scudder, S. H.—Continued.
tertiary deposits, while in the Coleoptera, Dip-
tera, and Hymenoptera, only the species found
elsewhere than at Florissant are described. It
includes of Myriapoda 1 sp., Arachnida 34, Neu-
roptera 66, Orthoptera 39, Hemiptera 266, Cole-
optera 112, Diptera 79, Lepidoptera 1, and Hymen-
optera 23, in all 612 species. All are displayed in
a tabular view at the end. A few notes occur on
European species.

—— See also Peale, A.C.
Selwyn, Alfred R. C., and Dawson,
George Mercer. Descriptive sketch of
the physical geography and geology of
the Dominion of Canada. 8°. Montreal.
1884. 55 pp.
Copies, p. 55, the statement in Dawson’s paper,
q. v.
Sendel, Nathaniel. De succino indicó,
ad virum nobilissimum atque experien-
tissimum dominum Johannein Philippum
Breynim epistola, prodromi loco electro-
lógiae suae propediem edendas scripta.
(Breyrn, Melon. petref. mont. Carmel, 35–
48.) 4°. Lipsiae. 1722.
Entitled on Breyrn’s title-page: De pseudo-suc-
cino, quod panceos ante annos ex Africa in
Belgium deferri coepit. “It evidently refers to
copal, and mentions, p. 40, the occurrence of Insects
‘nostris similla.’” Noticed in Bibl. germ., 5: 121.
—— Verschiedene erinnerungen von
dem succino prussico. (Contin. gelehrt.
Preussen, 1725, quart. 2, no. 3.) 8°.
Thorn. 1725.

Not seen. Title furnished by Dr. Hagen.
—— Nathanaelis Sendelli . . . elec-
trologiae per varia tentamina historica
dec physica continuandae missus primus
De perfectione succinorum operibus na-
turae et artis promotia testimoniisque ra-
tionis et experientiae demonstrata. 4°.
Elbingae 1725. pp. 56.
Reviewed in Acta. erud., 1725, 374–376.
4°. Lipsiae. 1725.

The same. Missus secundus, De mollitie
succinorum et inde emergentibus con-
tentis variis animalibus, vegetabilibus,
mineralibus atque aquosis. 4°. Elbingae.
1726. pp. 64.
The same. Missus tertius, De prosapia
succinorum et eorum variis affectioni-
bus, vi electrica, colore, odore, sapore.

These titles are furnished by Dr. Hagen, who
also quotes, but unverified by him, the English
translation in Acta germ., 1743, 340–355, 369–366,
389–405. 4°. London. 1743.
Sendel, N.—Continued.


A large part of the book and nearly seven of the plates are given up to insects, but amber and copal insects are, as is well known, not distinguished, and the book has therefore far less value and interest than it otherwise would possess.


See also Guérin-Ménéville, F. E., in Section I.


Refers, p. 173, to impressions of insects, principally apterous and among them inund, from the territories of Castelnaud, France.


An extract from the next work, pp. 267-233, published in advance.


Serres, P. M. T. de.—Continued.

Livre 4: Des arachnides et insectes fossiles, et spécialement de ceux des terrains d’eau douce du bassin tertiaire d’Aix, occupées pp. 206-258, and includes a list of nearly 80 genera of Aix insects, besides, pp. 254-258, a Tableau général des arachnides et des insectes fossiles, d’après l’ordre de formations géologiques, in which 105 genera are specified and 226 species enumerated.


Contains a list of insects of Aix, pp. 34-44.


Continuation of preceding, but with nothing on insects.

Shuckard, William Ed. See Burmeister, H.


Specimen IV, sistens aevicorvm descriptionem occupes pp. 65-81, with a plate. Reference furnished by Dr. Hagen.


Notice of fossil insects in the tertiary beds at Gunet Bay, Isle of Wight.

Smith, -Frederick. See Woodward, H.; and Zaddach, E. G.


Scattered notes and descriptions of insects from late tertiary, particularly pleistocene deposits.

Stanton, Henry Tibbats. See Bolton, J.


Describes two Coleoptera and one Hymenopteron (Myrmal).


Separate publication not seen. Notices, p. 262, collections of amber insects made by Schirmmeister and himself, showing the fauna to be the same as that of the amber of the Baltic coast.
Steinbeck, A.—Continued.
An abstract will be found in Neues jahrb. mineral., 1844, 121-122. 8°. Stuttgart. 1844.


Showing mines of an insect "ganz so, wie es die larven der blattschaben in dem parenchym der blätter jetztweltlicher pflanzen hinterlassen."


A list of Oeningen insects compiled from the first two parts of Heer's work occurs on pp. 95-101 with references to collections; and on p. 119 a reference to eggs and larvae of beetles and flies from the alluvium of the Rhine.

Tournai. [Tertiary of Arnissan.]

Tourial is said to have published some reference to fossil insects in a work on the above subject. I have been unable to verify it.

Troost, Gerard. Description of a variety of amber, and of a fossil substance supposed to be the nest of an insect discovered at Cape Sable, Magothy River, Ann-Arundel County, Maryland. (Amer. journ. se. arts, 3: 8-15.) 8°. New Haven, 1821.

Considers the nest found in a stratum of lignite, and which is described on pp. 10-11, to be "a kind of comb or nidus made by some insects around the twigs . . . of a tree."


Accompanied by a foot-note by Gilbert, and followed, pp. 303-304, by a Zusatz zu diesem aufatze by the same, in which certain similar appearances in European amber are noted. Gilbert considers them galls.


The final notes are omitted and the phraseology slightly altered.


Makes no reference to the "insect nests."


The translation, which is by Dr. Hager, omits only about a page of unimportant matter in the concluding notes. It is embodied in an article by Dr. Berendt, entitled Ueber eine von Dr. G. Troost in Baltimore im Jahre 1821 im American-journal of science gegebene beschreibung eines bernstein-vorkommens bei Cap Sable in Maryland; and is preceded and followed by remarks of Dr. Berendt, which, however, do not refer to the insect nests.

See also Ballenstedt, J. G. J.; and Hagen, H. A.


Not seen; an abstract will be found in Neues jahrb. miner., 1840, 374-377. 8°. Stuttgart. 1840. Insects are mentioned on p. 377; there are no Coleoptera nor Lepidoptera; Diptera and Hymenoptera are most abundant; Neuroptera, Orthoptera and Hemiptera rarer. A single spider was found. The fauna is tropical rather than European.

The Reise notizen are referred to in no bibliographies. They appeared separately for 1838 and 1839, and were probably extracts from some local paper. Cf. Neuesjahrb. mineral., 1840, 726.


Insects are figured on pl. 4, 5, 11, 14, 15, 22, 28, 40, 44, 45, 48. All are from Radoboj.

See also Heer, O.


Mentions, p. 67, a couple of insects accompanying the reptile, afterwards more fully treated by Oustalet.

Valentini, M. B.—Continued.  

Also with the title: D. Valentini schau bühne oder Natur-und materialien-kammer, anch ostindische send-schreiben und rapporten. Contains various references to insects in amber, original or quoted; see especially i. p. 516, ii. p. 60, and ii. anhang, pp. 93, 99.


Not seen. The first edition was published in 1762, and is said to contain reference to Oeningen insects.

Walch, Johann Ernst Immanuel. See Knorr, G. W.

Walchner, Friedrich August. Darstellung der geologischen verhältnisse des süßwasser-mergels von Oeningen im ba
dischen seekreis und seiner fossilen flora und fauna. 8°. Karlsruhe. 1850.

Separately printed from his Handbuch der geognosie zum gebranche bei seinen vorlesungen, und zum selbststudium, mit besonderer berücksich
tigung der geognostischen verhältnisse des gross-
herzogthum Baden. 2°. aufl. 8°. Karlsruhe. 1847-1851. (pp. 966 et seq.) Neither seen.


Contains, p. 57, a list of insects referred to twelve genera, only two of the species receiving names.—Phryganidae mombachiana and P. blumi. Separately printed from his Handbuch der geognosie, etc., as above. 2°. aufl. 8°. Karlsruhe. 1847-51.


Wanklyn, A. Description of some new species of fossil ferns from the Bournem

Westwood, J. O. See Jones, T. R.

Wiedemann, Christian Rudolph Wilhelm. See Rathke, M. H.

Wigand, Johannes. Vera historia de succino borvssiceo. De alee borvssica & de herbis in Borussia nascentibus. Item de sale creatvra Dei salvberrima conside-


In a section: De vermiculis in succino, ff. 29-29, he mentions cullices, formicae, aranei purni papiliones.


Abstract of the next, with slightly differing title, but published earlier than it, and containing a fuller list of insects.

— On the occurrence of Branchi

The insects are mentioned on p. 344, mostly in a List of insect remains from Gurnet Bay, near Cowes, Isle of Wight, determined by the late Frederick Smith. One hundred and twenty-five specimens are mentioned but only eighteen genera or families are specified and one species.

Zaddach, Ernst Gustav. Ueber die bernstein-und braunkohlenlager des Samb

Notices, pp. 3-4, the numbers of insects found in amber, all distinct from living forms; and on pp. 20-21 gives a table of the number of genera and species of the different orders of insects, with special mention of the remarkable genera Archaea and Amphilontum.

— Amber; its origin and history, as illustrated by the geology of Samland. (Quart. journ. science, 5: 167-185, pl. (2).) 8°. London 1868.

Mainly compiled from the author's previous writings on the amber beds. It contains, how-
ever, as new matter, a plate of amber insects with an explanation by Frederick Smith, and on pp. 184-185, a list of the principal works on amber and the organic remains preserved in it, furnished by the editors.
some references to fossil insects on pp. 78 and 92 of his Historia insectorum; but I have examined the work for such references unsuccessfully.

VII.—SPECIAL FOR CENOZOIC TIME.

VIIa.—Cenozoic Myriapoda.

See also under Section I and Section VI.


Describes and figures Julius antiquus Reyd. MSS. See same title in Section VIIb.


Description and figure of this species as found fossil near Dresden in kalksinterzähne in gneiss. Münster, loc. cit., p. 68. Speaks of these as littlen-artige röhre.

Heyden, C. von. See Bertkau, P.

Münster, G. See Cotta, B.

VII b.—Cenozoic Arachnida.

See also under Section I and Section VI.


A careful description of eight species, of which six are new; all are figured. See same title in Section VIIa.


Principally concerned with the arachnids described in his previous paper, and especially with Argyroneuta antiqua.


Mentions a spider in amber. See same title in Section VIIg.


Describes Attoides eresiiformis. Noticed by Dr. Hector George in the Feuilleton de Le constitutiole for 21 Nov., 1877. See also Girard, M.

George, H. See Brongniart, C. J. E.


A popular account of Attoides eresiiformis described by Brongniart.


Describes twenty-three species, almost all referred to new genera. Besides the Araneides, there are two Acari, two Opiliones, and one pedipalp. A discussion of their faunal relations at the close concludes them to have close affinities with Mediterranean forms.


Probably the gall of a Phytopus, on Salix.


Three species of Nothrus described.


One of the Atypinae from the Isle of Wight.


Seven of the fifteen species described and figured are from amber.
Menge, A.—Continued.


Detailed description and figures of Tityus eogens, Cloistes priscus, and Gerdia myura.


Reviews the arachnid fauna of Florissant, Col., and shows its relation to the forms of the European tertiaries.


Eriauchenius of Madagascar and Landana of Kongo are placed with Archea from amber in the family Arachéidae.


Describes and figures Archea pungneti from amber.


The Note of M. Turpin occupies pp. 502-503. Mention is made, p. 502, of the leg of an insect "très probablement d'un Acarus," as found in the earth.


On p. 25 catalogues without description Attus fossils from amber.

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VIIc.—Cenozoic Neuroptera.

* * See also under Section I and Section VI.


Figures a Chrysopa, pl. 5, fig. 3, 3a, from Thalheim, with mention on p. 26. See same title in Section VIII.

Berendt, G. C. See Pictet de la Rive, F. J., and Hagen, H. A.


The first notice of the remarkable caddis-fly cases of Auvergne, forming the beds of so-called indusial limestone.


Refers, p. 93, to Libellula doris and other insects as occurring at two horizons.


Includes the fossil genera and species, and contains, p. 738 (86), a list of the fossil Libellulina.

—— See also Hagen, H. A.


Discusses Indusia tubulata on pp. 392-393.


On pp. 539 and 557 catalogues Libellula doris Heer (larva) from Limone, etc.


Refers, p. 24, to the occurrence of larvae of a Libellula in tertiary beds near Pane e Vino.
Capellini, G.—Continued.  

Refers, p. 135, to the occurrence of the larvae of Libellula at Limone, etc.


Refers briefly, p. 25, to the Indusia tubulata of Auvergne.


Not seen; said to refer to the caddis fly cases of the indusial limestone of Auvergne.


Refers, p. 25, to the occurrence of Indusia tubulata in the calcareous marls of the Auvergne territories.


Notice of the indusial limestone of Auvergne, and the fossil phryganid species of which it is composed.


The Neoptera as well as the Coleoptera are discussed. See same title in Section VII.


Referred to Aeschna.

Hagen, H. A.—Continued.  

Description of Heteropheobia juganda and Lestes vicina.


Detailed description and comparison with living forms.


Detailed description, and discussion of its systematic position.


Extended descriptions of ten species, mostly Odonata, preceded by lists of the insects previously described from the Rhenish brown-coal.


Includes the fossil species, twenty-eight in number, of which ten belong to Polycentropus.


Describes two species from amber and three from copal, besides seven recent species, being all the ocellate species known.

Same title repeated in Section VIII.


Includes the fossil species, 8 Psocina, 1 Embidina. See same title in Section VIII.


Includes the fossil species, fourteen in number.


Hoeinghaus's description of Phryganea mambachiana is copied on p. 379, and the insect considered as probably belonging to the Phryganeidæ proper.


Concludes from them that before tertiary times a great development of genera and species had occurred.
Hagen, H. A.—Continued.


Contains a section, Uber psociden im bernstein, which by error (see p. 265) was printed first under that title. This section is also entitled Bernstein psociden and includes all the portion published in 1882, thirteen species and nine genera (two of them new) being described, while pp. 292-300 are occupied with general considerations drawn from their study.


Describes anew, p. 176 (6). Embidia antiqua from amber and refers it to Oligotoma, and under the head of Distribution, p. 223 (17), has a few further words upon it.

See also Pictet de la Rive, F. J., und Hagen, H. A.; also O. Hauer, Franz, ritter von. See Hagen H. A.


A brief notice of the fossil dragon-flies of Oeningen and Radoboj.


An abstract is given in Oken's Isis für 1846, p. 70.

Heyden, C. von. See Stoehr, E.


Text in German, accompanied by a French translation of the text (with no heading), 1 p. 8°. See also Hagen, H. A.; and Michelin, H.


Figures on pl. 2a dragon-fly larva from Oeningen under the name Libellula oenigena. Two fascicles of this work appear to have been issued; one containing the text and eight plates, the other with eleven plates and no text, neither with title-page. The data given above are taken from de Koninck's copy in the Cambridge Museum.


Suggestive and interesting discussion of the relative geological age of the genera of Psocideae with a classification in which these points are considered.


Describes one species each of Philotarsus and Eliposocus and gives a list of amber Psocideae by groups.


Discussion of the different stages of development which the several groups of Psocidæ reach, with a consideration of the fossil forms, especially those from amber.


Eight species or varieties are named but not described.


Not seen; according to Onstalet, he discusses Indusia in vol. 2, pp. 335 and 374.


The fossil larval-cases of which it is composed are referred to Limnophilaæ.


Reference is made on p. 201 to the occurrence of larval cases of Phryganæ in the silt or blue clay of Lewes Levels.

Marion, Antoine Fortuné. See Sapor­ta, G. de.

Massalongo, A. B. P. Sopra due larve fossili di Libellula dei terreni mioceni di Sinigallia. (Studii paleont., pp. 22-23, tab. 1, figs. 8-13.) 8°. Verona. 1856.

The larvae are referred to two of Heer's species from Oeningen.

Menge, A. See Pictet de la Rive, F. J., und Hagen, H. A.

Description of the caddis-fly cases of Auvergne.


Mere mention of Phryganea grandis. See Hoeminghaus, F. W.


Description and general remarks.


Oustalet, E. See Giard, A.


All specifically distinct from existing forms, but with one exception belonging to existing genera.


More than seventy species are described in full detail and admirably figured. Under the genera also Hagen gives good accounts of the literature of fossil species and prefaces the whole with general observations on the amber Neuroptera. The work is mostly Hagen’s. Some descriptions are by Menge. Description of the larva of a Phasma is also appended, p. 122.

Planchon, Gustave. Étude des tufs de Montpellier au point de vue géologique et paléontologique. 4°. [Montpellier.] 1864.

Not seen; according to Oustalet mention is made of Indusia.

Rouville, Paul de. Géologie des environs de Montpellier. 1855.

Not seen; gives, according to Oustalet, some notice of the remains in the indusial limestone.


Larval tubes of phrynogals adhering to the leaves of a fossil Nympheaea described, pp. 24-26, and figured, figs. 3-4, by A. F. Marion.


Pl. 5, figs. 1-2, p. 16, gives figures and description of an odonate larva from Oeningen and a winged odonate from Monte Bolca.


The same is found on the same plate, p. 21.


Discusses, pp. 10-13, the indusial limestones of France, which he records at the following localities: hills of Gergovie above Romagnat, at the Pyus Giron, de Jussat, de la Serre, de Mouton, de Dallet, at Mont Chagny, Mont Jughat, and the Côtes near Clermont; at Davayat near Ronn; at Aigueperse, Gaunat, Mayet d’école, St. Ger­­raud le Puy, between Jaligny and la Palisse, at Mont Barraud, etc. First edition not seen.


Note on the relation of the six species from Florissant to those of other tertiary deposits; they indicate a warm climate.


Summary of general results reached by a study of the American forms.


Extended description of Pianacephalus, a head­­less insect presumed to belong to the Tysanaura, and to form a distinct group therein.

Sismonda, E. — Continued.

Refers, p. 470, to the occurrence of the larva of Libellula doris in the upper miocene beds of Guarènè; it is figured, pl. 17, fig. 6.


The insects from Girgenti are determined by Dr. von Heyden, p. 236, as larva of Libellula doris Heer and L. euryhone Heer, the former in great quantities; both are Oeningen species.


Refers on p. 149 to the cases of phryganids.


Larvae and pupae of Ephemeridae in the thin-bear ing tertiary deep leads.


A popular account, drawn from Hagen's Monographie der termiten.

VIIId. — Cenozoic Orthoptera.

See also under Section I and Section VI.


Descriptions and figures of the species found in amber.

See also Germar, E. F., und Berendt, G. C.


Describes and figures Decticus umbraeus.


Edited, with notes, by Hagen; eight Orthoptera are described and figured, in part by Pictet.

See same title in Section VIIe.

Hagen, H. A. See Germar, E. F., und Berendt, G. C.

Heller. See Berendt, G. C.

James, J. F. See Zeiller, R.

Pictet de la Rive, F. J. See Germar, E. F., und Berendt, G. C.


The Note on the fossil species occurs on pp. 259-260, discusses one species already known from the tertiary beds of Florissant, and describes another from the same locality.


Describes a Labidura and a Homoeogamia.


Includes the fossil forms, of which eight species are enumerated.


Ridges raised in half dried mud by Gryllotalpa resemble Phymatoderma and Brachyphylum.


Translated by J. F. James.

VIIe. — Cenozoic Hemiptera.

See also under Section I and Section VI.


Records, p. 625, the occurrence of a Nepa in amber.

See also Germar, E. F., und Berendt, G. C.

Vol. 3, pp. 2–4, treat of the successive appearance of the insects in time, with special reference to the aphides. Vol. 4 contains a section, pp. 144–175, entitled: Introductory notes on the antiquity of the Hemiptera, and particularly with regard to the Aphiidae as represented in the sedimentary rocks and in amber, in which are described, and figured on plates 121–123, the aphides in amber given by Germar and Berendt, those given by Heer from Oeningen and Radoboj, and (from advance sheets) some of those figured by Scudder from Florissant; the descriptions are based in all cases on the figures of the same, and a few names are given for the first time. He also copies a figure by Millière, and some by Brodie.

**Fairmaire, Léon.** See Millière, P.


Edited, with notes, by Hagen: sixty Hemiptera described and figured.

See same title in Section VII.

—— See also Buckton, G. B.

**Hagen, H. A.** See Germar, E. F., und Berendt, G. C.


General account of the relations of the Rhynchoeta of Oeningen, Radoboj, and Aix to existing faunas, followed by a list of the species described in the third part of his Tertiary insects. They agree better with the insects of the southern zone than with those of Switzerland, and the Campsii and Riparii characteristic of temperate regions are wholly absent.

—— See also Buckton, G. B.


Description of two Hemiptera and a beetle.

See same title in Section VII.


Millière, P.—Continued.

Under the name of Aphis longicaudus, describes an insect from the "schiste marneux" of Ambéreux, Ain.

—— See also Buckton, G. B.


Describes a new genus and three new species of Physopoda from Aix.


Describes Cydnopsis heeri.


Describes twelve species, referred to the genera Phleothrips (1), Thrrips (7), and Heliothrips (4).


Describes two genera and three species.


Sets forth the proportional number of species in each of the families, and compares them with that of those now living in America and in the European tertiarys. The fauna of the tertiary west shown to bear definite relations to that now existing in the same region, but to have distinct tropical affinities. The total number of species is 266.

—— See also Buckton, G. B.

**Signoret, Victor.** See Millière, P.

**VIII.—Cenozoic Coleoptera.**

* * * See also under Section I and Section VI.

Assmann, A.—Continued.


The second paper describes two Coleoptera. See same title in Section I and Section VI.


Two elytra of beetles "of distinct species, resembling those of some of the smaller Carabidea," are mentioned, pp. 359–360, as occurring in the leaf-bed, and are figured, pl. 14, figs. 14–15; in the explanation of the plate, pp. 361–362, they are compared to Rhynchophora. See also Judd, J. W.

Barrois, Jules. See Debray, H.

Barthélémy de la Lapommeraye, A. Carabe d'Agassiz, Carabus agassizii. 8°. pp. 4. Marseille. [1850.]


Refers to a few Curculionidae and Buprestidae found at Corfe, afterwards figured by Westwood.

Brown, John. Insects and seeds in peat at Stanway. (Geologist, 1858, 254.) 8°. London. 1858.

Notes the occurrence of elytra.

Curtis, J. See Lyell, C.


Records the discovery, p. 48, of brilliant elytra of Donacia in peat along the Flemish coast.


Debray, Henri—Continued.

Under the heading Insectes, refers to the discovery in peat at Ardres of Donacia sericea, determined by J. Barrois, pp. 127–128. Separately issued, without change of pagination but with a title-page. 8°. Lille. 1878.


Contains a brief paragraph, p. 451, on the few beetles found.


Wood bored by larvae of a longicorn beetle.


Note upon a locality in the roche calcaire of Mont St. Catherine, near Rouen, where elytra with metallic colors had been found.


A notice by the editors of the magazine of Menge's Triena.

Evans, C. E. Insect remains in the Paludina beds at Peckham (with note concerning them by F. Smith, as recorded in a letter from H. Woodward). (Geologist, 4: 39–40, fig.) 8°. London. 1861.

Figures an elytron and mentions others.


Under the head of Organic remains, pp. 398–400, a letter is printed from T. V. Wollaston concerning Coleoptera found in the pit, and deductions are drawn concerning the climate of the time in which they lived.


Twenty-five species mostly Carabidae and Chryso­smelidae are described and excellently figured.

Fliche, P. Sur les lignites quaternaires de Jarville près de Nancy.
BIBLIOGRAPHY OF FOSSIL INSECTS.

Fliche, P.—Continued.

Records, p. 1234, seven kinds of beetles, northern species not found in the forests. The insects were determined by Matthieu de l'École forestière.


Notices the occurrence, p. 979, of the Conchophila punctata, aff. radulosa, wi s.

15. 1884. 3 pp., fig.

Descrives and figures a beetle found in a tertiary pebble.

Führ, J. Kritische beträge zur kenntniss des tores. (Jahrb. k. k. geol. reichsanst., 35: 677–726, taf. 12.) 8°. Wien, 1855.

Mentions a Donacia on p. 679.

Gaudin, C. T. See Heer, O.


A sharp criticism of Oustalet's memoir on the fossil insects of Anvergve.

See same title in Section VII.


Proposes Mengea for Trianae prooccupied.

Guérin-Méneville, F. E. See Barthélemy-Lapommeraye, A.


Mere exhibition of a specimen.


A brief general statement of the peculiarities of the beetle-fauna of Oeningen.

Heer, O.—Continued.


Laparocerus wollastoni described in a note on p. 14, and figured pl. 2, fig. 34.


In a note, p. 322, mentions the occurrence of species of Donacia and Hylobiid in the Dürnten clays. This appears to be the only publication of the address.

— Ueber die fossilen calosomen.

4°. [Zürich, 1860.] pp. 10, pl.

Published in the Programm of the Polytechnicum of Zürich. Seven species are described and figured from Locle and Oeningen, preceded by general remarks on fossil and recent Carabide.


Describes and figures 110 species, nearly all of them new. In an introduction of five pages some general results of the study of Oeningen Coleop·tera are tabulated, the most interesting of which appear to be that the fauna is more European in character than the flora and less rich in American forms, and that many species are related to those which now enjoy a wide distribution.


— Nachträge zur mioceenen flora Grönlands, enthaltend die von der schwedischen expedition in sommer 1870 gesammelten mioceenen pflanzen. 4°. Stockholm, 1874. pp. 29, pl. 5. (Kongl. svenska vetensk.-akad. handl., 13, ii.)

Insekten, p. 25, pl. 5, describes two species of Cistelites.

Forms vol. 3, no. iii, of Heer's Flora fossilis arctica.

— Notes on fossil plants discovered in Grinnell Land by Captain H. W. Feilden, naturalist of the English north
**Heer, O.—Continued.**


Mentions, p. 69, the occurrence of a single elytron of a beetle with the plants.


--- See also La Harpe, P. de.


The translation omits all references to animal remains.

**Heyden, C. von.** Fossile insekten aus der braunkohle von Sieblos. Nachtrag. (Palaeontogr., 8: 15-17, pl. 3, figs. 7-9.) 4°. Cassel. 1859. Description of a beetle and two Hemiptera. See same title in Section VII.


**Hislop, S.** See Murray, A.

**Hollingworth, George H.** Description of a peat-bed interstratified with the boulder drift at Oldham. (Quart. journ. geol. soc. Lond., 37: 713-714, fig.) 8°. London. 1881. Reports beetles in the main bed of peat, p. 713.

**Hope, F. W.** Description de quelques insectes non décrits trouvés dans la résine animée. (Mag. de zool., (9), 4, Ins., pl. 87-89.) 8°. Paris. 1842. Three coleoptera are described and figured in detail.

**Horn, George Henry.** Notes on some coleopterous remains from the bone cave at Port Kennedy, Pennsylvania. (Trans. Amer. ent. soc., 5: 241-245.) 8°. Philadelphia. 1876. Collected, without change of pagination, with other papers under the title: Miscellaneous papers on American coleoptera. Eleven species are described.

**Judd, John Wesley.** The secondary rocks of Scotland. Second paper. On the ancient volcanoes of the Highlands and the relation of their products to the mesozoic strata. (Quart. journ. geol. soc. Lond., 30: 290-301, pl. 22-23.) 8°. London. 1874. Mentions, p. 234, the discovery of “elytra of two species of beetles” in lacustrine deposits at Ballypapily, Co. Antrim, Ireland, which he refers to the miocene. These beetles were figured by Bally (q.v.).


Describes borings of four different tertiary beetles, of which three are named, one from Lebanon, the others from Nieder Lausitz. A list of known similar borings is added.


Contains a letter from Heer, who examined the organic remains in the peat and found the elytra of a Donacia.


Describes an Aphodius.


On p. 98 he enters Entomolithus coleoptri, unknown locality, which he likens to a carabid.


Mention is made, p. 175, of the discovery of three elytra of Coleoptera, which Curtis determines to be identical with living British species of Donacia and Copris.

Matthieu. See Pliche, P.

Menge, A. See Douglas, J. W.


Description of the species. Only the last reference seen.


Contains a list, p. 103, of insectes contenus dans le succin described by the author.


Occurs as a separate note in an article by Hislop, "On the tertiary deposits associated with the trap-rock in the East Indies, with descriptions of the fossil shells by the Rev. Stephen Hislop, and of the fossil insects by Andrew Murray, and a note on the fossil Cypriade by T. Rupert Jones." Thirteen Coleoptera (Buprestisde and Curculionide) are mentioned and figured; only one is named.


Mentions the discovery of fossil beetles (p. 325), at Orsberge on the Rhine.


The second part describes 81 species after the same plan as in the preceding memoir. 32 of them are Rhychnophora, 19 Staphylinae, 11 Carabidae, and the rest scattered among various families; the memoir opens with a chapter of 74 pages on the geological relations of the gypsium baux of Aix. For first part, see Section VI.

——— See also Giard, A.


Mentions the discovery of elytra of beetles in alluvial matter lying about the roots of trees resting on clay at Port Mellin, p. 23.


Mentions, p. 62, the occurrence of elytra of beetles in similar situations as the preceding at Ready Money.

Treats only of the same insect as the next.


Under the name of Hylolium tortonianum describes, p. 10 (932), and figs. pl. 1, fig. 9, borings in pine from plicocene deposits.


The letter is addressed to M. Cordier. The amber containing insects is mentioned on pp. 114-115. The insects mentioned are Aphodius fossor, Buprestis, Galeruca, "altises, and "le bonelier," all on p. 114. It is quoted in the Royal society's catalogue under the title: De la disposition de la tourbe à Elseneur et des insectes qu'on y trouve.


Describes finding fourColeoptera in a stratum of debuminised peat in a freestone quarry near Fifeness.


Describes three genera, each with one species.

Scheuchzer, J. J. Piscium querele et vindiciae expositione, 4°. Tiguri. 1708. t. p., pp. 36, pl. 5.

Mentions, p. 15, and figures, pl. 2, a "Scarabaeus in lapide fissili inmingens" as a relic of the deluge.


Describes beetles obtained from rock-salt in Wielieza by dissolving the salt.


Describes thirty species, mostly from Green River, Wyoming, and White River, Colorado.


Referred to Loxandrus and Loricera.

Scudder, S. H.—Continued.


Sub cortical mines of a scolytide beetle found on a juniper root in interglacial clays.


One hundred and twenty-six species of 63 genera of Carabidae, Dytsididae, Hydrophilidae, Silphidae, Staphylinidae, and Coccinellidae have been found in the American tertiaries.


Elytra of 32 species have been discovered, mostly Carabidae (20 sp.) and Staphylinidae (7 sp.). All are extinct, but resemble insects of the same region.

--- See also Grote, A. R.


§ V. Insectes, p. 457, gives a very brief account of the remains of Coleoptera found in the caverns.


Records, p. 407, the "wings of coleopterous insects" at a depth of 46 feet from the surface of the ground below layers of peat and sea mud in a section at Pentowan, Cornwall, half a mile from the coast.

Smith, F. See Evans, C. E.


Describes two species of Bothrideres.


Describes, pp. 3-4, and figures, pl. 1, figs. 13-14, the elytron and wing of a beetle, Melolonthites parschlingiana.


Refers in several places, on the authority of others, to the discovery of coleopterous remains in pleistocene deposits.
Ussher, W. A. E.—Continued.


Refers, pp. 30, 32, to the occurrence of elytra in alluvium and clay at different localities, on the authority of others.


Contains, pp. 225-250 (1852), Weber ein fossils forlder in der Vorder-Eifel bei dem dorfe Wohlscheid, in which, p. 229, pl. 25, figs. 17-18, a Pterostichus is noted.


Mentions, pp. 194, 206, branches of trees found in the tertiary clays of Sheppey, bearing excrecences produced by insects; and, p. 230, the discovery of beetles in the tertiary deposits at Newport.

Westwood, J. O. See Brodie, P. B.


Indicates briefly the generic affinities of a dozen species.

— See also Fisher, O.

Woodward, H. See Evans, C. E.

** The statement is somewhere made that Debye, Deutsch. naturf. versamml., 1847: 260-328, or Rheinl. u. westf. verhandl., 1848: 113-425, has a reference to two kinds of Coleoptera at Aix; but neither has.

VIIg.—Cenozoic Diptera.

** See also under Section I and Section VI.

Breyner, J. P. Observatio de succinea gleba, plante cujusdam folio impraenata, rarissima. (Phil. trans., 34, 154-156, pl., fig. 2.) 4°. London. 1728.

Mentions a fly in amber, with minute figure of same. See same title in Section VIIb.

Brongniart, C. J. E.—Continued.


Same as the preceding.


The fossil Diptera described as Protomyia and Bibiospis belong to the modern genus Peclia.


Discusses in full the species of fossil Bibionide described as Protomyia and Bibiospis, and concludes that all belong to Peclia; redescribes Peclia oustaleti; an enlargement of the preceding paper.


Records finding the larva of Stratiomyus, p. 2 (419).

— See also Giard, A.


The first account, p. 306, of fossil insects from the American tertiaryes. He speaks only of Diptera in a petroleum shale.

Giard, A. Note sur un diptère nouveau pour la faune française (Penthetria holosericea Meig.) suivie de quelques remarques sur les bibionides fossiles. (Bull. scient. hist. litt. dép. nord, ann. 8, pp. 172-178.) 8°. Lille. 1876.

Discusses, pp. 177-178, the Penthetria vailhantii of Oustalet from Auvergne. Continued in the following.


Critiques the classification by Oustalet and Brongniart of various species placed by them in Protomyia. A continuation of the preceding.

— See also Oustalet, E.
**Heer, O. See Loew, H.**

**Heyden, C. von und L. von. Bibliothek aus der rheinischen braunkohle von Rott. (Paleontogr., 14: 19-30, pl. 8, 9, figs. 1-12.) 4°. [Cassell.] 1865.**

Description of twenty-three species, mostly Protomyia, and remarks on three or four others.

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**Dipteren-larve aus dem tertiarischen von Nieder-Florschheim in Rhein-Hessen. (Paleontogr., 15: 157, pl. 23, fig. 22.) 4°. Cassel.' 1866.**


Description of Muscidites deperditus. See same title in Sect. VIII.


Describes forty-one species of seventeen genera, besides seven larvae of two different genera. In an appendix, pp. 265-266, a few details are given of other insects, and the collections in which they are found.

**Langius, Carolus Nicolaus. Historia lapidum figuratorum Helvetiae, ejusque viciniae, in qua non solum enarraturn omnia eorum genera, species et vires, aeneisque tabulis repraesentatur, sed insuper adductum eorum loca nativa, in quibus repeteri solent, ut curbillat facile sit eos colligere, modo adducita loca adire libeat. 8°. Venetiis. 1708. 2 t. p., pp. (26), 165, tab. 52.**

A single "Musca" from Oeningen is figured on pl. 7, fig. 5, and mentioned on p. 39.


Separate Berlin edition not seen; of the other, pp. 28-44 are occupied by a general systematic review of the amber Diptera, of which many new genera and species are indicated with brief or no description. More than 10,000 specimens were examined by Loew, and about 575 species indicated.

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**Beschreibung einiger neuen Tipularia terricola. (Linn. entom., 5: 385-406, tab. 2.) 8°. Berlin. 1851.**

Treats, pp. 400-401, pl. 2, figs. 16-23, of the genus Toxorhina and figures three amber species.

**Loew, H.—Continued.**

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An important discussion of the problems suggested by a study of the Diptera of the Prussian amber, of which at this time 850 species were known to the author, and of which over 650, belonging to 101 genera, had been satisfactorily determined. These insects belong to a single district fauna, and represent only a fragment of that, viz.: those low flying Diptera which love moist places sheltered from the wind. The generic types which existed in the amber period have probably been preserved down to our time. Of all living types North American Diptera, especially those found from lat. 32° to 40° most nearly resemble the amber fauna; next to these, those of Europe.


Translation by R. von Osten Sacken, who adds a single brief note on living species common to Europe and America.

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**Monographs of the Diptera of North America; prepared for the Smithsonian Institution. Part 1; edited, with additions, by R. Osten Sacken. 8°. Washington. 1862. pp. 24, 221, pl. 2.**

References to amber Diptera, partly original, will be found on pp. 11, 17.

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A paragraph in his Supplement, pp. 321-322, points out that this family of American flies "shows the most remarkable analogy to the remains of the fossil fauna of the same family preserved in amber."

---

**Berichtigung der generischen bestimmung einiger fossilen dipteren. (Zeitschr. gesammel. naturw., 32: 180-191, taf. 5.) 8°. Berlin. 1868.**

A revision of the tertiary Bibionidae described by Heer.


Brief notice of the discovery of two flies.

**Osten Sacken, Carl (Robert Romanoff) von. New genera and species of North American Tipulidae with short palpi, with an attempt at a new classification of the**
Osten Sacken, C.—Continued.
Refers, pp. 200, 221, 251, to the relationship of Protoplasa, Elephantomyia and Rhamphidia to
the species of the Baltic amber, and the identity of Toxorrhina and Limmobiorbyncbus.

— Appendix to the paper entitled
Brief remarks on the amher genera Toxorrhina and Macrochile, p. 17.

— Monographs of the Diptera of
Compared the American fauna to that of the European amber fauna, pp. 57–58; devotes a
fia couple of paragraphs, pp. 197–199, 112–114, to show
that the amber species referred by Loew to Toxor-
rhina belong to Elephantomyia; and another to
the Eriocera of Baltic amber, pp. 251–252.
— Ueber einige merkwürdigen
fälle der geographischen verbreitung von
Abstract of a paper published in the Tageblatt of the 52rie Versammlung deutscher naturforscher,
pp. 232–233. Contains a few words about the Tipulide of amber as compared with those living in N. America.

— A relic of the tertiary period in
Europe, Elephantomyia, a genus of Tipu-
Three species are found in amber, one in E-
urope and America and one in South Africa.
— See also Loew, H.

Oustalet, É. Note sur une empreinte
de diptère fossile des marnes du gypse
des environs de Paris. (Bull. soc. philom.
Not seen; title received from the author. Biblio
chapuis is described.

— Réclamation sur une question
de nomenclature. (Bull. scénces soc.
Lille. 1878. (With notes by Giard.)
A claim that the name of the original describer of the species of Protomyia referred by Brongni-

Oustalet, É.—Continued.
art to Plecia should still remain attached to them.
Giard refers to the opinion of Loew regarding
Heer's Protomyia.

— See also Giard, A.

Staub, Moriz. Tertiäre pflanzen von
Felek bei Klaensenburg. 8°. Budapest.
1883. t. p., 19 pp., 1, pl. (Mitth. jahrb.
k. ungg. geol. anst., 6: 263–281, pl. 18.)
Describes and figures Bibio kochii.

Unger, F. Fossil insecten. 4°. [Broselau.] 1841. pp. 16, pl. 2. (Acta
1842.
Describes and figures eight Diptera from the
tertiary beds of Radoboj. A geological section is
given on the first plate, and the larger part of the
paper, pp. 415–424, is given to an account of
the locality.

Williston, Samuel Wendell. Some in-
teresting new Diptera. (Trans. Conn.
Haven. 1880.
In describing a new nesemuid from Wash-
tagton Territory, he discusses the fossil Palaeolobus
of Florissant.

— Synopsis of the North American
30, 335, pl. 12. (Bull. U. S. nat. mus.,
31.)
Contains, pp. 281–283, a section on Geological
distribution, mostly a review of Florissant
Syridae.

VII.—Cenozoic Lepidoptera.
* * See also under Section I and Section
VI.

Boisduval, Jean Alphonse. Compte
verbal du rapport . . . sur un dessin . . .
qui représente une empreinte de lépidopo-
tre fossile, trouvée dans les environs
Compares the butterfly to the modern genus
Cyllo. Reproduced in Schudder's Fossil butter-
flies, p. 15.

— Rapport sur une empreinte de
lépidoptère trouvée dans les marnes des
environs d'Aix en Provence, et communi-
quée par M. de Saporta. (Ann. soc. ent.
1840.
Description of Cyllo seputa. Reproduced in
Schudder's Fossil butterflies, pp. 15–17.

— Quelques mots de réponse à M.
Alex. Lefèbvre sur les observations rela-
Boisduval, J. A.—Continued. 


Not seen. The author states that it is based on Scudder’s work on the subject, and contains nothing original.


Under the heading Fossil species, pp. 189-190, are given brief notes on Neorinopis sepulta, to show that it “is exactly intermediate in character between ... Neorina, Antirrhoea, and Anthyphlebia.”

Catalogue of diurnal Lepidoptera described by Fabricius in the collection of the British museum. 80. London. 1869. pp. 5, 303, pl. 3.

Refers, p. 109, to a possible relationship between Argynnias diana and the fossil Vanessa pluto.


Describes Lithopsycha antiqua from the Isle of Wight terataries, figures it and related living forms, and discusses the development of color in Lepidoptera.


First mention of the discovery of caterpillars at Aix.


Describes and figures Satyrites incertus, the first fossil caterpillar of a butterfly known, and discusses its probable affinities.


Several numbers on the plates are repeated, followed by “A.” A single fossil species, Cylo sepulta, is catalogued on p. 361.


First announcement of Neorinopis as a “Nymphale.” Reproduced in Scudder’s Fossil butterflies, p. 15.


P. (64) in pl. 1 (1888) contains a figure of Mylothrites pluto, with suggestions concerning its affinities with the living Argynnis diana.


Records a pupa of Triphena from tertiary deposits.


A paragraph giving a general account of the known fossil butterflies.


Describes a caterpillar, Tineites cristallus, found in quartz from Siberia.


Includes the few fossil species.


An argument to show that Boisduval had wrongly interpreted both the neuration and the markings of the wings. Reproduced in Scudder’s Fossil butterflies, pp. 17-25, pl. 1, figs. 14-16.

Describes on pp. 46-47 the structure of the integument of a fossil caterpillar from the oligocene of Florissant.


Extract: Description of a new fossil butterfly (Satyrites reynesi) found at Aix in Provence. 8°. London. 1872. pp. 2, pl. 1. (Geol. mag., 9: 532–533, pl. 13, figs. 2, 3.)

Also entitled on cover: On a new fossil butterfly. The English translation is by the editor of the Geological magazine. The species is from the tertiary.


Describes in detail the generic and specific characters of the five known species, besides four new ones, all from European territories. After an historical introduction there are sections on their geological relations, the probable food plants of their caterpillars, the present distribution of their nearest allies, and the fossils believed to be erroneously referred to butterflies. More or less extended abstracts will be found in Arch. sc. phys. nat., n. s., 55: 102–103; 57: 91–92. 8°. Genève. 1876–Neues jahrb. miner., 1877: 443–447. 8°. Stuttgart. 1877–Amer. journ. sc., (3), 11: 74–75. 8°. N. Haven. 1876–Amer. nat., 10: 53, 106–107. 8°. Salem. 1876. See also Boisdalvi, J. A.; Duponchel, P. A. J.; and Lefebvre, A.


Forms Excursus xxiv. A general account of the relations of the few species known in Europe and America.


Descriptions and illustrations of seven species, with an appendix on a living African libytheid allied to one of them: each is referred to a distinct and extinct genus and all but one are Nymphalidae.

— See also Brodie, P. B.; Lefebvre, A.; and Strecker, H.

Serres, P. M. T. de. Deuxième note additionelle au Mémoire géologique . . .


Page 172 contains a Note relative au lépidoptère figuré au no. 4; but the plate of the butterfly, Neornipos sepulsa, appears to have been published in a limited edition only, as the two or three copies I have examined do not contain it. Two years later Serres mentions its publication.


Pp. 251–254 are mostly given to combating the arguments drawn from the presence of Cyllo sepulsa in favor of the equatorial climate of Aix.


Contains, p. 19, a paragraph on fossil butterflies drawn from Scudder's paper, with one or two comments.


A study of the evolution and specialization of butterflies and moths, showing how the markings of the wings of fossil Lepidoptera harmonize with the systematic design found in recent species; in figs. 104, 105, on p. 177, he attempts restorations of Neornipos sepulsa and a tertiary Bombyx, both from Aix.

Westwood, J. O. See Doubleday E., and Westwood, J. O.

VIII.—Cenozoic Hymenoptera.

* * See also under Section I and Section VI.


Figures a Formica, pl. 4, fig. 6, 6a, 6b, with mention on p. 26. The Formica is said to come from Thalheim, but the locality of the plant on the same slab with it is given as Sotzka!

See same title in Section VII.

Brischke, D.—Continued.
Brief summary of the genera known, based in part on Menge's collection, with the number of
specimens in each.

Duisburg, H. von. Zur bernstein-
fauna. (Schriften k. phys.-ökon. ge-
Discusses the systematic position of the small-
est insect fossil known, a species of the hymen-
opterous genus Myrmr, the expanse of whose
wings is scarcely more than half a millimeter.

Emery, C., et Forel, Auguste. Cata-
logue des formicidés d'Europe. (Mitth.
schweiz. entom. gesellsch., 5: 441-481.)
8°. Schaffhausen. 1879.
Contains, p. 481. Liste des ouvrages traitant des
formicidés fossiles (6 titles).

Faujas-de-Saint-Fond, Barthélemy.
Nouvelle notice sur les plantes fossiles
renfermées dans un schiste marneux des
environs de Chaumerac et de Roche Sauve, département de l'Ardèche. (Mém.
Gives the opinion of Latreille on a species of
"Polistes" figured on the plate.

Forel, Auguste. See Emery, C., et
Forel, Auguste.

Haesbert, Martin Johann. De con-
chylio et petrifacus. (Ephem. med.
phys. acad. caes. leop. nat. curios., dec. 3,
Reports a fossil bee in the collection of Sche-
dius, figured tab. 2, fig. 4.

Heer, O. Ueber fossileameisen. (Mit-
theil. naturf. gesellsch. Zürich, 1: 167-
The fossil ants of Oeningen and Radobo
are winged and either males or females, neutrals being
rarely preserved; three fourths are females. The
individuals are very abundant, and are preserved in
large assemblages, and many species in close
contiguity. Most of them are Formicidae, and
they form the best data for comparison of the Oe-
ingen and Radoboj faunas.

TRANSLATION: On fossil ants. (Quart.
London. 1850.
Translated by T. R. Johnson.

— Fossil hymenopteren aus Oe-
ingen und Radoboj. 4°. (n. p. n. d.)
pp. 42, pl. 3. (Neue deutschr. allgem.
schweiz. gesellsch. gesammte naturw.,

Heer, O.—Continued.
Catalogues and describes sixty-nine species. In
an appendix, p. 42, notice is taken of Mayr's criti-
cism of his former treatment of the fossil ants.

—— See also Mayr, G. L.

Latreille, Pierre André. See Faujas-
de-Saint-Fond, B.

Malfatti, G. Dne piccoli simenotteri
fossili dell'ambra siciliana. 4°. [Roma.
1881] pp. 4, figs. (Atti accad. line., (3),
Describes and figures a Myrmr and a Tap-
noma.

Martialis, Marcus Valerius. Epigram-
 mata. Liber 4, section 32.
Et latet et lucet Phaethontide condita gatta.
Ut videatur apis nectare clausa suo.
Dignum tantorum pretium tuli illa laborum;
Credibile est ipsam sic voluisse mari.
Some writers have thought that Martial here
referred to amber-inclusa.

Mayr, Gustav Leopold. Vorläufige
studien über die Radoboj-formiciden in
der sammlung der k. k. geologischen
reichsanstalt. 8°. Wien. 1867. pp. 16,
pl. 1. (Jahrh. geol. reichsanst., 17: 47-
61, tab. 1.) 8°. Wien. 1867.
A revision of the specimens described by Heer
with reference to modern genera. See also
Heer, O.

ABSTRACT: On fossil insects. (Quart.
London. 1867.

—— Die ameisen des baltischen
tierreiches; mit 106 figuren auf fünf ta-
flen. (Beitr. naturk. Preussens, 1) pp. 4,
102, (10), tab. 5. 4°. Königsh. 1868.
Extended descriptions of forty-nine species and
twenty-three genera, with some preliminary
general observations, including a review of pre-
vious literature, and a comparison of amber
species with modern types and those of Radobo
faunas.

Saussure, Henri de. Note sur un
nouvel insecte hyménéoptère fossile. 8°.
zooll., (2), 4: 579-582, pl. 23, figs. 5-6.)
Describes and figures Pimpla antiqua from ter-
itories of Ax.

Scudder, S. H. Note on fossil ants
from South Park, Colorado. (Amer.
About forty species had been found at Floris-
sant.

Bull 69——7
BIBLIOGRAPHY OF FOSSIL INSECTS.

VIII.—COPAL INSECTS.

**Bloch, Mark Eliez. Beytrag zur naturgeschichte des kopals. 16°. Berlin. 1776. (Beschäft. berl. gesellsch. naturf. fr. 2: 91-196, tab. 3-5.)

Contains, pp. 164–190, Verzeichniss einiger merkwürdigen insekten, welche in kopal eingegossen, with rude figures.


Describes several new genera and species of insects found in African gum copal. Separate copy not seen. See also Lucas, H.


A very full abstract including descriptions of the species, signed D. (Desmarest?)


Briefer abstract of same.

**Desmarest, A. G. See Dalmann, J. W.


Descries three resinata from copal is described on p. 121.


Describes three species from copal. See same title in Section VII. e.


Includes three Psocina from copal. See same title in Section VII. e.


Contains descriptions and figures of three copal Diptera.


Remarks on the omission of these insects from Gemminger and Harold's Catalogus coleopterorum, and cites the species of all orders figured by Dalman.


Describes three Coleoptera.


General notes based on a collection exhibited. A single paragraph is devoted to insects.


On copal insects.

**Westwood, J. O. Characters of Embia, a genus of insects allied to the white ants (Termites); with descriptions of the species of which it is composed. (Trans. linn. soc. Lond., 17: 369–374, pl. 11.) 4°. London. 1837.

In a postscript on p. 374 two species from gum copal are noticed.


Redescribes some of Dalman's copal insects. The living species, whose economy is known, are parasitic on eggs of Mantidae.
## INDEX OF AUTHORS

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[Bulletin No. 69.]

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"The publications of the Geological Survey shall consist of the annual report of operations, geological and economic maps illustrating the resources and classification of the lands, and reports upon general and economic geology and paleontology. The annual report of operations of the Geological Survey shall accompany the annual report of the Secretary of the Interior. All special memoirs and reports of said Survey shall be issued in uniform quarto series if deemed necessary by the Director, but otherwise in ordinary octavos. Three thousand copies of each shall be published for scientific exchanges and for sale at the price of publication; and all literary and cartographic materials received in exchange shall be the property of the United States and form a part of the library of the organization: And the money resulting from the sale of such publications shall be covered into the Treasury of the United States."

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ANNUAL REPORTS.


The Tenth and Eleventh Annual Reports are in press.

MONOGRAPHS.

I. Lake Bonneville, by Grove Karl Gilbert. 1890. 4°. xx, 438 pp. 51 pl. 1 map. Price $1.50.


IV. Comstock Mining and Miners, by Elliot Lord. 1883. 4°. xiv, 451 pp. 3 pl. Price $1.50.
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V. The Copper-Bearing Rocks of Lake Superior, by Roland Duer Irving. 1883. 4°. xvi, 464 pp. 15 pl. 29 pl. and maps. Price $1.85.

VI. Contributions to the Knowledge of the Older Mesozoic Flora of Virginia, by William Morris Fontaine. 1883. 4°. xi, 144 pp. 54 pl. 54 pl. Price $1.05.


XI. Geological History of Lake Lahontan, a Quaternary Lake of Northwestern Nevada, by Israel Cook Russell. 1885. 4°. xiv, 288 pp. 46 pl. and maps. Price $1.75.


XIII. Geology of the Quicksilver Deposits of the Pacific Slope, with atlas, by George F. Becker. 1888. 4°. xix, 456 pp. 7 pl. and atlas of 14 sheets folio. Price $2.00.


In preparation:


—Description of New Fossil Plants from the Dakota Group, by Leo Lesquereux.

—Geology of the Eureka Mining District, Nevada, with atlas, by Arnold Hague.

—Sauropoda, by O. C. Marsh.

—Stegosauria, by O. C. Marsh.

—Brontotheride, by O. C. Marsh.


—Flora of the Dakota Group, by J. S. Newberry.

—The Glacial Lake Agassiz, by Warren Upham.

—Geology of the Potomac Formation in Virginia, by W. M. Fontaine.

BULLETINS.


2. Gold and Silver Conversion Tables, giving the coining values of troy ounces of fine metal, etc., computed by Albert Williams, Jr. 1883. 8°. 8 pp. Price 5 cents.

3. On the Fossil Faunas of the Upper Devonian, along the meridian of 76°30', from Tompkins County, N. Y., to Bradford County, Pa., by Henry S. Williams. 1884. 8°. 36 pp. Price 5 cents.


24. List of Marine Mollusca, comprising the Quaternary Fossils and recent forms from American Localities between Cape Hatteras and Cape Roque, including the Bermudas, by William Healey Dall 1885. 8°. 336 pp. Price 25 cents.


27. Report of work done in the Division of Chemistry and Physics, mainly during the fiscal year 1884-'85. 1886. 8°. 80 pp. Price 10 cents.


34. On the relation of the Laramie Molluscan Fauna to that of the succeeding Fresh-water Eocene and other groups, by Charles A. White. 1886. 8°. 54 pp. 5 pl. Price 10 cents.


42. Report of work done in the Division of Chemistry and Physics, mainly during the fiscal year 1885-'86. F. W. Clarke, chief chemist. 1887. 8°. 152 pp. 1 pl. Price 15 cents.


47. Analyses of Waters of the Yellowstone National Park, with an Account of the Methods of Analysis employed, by Frank Austin Gooch and James Edward Whittlefield. 1888. 8°. 84 pp. Price 10 cents.
IV ADVERTISEMENT.

52. Report of work done in the Division of Chemistry and Physics, mainly during the fiscal year 1887-87, by F. W. Clarke, chief chemist. 1889. 8°. 96 pp. Price 10 cents.
55. The Glacial Boundary in Western Pennsylvania, Ohio, Kentucky, Indiana, and Illinois, by George Frederick Wright, with an introduction by Thomas Chrowder Chamberlin. 1890. 8°. 112 pp. incl. 1 pl. 8 pl. Price 15 cents.
56. The Gabbros and Associated Rocks in Delaware, by Frederick D. Chester. 1890. 8°. 45 pp. 1 pl. Price 10 cents.
60. A Bibliography of Paleozoic Crustacea from 1698 to 1889, including a list of North American species and a systematic arrangement of genera, by Anthony W. Vogdes. 1890. 8°. 177 pp. Price 15 cents.
61. A Report of work done in the Division of Chemistry and Physics, mainly during the fiscal year 1887-89, by F. W. Clarke, chief chemist. 1890. 8°. 60 pp. Price 10 cents.
62. On a Group of Volcanic Rocks from the Tewa Mountains, New Mexico, and on the occurrence of Primary Quartz in certain Basalts, by Joseph Paxson Idlins. 1890. 8°. 34 pp. Price 5 cents.
63. The relations of the Traps of the Newark System in the New Jersey Region, by Nelson Horatio Darton. 1890. 8°. 82 pp. Price 10 cents.

In press:
68. Index to the Known Fossil Insects of the World, by Samuel Hubbard Scudder.
70. The Viscosity of Solids, by Carl Barus.

In preparation:
— Mesozoic Fossils in the Permian of Texas, by C. A. White.
— A Late Volcanic Eruption in Northern California and its Peculiar Lava, by J. S. Diller.
— The Compressibility of Liquids, by Carl Barus.
— The Eruptive and Sedimentary Rocks on Pigeon Point, Minnesota, and their contact phenomena, by W. S. Bayley.
— A Bibliography of Paleobotany, by David White.


The money received from the sale of these publications is deposited in the Treasury, and the Secretary of the Treasury declines to receive bank checks, drafts, or postage stamps; all remittances, therefore, must be by POSTAL NOTE or MONEY ORDER, made payable to the Librarian of the U.S. Geological Survey, or in CURRENCY, for the exact amount. Correspondence relating to the publications of the Survey should be addressed

TO THE DIRECTOR OF THE
UNITED STATES GEOLOGICAL SURVEY.

WASHINGTON, D. C., November, 1890.