



C

U. S. DEPARTMENT OF AGRICULTURE.
DIVISION OF ENTOMOLOGY.
BULLETIN No. 16.

THE
ENTOMOLOGICAL WRITINGS

OF

DR. ALPHEUS SPRING PACKARD.

BY

SAMUEL HENSHAW.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1887.



51
52
39

U. S. DEPARTMENT OF AGRICULTURE.
DIVISION OF ENTOMOLOGY.
BULLETIN No. 16.

THE
ENTOMOLOGICAL WRITINGS

OF

DR. ALPHEUS SPRING PACKARD.

BY

SAMUEL HENSHAW.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1887.

PHILOSOPHY 101

PHILOSOPHY 101

The first part of the course is devoted to the study of the foundations of philosophy. We begin with the question of the nature of reality and the relationship between the mind and the world. We then turn to the question of the nature of knowledge and the methods of philosophy. The second part of the course is devoted to the study of the history of philosophy. We begin with the ancient Greeks and then move on to the medieval and modern periods. The third part of the course is devoted to the study of contemporary philosophy. We begin with the phenomenologists and then move on to the analytic philosophers. The fourth part of the course is devoted to the study of the philosophy of language. We begin with the philosophy of language and then move on to the philosophy of action. The fifth part of the course is devoted to the study of the philosophy of mind. We begin with the philosophy of mind and then move on to the philosophy of psychology. The sixth part of the course is devoted to the study of the philosophy of science. We begin with the philosophy of science and then move on to the philosophy of biology. The seventh part of the course is devoted to the study of the philosophy of art. We begin with the philosophy of art and then move on to the philosophy of literature. The eighth part of the course is devoted to the study of the philosophy of religion. We begin with the philosophy of religion and then move on to the philosophy of ethics. The ninth part of the course is devoted to the study of the philosophy of politics. We begin with the philosophy of politics and then move on to the philosophy of law. The tenth part of the course is devoted to the study of the philosophy of education. We begin with the philosophy of education and then move on to the philosophy of social theory. The eleventh part of the course is devoted to the study of the philosophy of culture. We begin with the philosophy of culture and then move on to the philosophy of aesthetics. The twelfth part of the course is devoted to the study of the philosophy of the future. We begin with the philosophy of the future and then move on to the philosophy of the past.

PHILOSOPHY 101

PHILOSOPHY 101

PHILOSOPHY 101

PHILOSOPHY 101

PHILOSOPHY 101

PHILOSOPHY 101

PHILOSOPHY 101

LETTER OF SUBMITTAL.

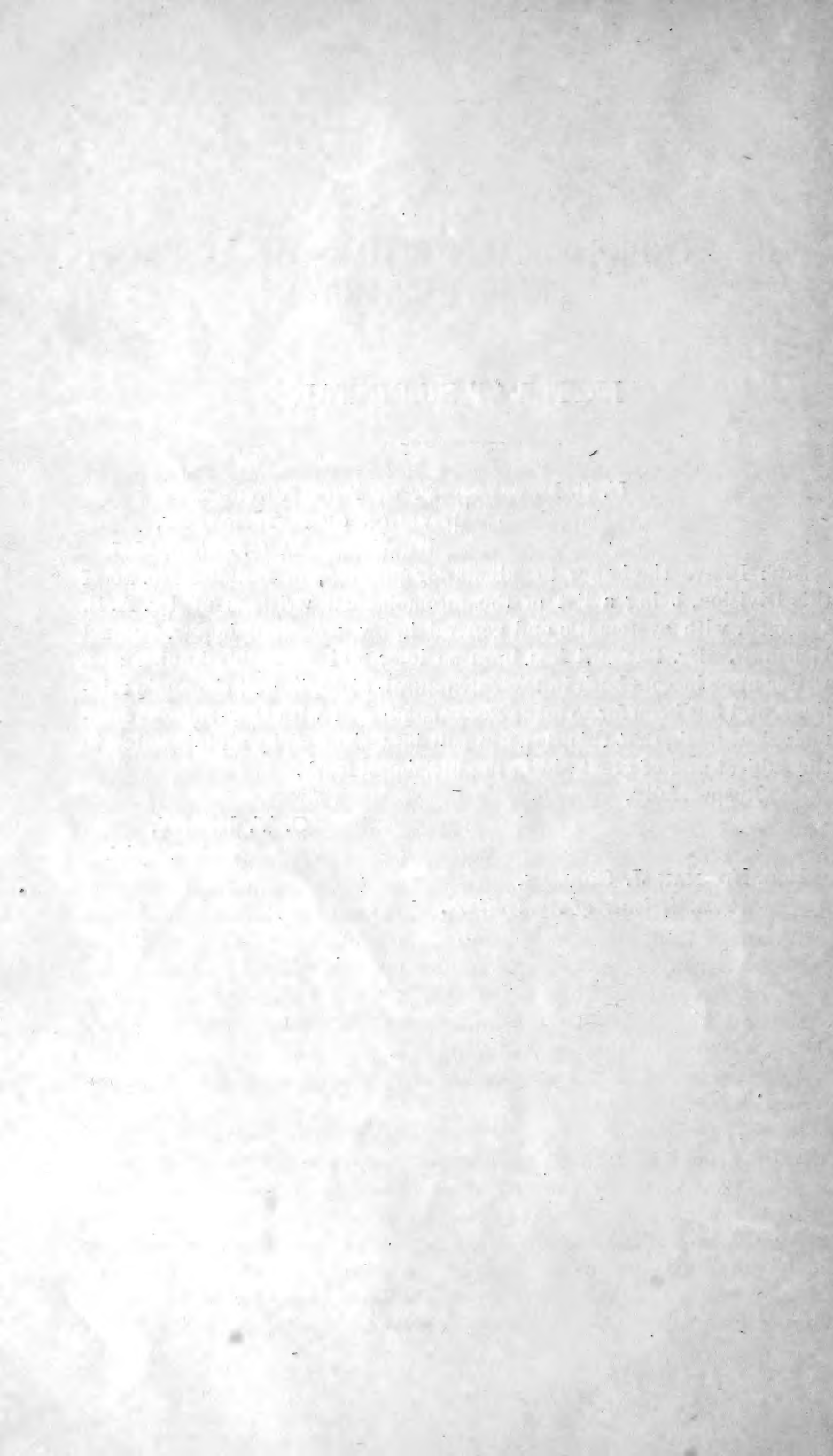
U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF ENTOMOLOGY,
Washington, D. C., July 5, 1887.

SIR: I have the honor to submit for publication Bulletin No. 16 of this Division, being a list of the entomological writings of Dr. A. S. Packard, with systematic and general index, prepared by Mr. Samuel Henshaw. Dr. Packard has been so long and favorably known as a writer upon insects both in their structural, biologic, and economic relations, and has been for so many years connected with Government entomological work, that this Bulletin will be welcomed by all interested in the subject and of great aid in the divisional work.

Respectfully,

C. V. RILEY,
Entomologist.

Hon. NORMAN J. COLMAN,
Commissioner of Agriculture.



THE ENTOMOLOGICAL WRITINGS OF ALPHEUS SPRING PACKARD.

By SAMUEL HENSHAW.

Alpheus Spring Packard was born in Brunswick, Me., February 19, 1839. His father was Alpheus Spring Packard, D. D., for over sixty years a professor in Bowdoin College. His mother was Frances E. Appleton, daughter of Rev. Jesse Appleton, president of Bowdoin College. After graduating from Bowdoin College in 1861, he spent three years at the Cambridge Museum of Comparative Zoology as a student of Prof. L. Agassiz. For a part of one year (1863-'64) he was the private assistant of Professor Agassiz.

Two summers (those of 1860 and 1864) were passed upon the coast of Labrador, where collections of marine invertebrates, insects, and quaternary fossils were accumulated for future investigations. In 1861-'62 he was assistant to the Maine Geological Survey. In 1864 he took the degree of Doctor of Medicine at the Maine Medical School. In September of the same year Dr. Packard was commissioned assistant surgeon First Maine Veteran Volunteer Infantry, and served in the Sixth Corps until mustered out with the regiment in July, 1865. In 1865-'66 he was acting custodian and librarian of the Boston Society of Natural History. Dr. Packard spent eleven years (1867-'78) in Salem. Appointed in 1867 one of the curators of the Peabody Academy, he was for about two years (1877-'78) the director of its museum. At Salem he established a summer school of biology, and in March, 1868, the first number of the *American Naturalist* was issued. Dr. Packard was one of the originators of this magazine, and for twenty years its editor-in-chief.

In 1867 he married Elizabeth Derby, daughter of Samuel B. Walcott of Salem, and has had four children, of whom a son and two daughters are living. As lecturer or instructor Dr. Packard has been connected with the Anderson School of Natural History, Bowdoin College, and the Maine and Massachusetts State Agricultural Colleges; as assistant he has been attached to the Kentucky Geological Survey, to Hayden's United States Geological Survey of the Territories, and to the United States Fish Commission. When in search of material for his studies

Dr. Packard has visited many parts of the United States and Mexico, and has dredged upon the coast of Labrador, in the Gulf of Maine, in Massachusetts and Buzzards Bays, off Beaufort, N. C., and upon the coast of Florida.

In 1871-'73 he served as State entomologist of Massachusetts, and from 1877-'82 was a member of the United States Entomological Commission. In 1878 he accepted the professorship of Zoology and Geology in Brown University, and still retains the position.

Dr. Packard was elected a member of the National Academy in 1872 and honorary member of the Entomological Society of London in 1884, and at home and abroad a number of societies have elected him to membership.

The entomological writings of Dr. A. S. Packard, recorded in Part I of the present list, form but a portion of his contributions to science. His memoirs in other branches in range cover the field of zoology, with occasional papers in allied sciences, and bear testimony alike to his versatility and the energy of his mind.

As a rule only the original place of publication is recorded, though a few reprints and reviews are included, as of possible value in case the original is inaccessible.

Dr. Packard's contributions to the natural history of *Limulus* are included in the present bibliography, because much of the discussion concerning the anatomy, genealogy, &c., of this animal bears directly upon the *Arachnida* and other *Arthropoda*.

Part II contains a systematic list of the new names proposed by Dr. Packard, and I have endeavored to note the collection containing the type, but in many cases have been unable to do so.

A number of the types noted as present in the collection of the Museum of Comparative Zoology are, however, in a very poor state of preservation, so that a word of explanation should be added.

The bulk of Dr. Packard's types were accumulated during his connection with, and formed part of the collection of, the Peabody Academy of Science at Salem.

From the year 1880 the Academy was without the services of an entomological assistant, so that the collections, "in spite of what care could be given them, were rapidly going to ruin," when, fortunately, in 1885, their valuable collections of insects were deposited without conditions in the museum at Cambridge, where their preservation is assured.

Dr. Packard has aided me throughout the preparation of the list, and I am indebted to Messrs. Edwards, Fernald, Hulst, Riley, and Smith for assistance in determining the value and position of many of the *Lepidoptera*. Mr. Howard has rendered a similar service with some of the parasitic *Hymenoptera*.

PART I.

CHRONOLOGICAL CATALOGUE.

1.

1861. PACKARD, ALPHEUS S. Entomological report on the Army-worm and Grain *Aphis*. <6th Ann. Rept. Me. Bd. Agric., 1861, pp. 130-145.

2.

1861. PACKARD, ALPHEUS S. Report on the Insects collected on the Penobscot and Alleguash Rivers during August and September, 1861. <6th Ann. Rept. Me. Bd. Agric., 1861, pp. 373-376.

3.

1862. PACKARD, ALPHEUS S. How to observe and collect Insects. <2d Ann. Rept. Nat. Hist. and Geol. Me., 1862, pp. 143-219, figs. Separate: Augusta, 1863, pp. 79, figs.

4.

1863. PACKARD, ALPHEUS S. On synthetic types in Insects. <Bost. Journ. Nat. Hist., 1863, v. 7, pp. 590-603, figs.

5.

1864. PACKARD, ALPHEUS S. [Note on *Stylops childreni*.] <Proc. Ent. Soc. Phil., 1864, v. 3, pp. 44-45.

6.

1864. PACKARD, ALPHEUS S. Synopsis of the *Bombycidae* of the United States <Proc. Ent. Soc. Phil., 1864, v. 3, pp. 97-130; 331-396.

7.

1864. PACKARD, ALPHEUS S. Note on the family *Zygænidæ*. <Proc. Essex Inst., 1864, v. 4, pp. 7-47, pl. 1-2.

8.

1864. PACKARD, ALPHEUS S. The Humble-bees of New England and their parasites; with notices of a new species of *Anthophorabia* and a new genus of *Proctotrupidæ*. <Proc. Essex Inst., 1864, v. 4, pp. 107-140, pl. 3.

9.

1864. PACKARD, ALPHEUS S. Report on the collection of Insects for 1863. < *Rept. Mus. Comp. Zool.*, 1864, pp. 36-44.

10.

1865. PACKARD, ALPHEUS S. Notes on two Ichneumons parasitic on *Samia columbia*. < *Proc. Bost. Soc. Nat. Hist.* 1865, v. 9, pp. 345-346.

11.

1866. PACKARD, ALPHEUS S. Observations on the development and position of the *Hymenoptera* with notes on the morphology of Insects. < *Proc. Bost. Soc. Nat. Hist.*, 1866, v. 10, pp. 279-295, figs; *Ann. and Mag. Nat. Hist.*, 1866, ser. 3, v. 18, pp. 82-99, figs.

12.

1866. PACKARD, ALPHEUS S. Revision of the fossorial *Hymenoptera* of North America. < *Proc. Ent. Soc. Phil.*, 1866, v. 6, pp. 39-115; 1867, v. 6, pp. 353-444.

13.

1866. PACKARD, ALPHEUS S. On certain entomological speculations—a review. < *Proc. Ent. Soc. Phil.*, 1866, v. 6, pp. 209-218.

14.

1867. PACKARD, ALPHEUS S. Insects and their allies. < *Amer. Nat.*, 1867, v. 1, pp. 73-84, figs.

15.

1867. PACKARD, ALPHEUS S. Wasps as marriage priests of plants. < *Amer. Nat.* 1867, v. 1, pp. 105-106, fig.

16.

1867. PACKARD, ALPHEUS S. The Insects of early spring. < *Amer. Nat.*, 1867, v. 1, pp. 110-111.

17.

1867. PACKARD, ALPHEUS S. The Insects of May. < *Amer. Nat.*, 1867, v. 1, pp. 162-164, figs.

18.

1867. PACKARD, ALPHEUS S. The Insects of June. < *Amer. Nat.*, 1867, v. 1, pp. 220-224, figs.

19.

1867. PACKARD, ALPHEUS S. The Red-legged Grasshopper. < *Amer. Nat.*, 1867, v. 1, pp. 271-272.

20.

1867. PACKARD, ALPHEUS S. The Insects of July. < *Amer. Nat.*, 1867, v. 1, pp. 277-279, figs.

21.

1867. PACKARD, ALPHEUS S. The Dragon-fly. < *Amer. Nat.*, 1867, v. 1, pp. 304-313, pl. 9, figs; *Science Gossip*. 1867, pp. 225-227.

22.

1867. PACKARD, ALPHEUS S. The Insects of August. < *Amer. Nat.*, 1867, v. 1, pp. 327-330, figs.

23.

1867. PACKARD, ALPHEUS S. The home of the Bees. < *Amer. Nat.*, 1867, v. 1, pp. 364-378; 1868, v. 1, pp. 596-606, pl. 10, figs.

24.

1867. PACKARD, ALPHEUS S. The eggs of the Dragon-fly. < *Amer. Nat.*, 1867, v. 1, p. 391.

25.

1867. PACKARD, ALPHEUS S. Insects in September. < *Amer. Nat.*, 1867, v. 1, pp. 391-392.

26.

1867. PACKARD, ALPHEUS S. The Clothes-moth. < *Amer. Nat.*, 1867, v. 1, pp. 423-427, figs.

27.

1867. PACKARD, ALPHEUS S. [Review of] Lubbock: Development of *Chlæon*. < *Amer. Nat.*, 1867, v. 1, pp. 428-431.

28.

1867. PACKARD, ALPHEUS S. The horned *Corydalus*. < *Amer. Nat.*, 1867, v. 1, pp. 436-437, figs.

29.

1867. PACKARD, ALPHEUS S. The Tiger-beetle. < *Amer. Nat.*, 1867, v. 1, pp. 552-554, figs.

30.

1867. PACKARD, ALPHEUS S. View of the lepidopterous fauna of Labrador. < *Proc. Bost. Soc. Nat. Hist.*, 1867, v. 11, pp. 32-63.

31.

1867. PACKARD, ALPHEUS S. [Increasing distribution of the Canker-worm.] < *Proc. Bost. Soc. Nat. Hist.*, 1867, v. 11, p. 88.

32.

1867. PACKARD, ALPHEUS S. Materials for a monograph of the *Phalænidae* of North America. < *Proc. Bost. Soc. Nat. Hist.*, 1867, v. 11, pp. 102-103.

33.

1867. PACKARD, ALPHEUS S. [On the larva of *Scenopinus*?] < *Proc. Essex Inst.*, 1867, v. 5, p. 94, fig.

34.

1867. PACKARD, ALPHEUS S. [Larva of salt-water *Chironomus*.] < *Proc. Essex Inst.*, 1867, v. 5, p. 187.

35.

1868. PACKARD, ALPHEUS S. The Insect fauna of the summit of Mount Washington as compared with that of Labrador. < *Amer. Nat.*, 1868, v. 1, pp. 674-676.

36.

1868. PACKARD, ALPHEUS S. On the development of a Dragon-fly, *Diplax*. < *Amer. Nat.*, 1868, v. 1, pp. 676-680, figs.

37.

1868. PACKARD, ALPHEUS S. Are Bees injurious to fruit? < *Amer. Nat.*, 1868, v. 2, p. 52.

38.

1868. PACKARD, ALPHEUS S. Apiphobia. < *Amer. Nat.*, 1868, v. 2, pp. 108-109.

39.

1868. PACKARD, ALPHEUS S. Entomological calendar [for April.] < *Amer. Nat.*, 1868, v. 2, pp. 110-111, figs.

40.

1868. PACKARD, ALPHEUS S. Fossil Insects. < *Amer. Nat.*, 1868, v. 2, p. 163, fig.

41.

1868. PACKARD, ALPHEUS S. Entomological calendar [for May.] < *Amer. Nat.*, 1868, v. 2, pp. 163-165, figs.

42.

1868. PACKARD, ALPHEUS S. The parasites of the Honey-bee. < *Amer. Nat.*, 1868, v. 2, pp. 195-205, pl. 4-5.

43.

1868. PACKARD, ALPHEUS S. Entomological calendar [for June.] < *Amer. Nat.*, 1868, v. 2, pp. 219-221, figs.

44.

1868. PACKARD, ALPHEUS S. Insects living in the sea. < *Amer. Nat.*, 1868, v. 2, pp. 277-278, figs.

45.

1868. PACKARD, ALPHEUS S. Salt-water Insects. < *Amer. Nat.*, 1868, v. 2, pp. 329-330.

46.

1868. PACKARD, ALPHEUS S. Entomological calendar [for August.] < *Amer. Nat.*, 1868, v. 2, pp. 331-334, figs.

47.

1868. PACKARD, ALPHEUS S. [Note on Fire-flies.] < *Amer. Nat.*, 1868, v. 2, pp. 432-433, figs.

48.

1868. PACKARD, ALPHEUS S. [Note on the Moose-tick.] < *Amer. Nat.*, 1868, v. 2, p. 559, figs.

49.

1868. PACKARD, ALPHEUS S. The embryology of *Libellula (Diplax)*, with notes on the morphology of Insects, and the classification of the *Neuroptera*. <*Proc. Amer. Assoc. Adv. Sci.*, 1868, v. 16, pp. 153-154.

50.

1868. PACKARD, ALPHEUS S. The Insect fauna of the summit of Mount Washington as compared with that of Labrador. <*Proc. Amer. Assoc. Sci.*, 1868, v. 16, pp. 154-158.

51.

1868. PACKARD, ALPHEUS S. On the development of a Dragon-fly (*Diplax*.) <*Proc. Bost. Soc. Nat. Hist.*, 1868, v. 11, pp. 365-372, figs.

52.

1868. PACKARD, ALPHEUS S. [Note on salt-water Insects.] <*Proc. Bost. Soc. Nat. Hist.*, 1868, v. 11, pp. 387-388.

53.

1868. PACKARD, ALPHEUS S. On the structure of the ovipositor and homologous parts in the male insect. <*Proc. Bost. Soc. Nat. Hist.*, 1868, v. 11, pp. 393-399, figs.

54.

1869. PACKARD, ALPHEUS S. [Review of] Meek, Worthen, and Scudder: Articulate fossils from the coal. <*Amer. Nat.*, 1869, v. 3, pp. 45-46, fig.

55.

1869. PACKARD, ALPHEUS S. [Review of] Claparede: Studien an Acariden. <*Amer. Nat.*, 1869, v. 3, pp. 490-493, pl. 8.

56.

1869. PACKARD, ALPHEUS S. A chapter on Flies. <*Amer. Nat.*, 1869, v. 2, pp. 586-596; 638-644, pl. 12-13, figs.

57.

1869. PACKARD, ALPHEUS S. Case-worms. <*Amer. Nat.*, 1869, v. 2, pp. 160-161, figs.

58.

1869. PACKARD, ALPHEUS S. A chapter on Mites. <*Amer. Nat.*, 1869, v. 3, pp. 364-373; 448, pl. 6, figs.

59.

1869. PACKARD, ALPHEUS S. The Salt Lake *Ephydra*. <*Amer. Nat.*, 1869, v. 3, p. 391.

60.

1869. PACKARD, ALPHEUS S. On Insects inhabiting salt water. <*Proc. Essex Inst.*, 1869, v. 6, pp. 41-51, figs.

61.

1869. PACKARD, ALPHEUS S. The characters of the lepidopterous family *Noctuidæ*. <*Proc. Port. Soc. Nat. Hist.*, 1869, v. 1, pp. 153-156.

62.

1869. PACKARD, ALPHEUS S. Report of the Curator of *Articulata*, [Peab. Acad. Sci.] <1st Ann. Rept. Trustees Peab. Acad. Sci., 1869, pp. 52-56.

63.

1869. PACKARD, ALPHEUS S. List of hymenopterous and lepidopterous Insects collected by the Smithsonian expedition to South America, under Prof. James Orton. <1st Ann. Rept. Trustees Peab. Acad. Sci., 1869, pp. 56-69.

64.

1869. PACKARD, ALPHEUS S. Guide to the study of Insects, and a treatise on those injurious and beneficial to crops. <Salem, 1869, pp. 8 + 702, pl. 1-11, figs.
 a. 2d edition, Salem, 1870.
 b. 3d edition, Salem, 1872.
 c. 4th edition, Salem, 1874.
 d. 5th edition, New York, 1876.
 e. 6th edition, New York, 1878.
 f. 7th edition, New York, 1880.
 g. 8th edition, New York, 1884, pp. 8 + 715, pl. 1-15, figs.

65.

1869. PACKARD, ALPHEUS S. Record of American Entomology for the year 1868. <Salem, 1869, pp. 6 + 52.

66.

1870. PACKARD, ALPHEUS S. [Note on *Epeira riparia* and *E. cancer*.] <Amer. Nat., 1870, v. 3, p. 616.

67.

1870. PACKARD, ALPHEUS S. Certain parasitic Insects. <Amer. Nat., 1870, v. 4, pp. 83-99, pl. 1, figs.

68.

1870. PACKARD, ALPHEUS S. A few words about Moths. <Amer. Nat., 1870, v. 4, pp. 225-229, pl. 2.

69.

1870. PACKARD, ALPHEUS S. Embryology of *Limulus polyphemus*. <Amer. Nat., 1870, v. 4, pp. 498-502, figs. *Quart. Journ. Micros. Sci.*, 1871, ser. 2, v. 11, pp. 263-267.

70.

1870. PACKARD, ALPHEUS S. [*Pieris rapae* in New Jersey.] <Amer. Nat., 1870, v. 4 p. 576.

71.

1870. PACKARD, ALPHEUS S. The borers of certain shade-trees. <Amer. Nat., 1870, v. 4, pp. 588-594, figs.

72.

1870. PACKARD, ALPHEUS S. [Review of] Riley: Second Missouri Report. <Amer. Nat., 1870, v. 4, pp. 610-615, figs.

73.

1870. PACKARD, ALPHEUS S. The caudal styles of Insects sense organs, *i. e.*, abdominal antennæ. <*Amer. Nat.*, 1870, v. 4, pp. 620-621.

74.

1870. PACKARD, ALPHEUS S. A remarkable Myriapod: [*Pauropus Lubbockii.*] <*Amer. Nat.*, 1870, v. 4, p. 621.

75.

1870. PACKARD, ALPHEUS S. Abdominal sense organs in a Fly. <*Amer. Nat.*, 1870, v. 4, pp. 690-691.

76.

1870. PACKARD, ALPHEUS S. [The Currant Saw-fly.] <*Bull. Essex Inst.*, 1870, v. 2, pp. 93-95, figs.

77.

1870. PACKARD, ALPHEUS S. List of *Coleoptera* collected by A. S. Packard, jun., at Caribou Island, Labrador, Straits of Belle Isle. <*Can. Ent.*, 1870, v. 2, p. 119.

78.

1870. PACKARD, ALPHEUS S. New or little known injurious Insects. <*17th Ann. Rept. Sec. Mass. Bd. Agric.*, 1870, pp. 235-263, pl. 1, figs. Separate: 1870, pp. 31, pl. 1, figs. See *Amer. Nat.*, 1871, v. 4, pp. 684-687, pl. 6, figs.)

79.

1870. PACKARD, ALPHEUS S. Record of American Entomology for the year 1869. <*Salem*, 1870, pp. 5 + 62.

80.

1871. PACKARD, ALPHEUS S. On the Insects inhabiting salt water, No. 2. <*Amer. Journ. Sci.*, 1871, ser 3, v. 1, pp. 100-110, figs. *Ann. and Mag. Nat. Hist.*, 1871, ser. 4, v. 7, pp. 230-240.

81.

1871. PACKARD, ALPHEUS S. Morphology and ancestry of the King Crab. <*Amer. Nat.*, 1871, v. 4, pp. 754-756.

82.

1871. PACKARD, ALPHEUS S. The ancestry of Insects. <*Amer. Nat.*, 1871, v. 4, p. 756.

83.

1871. PACKARD, ALPHEUS S. [Review of] Ganin: The early stages of Ichneumon parasites. <*Amer. Nat.*, 1871, v. 5, pp. 42-52, figs.

84.

1871. PACKARD, ALPHEUS S. Bristle-tails and Spring-tails. <*Amer. Nat.*, 1871, v. 5, pp. 91-107, pl. 1, figs.

85.

1871. PACKARD, ALPHEUS S. [Review of] Adair: Annals of Bee culture for 1870. <*Amer. Nat.*, 1871, v. 5, pp. 113-115.

86.

1871. PACKARD, ALPHEUS S. [Review of] Eaton: Monograph on the *Ephemeridæ*. <*Amer. Nat.*, 1871, v. 5, pp. 417-419.

87.

1871. PACKARD, ALPHEUS S. [Review of] Seudder and Burgess: Asymmetry in the appendages of hexapod Insects. <*Amer. Nat.*, 1871, v. 5, pp. 420-421.

88.

1871. PACKARD, ALPHEUS S. The embryology of *Chrysopa* and its bearings on the classification of the *Neuroptera*. <*Amer. Nat.*, 1871, v. 5, pp. 564-568.

89.

1871. PACKARD, ALPHEUS S. [Review of] Murray: Geographical distribution of Beetles. <*Amer. Nat.*, 1871, v. 5, pp. 644-646.

90.

1871. PACKARD, ALPHEUS S. [Review of] McLachlan: Position of the Caddis-flies. <*Amer. Nat.*, 1871, v. 5, pp. 707-713.

91.

1871. PACKARD, ALPHEUS S. On the Crustaceans and Insects [of the Mammoth Cave.] <*Amer. Nat.*, 1871, v. 5, pp. 744-761, figs. (See No. 115).

92.

1871. PACKARD, ALPHEUS S. [Fossil Insects, &c., from Sunderland, Mass.] <*Bull. Essex Inst.*, 1871, v. 3, pp. 1-2.

93.

1871. PACKARD, ALPHEUS S. [Abdominal appendages in *Chrysopila* and palpal sacs in *Perla*.] <*Bull. Essex Inst.*, 1871, v. 3, p. 2.

94.

1871. PACKARD, ALPHEUS S. Embryological studies on *Diplax*, *Perithemis*, and the thysanurous genus *Isotoma*. <*Mem. Peab. Acad. Sci.*, 1871, v. 1, No. 2, pp. 24, pl. 1-3, figs.

95.

1871. PACKARD, ALPHEUS S. On the embryology of *Limulus polyphemus*. <*Proc. Amer. Assoc. Adv. Sci.*, 1871, v. 19, pp. 247-255, figs.

96.

1871. PACKARD, ALPHEUS S. Catalogue of the *Phalænide* of California. <*Proc. Bost. Soc. Nat. Hist.*, 1871, v. 13, pp. 381-405.

97.

1871. PACKARD, ALPHEUS S. New or rare American *Neuroptera*, *Thysanura*, and *Myriapoda*. <*Proc. Bost. Soc. Nat. Hist.*, 1871, v. 13, pp. 405-411, figs.

98.

1871. PACKARD, ALPHEUS S. Embryology of *Isotoma*, a genus of *Podurida*. <*Proc. Bost. Soc. Nat. Hist.*, 1871, v. 14, pp. 13-15, figs.

99.

1871. PACKARD, ALPHEUS S. [Development of *Limulus* and remarks upon the ancestry of Insects.] <Proc. Bost. Soc. Nat. Hist., 1871, v. 14, pp. 60-61.

100.

1871. PACKARD, ALPHEUS S. First annual report on the injurious and beneficial Insects of Massachusetts. <18th Ann. Rept. Sec. Mass. Bd. Agric., 1871, pp. 351-379, pl. 1, figs. Separate: Boston: 1871, pp. 31, pl. 1, figs. (See *Amer. Nat.*, 1871, v. 5, pp. 423-427, figs.)

101.

1871. PACKARD, ALPHEUS S. Report on the *Articulata* [Peab. Acad. Sci.]. <2d and 3d Ann. Repts. Trustees Peab. Acad. Sci., 1871, pp. 62-63.

102.

1871. PACKARD, ALPHEUS S. List of Insects collected at Pebas, Equador, and presented by Prof. James Orton. <2d and 3d Ann. Rept. Trustees Peab. Acad. Sci., 1871, pp. 85-87.

103.

1871. PACKARD, ALPHEUS S. Record of American Entomology for the year 1870. <Salem, 1871, pp. 27.

104.

1872. PACKARD, ALPHEUS S. [Review of] Riley: Third Missouri Report. <Amer. Nat., 1872, v. 6, pp. 292-295, figs.

105.

1872. PACKARD, ALPHEUS S. [Review of] Stretch: Illustrations of *Zygænidæ* and *Bombycidæ*. <Amer. Nat., 1872, v. 6, pp. 762-764.

106.

1872. PACKARD, ALPHEUS S. Parthenogenesis in Bees. <Ann. Bee Cult., 1872.

107.

1872. PACKARD, ALPHEUS S. Injurious Insects in Essex County. <Bull. Essex Inst., 1872, v. 4, pp. 5-9, figs.

108.

1872. PACKARD, ALPHEUS S. How many times does the larva of *Arctia caja* change its skin? <Ent. Mo. Mag., 1872, v. 8, p. 206.

109.

1872. PACKARD, ALPHEUS S. On the development of *Limulus polyphemus*. <Mem. Bost. Soc. Nat. Hist., 1872, v. 2, pp. 155-202, pl. 3-5, figs.

110.

1872. PACKARD, ALPHEUS S. Embryological studies on hexapodous Insects. <Mem. Peab. Acad. Sci., 1872, v. 1, No. 3, p. 1-3.

111.

1872. PACKARD, ALPHEUS S. Second annual report on the injurious and beneficial Insects of Massachusetts. <19th Ann. Rept. Sec. Mass. Bd. Agric., 1872, pp. 331-347, figs. Separate: Boston: 1872, pp. 19, figs. (See *Amer. Nat.*, 1873, v. 7, p. 241-244, figs.)

112.

1872. PACKARD, ALPHEUS S. New American Moths: *Zygaenidae* and *Bombycidae*. <4th Ann. Rept. Trustees Peab. Acad. Sci., 1872, p. 84-91. Separate: pp. 8.

113.

1872. PACKARD, ALPHEUS S. List of the *Coleoptera* collected in Labrador. <4th Ann. Rept. Trustees Peab. Acad. Sci., 1872, pp. 92-94.

114.

1872. PACKARD, ALPHEUS S. Record of American Entomology for the year 1871. <4th Ann. Rept. Trustees Peab. Acad. Sci., 1872, pp. 99-147.

115.

1872. PACKARD, ALPHEUS S. The Mammoth Cave and its inhabitants. <*Salem*, 1872, pp. 62, figs.
(Dr. Packard contributes Chapter II, on the *Crustacea* and *Insecta*. Same as No. 91, with short additional note.)

116.

1873. PACKARD, ALPHEUS S. When is sex determined? <*Amer. Nat.*, 1873, v. 7, pp. 175-177.

117.

1873. PACKARD, ALPHEUS S. On the distribution of Californian Moths. <*Amer. Nat.*, 1873, v. 7, pp. 453-458.

118.

1873. PACKARD, ALPHEUS S. [Review of] Riley: Fifth Missouri Report. <*Amer. Nat.*, 1873, v. 7, pp. 471-477, figs.

119.

1873. PACKARD, ALPHEUS S. Embryology of the *Lepidoptera*. <*Amer. Nat.*, 1873, v. 7, pp. 486-487.

120.

1873. PACKARD, ALPHEUS S. Farther observations on the embryology of *Limulus*, with notes on its affinities. <*Amer. Nat.*, 1873, v. 7, pp. 675-678.

121.

1873. PACKARD, ALPHEUS S. Discovery of a Tardigrade. <*Amer. Nat.*, 1873, v. 7, pp. 740-741, figs.

122.

1873. PACKARD, ALPHEUS S. Catalogue of the *Pyralidae* of California, with descriptions of new Californian *Pterophoridae*. <*Ann. Lyc. Nat. Hist. N. Y.*, 1873, v. 10, pp. 257-267.

123.

1873. PACKARD, ALPHEUS S. Notes on some *Pyralidæ* from New England, with remarks on the Labrador species of the family. <Ann. Lyc. Nat. Hist. N. Y., 1873, v. 10, pp. 267-271.

124.

1873. PACKARD, ALPHEUS S. Catalogue of the *Phalænidæ* of California, No. 2. <Proc. Bost. Soc. Nat. Hist., 1873, v. 16, pp. 13-40, pl. 1.

125.

1873. PACKARD, ALPHEUS S. Occurrence of new and rare Myriapods in Massachusetts. <Proc. Bost. Soc. Nat. Hist., 1873, v. 16, p. 111.

126.

1873. PACKARD, ALPHEUS S. Report of the Curator of Articulates [Peab. Acad. Sci.] <5th Ann. Rept. Trustees Peab. Acad. Sci., 1873, pp. 15-17.

127.

1873. PACKARD, ALPHEUS S. Synopsis of the *Thysanura* of Essex County, Mass., with descriptions of a few extralimital forms. <5th Ann. Rept. Peab. Acad. Sci., 1873, pp. 23-51.

128.

1873. PACKARD, ALPHEUS S. Descriptions of new American *Phalænidæ*. <5th Ann. Rept. Trustees Peab. Acad. Sci., 1873, pp. 52-81.

129.

1873. PACKARD, ALPHEUS S. Notes on North American Moths of the families *Phalænidæ* and *Pyralidæ* in the British Museum. <5th Ann. Rept. Trustees Peab. Acad. Sci., 1873, pp. 82-92.

130.

1873. PACKARD, ALPHEUS S. On the cave fauna of Indiana. <5th Ann. Rept. Trustees Peab. Acad. Sci., 1873, pp. 93-97.

131.

1873. PACKARD, ALPHEUS S. Record of American Entomology for the year 1872. <5th Ann. Rept. Trustees Peab. Acad. Sci., 1873, pp. 99-135.

132.

1873. PACKARD, ALPHEUS S. Third annual report on the injurious and beneficial effects of Insects. <20th Ann. Rept. Sec. Mass. Bd. Agric., 1873, p. 237-265, figs. (Reprinted with corrections in *Amer. Nat.*, 1873, v. 7, p. 524-548, figs.)

133.

1873. PACKARD, ALPHEUS S. *Insecta* [of Vineyard Sound.] <Rept. U. S. Comm. Fish and Fisheries, 1873, Pt. 1, pp. 539-544.

134.

1873. PACKARD, ALPHEUS S. Descriptions of new species of *Mallophaga* collected by C. H. Merriam while in the government geological survey of the Rocky Mountains, Prof. F. V. Hayden, United States geologist. <*Rept. U. S. Geol. Surv. for 1872, 1873*, pp. 731-734, figs.

135.

1873. PACKARD, ALPHEUS S. Description of new Insects. <*Rept. U. S. Geol. Surv. for 1872, 1873*, pp. 739-741, figs.

136.

1873. PACKARD, ALPHEUS S. Insects inhabiting Great Salt Lake and other saline or alkaline lakes in the West. <*Rept. U. S. Geol. Surv. for 1872, 1873*, pp. 743-746.

137.

1873. PACKARD, ALPHEUS S. Directions for collecting and preserving Insects, prepared for the use of the Smithsonian Institution. <*Smith. Misc. Coll.*, 1873, v. 11, pp. 3+55, figs. Separate: Washington, 1873, pp. 3+55, figs.

138.

1873. PACKARD, ALPHEUS S. On the ancestry of Insects. <*Salem*, 1873. (Printed in advance from *Our Common Insects*.)

139.

1873. PACKARD, ALPHEUS S. *Our Common Insects*. A popular account of the Insects of our fields, forests, gardens, and houses. <*Salem*, 1873, pp. 16+225, pl., figs.

140.

1874. PACKARD, ALPHEUS S. [Morphology of Insects; reply to criticism of C. V. Riley.] <*Amer. Nat.*, 1874, v. 8, pp. 187-188].

141.

1874. PACKARD, ALPHEUS S. Occurrence of *Telea polyphemus* in California. A correction. <*Amer. Nat.*, 1874, v. 8, pp. 243-244.

142.

1874. PACKARD, ALPHEUS S. Nature's means of limiting the numbers of Insects. <*Amer. Nat.*, 1874, v. 8, pp. 270-282, figs.

143.

1874. PACKARD, ALPHEUS S. The discovery of the origin of the sting of the Bee. <*Amer. Nat.*, 1874, v. 8, p. 431.

144.

1874. PACKARD, ALPHEUS S. The mouth-parts of the Dragon-fly. <*Amer. Nat.*, 1874, v. 8, p. 432.

145.

1874. PACKARD, ALPHEUS S. Occurrence of *Japyx* in the United States. <*Amer. Nat.*, 1874, v. 8, pp. 501-502, fig.

146.

1874. PACKARD, ALPHEUS S. The "hateful" Grasshopper in New England. < *Amer. Nat.*, 1874, v. 8, p. 502.

147.

1874. PACKARD, ALPHEUS S. [Grasshoppers as food.] < *Amer. Nat.*, 1874, v. 8, p. 511.

148.

1874. PACKARD, ALPHEUS S. On the distribution and primitive number of spiracles in Insects. < *Amer. Nat.*, 1874, v. 8, pp. 531-534.

149.

1874. PACKARD, ALPHEUS S. Larvæ of *Anopthalmus* and *Adelops*. < *Amer. Nat.*, 1874, v. 8, pp. 562-563.

150.

1874. PACKARD, ALPHEUS S. The metamorphosis of Flies. I-III. < *Amer. Nat.*, 1874, v. 8, pp. 603-612; 661-667; 713-721. (*Translated from A. Weismann.*)

151.

1874. PACKARD, ALPHEUS S. Further observations on the embryology of *Limulus*, with notes on its affinities. < *Proc. Amer. Assoc. Adv. Sci.*, 1874, v. 22, pp. 30-32.

152.

1874. PACKARD, ALPHEUS S. On the transformations of the common House-fly, with notes on allied forms. < *Proc. Bos. Soc. Nat. Hist.*, 1874, v. 16, pp. 136-150, pl. 3, figs.

153.

1874. PACKARD, ALPHEUS S. Report of the Curator of *Articulata* [Peab. Acad. Sci.] < *6th Ann. Rept. Trustees Peab. Acad. Sci.*, 1874, pp. 13-14.

154.

1874. PACKARD, ALPHEUS S. Descriptions of new North American *Phalanidæ*. < *6th Ann. Rept. Trustees Peab. Acad. Sci.*, 1874, pp. 39-53.

155.

1874. PACKARD, ALPHEUS S. Record of American Entomology for the year 1873. < *6th Ann. Rept. Trustees Peab. Acad. Sci.*, 1874, pp. 61-114.

156.

1874. PACKARD, ALPHEUS S. [Parasites of White Mountain Butterflies.] < *Final Rept. Geol. N. H.*, 1874, v. 1, p. 347, figs.

157.

1874. PACKARD, ALPHEUS S. On the geographical distribution of the Moths of Colorado. < *Rept. U. S. Geol. Surv. for 1873*, 1874, pp. 543-560, figs.

158.

1874. PACKARD, ALPHEUS S. Report on the Myriopods collected by Lieut. W. L. Carpenter in 1873 in Colorado. < *Rept. U. S. Geol. Surv. for 1873*, 1874, p. 607.

159.

1875. PACKARD, ALPHEUS S. [Proposed monograph of] the Geometrid Moths. < *Amer. Nat.*, 1875, v. 9, pp. 64, 179-180, figs.

160.

1875. PACKARD, ALPHEUS S. The Invertebrate cave fauna of Kentucky and adjoining states. *Arancina*. < *Amer. Nat.*, 1875, v. 9, pp. 274-278.

161.

1875. PACKARD, ALPHEUS S. [Cigars destroyed by Insects.] < *Amer. Nat.*, 1875, v. 9, p. 375.

162.

1875. PACKARD, ALPHEUS S. On the development of the nervous system in *Limulus*. < *Amer. Nat.*, 1875, v. 9, pp. 422-424.

163.

1875. PACKARD, ALPHEUS S. On an undescribed organ in *Limulus*, supposed to be renal in its nature. < *Amer. Nat.*, 1875, v. 9, pp. 511-514; *Ann. and Mag. Nat. Hist.*, 1875, ser. 4, v. 15, pp. 255-258.

164.

1875. PACKARD, ALPHEUS S. *Caloptenus spretus* [= *C. atlanis*] in Massachusetts. < *Amer. Nat.*, 1875, v. 9, p. 573.

165.

1875. PACKARD, ALPHEUS S. Life histories of the *Crustacea* and Insects. < *Amer. Nat.*, 1875, v. 9, pp. 583-622, figs.

166.

1875. PACKARD, ALPHEUS S. Cave-inhabiting Spiders. < *Amer. Nat.*, 1875, v. 9, pp. 663-664.

167.

1875. PACKARD, ALPHEUS S. On gynandromorphism in the *Lepidoptera*. < *Mem. Bost. Soc. Nat. Hist.*, 1875, v. 2, pp. 409-412, pl. 14, in part.

168.

1876. PACKARD, ALPHEUS S. The cave Beetles of Kentucky. < *Amer. Nat.*, 1876, v. 10, pp. 282-287, pl. 2, figs.

169.

1876. PACKARD, ALPHEUS S. The House-fly. < *Amer. Nat.*, 1876, v. 10, pp. 476-480, figs.

170.

1876. PACKARD, ALPHEUS S. [Review of] Riley: Eighth Missouri Report. < *Amer. Nat.*, 1876, v. 10, pp. 485-488.

171.

1876. PACKARD, ALPHEUS S. A century's progress in American Zoology. <Amer. Nat., 1876, v. 10, pp. 591-598. *Gervais Journ. de Zool.*, 1876, v. 5, pp. 413-423.

172.

1876. PACKARD, ALPHEUS S. [Review of] Cook: Manual of the Apiary. <Amer. Nat., 1876, v. 10, pp. 621-622.

173.

1876. PACKARD, ALPHEUS S. [Review of] Mayer: Ontogeny and phylogeny of Insects. <Amer. Nat., 1876, v. 10, pp. 688-691.

174.

1876. PACKARD, ALPHEUS S. [The ravages of Locusts.] <Amer. Nat., 1876, v. 10, pp. 754-755.

175.

1876-1878. PACKARD, ALPHEUS S. Johnson's New Universal Cyclopædia. <New York, 1876-1878.

Dr. PACKARD contributes:

1. *Hymenoptera*, 1876, v. 2, pp. 1075-1076.
2. *Lepidoptera* pp. 1733-1734.
3. *Locust*, 1877 v. 3, p. 87.
4. *Louse* p. 129.
5. *Neuroptera* pp. 782-783.
6. *Silk-worm*, 1878 ... v. 4, pp. 1662-1664.

176.

1876. PACKARD, ALPHEUS S. A monograph of the Geometrid Moths or *Phalanida* of the United States. <Rept. U. S. Geol. Surv., Washington, 1876, pp. 4+607, pl. 1-13, figs.

177.

1876. PACKARD, ALPHEUS S. Life histories of animals, including man, or outlines of comparative embryology. <New York, 1876, pp. 243, pl., figs.

178.

1877. PACKARD, ALPHEUS S. The migrations of the destructive Locust of the West. <Amer. Nat., 1877, v. 11, pp. 22-29.

179.

1877. PACKARD, ALPHEUS S. Explorations of the Polaris expedition to the North Pole. <Amer. Nat., 1877, v. 11, pp. 51-53. Separate, 1877, pp. 2. (See *Ent. Mo. Mag.*, 1877, v. 13, pp. 228-229.)

180.

1877. PACKARD, ALPHEUS S. Partiality of white Butterflies for white flowers. <Amer. Nat., 1877, v. 11, p. 243.

181.

1877. PACKARD, ALPHEUS S. Experiments on the sense organs of Insects. <Amer. Nat., 1877, v. 11, pp. 418-423.

182.

1877. PACKARD, ALPHEUS S. [Review of] Murray: Aptera. <*Amer. Nat.*, 1877, v. 11, pp. 482-483.

183.

1877. PACKARD, ALPHEUS S. United States Entomological Commission: Circular No. 1. [Riley, Packard, Thomas.] <*Washington*: 1877, pp. 4.

184.

1877. PACKARD, ALPHEUS S. United States Entomological Commission: Circular No. 3. <*Washington*: 1877.

185.

1877. PACKARD, ALPHEUS S. United States Entomological Commission: Bulletin No. 1. [Riley, Packard, Thomas.] <*Washington*: 1877, pp. 12.

186.

1877. PACKARD, ALPHEUS S. United States Entomological Commission: Bulletin No. 2. [Riley, Packard, Thomas.] <*Washington*: 1877, pp. 14, figs.

187.

1877. PACKARD, ALPHEUS S. On a new cave fauna in Utah. <*Bull. U. S. Geol. and Geogr. Surv.*, 1877, v. 3, pp. 157-169, figs.

188.

1877. PACKARD, ALPHEUS S. The Hessian-fly, Joint-worm, and Wheat-midge. <*Ca. Ent.*, 1877, v. 9, p. 100.

189.

1877. PACKARD, ALPHEUS S. Experiments upon the vitality of Insects. <*Psyche*, 1877, v. 2, pp. 17-19.

190.

1877. PACKARD, ALPHEUS S. Appendages homologous with legs. <*Psyche*, 1877, v. 2, p. 23.

191.

1877. PACKARD, ALPHEUS S. Report on the Rocky Mountain Locust and other Insects now injuring or likely to injure field and garden crops in the western states and territories. <*Rept. U. S. Geol. Surv. for 1875, 1877*, pp. 589-810, pls. 62-70, maps 1-5, figs.

192.

1877. PACKARD, ALPHEUS S. List of *Coleoptera* collected in 1875 in Colorado and Utah by A. S. Packard, jr., M. D. <*Rept. U. S. Geol. Surv. for 1875, 1877*, pp. 811-815.

193.

1877. PACKARD, ALPHEUS S. Half-Hours with Insects. <*Boston*: 1877, pp. 8+384, pl., figs.

*The publications of the Commission were prepared unitedly by Messrs. Riley, Packard, and Thomas, but to the individual members were assigned special work and chapters in the subdivision of the work.

194.

1878. PACKARD, ALPHEUS S. The mode of extrication of Silk-worm Moths from their cocoons. <*Amer. Nat.*, 1878, v. 12, pp. 379-383, figs; *Nature*, 1878, v. 18, pp. 226-227, figs; *Ent. Nach.*, 1878, v. 5, pp. 284-285.

195.

1878. PACKARD, ALPHEUS S. Some characteristics of the central zoo-geographical province of the United States. <*Amer. Nat.*, 1878, v. 12, pp. 512-517.

196.

1878. PACKARD, ALPHEUS S. Insects affecting the Cranberry, with remarks on other injurious Insects. <*Rept. U. S. Geol. Surv. for 1876, 1878*, pp. 521-531, figs.

197.

1878. PACKARD, ALPHEUS S. First annual report of the U. S. Entomological Commission. <*Washington*, 1878, pp. 14+477+295, pl. 1-5, figs.

Dr. Packard contributes:

Chapter 2. Chronological history, pp. 53-113.

Chapter 5. Permanent breeding grounds of the Rocky Mountain Locust, pp. 131-136.

Chapter 9. Anatomy and embryology, pp. 257-279.

Chapter 17. Uses to which Locusts may be put, pp. 437-443.

Chapter 19. Locust ravages in other countries, pp. 460-477.

Appendix IX. Narrative of the first journey made in the summer of 1877, pp. 134-138.

Appendix X. Narrative of a second journey made in the summer of 1877, pp. 139-144.

With the co-operation of Mr. Cyrus Thomas, Dr. Packard contributes:

Chapter 6. Geographical distribution, pp. 136-142.

Chapter 7. Migrations, pp. 143-211.

198.

1878. PACKARD, ALPHEUS S. Insects of the West: An account of the Rocky Mountain Locust, the Colorado Potato-beetle, the Canker-worm, Currant Saw-fly, and other Insects which devastate the crops of the country. <*London*, 1878. (A reprint, with slight changes, paging, &c., of No. 191.)

199.

1879. PACKARD, ALPHEUS S. [The smallest Insects known.] <*Amer. Nat.*, 1879, v. 13, p. 62.

200.

1879. PACKARD, ALPHEUS S. [Fossil Insects at Green River, Wyoming.] <*Amer. Nat.*, 1879, v. 13, p. 203.

201.

1879. PACKARD, ALPHEUS S. [Parthenogenesis of the Honey-bee.] <*Amer. Nat.*, 1879, v. 13, p. 394.

202.

1879. PACKARD, ALPHEUS S. A poisonous Centipede. <*Amer. Nat.*, 1879, v. 13, p. 527.

203.

1879. PACKARD, ALPHEUS S. [Cotton-worm investigation.] < *Amer. Nat.*, 1879, v. 13, p. 535.

204.

1879. PACKARD, ALPHEUS S. The Rocky Mountain Locust in New Mexico. < *Amer. Nat.*, 1879, v. 13, p. 586.

205.

1879. PACKARD, ALPHEUS S. [Review of] Graber: *Die Insekten*. < *Amer. Nat.*, 1879, v. 13, pp. 774-775.

206.

1879. PACKARD, ALPHEUS S. Zoology for students and general readers. < *New York*: 1879, pp. 8+719, figs.

a. 2d edition, New York, 1880.

b. 3d edition, New York, 1881.

c. 4th edition, New York, 1883.

d. 5th edition, New York, 1886.

207.

1879. PACKARD, ALPHEUS, S. Zoology of the Invertebrate animals. < *New York*: 1879, pp. 12+143, figs. (By A. Macalister. Specially revised for America by A. S. Packard.)

208.

1880. PACKARD, ALPHEUS S. Moths entrapped by an Aselepiad plant, *Physianthus*, and killed by Honey-bees. < *Amer. Nat.*, 1880, v. 14, pp. 48-50; *Nature*, 1880, v. 21, p. 308; *Journ. Roy. Micros. Soc.*, 1880, ser. 1, v. 3, pp. 241-242; *Journ. Sci.*, 1880, ser. 3, v. 2, p. 213; *Bot. Gaz.*, 1880, v. 5, pp. 17-20.

209.

1880. PACKARD, ALPHEUS S. The Cotton-worm Moth in Rhode Island. < *Amer. Nat.*, 1880, v. 14, p. 53.

210.

1880. PACKARD, ALPHEUS S. Structure of the eye of *Limulus*. < *Amer. Nat.*, 1880, v. 14, pp. 212-213; *Ann. and Mag., Nat. Hist.*, 1880, ser. 5, v. 5, pp. 434-435; *Journ. Roy. Micros. Soc.*, 1880, ser. 1, v. 3, pp. 947-948.

211.

1880. PACKARD, ALPHEUS S. On the internal structure of the brain of *Limulus polyphemus*. < *Amer. Nat.*, 1880, v. 14, pp. 445-448; *Ann. and Mag. Nat. Hist.* 1880, ser. 5, v. 6, pp. 29-33

212.

1880. PACKARD, ALPHEUS S. Case of protective mimicry in a Moth. < *Amer. Nat.*, 1880, v. 14, p. 600.

213.

1880. PACKARD, ALPHEUS S. The eyes and brain of *Cermatia forceps*. < *Amer. Nat.*, 1880, v. 14, pp. 602-603. *Journ. Roy. Micros. Soc.*, 1880, ser. 1, v. 3, pp. 783-784.

214.

1880. PACKARD, ALPHEUS S. [Review of] Wood-Mason: Morphology of Insects. < *Amer. Nat.*, 1880, v. 14, pp. 665-667.

215.

1880. PACKARD, ALPHEUS S. [The investigations of the U. S. Entomological Commission for 1880.] < *Amer. Nat.*, 1880, v. 14, pp. 753-755.

216.

1880. PACKARD, ALPHEUS S. Eggs of Tree-crickets wanted. < *Amer. Nat.*, 1880, v. 14, p. 804.

217.

1880. PACKARD, ALPHEUS S. *Cetonia inda*. < *Amer. Nat.*, 1880, v. 14, p. 806.

218.

1880. PACKARD, ALPHEUS S. The anatomy, histology, and embryology of *Limulus polyphemus*. < *Annis Mem. Bost. Soc. Nat. Hist.*, 1880, pp. 45, pls. 1-7; *Journ. Roy. Micros. Soc.*, 1881, ser. 2, v. 1, pp. 600-601.

219.

1880. PACKARD, ALPHEUS S. The Hessian fly, its ravages, habits, enemies, and means of preventing its increase. < *Bull. U. S. Ent. Comm.*, No. 4, 1880, pp. 43, pls. 1-2, map, fig. (See *Amer. Nat.*, 1880, v. 14, pp. 586-587; *Amer. Ent.*, 1880, v. 3, pp. 118-121, 140-141, figs.)

220.

1880. PACKARD, ALPHEUS S. On the internal structure of the brain of *Limulus polyphemus*. < *Zool. Anz.*, 1880, v. 3, pp. 306-310.

221.

1880. PACKARD, ALPHEUS S. Second report of the U. S. Entomological Commission. < *Washington*, 1880, pp. 18+322+80, pls. 1-17, maps, figs.

Dr. PACKARD contributes:

Chapter 6. The southern limits of the distribution of the Rocky Mountain Locust, pp. 156-160.

Chapter 7. Summer of Locust flights from 1877 to 1879, pp. 160-163.

Chapter 8. The Western Cricket, pp. 163-178.

Chapter 9. The air-sacs of Locusts, with reference to their powers of flight, pp. 178-183.

Chapter 11. The brain of the Locust, pp. 223-242.

Appendix VII. Notes of a journey made to Utah and Idaho in the summer of 1878, pp. 69-71.

Appendix VIII. Yersin's researches on the functions of the nervous system of the Articulate animals, pp. 73-74.

With the co-operation of Professor RILEY, Dr. PACKARD contributes:

Chapter 1. Additions to the chronology of Locust ravages, pp. 1-14.

222.

1881. PACKARD, ALPHEUS S. Fauna of the Luray and the Newmarket Caves, Virginia. < *Amer. Nat.*, 1881, v. 15, pp. 231-232.

223.

1881. PACKARD, ALPHEUS S. The brain of the Locust. < *Amer., Nat.* 1881, v. 15, pp. 285-302, pl. 1-3; *Journ. de Microg.*, 1881, v. 5, pp. 448-453; v. 6, pp. 71-75.

224.

1881. PACKARD, ALPHEUS S. The brain of the embryo and young Locust. < *Amer. Nat.*, 1881, v. 15, pp. 372-379, pl. 4-5.

225.

1881. PACKARD, ALPHEUS S. Locusts in Mexico in 1880. < *Amer. Nat.* 1881, v. 15, p. 578.

226.

1881. PACKARD, ALPHEUS S. *Scolopendrella* and its position in nature. < *Amer. Nat.*, 1881, v. 15, pp. 698-704, figs.

227.

1881. PACKARD, ALPHEUS S. The fauna of Nickajack Cave. < *Amer. Nat.*, 1881, v., 15, pp. 877-882, pl. 7. (Prepared by Prof. E. D. Cope and Dr. Packard.)

228.

1881. PACKARD, ALPHEUS S. [Review of] Scudder: Butterflies. < *Amer. Nat.*, 1881, v. 15, pp. 885-887.

229.

1881. PACKARD, ALPHEUS S. Insects injurious to forest and shade trees. < *Bull. U. S. Ent. Comm.*, No. 7, 1881, pp. 275, figs.

230.

1881. PACKARD, ALPHEUS S. Bibliography of economic Entomology. < *Ca. Ent.*, 1881, v. 13, p. 39. (Plan of proposed work.)

231.

1881. PACKARD, ALPHEUS S. Descriptions of some new Ichneumon parasites of North American Butterflies. < *Proc. Bost. Soc. Nat. Hist.*, 1881, v. 21, pp. 18-38.

232.

1881. PACKARD, ALPHEUS S. The Grasshopper question. < *Rocky Mt. Husb.*, 1881.

233.

1882. PACKARD, ALPHEUS S. [Review of] Thomas: Fifth Illinois Report. < *Amer. Nat.*, 1882, v. 16, pp. 39-40.

234.

1882. PACKARD, ALPHEUS S. Is *Limulus* an Arachnid? < *Amer. Nat.*, 1882, v. 16, pp. 287-292; *Ann. and Mag. Nat. Hist.*, 1882, ser. 5, v. 9, pp. 369-374; *Journ. Roy. Micros. Soc.*, 1882, ser. 2, v. 2, p. 337.

235.

1882. PACKARD, ALPHEUS S. A correction [to No. 234]. < *Amer. Nat.*, 1882, v. 16, p. 436.

236.

1882. PACKARD, ALPHEUS S. The coloring of zoo-geographical maps. < *Amer. Nat.*, 1882, v. 16, p. 589.

237.

1882. PACKARD, ALPHEUS S. Bot-fly maggots in a Turtle's neck. < *Amer. Nat.*, 1882, vol. 16, p. 598, figs.

238.

1882. PACKARD, ALPHEUS S. Larvæ of a Fly in a Hot Spring in Colorado. < *Amer. Nat.*, 1882, v. 16, pp. 599-600.

239.

1882. PACKARD, ALPHEUS S. Nomenclature of external parts of *Arthropoda*. < *Amer. Nat.*, 1882, v. 16, pp. 676-677.

240.

1882. PACKARD, ALPHEUS S. [Review of] Lubbock: Ants, bees, and wasps. < *Amer. Nat.*, 1882, v. 16, pp. 804-807.

241.

1882. PACKARD, ALPHEUS S. Probable difference in two broods of *Drasteria erechthea*. < *Papilio*, 1882, v. 2, pp. 147-148.

242.

1882. PACKARD, ALPHEUS S. Notes on lepidopterous larvæ. < *Papilio*, 1882, v. 2, pp. 180-183.

243.

1883. PACKARD, ALPHEUS S. The systematic position of the *Archipolypoda*, a group of fossil Myriopods. < *Amer. Nat.*, 1883, v. 17, pp. 326-329, figs; *Journ. Roy. Micros. Soc.*, 1883, ser. 2, v. 3, pp. 365-365.

244.

1883. PACKARD, ALPHEUS S. [Review of] Riley: Rept. U. S. Ent. for 1881-1882. < *Amer. Nat.*, 1883, v. 17, pp. 399-400, figs.

245.

1883. PACKARD, ALPHEUS S. A new species of *Polydesmus* with eyes. < *Amer. Nat.*, 1883, v. 17, pp. 428-429, figs; *Journ. Roy. Micros. Soc.*, 1883, ser. 2, v. 3, p. 367.

246.

1883. PACKARD, ALPHEUS S. Discovery of *Eurypauropus* in Europe. < *Amer. Nat.*, 1883, v. 17, p. 555.

247.

1883. PACKARD, ALPHEUS S. Repugnatorial pores in the *Lysiopetalidæ*. < *Amer. Nat.*, 1883, v. 17, p. 555.

248.

1883. PACKARD, ALPHEUS S. [Review of] Recent works on the mouth-parts of Flies. < *Amer. Nat.*, 1883, v. 17, pp. 631-633.

249.

1883. PACKARD, ALPHEUS S. The coxal gland of Arachnids and *Crustacea*. < *Amer. Nat.*, 1883, v. 17, pp. 795-797.

250.

1883. PACKARD, ALPHEUS S. On the classification of the Linnæan orders of *Orthoptera* and *Neuroptera*. < *Amer. Nat.*, 1883, v. 17, pp. 820-829; *Ann. and Mag. Nat. Hist.*, 1883, ser. 5, v. 12, pp. 145-154; *Journ. Roy. Micros. Soc.*, 1884, ser. 2, v. 4, p. 220.

251.

1883. PACKARD, ALPHEUS S. Note on a *Peripatus* from the Isthmus of Panama. < *Amer. Nat.*, 1883, v. 17, pp. 881-882, figs.

252.

1883. PACKARD, ALPHEUS S. The structure and embryology of *Peripatus*. < *Amer. Nat.*, 1883, v. 17, pp. 882-884.

253.

1883. PACKARD, ALPHEUS S. On the genealogy of the Insects. < *Amer. Nat.*, 1883, v. 17, pp. 932-945, figs.; *Journ. Roy. Micros. Soc.*, 1884, ser. 2, v. 4, pp. 217-218; *Journ. de Microg.*, 1884, v. 7, pp. 566-571, 622-628, figs; *Bull. Soc. Ent. Ital.*, 1884, v. 16, pp. 135-136.

254.

1883. PACKARD, ALPHEUS S. [Review of] Weismann: Studies in the theory of descent. < *Amer. Nat.*, 1883, v. 17, pp. 1042-1046.

255.

1883. PACKARD, ALPHEUS S. Molting in the shell in *Limulus*. < *Amer. Nat.*, 1883, v. 17, pp. 1075-1076; *Journ. Roy. Micros. Soc.*, 1883, ser. 2, v. 3, pp. 836-837.

256.

1883. PACKARD, ALPHEUS S. The number of segments in the head of winged Insects. < *Amer. Nat.*, 1883, v. 17, pp. 1134-1138, figs.; *Journ. Roy. Micros. Soc.*, 1884, ser. 2, v. 4, pp. 43-44.

257.

1883. PACKARD, ALPHEUS S. Occurrence of a *Stratiomys* larva in sea-water. < *Amer. Nat.*, 1883, v. 17, pp. 1287-1288.

258.

1883. PACKARD, ALPHEUS S. Note on forest-tree Insects. < *Bull. Div. Ent. U. S. Dept. Agric.*, No. 3, 1883, pp. 24-30.

259.

1883. PACKARD, ALPHEUS S. Scorpions. < *Independent*, 1883.

260.

1883. PACKARD, ALPHEUS S. Decay of the spruce in the Adirondacks and northern New England. <*Nation*, 1883, v. 37, p. 525.

261.

1883. PACKARD, ALPHEUS S. A revision of the *Lysioptelidæ*, a family of Chilognath *Myriopoda*, with a notice of the genus *Cambala*. <*Proc. Amer. Philos. Soc.*, 1883, v. 21, pp. 177-197; *Journ. Roy. Micros. Soc.*, 1883, ser. 2, v. 3, p. 832.

262.

1883. PACKARD, ALPHEUS S. On the morphology of the *Myriopoda*. <*Proc. Amer. Philos. Soc.*, 1883, v. 21, pp. 197-209, figs.; *Journ. Roy. Micros. Soc.*, 1883, ser. 2, v. 3, pp. 832-833.

263.

1883. PACKARD, ALPHEUS S. Report on the causes of destruction of evergreen forests in northern New England and New York. <*Rept. Dept. Agric. for* 1883, [part of *Riley's report as Entomologist*], 1883, pp. 138-151, pl. 9, figs.

264.

1883. PACKARD, ALPHEUS S. Third report of the U. S. Entomological Commission. <*Washington*, 1883, pp. 14+347+92, pl. 1-64, maps, figs.

Dr. PACKARD contributes:

Chapter 8. The Hessian fly, pp. 193-248.

Chapter 9. Descriptions of the larvæ of injurious forest Insects, pp. 251-262.

Chapter 10. The embryological development of the Locust, pp. 263-285.

Chapter 11. The systematic position of the *Orthoptera* in relation to the other orders of Insects, pp. 286-345.

Chapter 12. Note on the geographical distribution of the Rocky Mountain Locust, illustrated with colored zoo-geographical map of North America, pp. 346-347.

265.

1883. PACKARD, ALPHEUS S. The Standard Natural History. <*Boston*, 1883-1885.

Dr. PACKARD contributes:

1. Introduction, 1885, v. 1, pp. i-lxxii.

2. *Hexapoda*, 1883, v. 2, pp. 131-134.

3. *Thysanura*, pp. 135-138.

4. *Dermatoptera*, p. 139.

5. *Pseudoneuroptera*, 1883-'84, v. 2, pp. 140-154.

6. *Neuroptera*, 1884, v. 2, pp. 155-166.

266.

1883. PACKARD, ALPHEUS S. Zoology. Briefer Course. <*New York*, 1883, pp. 5+334.

a. 2d edition, New York, 1885.

b. 3d edition, New York, 1886.

267.

1884. PACKARD, ALPHEUS S. Sograff's embryology of the Chilopod *Myriopods*. <*Amer. Nat.*, 1884, v. 18, pp. 201-202.

268.

1884. PACKARD, ALPHEUS S. New cave Arachnids. < *Amer. Nat.*, 1884, v. 18, pp. 202-204, figs.

269.

1884. PACKARD, ALPHEUS S. [Review of] Meinert: *Caput Scolopendræ.* < *Amer. Nat.*, 1884, v. 18, pp. 270-272.

270.

1884. PACKARD, ALPHEUS S. Egg-laying habits of the egg parasite of the Canker-worm. < *Amer. Nat.*, 1884, v. 18, pp. 292-293.

271.

1884. PACKARD, ALPHEUS S. Paired sexual outlets in Insects. < *Amer. Nat.*, 1884, v. 18, p. 293.

272.

1884. PACKARD, ALPHEUS S. The Larch-worm. < *Amer. Nat.*, 1884, v. 18, pp. 293-296, figs.

273.

1884. PACKARD, ALPHEUS S. The Hemlock *Gelechia*. < *Amer. Nat.*, 1884, v. 18, p. 296.

274.

1884. PACKARD, ALPHEUS S. The Spruce-bud *Tortrix*. < *Amer. Nat.*, 1884, v. 18, pp. 424-426, figs.

275.

1884. PACKARD, ALPHEUS S. Notes on Moths. < *Amer. Nat.*, 1884, v. 18, pp. 632-633.

276.

1884. PACKARD, ALPHEUS S. The transformations of *Nola*. < *Amer. Nat.*, 1884, v. 18, pp. 726-727.

277.

1884. PACKARD, ALPHEUS S. Habits of an aquatic Pyralid caterpillar. < *Amer. Nat.*, 1884, v. 18, pp. 824-826, pl. 24.

278.

1884. PACKARD, ALPHEUS S. Note on salt-water Insects, No. 3. < *Amer. Nat.*, 1884, v. 18, pp. 826-828, figs.

279.

1884. PACKARD, ALPHEUS S. Aspects of the body in Vertebrates and Arthropods. < *Amer. Nat.*, 1884, v. 18, pp. 855-861, figs.; *Ann. and Mag. Nat. Hist.*, 1884, ser. 5, v. 14, pp. 243-249, figs.; *Journ. Roy. Micros. Soc.*, 1884, ser. 2, v. 4, p. 866.

280.

1884. PACKARD, ALPHEUS S. Life-histories of some Geometrid Moths. < *Amer. Nat.*, 1884, v. 18, pp. 933-936.

281.

1884. PACKARD, ALPHEUS S. Anatomy and function of the Bee's tongue. < *Amer. Nat.*, 1884, v. 18, p. 937.

282.

1884. PACKARD, ALPHEUS S. Life-history of *Lochmaeus tessella*. < *Amer. Nat.*, 1884, v. 18, pp. 1044-1045.

283.

1884. PACKARD, ALPHEUS S. Transformations of *Caripeta angustiorata*. < *Amer. Nat.*, 1884, v. 18, pp. 1045-1046.

284.

1884. PACKARD, ALPHEUS S. Mode of oviposition of the common Longicorn Pine borer (*Monohammus confusor*). < *Amer. Nat.*, 1884, v. 18, pp. 1149-1151.

285.

1884. PACKARD, ALPHEUS S. Egg-laying habits of the Maple-tree borer. < *Amer. Nat.*, 1884, v. 18, pp. 1151-1152.

286.

1884. PACKARD, ALPHEUS S. Palmen's paired outlets of the sexual organs of Insects. < *Amer. Nat.*, 1884, v. 18, pp. 1152-1153.

287.

1884. PACKARD, ALPHEUS S. The nature of the so-called "liver" in the Arachnids. < *Amer. Nat.*, 1884, v. 18, pp. 1153-1154.

288.

1884. PACKARD, ALPHEUS S. The systematic position of the *Embida*. < *Amer. Nat.*, 1884, v. 18, pp. 1154-1155.

289.

1884. PACKARD, ALPHEUS S. The larval stages of *Mamestra picta*. < *Amer. Nat.*, 1884, v. 18, pp. 1266-1267.

290.

1884. PACKARD, ALPHEUS S. The Bees, Wasps, &c., of Labrador. < *Amer. Nat.*, 1884, v. 18, p. 1267.

291.

1884. PACKARD, ALPHEUS S. Origin of Bee's cells. < *Amer. Nat.*, 1884, v. 18, pp. 1268-1269.

292.

1884. PACKARD, ALPHEUS S. The life of the Great Salt Lake. I-IV. < *Independent*, 1884.

293.

1885. PACKARD, ALPHEUS S. [Review of] Dahl: Structure and function of the legs of Insects. < *Amer. Nat.*, 1885, v. 19, pp. 178-180.

294.

1885. PACKARD, ALPHEUS S. The number of abdominal segments in lepidopterous larvæ. < *Amer. Nat.*, 1885, v. 19, pp. 307-308; *Journ. Roy. Micros. Soc.*, 1885, ser. 2, v. 5, p. 636.

295.

1885. PACKARD, ALPHEUS S. [Review of] Riley: Rept. U. S. Ent. for 1884. < *Amer. Nat.*, 1885, v. 19, p. 607, pl. 18.

296.

1885. PACKARD, ALPHEUS S. [Review of] Smith: Systematic position of some N. A. *Lepidoptera*. < *Amer. Nat.*, 1885, v. 19, pp. 608-609.

297.

1885. PACKARD, ALPHEUS S. Unusual number of legs in the caterpillar of *Lagoa*. < *Amer. Nat.*, 1885, v. 19, pp. 714-715, figs.; *Journ. Roy. Micros. Soc.*, 1885, ser. 2, v. 5, pp. 990-991.

298.

1885. PACKARD, ALPHEUS S. Use of the pupæ of Moths in distinguishing species. < *Amer. Nat.*, 1885, v. 19, pp. 715-716.

299.

1885. PACKARD, ALPHEUS S. On the embryology of *Limulus polyphemus*. III. < *Amer. Nat.*, 1885, v. 19, pp. 722-727, pl. 24; *Proc. Amer. Philos. Soc.*, 1885, v. 22, pp. 268-272, pl.; *Journ. Roy. Micros. Soc.*, 1885, ser. 2, v. 5, pp. 806-807.

300.

1885. PACKARD, ALPHEUS S. Edible Mexican Insects. < *Amer. Nat.*, 1885, v. 19, p. 893.

301.

1885. PACKARD, ALPHEUS S. Dr. Brauer's views on the classification of Insects. < *Amer. Nat.*, 1885, v. 19, pp. 999-1001.

302.

1885. PACKARD, ALPHEUS S. Flights of Locusts in Eastern Mexico in 1885. < *Amer. Nat.*, 1885, v. 19, pp. 1105-1106.

303.

1885. PACKARD, ALPHEUS S. [Review of] Hickson: Eye and optic tract of Insects. < *Amer. Nat.*, 1885, v. 19, pp. 1220-1221.

304.

1885. PACKARD, ALPHEUS S. Spiders. < *Random Notes on Nat. Hist.*, 1885, v. 2, p. 11.

305.

1885. PACKARD, ALPHEUS S. Second report on the causes of the destruction of the evergreen and other forest trees in northern New England and New York. < *Rept. Dept. Agric. for 1884*, [part of *Riley's Report as Entomologist*,] 1885, pp. 374-383, figs. Separate: 1885, pp. 12, figs.

306.

1886. PACKARD, ALPHEUS S. [Review of] Brongniart: Studies of carboniferous Insects. < *Amer. Nat.*, 1886, v. 20, pp. 68-69.

307.

1886. PACKARD, ALPHEUS S. [Review of] Plateau: Experiments on vision of Insects. < *Amer. Nat.*, 1886, v. 20, pp. 69-70.

308.

1886. PACKARD, ALPHEUS S. [Review of] Chlododkowsky: Morphology of *Lepidoptera*. < *Amer. Nat.*, 1886, v. 20, pp. 169-170.

309.

1886. PACKARD, ALPHEUS S. Flights of Locusts at San Luis Potosi, Mexico, 1885. < *Amer. Nat.*, 1886, v. 23, p. 170.

310.

1886. PACKARD, ALPHEUS S. [Review of] Scudder: Systematische Übersicht fossilen Insekten. < *Amer. Nat.*, 1886, v. 20, pp. 369-370.

311.

1886. PACKARD, ALPHEUS S. On the cinurous *Thysanura* and *Symphyla* of Mexico. < *Amer. Nat.*, 1886, v. 20, pp. 382-383.

312.

1886. PACKARD, ALPHEUS S. On the nature and origin of the so-called "spiral thread" of tracheæ. < *Amer. Nat.*, 1886, v. 20, pp. 438-442, figs.; *Journ. Roy. Micros. Soc.*, 1886, ser. 2, v. 6, pp. 789-790.

313.

1886. PACKARD, ALPHEUS S. [Review of] Korotneff: Development of the Mole cricket. < *Amer. Nat.*, 1886, v. 20, pp. 460-462, pl. 18-19.

314.

1886. PACKARD, ALPHEUS S. [Review of] Grassi: Development of the Honey-bee. < *Amer. Nat.*, 1886, v. 20, pp. 462-464.

315.

1886. PACKARD, ALPHEUS S. The origin of the spiral thread in tracheæ. A correction. < *Amer. Nat.*, 1886, v. 20, p. 558.

316.

1886. PACKARD, ALPHEUS S. Larval form of *Polydesmus canadensis*. < *Amer. Nat.*, 1886, v. 20, p. 651.

317.

1886. PACKARD, ALPHEUS S. A new arrangement of the orders of Insects. < *Amer. Nat.*, 1886, v. 20, p. 808.

318.

1886. PACKARD, ALPHEUS S. The fluid ejected by notodontian caterpillars. < *Amer. Nat.*, 1886, v. 20, pp. 811-812.

319.

1886. PACKARD, ALPHEUS S. An eversible "gland" in the larva of *Orgyia*. <*Amer. Nat.*, 1886, v. 20, p. 814.

320.

1886. PACKARD, ALPHEUS S. The organ of smell in Arthropods. <*Amer. Nat.*, 1886, v. 20, pp. 889-894; 973-975. (Translated abstract from K. Kraepelin.)

321.

1886. PACKARD, ALPHEUS S. Third report on the causes of destruction of the evergreen and other forest trees in northern New England. <*Rept. Dept. Agric. for 1885*, [part of *Riley's report as Entomologist*,] 1886, pp. 319-333, figs.

1886. PACKARD, ALPHEUS S. Additions to the third report on the causes of the destruction of the evergreen and other forest trees in northern New England. <*Bull. Div. Ent. U. S., Dept. Agric.*, No. 12, 1886, pp. 17-23.

323.

1886. PACKARD, ALPHEUS S. First Lessons in Zoology. <New York: 1886, pp. 6+290, figs.

324.

1887. PACKARD, ALPHEUS S. Cave fauna of North America, with remarks on the anatomy and origin of blind forms. <*Amer. Nat.*, 1887, v. 21, pp. 82-83.

325.

1887. PACKARD, ALPHEUS S. Critical remarks on the literature of the organs of smell in Arthropods. <*Amer. Nat.*, 1887, v. 21, pp. 182-185. (Translated abstract from K. Kraepelin.)

326.

1887. PACKARD, ALPHEUS S. Hauser on the organs of smell in Insects. <*Amer. Nat.*, 1887, v. 21, pp. 279-286, pl. 13-15.

327.

1887. PACKARD, ALPHEUS S. Fourth report on Insects injurious to forest and shade trees. <*Bull. Div. Ent. U. S. Dept. Agric.*, No. 13, 1887, pp. 21-32, figs.

328.

1887. PACKARD, ALPHEUS S. Notes on certain *Psychida*, with descriptions of two new *Bombycida*. <*Ent. Amer.*, 1887, v. 3, pp. 51-52.

329.

1865. PACKARD, ALPHEUS S. Notice of an egg-parasite upon the American Tent caterpillar, *Clisiocampa americana* Harris. <*Pract. Ent.*, 1865, v. 1, pp. 14-15.

330.

1866. PACKARD, ALPHEUS S. Outlines of the study of Insects. <*Pract. Ent.*, 1866, v. 1, pp. 74-76; 94-95; 106-107, figs.

331.

1871. PACKARD, ALPHEUS S. Value of Honey-bees in fruit culture. <*West. Pomologist*, 1871, v. 2, pp. 133-134.

332.

1874. PACKARD, ALPHEUS S. The structure of Insects. <*Cult. and Count. Gentl.*, 1874, v. 39, p. 11.

333.

1874. PACKARD, ALPHEUS S. Flight, senses and growth of Insects. <*Cult. and Count. Gentl.*, 1874, v. 39, p. 22.

334.

1875. PACKARD, ALPHEUS S. The Colorado Potato-beetle and Army-worm. The Currant-worm. <*N. E. Farmer*, 1875, v. 54, No. 35, p. 1.

335.

1876. PACKARD, ALPHEUS S. The House-fly. <*Cult. and Count. Gentl.*, 1876, v. 41, p. 526.

336.

1876. PACKARD, ALPHEUS S. The Canker-worm. <*Sci. Farmer*, 1876.

337.

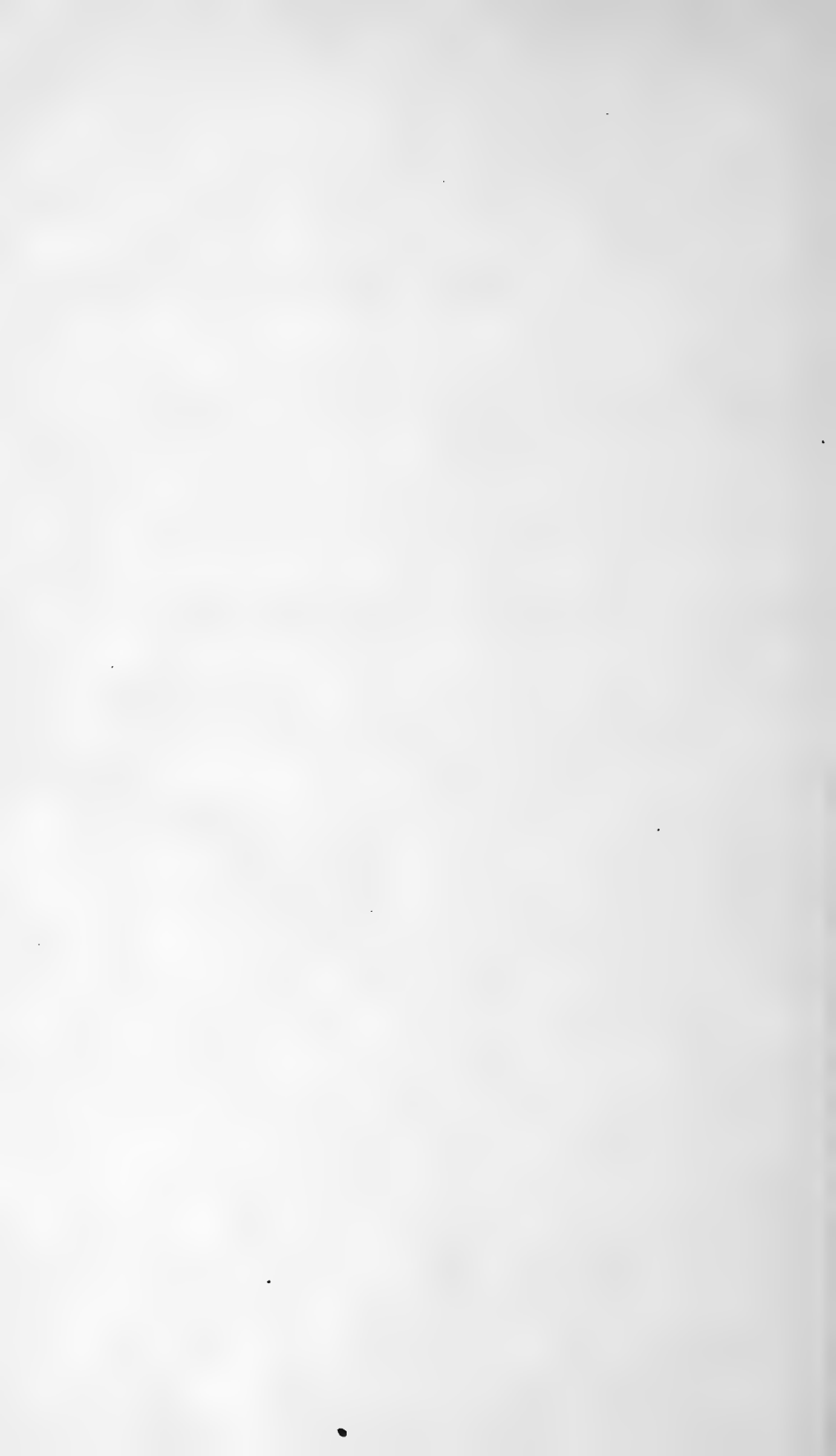
1878. PACKARD, ALPHEUS S. Insects injurious to the Maple. <*Sci. Farmer*, 1878.

338.

1880. PACKARD, ALPHEUS S. Insects injurious to the Cranberry. <*Trans. Wisc. Hort. Soc.*, 1880, v. 10, pp. 313-322, figs.

339.

- . PACKARD, ALPHEUS S. The House-fly, I-III. <*Youth's Companion*.



PART II.

SYSTEMATIC INDEX OF THE NEW NAMES PROPOSED.

The first number following the name refers to the number of the paper in Part I; the second, to the page where the species is first described. The following abbreviations are used in locating the types:

- A. E. S. = Collection of the American Entomological Society, Philadelphia, Pa.
 A. S. P. = Collection of A. S. Packard, Providence, R. I.
 B. S. N. H. = Collection of the Boston Society of Natural History, Boston, Mass.
 C. H. F. = Collection of C. H. Fernald, Amherst, Mass.
 H. E. = Collection of Henry Edwards, New York, N. Y.
 J. A. L. = Collection of J. A. Lintner, Albany, N. Y.
 M. C. Z. = Collection of the Museum of Comparative Zoology, Cambridge, Mass.
 N. M. = Collection of the National Museum, Washington, D. C.
 P. A. S. = Collection of the Peabody Academy of Science, Salem, Mass.
 S. H. S. = Collection of S. H. Scudder, Cambridge, Mass.

ARACHNIDA.

<i>Sarcoptidae.</i>	
Chelyletus semivorus, 64-665.*	
Dermaleichus pici-pubecentis, 64-667.*	
<i>Gamasidae.</i>	
Argus americana, 135-740.	M. C. Z.
<i>Ixodidae.</i>	
Ixodes albipictus, 58-366; 63-65.	M. C. Z.
bovis, 58-370; 63-68.	M. C. Z.
chordeilis, 63-67.	M. C. Z.
cookei, 63-67.	M. C. Z.
leporis palustris, 63-67.	M. C. Z.
naponensis, 63-65.	
nigrolineatus, 63-66.	M. C. Z.
perpunctatus, 63-68.	M. C. Z.
unipunctatus, 58-370; 63-66.	
<i>Trombididae.</i>	
Trombidium bulbipes, 132-264.	
<i>Hydrachnidae.</i>	
Hydrachna tricolor, 80-108.	
Thalassarachna, 80-107.	
verrillii, 80-107.	
<i>Oribatidae.</i>	
Nothrus ovivorus, 64-664.*	
<i>Bdellidae.</i>	
Bdella marina, 133-544; 278-828.	M. C. Z.

<i>Arctiscoideae.</i>	
Macrobiotus americanus, 121-741.*	
<i>Nemastomatidae.</i>	
Nemastoma inops, 268-203.	M. C. Z.
troglodytes, 187-160.	M. C. Z.
<i>Phalangidae.</i>	
Phlegmacera, 268-203.	
cavicolesus, 268-203.	M. C. Z.
Scotolemon robustum, 187-164.	A. S. P.
<i>Chernetidae.</i>	
Ghthonius caecus, 268-203.	M. C. Z.
Obisium cavicola, 268-202.	M. C. Z.

MYRIAPODA.

<i>Lysiopetalidae.</i>	
Cryptotrichus, 261-189.	
Scoterpes copei (Spirostrephon), 91-743.	M. C. Z.
Spirostrephon. See Scoterpes.	
<i>Chordeumidae.</i>	
Craspedosoma ocellatus (Polydesmus), 245-428.	
<i>Polydesmidae.</i>	
Polydesmus cavicola, 187-162.	A. S. P.
See Craspedosoma.	
<i>Pauropidae.</i>	
Pauropus lubbockii, 74-621; 97-409.	

* Types not preserved. A. S. Packard.

THYSANURA.

Scolopendrellidae.

- Scolopendrella americana*, 125-111.
= *immaculata*, Newp. A. S. P.

Campodeidae.

- Campodea americana*, 84-96; 97-409.
= *staphylinus*, Westw. M. C. Z.
cookei, 91-747. M. C. Z.
mexicana, 311-383.

- Japyx subterraneus*, 145-511. M. C. Z.

Poduridae.

- Achorutes boletivorus*, 127-30. M. C. Z.
marmoratus, 127-30. M. C. Z.
pratorem, 127-31. M. C. Z.
texasensis, 127-30. M. C. Z.

- Anura gibbosa*, 127-27. M. C. Z.

- De Geeria decemfasciata*, 127-40. M. C. Z.
flavocincta, 64b-pl. 10.
= *decemfasciata*, Pack. M. C. Z.
griseo-olivata, 127-39. M. C. Z.
perpulchra, 127-38. M. C. Z.
purpurascens, 64b-pl. 10. M. C. Z.

- Isotoma albella*, 127-32. M. C. Z.

- belfragei*, 127-33. M. C. Z.

- besselsii*, 179-52. M. C. Z.

- glauca*, 127-33. M. C. Z.

- leonina*, 127-32. M. C. Z.

- nivalis*, 127-31. M. C. Z.

- plumbeus*, 64b-pl. 10. M. C. Z.

- purpurascens*, 127-34. M. C. Z.

- tricolor*, 127-34. M. C. Z.

- walkeri*, 94-19; 98-14. M. C. Z.

- Lepidocyrtus albus*, 127-37. M. C. Z.
bipunctatus, 127-37. M. C. Z.
marmoratus, 127-36. M. C. Z.
metallicus, 127-36. M. C. Z.

- Orchesella carneiceps*, 127-40. M. C. Z.
flavopicta, 127-41. M. C. Z.

- Papirus marmoratus*, 127-42. M. C. Z.
texasensis, 127-42. M. C. Z.

- Smynturus rosens*, 127-43. M. C. Z.
quadrisignatus, 127-44. M. C. Z.

Lepismatidae.

- Lepisma domestica*, 127-48. M. C. Z.
mucronata, 127-49. M. C. Z.

- quadriseriata*, 127-47. M. C. Z.
spinulata, 127-48. M. C. Z.

- Machilus brevicornis*, 127-49. M. C. Z.
orbitalis, 127-50.

NEUROPTERA.

Panorpidae.

- Boreus californicus*, 97-408. M. C. Z.

PSEUDONEUROPTERA.

Psocidae.

- Amphientomum hagenii*, 97-405.

ORTHOPTERA.

Locustaridae.

- Ceuthophilus ensiger*, 227-882. M. C. Z.
sloanii, 130-93. M. C. Z.

HEMIPTERA.

Liotheidae.

- Colpocephalum lari*, 67-96.

- Menopon picicola*, 134-731.

Philopteridae.

- Docophorus buteonis*, 67-93.

- hamatus*, 67-94.

- synnii*, 134-733.

- Goniocotes burnettii*, 67-94.

- Goniodes mephitidis*, 134-732.

- merriamianus*, 134-731.

- Lipcurus corvi*, 67-95.

- elongatus*, 67-95.

- gracilis*, 67-95.

- Nirmus buteonivorus*, 134-733. P. A. S.

- thoracicus*, 67-94.

- Trichodectes caprae*, 67-96.

Coccidae.

- Aspidiotus*. See *Mytilaspis*.

- Coccus*. See *Mytilaspis*.

- Lecanium platycerii*, 78-260.

- Mytilaspis citricola* (*Aspidiotus*), 64a-527.*
gloveri (*Coccus*), 64-527.*

DIPTERA.

Hippoboscidae.

- Hippobosca*. See *Olfersia*.

- Olfersia bubonis* (*Hippobosca*), 64-47.

- = *americana*, Leach. M. C. Z.

Ephydriidae.

- Ephydra californica*, 80-103.

- gracilis*, 80-105. A. S. P.,

- halophila*, 60-46.

Chironomidae.

- Chironomus halophilus*, 133-539.

- oceanicus*, 60-42.

Cecidomyiidae.

- Diplosis pini-rigidæ*, 196-527.

LEPIDOPTERA.

Pterophoridae.

- Lioptilus sulphureodactylus* (*Pterophorus*),
122-266. M. C. Z.

- Platyptilia cervinidactyla* (*Pterophorus*)
122-266, = *ochrodactyla*, S. V. M. C. Z.

- Pterophorus pergracilidactylus*, 122-265.
= *monodactylus*, Linn. M. C. Z.

- See *Lioptilus*; *Platyptilia*.

Tineidae.

- Aspidisca saccatella* (*Lyonetia*), 64-355.

- = *splendoriferella*, Clem.

- Bucculatrix curvilineatella* (*Lithocolletis*),
64-354. = *pomifoliella*, Clem.

- thuiella*, 100-373.

- Coleophora cerasivorella*, 78-239.

- Depressaria robinella*, 64-349.

- Gelechia abietisella*, 263-150; 273-296.

- caryævorella*, 321-331.

- trimaculella*, 30-61.

- = *continua*, Zeller.

- Lithocolletis*. See *Bucculatrix*; *Lyonetia*; *Ornix*.

- Lyonetia nidificansella* (*Lithocolletis*), 64-354.

- See *Aspidisca*.

* Based on Glover's unpublished figures.

Tineidæ—Continued.

- Micropteryx pomivorella*, 78-238.
Cecophora frigidella, 30-62.
Ornix geminatella (*Lithocolletis*), 64-353.

Tortricidæ.

- Anchylopera*. See *Rhopobota*.
Cacœcia gossypiana (*Lozotænia*), 64-335.
 = *rosaceana*, Harris.
 v-*signatana* (*Tortrix*), 78-238.
 = *argyrosphila*, Walk.
Conchylis chalcana, 30-56, = *deuschiana*, Zett.
Eudemis vitivorana (*Penthina*), 64-336.
 = *botrana*, Schiff. M. C. Z.

- Grapholitha*. See *Steganoptycha*.
Lozotænia. See *Cacœcia*; *Ptycholoma*.
Pandemis. See *Phoxopterus*.
Penthina frigida, 30-57. M. C. Z.
 fulvifrontana, 30-59.
 = *septentrionana*, Curtis. M. C. Z.
 murina, 30-60. M. C. Z.
 tessellana, 30-58.
 = *intermistana*, Clem. M. C. Z.
 See *Eudemis*.

- Phoxopterus leucophalerata* (*Pandemis*), 30-56.
 = *tineana*, Hüb. M. C. Z.

- Ptycholoma fragariana* (*Lozotænia*), 64-335.
 = *persicana*, Fitch. M. C. Z.

- Rhopobota vacciniiana* (*Anchylopera*), 64-338. M. C. Z.

- Sciaphila niveosana*, 30-55. M. C. Z.

- Steganoptycha nebulosana* (*Grapholitha*), 30-69. M. C. Z.

- Teras oxyeocana* (*Tortrix*), 64-334. M. C. Z.
 vacciniivorana (*Tortrix*), 78-241.* C. H. F.

- Tortrix*. See *Cacœcia*; *Sciaphila*; *Teras*.

Pyralidæ.

- Acrobasis*. See *Phycis*.
Anerastia roseatella (*Nephoteryx*), 123-270,
 = *hæmatica*, Zeller. M. C. Z.
Botis borealis (*Pyrausta*), 30-53. M. C. Z.
 californialis, 122-260. M. C. Z.
 mustelinalis, 122-262. M. C. Z.
 perrubralis, 122-264. M. C. Z.
 profundalis, 122-261. M. C. Z.
 semirubralis, 122-263. M. C. Z.
 subolivalis, 122-261. M. C. Z.
 syringicola, 78-250. M. C. Z.
 unifascialis, 122-261. M. C. Z.

- = *subolivalis*, Pack. M. C. Z.
Calaclysta metalliferalis, 122-265.† M. C. Z.

- Crambus argillaceus*, 30-54. M. C. Z.

- carpenterellus*, 157-548. M. C. Z.

- unistriatellus*, 30-54. M. C. Z.

- Dakrura grossulariæ* (*Pempelia*), 64-331. M. C. Z.
 = *convolutella*, Hüb. M. C. Z.

- Eromena californialis*, 122-264. M. C. Z.

- Eudorea*. See *Scoparia*.

- Eurycreon occidentalis* (*Scopula*), 122-260. M. C. Z.

- = *rantalis*, Guen. M. C. Z.

- Myeoloides albipagiatella*, 123-269. M. C. Z.

Pyralidæ—Continued.

- Nephoteryx edmandsii*, 8-120. M. C. Z.

- fenestrella* (*Pempelia*), 122-259. M. C. Z.

- latifasciatella*, 123-269. M. C. Z.

- = *ovalis*, Pack. M. C. Z.

- leoninella* (*Pempelia*), 122-259. M. C. Z.

- ovalis* (*Pempelia*), 123-269. M. C. Z.

- See *Anerastia*.

- Pempelia*. See *Dakrura*; *Nephoteryx*.

- Phycis rubrifasciella* (*Acrobasis*), 123-267. M. C. Z.‡

- Pyrausta*. See *Botis*.

- Scoparia albisinuatella* (*Eudorea* ?), 30-53.‡ M. C. Z.

- frigidella* (*Eudorea* ?), 30-53.‡ M. C. Z.

- Scopula glacialis*, 30-52. M. C. Z.

- See *Eurycreon*.

Geometridæ.

- Acidalia albocostaliata*, 176-336. M. C. Z.

- californiata*, 96-390. M. C. Z.

- = *sideraria*, Guen. M. C. Z.

- candidaria*, 128-72. B. S. N. H.

- = *ordinata*, Walk. M. C. Z.

- granitaria*, 96-390. M. C. Z.

- longipennata*, 128-71. M. C. Z.

- = *peralbata*, Pack. M. C. Z.

- okakaria*, 30-43. M. C. Z.

- = *inductata*, Guen. M. C. Z.

- pacificaria*, 96-391. M. C. Z.

- = *sideraria*, Guen. M. C. Z.

- peralbata*, 128-70. M. C. Z.

- perirrorata*, 128-71. M. C. Z.

- productata*, 176-334. M. C. Z.

- punctofimbriata*, 128-70. M. C. Z.

- quadrilineata*, 176-345. M. C. Z.

- quinquelinearia*, 96-389. M. C. Z.

- rotundopennata*, 176-337. M. C. Z.

- rubrolineata*, 124-28. M. C. Z.

- = *magnetaria*, Guen. M. C. Z.

- rubromarginata*, 96-391. M. C. Z.

- = *hepaticaria*, Guen. M. C. Z.

- subalbaria*, 124-28. M. C. Z.

- Anagoga californiaria* (*Ellopia*), 96-384. M. C. Z.

- = *occiduaria*, Walk. M. C. Z.

- Anaploides*, 176-392. M. C. Z.

- pistaciaria*, 176-392. M. C. Z.

- Anisopteryx autumnata*, 176-400. M. C. Z.

- = *pometaria*, Harris. M. C. Z.

- Annemoria*, 176-375. M. C. Z.

- unitaria* (*Eunemoria*), 124-30. M. C. Z.

- Antepione*, 176-483. M. C. Z.

- sulphurata* (*Heterolocha*), 128-79. M. C. Z.

- Aplodes approximaria*, 128-73. J. A. L.

- brunnearia*, 176-388. M. C. Z.

- coniferaria*, 280-933. M. C. Z.

- latiaria*, 128-74. J. A. L.

- = *var. of mimosaria*, Guen. J. A. L.

*According to Riley this is a seasonal dimorphic form of *oxyeocana*; Fernald considers this = *minuta* Rob., and that *oxyeocana* should remain distinct.

†According to Professor Fernald this is not a *Calaclysta*.

‡*Pinipestis abietivorella*, given by Grote (Check List, 1882, p. 55) as one of Packard's species, was described by Grote (Bull. U. S. Geol. Surv., v. 4, p. 701).

§Probably varieties of *S. centuriella*, Schiff.

Geometridæ—Continued.

<i>Aplodes rubrifrontaria</i> (<i>Racheospila</i>), 128-76.	M. C. Z.
<i>rubrolinearia</i> , 128-74.	
= <i>inclusaria</i> , Walk.	M. C. Z.
<i>rubromarginaria</i> , 176-389.	M. C. Z.
<i>Aspilates lintneraria</i> , 154-44.	
= <i>liberaria</i> , Walk.	M. C. Z.
<i>pervaria</i> , 128-62.	M. C. Z.
<i>quadrifasciaria</i> , 128-62.	M. C. Z.
<i>Asthena brunneifasciata</i> , 176-325.	M. C. Z.
<i>triseriata</i> (<i>Corycia</i>), 154-50.	
= <i>albovilvaria</i> , Morr.	M. C. Z.
<i>Azelina behrensata</i> , 96-386.	M. C. Z.
= <i>var. of hubnerata</i> , Guen.	M. C. Z.
<i>Baptria</i> . See <i>Oedezia</i> .	
<i>Boarmia</i> . See <i>Cymatophora</i> .	
<i>Caberodes cervinaria</i> , 128-81.	M. C. Z.
See <i>Metanema</i>	
<i>Callizzia</i> , 176-314.	
<i>amorata</i> , 176-315.	M. C. Z.
<i>Caripeta piniaria</i> (<i>Parennomos</i>), 78-247.	
= <i>angustiorata</i> , Walk.	
<i>Carsia alpinata</i> , 128-52, = <i>paludata</i> , Thunb.	
<i>boreata</i> , 128-52, = <i>paludata</i> , Thunb.	
<i>Canlostoma occiduaria</i> , 154-52.	M. C. Z.
<i>Ceratodalia</i> , 176-322.	
<i>gueneata</i> , 176-323.	M. C. Z.
<i>Chesias</i> . See <i>Eupithecia</i> .	
<i>Chloraspilates</i> , 176-211.	
<i>bicoloraria</i> , 176-212.	N. M.
<i>Chlorosca</i> , 124-31.	
<i>bistriaria</i> , 176-378.	M. C. Z.
<i>nevadaria</i> , 124-31.	M. C. Z.
<i>perviridaria</i> , 176-379.	
= <i>fasciolaria</i> , Guen.	M. C. Z.
<i>Choerodes bipunctaria</i> , 63-64.	
See <i>Eutrapela</i> .	
<i>Cidaria</i> . See <i>Glaucopteryx</i> ; <i>Hydriomena</i> ; <i>Ochyria</i> ; <i>Petrophora</i> ; <i>Thera</i> .	
<i>Cleora nigrovenaria</i> , 176-454.	M. C. Z.
<i>pellucidaria</i> , 128-78.	
= <i>semiclusaria</i> , Walk.	M. C. Z.
<i>piniaria</i> (<i>Zerene</i>), 78-246.	
= <i>semiclusaria</i> , Walk.	
<i>umbrosaria</i> , 124-23.	M. C. Z.
<i>Coremia</i> . See <i>Ochyria</i> .	
<i>Corycia</i> . See <i>Asthena</i> ; <i>Eudeilinia</i> .	
<i>Cymatophora californiaria</i> (<i>Boarmia</i>), 96-387.	
<i>plumosaria</i> , 154-51.	M. C. Z.
<i>polygrammaria</i> , 176-439.	M. C. Z.
<i>quinquelinearia</i> , 154-51.	M. C. Z.
<i>Dasyfidonia</i> , 176-233.	
<i>Deilinia pacificaria</i> , 176-307.	M. C. Z.
<i>Drepanodes juniperaria</i> , 100-371.	
= <i>olyzonaria</i> , Walk.	M. C. Z.
<i>panamaria</i> , 124-39.	M. C. Z.
<i>Ellopia</i> . See <i>Anagoga</i> .	
<i>Endropia apiciaria</i> , 176-502.	
= <i>warneri</i> Harvey.	M. C. Z.
<i>bilinearia</i> (<i>Prionocycla</i>), 78-245.	
<i>pilosaria</i> , 176-501.	B. S. N. H.
<i>pilosaria</i> , 176-501.	M. C. Z.
<i>Eois ferrugata</i> , 176-321.	M. C. Z.

Geometridæ—Continued.

<i>Eois geminata</i> , 176-320.	M. C. Z.
<i>occidentata</i> (<i>Hyria</i>), 124-29.	M. C. Z.
<i>Epione mustelinaria</i> , 63-64.	
<i>Epirrita 12-lineata</i> (<i>Larentia</i>), 124-19.	
= <i>var. of inclinata</i> , Walk.	M. C. Z.
<i>perlineata</i> (<i>Larentia</i>), 124-20.	
= <i>incilinata</i> , Walk.	M. C. Z.
<i>Euacidalia</i> , 128-69.	
<i>floridata</i> , 176-319.	M. C. Z.
<i>sericeata</i> , 128-69.	M. C. Z.
<i>Euaspilates</i> , 154-45.	
<i>spinataria</i> , 154-45.	M. C. Z.
<i>Eucrostis zelleraria</i> , 176-370.	
= <i>phyllinaria</i> , Zell.	M. C. Z.
<i>Eudeilinia</i> , 176-302.	
<i>biseriata</i> (<i>Corycia</i>), 128-68.	
= <i>herminiata</i> , Guen.	
<i>Euophya</i> , 128-73.	
<i>serrulata</i> , 128-73.	M. C. Z.
<i>Eufidonia</i> , 176-225.	
<i>Eufitchia</i> , 176-247.	
<i>Eumacaria</i> , 128-67.	
<i>brunnearia</i> , 128-67.	M. C. Z.
<i>Eunemoria</i> , 124-30; 128-76, = <i>Annemoria</i> , Pack.	
See <i>Annemoria</i> ; <i>Synchlora</i> .	
<i>Euphnessa</i> , 6-102.*	
<i>Eupistheria</i> . See <i>Thamnonoma</i> .	
<i>Eupithecia albicapitata</i> , 176-48.	M. C. Z.
<i>behrensata</i> , 176-59.	M. C. Z.
<i>cretacea</i> (<i>Larentia</i>), 154-40.	
<i>geminata</i> , 128-58.	M. C. Z.
= <i>absynthiata</i> , Linn.	M. C. Z.
<i>interruptofasciata</i> , 128-59.	M. C. Z.
<i>longipalpata</i> , 176-56.	M. C. Z.
<i>luteata</i> , 30-46.	M. C. Z.
<i>nevadata</i> , 96-395.	M. C. Z.
<i>occidentaliata</i> (<i>Chesias</i>), 96-404.	
= <i>subpicata</i> , Guen.	M. C. Z.
<i>palpata</i> , 128-58.	
= <i>luteata</i> , Pack.	M. C. Z.
<i>ravocostaliata</i> , 176-60.	M. C. Z.
<i>rotundopunctata</i> , 96-395.	M. C. Z.
<i>strattonata</i> , 128-60.	M. C. Z.
<i>zygadeniata</i> , 176-61.	M. C. Z.
See <i>Glaucopteryx</i> ; <i>Lobophora</i> .	
<i>Eurhinosea</i> , 124-34, = <i>Petrophora</i> , Hübn.	
See <i>Petrophora</i> .	
<i>Eutrapela falcata</i> , 124-39.	M. C. Z.
<i>furciferata</i> , 176-559.	M. C. Z.
<i>nubilata</i> (<i>Choerodes</i>), 96-381.	
<i>nubilata</i> , 96-381.	M. C. Z.
<i>Fidonia</i> . See <i>Loxofidonia</i> .	
<i>Glaucopteryx aurata</i> (<i>Cidaria</i>), 30-51.	
= <i>cæsiata</i> , Borkh.	M. C. Z.
<i>multilineata</i> (<i>Cidaria</i>), 96-403.	
= <i>implicata</i> , Guen.	M. C. Z.
<i>quadripunctata</i> (<i>Cidaria</i>), 96-402.	
= <i>magnoliata</i> , Guen.	M. C. Z.
<i>Guophos haydenata</i> , 176-445.	M. C. Z.
<i>Goniacidalia</i> , 128-68.	
<i>furciferata</i> , 128-68.	M. C. Z.
<i>Gorytrodes trilinearia</i> , 124-24.	M. C. Z.
<i>Gueneria</i> , 176-307.	

* Described as a *Bombycid*; see Ent. Amer., 1885, v. 1, p. 167, for Hulst's reasons for placing here.

Geometridæ—Continued.

- Halia. *See* *Thamnomona*.
Hemerophila latifasciaria, 124-33. M. C. Z.
Hesperumia, 124-37; 128-79.
 ochreata, 124-37. M. C. Z.
 sulphuraria, 128-79.
 = *ochreata*, Pack. M. C. Z.
Heterolocha edwardsata, 96-383. M. C. Z.
 See Antepione.
Heterophleps harveiata, 176-193. M. C. Z.
Hydriomena albifasciata (*Hypsipetes*), 154-41.
 H. E. *
 californiata (*Hypsipetes*), 96-396. M. C. Z.
 glauca (*Cidaria*), 124-20. H. E.
 nubilofasciata (*Hypsipetes*) 96-398. M. C. Z.
 quinquefasciata (*Hypsipetes*), 96-397. M. C. Z.
 speciosata (*Hypsipetes*), 124-22. M. C. Z.
 viridata (*Hypsipetes*), 124-21. M. C. Z.
Hypsipetes. *See* *Hydriomena*.
Hyria. *See* *Eois*.
Larentia. *See* *Epirrita*; *Eupithecia*.
Lithostegia rotundata, 154-39. M. C. Z.
 triseriata, 154-39. M. C. Z.
Lobophora inequaliata, 176-180.
 montanata, 154-40. M. C. Z.
 vernata (*Eupithecia*), 128-57.
 = *limitaria*, Walk. M. C. Z.
 viridata, 128-56. M. C. Z.
Loxofidonia, 176-223.
 acidaliata (*Fidonia*), 154-48. M. C. Z.
Lozogramma atropunctata, 154-50. M. C. Z.
 ferruginosaria (*Tephrosia*), 96-388. M. C. Z.
 nigroseriata (*Tephrosia*), 124-32. M. C. Z.
 = *ferruginosaria*, Pack. M. C. Z.
Lythria rileviana, 176-221.
 = *chamaechrysaria*, Grote. M. C. Z.
 snoviaria, 176-222. M. C. Z.
Macaria. *See* *Phasiane*; *Semiothisa*.
Marmopteryx, 176-259.
 marmorata (*Tephrosia*) 96-393. M. C. Z.
 tessellata, 157-552. M. C. Z.
Melanippe. *See* *Rheumampertyx*.
Melanthia. *See* *Rheumampertyx*.
Metanema carnaria (*Caberodes*), 128-80. M. C. Z.
 See Tetracis.
Metrocampa viridoperlata, 124-38.
 = *var. perlaria*, Guen. H. E.
Nemoria gratata, 176-373. M. C. Z.
Ochyria californiata (*Coremia*), 96-398.
 = *munitata*, Hübn. M. C. Z.
 carneata (*Phibalapteryx*), 154-43. M. C. Z.
 gueneata, 176-141. M. C. Z.
 labradorensis (*Coremia*), 30-46.
 = *var. of munitata*, Hübn. M. C. Z.
 lacteata, 176-143. M. C. Z.

Geometridæ—Continued.

- Ochyria lignicolorata* (*Coremia*), 154-42. M. C. Z.
 nigrofasciata (*Cidaria*), 30-49.
 = *abrasaria*, H. S. M. C. Z.
 rubrosuffusata (*Cidaria*), 96-402. M. C. Z.
 strigata (*Cidaria*), 30-50.
 = *munitata*, Hübn. M. C. Z.
Odezia californiata (*Baptria*), 96-404. M. C. Z.
Orthofidonia, 176-235.
Pachynymia psi, 128-61.
Panagra. *See* *Phasiane*.
Paraphia piniata, 78-246. = *subatomaria*, Guen.
Parennomos, 78-248. = *Caripeta*, Walk.
 See Caripeta.
Petrophora albolineata (*Cidaria*), 128-55. M. C. Z.
 brunneata (*Cidaria*), 30-47.
 = *truncata*, Hübn. M. C. Z.
 disjunctaria (*Cidaria*), 128-53.
 = *cunigerata*, Walk.
 flavata (*Eurhinosea*), 124-35. M. C. Z.
 leoninata (*Cidaria*), 96-401. M. C. Z.
 montanata (*Cidaria*), 128-55.
 = *prunata*, Linn.
 nubilata (*Cidaria*), 30-48; 96-400. M. C. Z.
 = *var. of prunata*, Linn. M. C. Z.
 subochreata (*Cidaria*), 96-400.
 = *mancipata*, Guen. M. C. Z.
 triangulata (*Cidaria*), 128-54.
 = *prunata*, Linn.
Phasiane atrofasciata, 176-264. M. C. Z.
 excuvata, 154-47.
 = *continuata*, Walk. M. C. Z.
 flavofasciata (*Panagra*), 96-394.
 = *neptata*, Guen. M. C. Z.
 irrorata, 176-273. M. C. Z.
 meadiata, 154-47. M. C. Z.
 nubiculata, 176-267. M. C. Z.
 sinuata, 154-45. M. C. Z.
 snoviata, 176-268. M. C. Z.
 subminiata (*Panagra*), 124-25. M. C. Z.
 subminiata (*Macaria*), 154-49. M. C. Z.
 = *snoviata*, Pack. M. C. Z.
 trifasciata, 154-46.
 = *var. of mellistrigata*, Gr. M. C. Z.
Phibalapteryx. *See* *Ochyria*.
Philereme albosignata (*Scotosia*), 128-61. M. C. Z.
 californiata (*Scotosia*), 96-399. M. C. Z.
 meadiata (*Scotosia*), 154-41. M. C. Z.
Plagodis keutzingeria, 176-468.
Priocyclus. *See* *Endropia*.
Racheospila. *See* *Aplodes*.
Rheumampertyx brunneicellata (*Melanthia*), 154-42. M. C. Z.
 kodiakata (*Melanippe*), 124-23. = *lugubrata*, Staud. H. E.
Scotosia. *See* *Philereme*.

* All the species described by Dr. Packard are probably varieties of *sordidata*, Fabr.

Geometridæ—Continued.

- Selidosema californiaria, 96-394.
=jurnaria, Guen. M. C. Z.
Semiolitha californiata (Macaria), 96-392.
M. C. Z.
dislocaria, 176-282. M. C. Z.
duplicaria (Macaria), 128-65.
=ocellinata, Guen. M. C. Z.
minorata (Macaria), 128-66. M. C. Z.
multilineata (Macaria), 128-65.
M. C. Z.
pallidata (Macaria), 128-64.
=californiata, Pack. M. C. Z.
punctolineata (Macaria), 128-64.
M. C. Z.
sexmaculata (Macaria), 30-44.
=granitata, Guen. M. C. Z.
S-signata (Macaria), 128-63. M. C. Z.
Sieya crocearia, 124-36.
=macularia, Harris. H. E.
Stenaspilates, 176-212.
meskaria, 176-213. N. M.
Stenotrachelys permagnaria, 176-450. N. M.
Synchlora albolineata, 128-75.
=glaucaria, Guen. M. C. Z.
excurvaria, 128-76. M. C. Z.
gracilaria (Eunemorina), 128-77.
=glaucaria, Guen. M. C. Z.
rubrifrontaria, 128-75. M. C. Z.
tricoloraria (Eunemorina), 124-30.
=liquoraria, Guen. M. C. Z.
Tephрина. See Marmopteryx; Thamnomona.
Tephrosia californiaria, 96-388. M. C. Z.
falcataria, 124-32. M. C. Z.
See Lozogramma.
Tetracis aurantiacaria (Metanema), 124-34.
=cervinaria, Pack. M. C. Z.
cervinaria (Metanema), 96-386. M. C. Z.
grotearia, 176-553. M. C. Z.
paralleliaria, 124-38. M. C. Z.
trianguliferata, 96-384. H. E.
Thamnomona argillacearia (Tephрина), 154-48.
cineraria (Halia), 96-392.
=marcescens, Guen. M. C. Z.
ferruginaria (Eupistheria), 128-78.
=brunnearia, Thunb. M. C. Z.
flavicaria, 176-256. M. C. Z.
guenearia, 176-252. M. C. Z.
quadrilinearia (Halia), 124-26.
M. C. Z.
sulphuraria (Eupistheria), 128-77.
M. C. Z.
tripunctaria (Halia), 124-26.
M. C. Z.
Thera contractata (Cidaria), 128-56. M. C. Z.
Tornos approximaria, 176-215. M. C. Z.
Zerene. See Cleoria.
- Noctuidæ.
- Agrotis littoralis, 30-36. M. C. Z.
okakensis, 30-38. M. C. Z.
ortoni, 63-63. =saucia, Hübn. M. C. Z.
umbra, 30-37. M. C. Z.
Anarta bicycla, 30-41.
=melaleuca, Thunb. M. C. Z.
nigro-lunata, 30-40.
=melanopa, Thunb. M. C. Z.

Noctuidæ—Continued.

- Heliophila rufostriata (Leucania), 30-36.
P. A. S.
Leucania. See Heliophila.
Palindia geminata, 63-64. M. C. Z.
Platycerura, 6-373.
fureilla, 6-374. B. S. N. H.
Bombyciidæ.
Actias azteca, 64-298.
Adoneta leucosigma (Cyclopteryx), 6-346.
Antarctia bicolor, 63-63. M. C. Z.
punctata, 6-123. M. C. Z.
Apatelodes, 6-353.
hyalinopuncta, 6-354.
=angelica, Gr. M. C. Z.
Arachnis picta, 6-126. M. C. Z.
Aretia pallida, 6-118.
Attacus amazonica, 102-85. M. C. Z.
Byssophaga grisea (Cisthene), 112-84.
=nixa, Boisd. M. C. Z.
Callarctia, 6-114.
ornata, 6-115.
Callimorpha vestalis, 6-108.
=var. of Lecontei, Boisd.
Callochloa, 6-339, =Parasa, Moore.
See Parasa.
Callosamia, 6-379, =Attacus, Linn.
Cecrita. See Coelodasys; Seirodonta.
Cisthene. See Byssophaga.
Clemensia, 6-100.
albata, 6-101. M. C. Z.
umbra, 112-85.*
Clisiocampa californica, 6-387.
Coelodasys, 6-363.
biguttata, 6-365. B. S. N. H.
cinereofrons, 6-366.
=var. of biguttata, Pack.
B. S. N. H.
edmandsii, 6-364.
harrisii, 6-365.
mustelina (Cecrita?), 6-359.
B. S. N. H.
Crambidia, 6-99.
pallida, 6-99. B. S. N. H.
Cyclopteryx, 6-344, =Adoneta, Clem.
See Adoneta.
Cyrtosia, 6-342, =Packardia, G. & R.
See Packardia.
Dasylophia, 6-362.
interna, 6-363. B. S. N. H.
Drepana. See Platypteryx.
Dryopteris irrorata, 6-377. P. A. S.
Epantheria permaculata (Leucarectia), 112-86.
=reducta, Gr. M. C. Z.
Edapteryx, 6-375, =Prionia, Hübn.
See Prionia.
Euchronia, 6-382, =Hemileuca, Walk.
Euclea bifida, 6-338. P. A. S.
ferruginea, 6-338. M. C. Z.
monitor, 6-337.
=querecti, H. S. B. S. N. H.
Euleucophæus, 112-88.
tricolor, 112-89. H. E.
Gastropacha californica, 112-91. M. C. Z.
ferruginea, 6-386.
Gloveria, 112-89.

* Type lost in the mail.—Hy. Edwards.

Bombycidae—Continued.

- Gloveria arizonensis*, 112-90.
Gluphisia trilineata, 6-355. B. S. N. H.
Halisdota agassizii, 6-128.
 = *maculata*, Harris. M. C. Z.
argentata, 6-129. M. C. Z.
edwardsii, 6-129. M. C. Z.
pustulata, 63-63. M. C. Z.
Hemileuca diana, 157-557. = *juno*, Pack. M. C. Z.
juno, 112-87. M. C. Z.
Hepialus argentata (*Sthenopsis*), 6-392.
 = *argenteomaculatus*, Harris. B. S. N. H.
labradoriensis, 6-394. M. C. Z.
mustelinus, 6-393. B. S. N. H.
purpurascens (*Sthenopsis*), 4-598; 6-392.
 = *argenteomaculatus*, Harris.
Heterocampa cinerea (*Lochmæus*), 6-372. P. A. S.
marina (*Lochmæus*), 6-373.
obliqua, 6-368. P. A. S.
olivata (*Lochmæus*), 6-371.
 = *biundata*, Walk. P. A. S.
tessella (*Lochmæus*), 6-370.
 = *marthesia*, Cram. A. S. P.
trouvelotii, 6-369.
unicolor (*Lochmæus*), 6-373. P. A. S.
Heterogenea shurtleffi, 6-346. B. S. N. H.
Ianassa virgata (*Xylinodes*), 6-367.
 = *lignicolor*, Walk. P. A. S.
Ichthyura indentata, 6-352. B. S. N. H.
inversa, 6-352. M. C. Z.
Isa, 6-347.
Lagoa crispata, 6-335. B. S. N. H.
Leucartia, 6-124.
californica, 6-125.
 = *acraea*, Drury. M. C. Z.
See Ecpantheria.
Limacodes biguttata, 6-341. B. S. N. H.
y-inversa, 6-341. M. C. Z.
Lithacodes, 6-345, = *Limacodes*, Latr.
Lithacodia graefii, 328-52. A. S. P.
Lithosia argillacea, 6-98.
 = *bicolor*, Grote. B. S. N. H.
rubropicta, 328-52. A. S. P.
Lochmæus. See Heterocampa.
Lophodonta, 6-357.
ferruginea, 6-357. B. S. N. H.
Nadata doubledayi, 6-356.
Nemeophila modesta (*Platarctia*), 6-113. M. C. Z.
scudderii (*Platarctia*), 6-113. P. A. S.
Oedemasia, 6-359.
badia, 6-361.
 = *nitida*, Pack. B. S. N. H.
nitida, 6-360.
Orgyia definita, 6-332.
 = *var. of leucosigma*. A. & S.

Bombycidae—Continued.

- Packardia albipuncta* (*Cyrtosia*), 6-344.
elegans (*Cyrtosia*), 6-342. B. S. N. H.
fusca (*Cyrtosia*), 6-343.
geminata (*Cyrtosia*), 6-343.
Parasa vernata (*Callochloa*), 6-339.
 = *chloris*, H. S. M. C. Z.
Parorgyia, 6-332.
basiflava, 6-333. B. S. N. H.
Pheosia rimosa, 6-358.
Phobetron nigricans (*Thyridopteryx*), 6-350.
Platarctia, 6-109.
See Nemeophila.
Platœcticus, 64-291.
gloveri, 64-291.* M. C. Z.
Platypteryx siculifer (*Drepana*), 112-87.
Prionia bilineata (*Edapteryx*), 6-376.
Psyche carbonaria, 328-51.
Pyrrharetia, 6-120.
californica, 6-121.
 = *var. of isabella*, A. & S. M. C. Z.
Seiractia, 6-119.
clio, 6-120.
Seirodonta bilineata (*Cecrita*), 6-359. B. S. N. H.
Spilosoma vestalis, 6-125. M. C. Z.
Sthenopsis, 6-390, = *Hepialus*, Fabr.
See Hepialus.
Thyridopteryx. See Phobetron.
Tortricidia, 6-347.
testacea, 6-348. B. S. N. H.
Xylinodes, 6-366, = *Ianassa*, Walk.
See Ianassa.
Zygœnidæ. †
Acolithus sanbornii (*Harrisina*), 7-32.
 = *falsarius*, Clem. B. S. N. H.
Anatolmis, 7-45.
grotei, 7-47.
Glaucoptis tricolor, 63-62. M. C. Z.
Harrisina, 7-31. *See Acolithus.*
Lycomorpha miniata, 112-84. M. C. Z.
palmeri, 112-84. M. C. Z.
Phryganidia, 6-348. ‡
californica, 6-349. M. C. Z.
 HYMENOPTERA.
Chalcididæ.
Anthophorabia megachilis, 8-134.
Copidosoma turni (*Encyrtus*), 231-32. S. H. S.
Derostenus antiopæ (*Entedon*), 231-36.
 B. S. N. H.
Encyrtus montinus, 156-347. *See Copidosoma.*
Entedon. See Derostenus.
Eulophus. See Tetrastichus.
Tetrastichus saundersii (*Eulophus*), 231-34.
 S. H. S.
semidæ (*Eulophus*), 156-347.
 S. H. S.
theclæ (*Eulophus*), 231-34. S. H. S.
Trichogramma minutissimum, 231-37.

* Described from Glover's figures. *See* 328-51.† According to Smith (*Trans. Amer. Ent. Soc.*, v. 12) none of the genera mentioned except *Glaucoptis*, belong to the *Zygœnidæ*. It is more convenient however, to catalogue them here.‡ Originally described as a *Psychid*. Stretch (*Ill. Zyg. & Bomby.*, p. 90) places near *Procris* and *Otenucha* "chiefly because unable to assign it a more satisfactory position." Later, Packard accepted Stretch's view. Butler (*Papilio*, v. 1, p. 131) contends that the larva and pupa show no affinity to *Zygœnidæ* or *Psychidæ*; that the structure of the imago scarcely differs from *Hyrminia* of the *Dioptidæ*. Grote in his check-list (1882) follows Butler. Mr. J. B. Smith writes me that the genus is an aberrant one and is "more *Lithosid* than anything else."

Proctotrypidae.

Pteratomus, 8-137.

putnami, 8-138.

Braconidae.

Apanteles atalantæ (Microgaster), 231-27.

= congregatus, Say. S. H. S.

carduicola (Microgaster), 231-27.

= fruticosus, Cress. S. H. S.

lunatus (Microgaster), 231-28.

nephopteris (Microgaster), 8-122.

pieridis (Microgaster), 231-26.

= pieridivora, Riley, a var. of congregatus, Say.

Microgaster carinata, 231-25.

= var. of gelechiæ, Riley. S. H. S.

hallii, 179-52.

See Apanteles.

Ichneumonidae.

Campoplex pieridicola, 231-20. S. H. S.

Cryptus samia, 10-345. M. C. Z.

smithii, 10-346. M. C. Z.

Ichneumon hunteræ, 231-22.

= rufiventris Brullé. S. H. S.

tharotis, 231-24.

= instabilis Cress.

Ophion tityri, 231-19.

= bilineatus Say. B. S. N. H.

Scoliidae.

Scolia bisignata, 63-61. P. A. S.

Pompilidae.

Pepsis purpuripes, 63-61. P. A. S.

quitonensis, 63-61. P. A. S.

vinipennis, 63-61. M. C. Z.

Pompilus vinicolor, 63-62. P. A. S.

Bembecidae.

Monedula, 10-maculata, 63-60. P. A. S.

Nyssonidae.

Gorytes atricornis, 12-428. B. S. N. H.

canaliculatus, 12-428. A. E. S.

denticulatus, 12-430. A. E. S.

ephippiatus, 12-426. A. E. S.

flavicornis, 12-429. A. E. S.

moneduloides, 12-431. A. E. S.

nebulosus, 12-424. A. E. S.

rufo-luteus, 12-425. A. E. S.

rugosus, 12-427. P. A. S.

Mellinus bimaculatus, 12-419. B. S. N. H.

Nysson laterale, 12-440. A. E. S.

Oxybelus mucronatus, 12-436. A. E. S.

Trypoxylon rubro-cinctum, 12-416. A. E. S.

tridentatum, 12-417. P. A. S.

Crabronidae.

Anacrabro, 12-67.

ocellatus, 12-68. A. E. S.

Blepharipus harrisii, 12-376. B. S. N. H.

minimus, 12-377. B. S. N. H.

Cerceris occipitamaculata, 12-62.

Crabro brunneipes, 12-102. A. E. S.

corrugatus, 12-107. A. E. S.

cristatus, 12-101. A. E. S.

cubiceps, 12-105. A. E. S.

denticulatus, 12-97. A. E. S.

effusus, 12-104.

gracilissimus, 12-78. A. E. S.

oblongus, 12-88.

Crabronidae—Continued.

Crabro parvulus, 12-108. A. E. S.

paucimaculatus, 12-90. A. E. S.

pauper, 12-95. A. E. S.

producticollis, 12-76. A. E. S.

quadrangularis, 12-85. A. E. S.

14-maculatus, 12-87. A. E. S.

rufifemur, 12-81. A. E. S.

septentrionalis, 12-110. P. A. S.

stirpicola, 12-111. A. E. S.

tenuiglossa, 12-98.

trapezoidens, 12-89. A. E. S.

villosifrons, 12-84. A. E. S.

Diodontus americanus, 12-393. P. A. S.

Mimesa basirufa, 12-406. B. S. N. H.

cingulata, 12-410. P. A. S.

cressonii, 12-405. A. E. S.

denticulata, 12-406. A. E. S.

monticola, 12-407. B. S. N. H.

pauper, 12-409. A. E. S.

Psen chalcifrons, 12-401. A. E. S.

elongatus, 12-400. A. E. S.

fuscipes, 12-402. B. S. N. H.

niger, 12-399. A. E. S.

Rhopalum pedicellatum, 12-380. A. E. S.

rufigaster, 12-382. A. E. S.

Stigmus americanus, 12-386. A. E. S.

Thyreopus argus, 12-359. P. A. S.

cingulatus, 12-366. A. E. S.

coloradensis, 12-356. A. E. S.

cribrellifer, 12-358. A. E. S.

discifer, 12-363. A. E. S.

monticolor, 12-367. B. S. N. H.

pegasus, 12-362. B. S. N. H.

signifer, 12-361. P. A. S.

tumidus, 12-364. A. E. S.

vernalis, 12-369. A. E. S.

Vespidæ.

Montezumia andeus, 63-60. P. A. S.

Andrenidæ.

Augochlora fuscipes, 63-60. P. A. S.

nigro-ænea, 63-59. P. A. S.

Halictus rimosiceps, 63-60. P. A. S.

Apidæ.

Anthidium pictifrons, 63-59. P. A. S.

Anthophora conica, 63-58. P. A. S.

pilifrons, 63-58. P. A. S.

Centris braccata, 63-57. P. A. S.

4-maculata, 63-57. P. A. S.

Euglossa bombiformis, 63-57. P. A. S.

Osmia lignivora, 23-376; 64-139. P. A. S.

Trigona mellicolor, 63-56. P. A. S.

GROUP NAMES.

Cinura, 64e-iii.

Elytrophora, 264-294.

Euglossata, 264-294.

Eurhynchota, 264-294.

Heterometabola, 64-iii.

Mecaptera, 317-808.

Phyloptera, 264-287.

Platyptera, 264-292.

Plectoptera, 317-808.

Synaptera, 264-294.

INDEX.

<p>Abdominal antennæ..... 73</p> <p style="padding-left: 2em;">appendages..... 83</p> <p style="padding-left: 2em;">segments in lepidopterous larvæ, number of..... 294</p> <p style="padding-left: 2em;">sense organs..... 75</p> <p>Adelops, larva..... 149</p> <p>Adirondacks, decay of spruce in..... 260</p> <p>Alleghash River, insects collected on..... 2</p> <p>Anabrus. (See Western cricket.)</p> <p>Ancestry of Insects..... 82, 99, 138</p> <p style="padding-left: 2em;">Limulus..... 81</p> <p>Anopthalmus, larva..... 149</p> <p>Antennæ, abdominal..... 73</p> <p>Aphis, grain..... 1</p> <p>Apiphobia..... 38</p> <p>Appendages, abdominal..... 93</p> <p style="padding-left: 2em;">homologous, with legs..... 190</p> <p>April Insects..... 16, 39</p> <p>Aquatic pyralid larva..... 277</p> <p>Arachnid, is Limulus an..... 234, 235</p> <p>Arachnida, coxal glands..... 249</p> <p style="padding-left: 2em;">liver..... 287</p> <p style="padding-left: 2em;">new cave..... 268</p> <p>Araneina of Kentucky caves..... 160</p> <p>Archipolypoda, position..... 243</p> <p>Arctia caja, number of larval moults..... 108</p> <p>Army-worm..... 1, 334</p> <p>Arthropods, aspect of body..... 279</p> <p style="padding-left: 2em;">nomenclature of external parts..... 239</p> <p style="padding-left: 2em;">smell..... 320, 325</p> <p>Arrangement of the orders of insects..... 317</p> <p>Articulatæ (Peab. Acad. Sci.) Reports..... 62, 101, 126, 153</p> <p style="padding-left: 2em;">Yersin on nervous system of..... 221</p> <p>August Insects..... 22, 46</p> <p>Bees, discovery of the origin of sting of.... 143</p> <p style="padding-left: 2em;">home of..... 23</p> <p style="padding-left: 2em;">injurious to fruit, are..... 37</p> <p style="padding-left: 2em;">Labrador..... 290</p> <p style="padding-left: 2em;">of New England, Humble..... 8</p> <p style="padding-left: 2em;">origin of cells of..... 291</p> <p style="padding-left: 2em;">Parthenogenesis of..... 106</p> <p style="padding-left: 2em;">of Honey..... 201</p> <p style="padding-left: 2em;">tongue, anatomy, and function of.... 281</p> <p>Beetles of Kentucky caves..... 168</p> <p>Bibliography of economic entomology..... 230</p> <p>Blind forms, anatomy and origin..... 324</p> <p>Body of Arthropods, aspect..... 279</p> <p>Bombyciæ, new..... 112, 328</p> <p style="padding-left: 2em;">synopsis United States..... 6</p> <p>Borers of shade trees..... 71</p>	<p>Bot-fly maggots in turtle..... 237</p> <p>Brauer's classification of insects..... 301</p> <p>Bristle-tails..... 84</p> <p>British Museum, N. Am. Phalænida and Pyralida in..... 129</p> <p>Butterflies, ichneumon parasites of..... 231</p> <p style="padding-left: 2em;">parasites of White Mountain..... 156</p> <p style="padding-left: 2em;">partiality for white flowers of white..... 180</p> <p>California Moths, distribution..... 117</p> <p style="padding-left: 2em;">Phalænida..... 96, 124</p> <p style="padding-left: 2em;">Pterophoridae..... 122</p> <p style="padding-left: 2em;">Pyralida..... 122</p> <p style="padding-left: 2em;">Telea polyphemus in..... 141</p> <p>Caloptenus spretus in Massachusetts..... 164</p> <p style="padding-left: 2em;">(See Rocky Mountain Locust.)</p> <p>Cambala, notice of genus..... 261</p> <p>Canker-worm..... 198, 336</p> <p style="padding-left: 2em;">increasing distribution of..... 31</p> <p style="padding-left: 2em;">egg-laying habit of egg-parasite of..... 270</p> <p>Caribou Island, Coleoptera..... 77</p> <p>Caripeta angustivorata, transformations... 283</p> <p>Case-worms..... 57</p> <p>Cave, Arachnida..... 268</p> <p style="padding-left: 2em;">Araneina of Kentucky..... 160</p> <p style="padding-left: 2em;">Beetles..... 168</p> <p style="padding-left: 2em;">fauna of Indiana..... 130</p> <p style="padding-left: 2em;">Luray..... 222</p> <p style="padding-left: 2em;">Mammoth..... 91, 115</p> <p style="padding-left: 2em;">Newmarket..... 222</p> <p style="padding-left: 2em;">Nickajack..... 227</p> <p style="padding-left: 2em;">North America..... 324</p> <p style="padding-left: 2em;">Utah..... 187</p> <p style="padding-left: 2em;">spiders..... 166</p> <p>Centipede, poisonous..... 202</p> <p>Century's progress in American Zoology... 171</p> <p>Cermata forceps, brain and eyes..... 213</p> <p>Cetonia inda..... 217</p> <p>Chilopods, Sagraff on embryology of..... 267</p> <p>Chironomus, salt-water..... 34</p> <p>Chrysopa, embryology..... 88</p> <p>Chrysopila, abdominal appendages..... 93</p> <p>Cigars destroyed by Insects..... 161</p> <p>Cinurous Thysanura of Mexico..... 311</p> <p>Classification of Insects, Brauer's..... 301</p> <p style="padding-left: 2em;">Neuroptera..... 49, 88, 250</p> <p style="padding-left: 2em;">Orthoptera..... 250</p> <p>Clisiocampa, egg-parasite of..... 329</p> <p>Clothes moth..... 26</p> <p>Cocoons, method of escape of Silkworm Moths..... 194</p>
---	---

Coleoptera, Caribou Island.....	77	Fly, transformations of House	152
Colorado	192	Food, Grasshoppers as	147
Labrador	77, 113	Forest trees, Insects injurious to .. 229, 258, 260, 263,	
Utah	192	264, 305, 321, 322, 327	
Collecting Insects, directions for.....	3, 137	larvæ injurious to	137
Colorado Coleoptera	192	Fossil Insects.....	40
Moths, distribution	157	from Green River	200
larva of fly in Hot Spring in.....	238	Sunderland, Mass.....	92
Myriapods	158	Fossorial Hymenoptera, N. Am. revision... 12	
Potato-beetle	198, 334	Fruit, are Bees injurious to	37
Common Insects	139	Fruit culture, value of Honey-bees in..... 331	
Corydalus, horned	28	Gelechia, Hemlock	273
Cotton Moth in Rhode Island.....	209	Geometridæ. See Phalænidæ.	
worm investigation	203	Grain Aphid	1
Coxal glands of Arachnida	249	Grasshopper, hateful in Massachusetts .. 164	
Cranberry Insects	196, 338	New England	146
Cricket, eggs of Tree.....	216	question	232
Western.....	221	Red-legged	19
Currant Saw-fly	76, 198	Grasshoppers as food.....	147
Currant worm	334	Green River, fossil Insects from	200
Dermatoptera	265	Growth of Insects.....	333
Diplax, development	36, 49, 51	Guide to the study of Insects.....	64
embryology	94	Gynandromorphism in Lepidoptera	167
Dragon-fly	21	Half hours with Insects	193
development	36, 49, 51	Hauser on smell of Insects.....	325
eggs	24	Head of winged Insects, number of segments	
mouth parts	144	in	256
Drasteria erechthea, difference in two broods. 241		Hemlock Gelechia	273
Early spring Insects	16	Hessian-fly	188, 219, 264
Economic entomology, bibliography	230	Hexapoda	265
Edible Mexican Insects.....	300	Hexapodous Insects, embryology of..... 110	
Egg-laying habits of egg parasite of Canker-		Home of the Bees	23
worm	270	Honey-bee, Moths killed by	208
Maple-tree borer.....	285	parasites	42
Egg-parasite of Clisiocampa	329	parthenogenesis of	201
Embidiæ, systematic position.....	288	Honey-bees in fruit culture, value of..... 331	
Entomological calendars, April	16, 39	Horned Corydalus.....	28
August.....	22, 46	Hot spring in Colorado, larva of Fly from... 238	
early spring	16	House-fly	169, 335, 339
July	20	transformations of.....	152
June	18, 43	Humble-bees of New England.....	8
May	17, 41	Hymenoptera	175
September	25	development and position of..... 11	
Commission Bulletins	185, 186	fossorial.....	12
Circulars.....	183, 184	South American (Orton ex-	
investigations of	215	pedition)	63
Reports.....	197, 221, 264	Ichneumons, parasitic, on North American	
records.....	65, 79, 103, 114, 131, 155	Butterflies.....	231
Epeira cancer	66	Samia columbia.	10
riparia	66	Indiana, cave fauna of	130
Ephydra, salt-water	59	Injurious insects .. 78, 100, 107, 111, 132, 196, 198, 229,	
Essex County, injurious Insects	107	258, 260, 263, 264, 305, 321, 322,	
Thysanura	127	327, 337, 338	
Europe, Eurypauropus in	246	Essex County.....	107
Eurypauropus in Europe	246	forest and shade trees .. 229, 258,	
Evergreen forests, destruction of .. 263, 305, 321, 322		260, 263, 264, 305, 321, 322, 327	
Fireflies.....	47	Massachusetts	100, 111, 132
Flies, chapter on	56	Insects, Alleguash River	2
metamorphosis of	150	ancestry of	82, 99, 138
Flight of Insects	333	April.....	16, 39
Flowers, partiality of white butterflies for		August.....	22, 46
white	180	Brauer's classification of	301
Fly, abdominal sense organs of.....	75	cigars destroyed by	161
house	169, 335, 339	common	139
in hot spring in Colorado, larvæ of..... 238		Cranberry	196, 338

Insects, description of new	135	Labrador Insects compared with Mount	
directions for collecting	3, 137	Washington	35, 50
distribution and number of spiracles	148	Lepidoptera	30
early spring	16	Pyrilidæ	123
edible Mexican	300	Wasps	290
embryology of hexapodous	110	Lagoa, unusual number of legs in larva of ..	297
flight of	333	Larch worm	272
forest-tree .. 229, 258, 260, 263, 264, 305, 321,	322, 327	Larvæ injurious to forest trees	264
fossil	40, 92, 200	Legs, appendages homologous with	190
genealogy of	253	Lepidoptera	175
growth of	333	embryology	119
guide to the study of	64	gynandromorphism	167
Half Hours with	193	Labrador	30
Hauser on smell of	325	notes on larvæ	242
injurious .. 78, 100, 107, 111, 132, 196, 198,	229, 258, 260, 263, 264, 305, 321,	number of segments in larvæ of ..	294
	322, 327, 337, 338	South American (Orton Expedition) ..	63
July	20	Life histories of Insects	165, 177, 280, 282
June	18, 43	Limulus, anatomy	218
Labrador and Mount Washington, compared ..	35, 50	ancestry	81
life histories of	165, 177, 280, 282	an Arachnid	234, 235
Mammoth Cave	91, 115	brain, internal structure	211, 220
Maple	337	development	99, 109
May	17, 41	embryology	69, 95, 120, 151, 218, 299
morphology of	11, 140	eye	210
Mount Washington and Labrador compared ..	35, 50	histology	218
nature's means of limiting the numbers of ..	142	molting of shell	255
new arrangement of orders of	317	morphology	81
number of segments in head of winged ..	256	nervous system, development ..	162
outlines of the study of	330	renal organs (supposed)	163
paired sexual outlets in	271	Liver in Arachnida	267
Palmen's paired sexual outlets in ..	286	Lochmæus tessella, life history	282
parasitic	67	Locust	175
Pebas, Equador	102	ravages	197
Penobscot	2	Red-legged	19
Polaris Expedition	179	Rocky Mountain, air sacs	221
Salt Lake	137	anatomy	197
salt-water	44, 45, 52, 60, 80, 136, 278	brain	221, 222
sense organs of	181	of embryo and young	223
senses of	333	breeding grounds (permanent) ..	197
September	25	chronological history	197, 221
smallest known	199	distribution (southern limits) ..	221
smell in	326	embryology	197, 264
structure of	332	flights, 1877-'79	221
synthetic	4	in East Mexico in 1885 ..	302
and their allies	14	Mexico in 1880	225
Vineyard Sound	133	San Luis Potosi, Mexico, in 1885 ..	309
vitality of	189	geographical distribution	197, 264
of the West	191, 198	in Mexico	225
Invertebrates, zoology of	207	migratory	178, 197
Isotoma, embryology of	94	narratives of journeys in relation to ..	197, 221
Japyx in the United States	145	in New Mexico	204
Joint worm	188	question	232
July Insects	20	ravages	174
June Insects	18, 43	report on	191, 197, 198
Kentucky caves Araneina	160	uses of	197
Beetles	168	Louse	175
Labrador Bees	290	Luray Cave, fauna	222
Coleoptera	77, 113	Lysiopetalidæ, repugnatorial glands ..	247
		revision	261
		Mallophaga, new	134
		Mamestra picta, larval stages	289
		Mammoth Cave Insects	91, 115

Maple, Insects injurious to.....	337	Oviposition of <i>Monohammus confusor</i>	284
Maple-tree borer, egg-laying habits	285	Ovipositor, structure of	53
Maps, coloring of zoo geographical.....	236, 264	Paired sexual outlets in Insects.....	271, 286
Massachusetts, <i>Caloptenus spretus</i> in.....	164	Palmen's paired sexual outlets in Insects... ..	286
injurious Insects.....	100, 111, 132	Palpal sac in <i>Perla</i>	93
Myriapoda.....	125	Panama, <i>Peripatus</i> from	251
May Insects.....	17, 41	Parasite of Canker-worm, egg-laying habits of egg.....	270
Mexican Insects, edible.....	300	Parasites of Honey-bee	42
Mexico, flights of Locusts in 1880 in.....	225	Humble-bees of New England.....	8
1885 in.....	302	North American Butterflies, <i>Ichneumon</i>	231
at San Luis Potosi, 1885 in.....	309	<i>Samia columbia</i> , <i>Ichneumon</i>	10
Symphyla.....	311	White Mountain Butterflies... ..	156
Thysanura (cinurous).....	311	Parasitic Insects.....	67
Mimicry in a Moth.....	212	Parthenogenesis in Bees	106
Mites, chapter on.....	58	Honey-bee	201
<i>Monohammus confusor</i> , oviposition	284	Peabody Academy of Science, report on Ar- ticultates	62, 101, 126, 153
Moose-tick.....	48	Pebas, Equador, Insects.....	102
Moths, characters of the pupæ of	298	Penobscot Insects.....	2
distribution of California.....	117	<i>Peripatus</i> from Panama.....	251
Colorado.....	157	structure and embryology of	252
entrapped by <i>Asclepiad</i> plant.....	203	<i>Perithemis</i> , embryology of	94
a few words about	68	<i>Perla</i> , palpal sac in.....	93
killed by Honey-bees.....	208	<i>Phalænidæ</i> , California.....	96, 104
notes on.....	275	life histories of	280
protective mimicry in.....	212	North American, in British Mu- seum	129
Mount Washington and Labrador, Insect fauna compared.....	35, 50	monograph ..	176
Museum Comparative Zoology, report on Insects of.....	9	new	128, 154
Myriapoda, Colorado.....	158	<i>Pieris rapæ</i> in New Jersey.....	70
Massachusetts.....	125	Pine-borer, oviposition of	282
morphology of.....	262	Plants, Wasps as marriage priests	15
new or rare	97	Poisonous Centipede.....	202
a remarkable	74	Polaris expedition, Insects of.....	179
Sograff's embryology of <i>Chilo-</i> pod	267	<i>Polydesmus canadensis</i> , larval form of.....	316
Nature's means of limiting the number of Insects.....	142	with eyes	245
Nervous system of Articulates, Yersin on..	221	Potato-beetle, Colorado.....	198, 334
Neuroptera	175, 265	Pseudoneuroptera.....	265
classification.....	49, 88, 250	Psychidæ, notes on.....	398
new or rare	97	Pterophoridaæ, California.....	122
New England, decay of spruce in	260	Pupæ of Moths in determining species.....	298
destruction of evergreen forests in	263, 305, 321, 322	<i>Pyralidæ</i> , aquatic larva	277
hateful Grasshopper in	146	California	122
Humble-bees of.....	8	Labrador	123
<i>Pyralidæ</i> of.....	123	New England.....	123
New Jersey, <i>Pieris rapæ</i> in	70	North American, in British Mu- seum	129
Newmarket Cave, fauna	222	Records of American entomology ..	65, 79, 103, 114, 131, 155
New Mexico, Rocky Mountain Locust in ..	204	Red-legged Grasshopper	19
New York, destruction of evergreen forests in	263, 305	Reports Articulata. (<i>Peab. Acad. Sci.</i>) ..	62, 101, 126, 153
Nickajack Cave, fauna.....	227	Insects. (<i>Mus. Comp. Zool.</i>)	9
Noctuidæ, characters of.....	61	Repugnatorial pores in <i>Lysiopetalidæ</i>	247
North Pole, Insects of Polaris expedition to.	179	Reviews:	
Notodont caterpillars, fluid of	318	Adair: <i>Annals of Bee culture</i>	85
Observe Insects, how to.....	3	Brongniart: <i>Carboniferous Insects</i>	306
Orders of Insects, new arrangement of.....	317	Cholodkowsky: <i>Morphology of Lepi-</i> doptera	308
<i>Orgyia</i> , eversible gland in larva of	319	Claparède: <i>tudien Acarinen</i>	55
Orthoptera, classification of	250	Cook: <i>Manual Apiary</i>	172
systematic position of	264	Dahl: <i>Structure and function of the</i> legs of Insects	293
Orton Expedition to South America, Hymen- optera and Lepidoptera of.....	63		

Reviews—Continued.

Eaton: Monograph of Ephemeroidea	86	September Insects	25
Ganin: Early stages of Ichneumon	83	Sex determined, when is	116
Graber: Die Insekten	215	Sexual outlets in Insects, paired	271
Grassi: Development of the Honey-bee	314	Palmen's paired	286
Hickson: Eye and optic tract of Insects	303	Shade-trees, borers of	71
Kortneff: Development of Mole cricket	313	Insects injurious to	229, 326
Lubbock: Ants, Bees, and Wasps	24	Silk-worm	175
Development of Chlæon	27	Moths from cocoons, method of escape of	194
McLachlan: Position of Caddis-flies	90	Smallest known Insects	199
Mayer: Ontogeny and phylogeny of In- sects	173	Smell in Arthropoda	320, 325
Meek, Worthen, and Scudder: Articulate fossils from the coal	54	Insects	326
Meinert: Caput Scolopendræ	269	Sograff's embryology of Chilopods	267
Murray: Aptera	182	South America, Hymenoptera and Lepidop- tera from	63
Geographical distribution of Beetles	89	Spiders	304
Plateau: Vision of Insects	307	cave	166
Recent works on the mouth parts of Flies	248	Spiracles, distribution and number of	148
Riley: Second Missouri Report	72	Spiral thread of tracheæ	312, 315
Third Missouri Report	104	Spring tails	84
Fifth Missouri Report	118	Spruce bud Tortrix	274
Eighth Missouri Report	170	decay of	260
Report United States Entomolog- gist, 1881-'82	244	Sting of Bee, discovery of the origin of	143
1884	295	Stratiomys in salt water, larva of	257
Scudder: Butterflies	228	Stylops childreni	5
Systematische Übersicht fossilen Insekten	310	Sunderland, Mass., fossil Insects from	92
and Burgess: Assymetry in Hexapoda	87	Symphyla of Mexico	311
Smith: Position of certain North Ameri- can Lepidoptera	296	Synthetic types of Insects	4
Stretch: Illustrations of Zygenidæ and Bombycidæ	105	Tardigrade, discovery of	121
Thomas: Fifth Illinois Report	233	Telea polyphemus in California	141
Walsh: Entomological speculations	13	Thysanura	265
Weismann: Studies in the theory of descent	254	Essex County	127
Wood-Mason: Morphology of Insects	214	Mexico, Cinurous	311
Rhode Island, Cotton-worm moth in	209	new or rare	97
Salt Lake Ephydra	59	Tiger beetle	29
fauna	292	Tongue of Bee	281
Insects	137	Tortrix, spruce bud	274
Salt water Chironomus	34	Tracheæ, spiral thread	312, 315
Insects 44, 45, 52, 60, 80, 136,	278	Tree cricket, eggs of	216
larva of Stratiomys in	257	Turtle, bot-fly larvæ from	237
Samia columbia, Ichneumon parasites of	10	Utah, cave fauna	187
San Luis Potosi, Mexico, flights of Locusts at	309	Coleoptera	192
Saw-fly, Currant	76, 198	Vineyard Sound Insects	133
Scenopinus, larva	33	Vitality of Insects	189
Scolopendrella, position	226	Washington (Mount) Insects compared with Labrador	35, 50
Scorpions	250	Wasps, Labrador	290
Segments in head of winged Insects, num- ber of	256	as marriage priests of plants	15
lepidopterous larvæ, number of	294	West, Insects of the	191, 198
Sense organs, abdominal	75	Western Cricket	221
of Insects, experiments on	181	Wheat midge	188
Senses of Insects	333	White Butterflies' partiality to white flowers Mountain Butterflies, parasites of	180 156
		Yersin on function of the nervous system of Articulates	221
		Zoology	206
		briefer course	266
		century's progress in American	171
		first lessons	323
		of invertebrates	207
		Zygænidæ, new	112
		notes	7

PB-6346-4-SB
528-10





SMITHSONIAN INSTITUTION LIBRARIES



3 9088 00311219 0

nhent Z8651.H52

The entomological writings of Dr. Alpheu