

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

Coloured covers/
Couverture de couleur

Coloured pages/
Pages de couleur

Covers damaged/
Couverture endommagée

Pages damaged/
Pages endommagées

Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée

Pages restored and/or laminated/
Pages restaurées et/ou pelliculées

Cover title missing/
Le titre de couverture manque

Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées

Coloured maps/
Cartes géographiques en couleur

Pages detached/
Pages détachées

Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)

Showthrough/
Transparence

Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur

Quality of print varies/
Qualité inégale de l'impression

Bound with other material/
Relié avec d'autres documents

Continuous pagination/
Pagination continue

Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure

Includes index(es)/
Comprend un (des) index

Title on header taken from:/
Le titre de l'en-tête provient:

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

Title page of issue/
Page de titre de la livraison

Caption of issue/
Titre de départ de la livraison

Masthead/
Générique (périodiques) de la livraison

Additional comments:/
Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
						✓					

The Canadian Entomologist.

VOL. XXIII. LONDON, DECEMBER, 1891.

No. 12.

LIST OF WRITINGS OF THE LATE HENRY EDWARDS.

BY WM. BEUTENMULLER, NEW YORK.

The present list of writings of the late Henry Edwards was compiled up to 1880 by the deceased, and the titles following were added by me. Mr. Edwards, at the time he gave me the list, told me that it lacked the titles of one or two articles he had written for some newspaper in Australia a number of years ago, but could not remember on what subject they were, nor in what paper he published them. His papers on Pacific Coast Lepidoptera, Nos. 23 to 30 inclusive, were not published by the California Academy of Sciences, except as author's extras. I am informed that at that time (1877-78), by reason of the lack of funds, the Academy published nothing, and that while Mr. Edwards was in San Francisco the last time, there was some talk about publishing these papers in the Proceedings of that Society. We hope that this will soon be done, as the limited number of these papers that were printed have all been distributed by Mr. Edwards, and undoubtedly before long will be almost inaccessible to anyone not possessing a copy, and ultimately they will become lost from view altogether, if not placed on permanent record.

1871.—Notes on an extended Entomological tour made by Lord Walsingham. (Alta. Calif. June-Aug.)

1873.—Notes on Honey-making Ant of Texas and New Mexico. *Myrmecocychus Mexicanus*, Westw. (Proc. Cal. Acad. Sc., V., p. 72.)

Republished, Pacific Rural Press, May.

Republished, Am. Naturalist, VII., pp. 722-726.

1873.—Pacific Coast Lepidoptera, No. 1.—Descriptions of new or imperfectly known Heterocera. Proc. Cal. Acad. Sc., vol. V., pp. 109-113.

1873.—Pacific Coast Lepidoptera, No. 2.—On the transformations of Diurnal Lepidoptera of California and the adjacent districts. (Proc. Cal. Acad. Sc., V., pp. 161-172.)

1873.—Pacific Coast Lepidoptera, No. 3.—Notes on some Zygaenidæ and Bombycidæ of Oregon and British Columbia, with descriptions of new species. (Proc. Cal. Acad. Sc., V., pp. 183-190)

1873.—Remarks at the Agassiz Memorial Meeting, Mercantile Library Hall, San Francisco, Dec. 22, 1873. (Proc. Cal. Acad. Sc., V., p. 241.)

1874.—Scientific Notes. (Overland Monthly, 13, pp. 193, 285, 379, 484, 572.)

1874.—Pacific Coast Lepidoptera, No. 4.—Descriptions of some new Genera and species of Heterocera. (Proc. Cal. Acad. Sc., V., pp. 264-267.)

1874.—Description of *Cynips saltatorius*, Hy. Edw. (Pacific Rural Press).

1874.—Pacific Coast Lepidoptera, No. 5.—On the earlier stages of some species of Diurnal Lepidoptera. (Proc. Cal. Acad. Sc., V., pp. 325-332.)

1874.—Pacific Coast Lepidoptera, No. 6.—Notes on the earlier stages of *Ctenucha Multifaria*, Boisd. (Proc. Cal. Acad. Sc., V., pp. 344-345.)

1874.—Pacific Coast Lepidoptera, No. 7.—Descriptions of some new species of Heterocera. (Proc. Cal. Acad. Sc., V., pp. 365-367.)

1874.—A tribute to the memory of George Robert Crotch. (Proc. Cal. Acad. Sc., V., pp. 332-334.)

1874.—Pacific Coast Lepidoptera, No. 8.—On the transformations of some species of Heterocera not previously described. (Proc. Cal. Acad. Sc., V., pp. 367-372.)

1874.—Pacific Coast Lepidoptera, No. 9.—Description of a new species of *Thyris*, from the collection of Dr. Hermann Behr. (Proc. Cal. Acad. Sc., V., p. 413.)

1874.—Pacific Coast Lepidoptera, No. 10.—On a new species of *Papilio* from California. (Proc. Cal. Acad. Sc., V., pp. 423-424.)

1875.—Pacific Coast Lepidoptera, No. 11.—List of the Sphingidæ of California and adjacent Districts, with descriptions of new species. (Proc. Cal. Acad. Sc., VI., pp. 86-94.)

1875.—Pacific Coast Lepidoptera, No. 12.—On some new species of Noctuidæ. (Proc. Cal. Acad. Sc., VI., pp. 132-139.)

1875.—On the localities and habits of the various species of *Omus*. (Psyche, Vol. I, pp. 73-76.)

1875.—Notes on a Cochineal-bearing insect of California (*Coccus arctostaphylos*, Hy. Edw., MS.) (San Francisco Micro. Soc.)

1875.—Pacific Coast Lepidoptera, No. 13.—On the earlier stages of *Vanessa Californica*. (Proc. Cal. Acad. Sc., VI., pp. 146-149.)

Republished in the San Francisco Evening Bulletin, July, 1875.

1875.—*Darlingtonia Californica*, Torrey. (Proc. Cal. Acad. Sc., VI., pp. 161-166.)

Republished in the San Francisco Evening Bulletin, Sept., 1875.

1875.—Note on *Sarcodes Sanguinea*, Torrey, (Snow Plant of the Sierras). (San Francisco Evening Bulletin.)

1875.—Pacific Coast Lepidoptera, No. 14.—Notes on the Genus *Catocala*, with descriptions of new species. (Proc. Cal. Acad. Sc., VI., pp. 207-215.)

1875.—Pacific Coast Lepidoptera, No. 15.—Description of a new species of *Catocala* from San Diego. (Proc. Cal. Acad. Sc., vol. VI., pp. 184-185.)

1876.—Annual Address as Vice-President of the California Academy of Sciences. (Proc. Cal. Acad. Sc., VII., pp. 1-10.)

1876.—Notes on the Sugar-Cane Weevil, *Sphenophorus Sericans*, Wied. (San Francisco Micro. Soc., p. .)

1876.—Notes on *Exodes* from South California. (Pacific Rural Press.)

1876.—Destructive Locusts of California. (Pacific Rural Press.)

1876.—Botany of California, by Brewer, Gray and Watson—a notice. (S. Fran. News-Letter, Aug. 26th.)

1876.—Pacific Coast Lepidoptera, No. 16.—Notes on the Transformations of some species of Lepidoptera not hitherto recorded. (Proc. Cal. Acad. Sc., VII., pp. 19-24.)

1876.—Pacific Coast Lepidoptera, No. 17.—On the Transformation of *Colias* (*Meganostoma Reak*), *Eurydice*, Bdv. (Proc. Cal. Acad. Sc., VII., pp. 60-62.)

1876.—Pacific Coast Lepidoptera, No. 18.—Description of a new species of *Heterocampa* (Larva and Imago). Proc. Cal. Acad. Sc., VII., pp. 121-122.)

1876.—Pacific Coast Lepidoptera, No. 19.—Notes on a singular variety of the Larva of *Halisidota Agassizii*, Pack. (Proc. Cal. Acad. Sc., VII., pp. 128-130.)

1876.—Pacific Coast Lepidoptera, No. 20.—Notes on the Case-bearing Moths (*Psychidæ*) with notices of Californian species. (Proc. Cal. Acad. Sc., VII., pp. 140-143.)

Republished in the S. Francisco Evening Bulletin, Nov., and Pacific Rural Press, Nov.

1876.—Pacific Coast Lepidoptera, No. 21.—Descriptions of two new species of the Genus *Thecla*. (Proc. Cal. Acad. Sc., VII., pp. 143-145.)

1876.—Pacific Coast Lepidoptera, No. 22.—Notes on some Diurnal Lepidoptera, with descriptions of new varieties. (Proc. Cal. Acad. Sc., VII., pp. 163-173.)

1877.—Pacific Coast Lepidoptera, No. 23.—Description of a new species of *Catocala*, and a List of the Californian Specimens of the Genus known to occur in collections. (Proc. Cal. Acad. Sc., Feb. 5, pp. 1-2.)

1877.—Pacific Coast Lepidoptera, No. 24.—Notes on the Genus *Colias*, with descriptions of some apparently new forms. (Proc. Cal. Acad. Sc., Feb. 5, pp. 1-11.)

1877.—Pacific Coast Lepidoptera, No. 25.—Description of a new species of *Plusia* from Arizona. (Proc. Cal. Acad. Sc., Mar. 5, p. 1.)

1877.—Pacific Coast Lepidoptera, No. 26.—Description of two new forms of Diurnals. (Proc. Cal. Acad. Sc., Dec. 17, p. 1.)

1877.—Notes on species of *Cicada*. (Pacific Rural Press, July.)

1877.—Pacific Coast Lepidoptera, No. 27.—Transformations of some species not hitherto recorded. (Proc. Cal. Acad. Sc., June 17, pp. 2-4.)

1877.—Notes on the Devil-Bean of Mexico, *Carpocapsa saltitans*. (Pacific Rural Press.)

1878.—Note on *Prionus Californicus*. (Pacific Rural Press, March.)

1878.—Pacific Coast Lepidoptera, No. 28.—On the occurrence of some rare species of Diurnals in California. (Proc. Cal. Acad. Sc., June 17, pp. 5, 6.)

1878.—Pacific Coast Lepidoptera, No. 29.—Description of some new genera and species of Noctuidæ. (Proc. Cal. Acad. Sc., July 1, pp. 7-10.)

1878.—Pacific Coast Lepidoptera, No. 30.—Notes on the Genus *Parnassius*. (Proc. Cal. Acad. Sc., July 15th, pp. 11-14.)

1880.—Pacific Coast Lepidoptera, by Henry Edwards. From the Proceedings of the California Academy of Sciences. Author's Copy, New York, 3 plates.

(This volume is composed of author's extras of the Pacific Coast Lepidoptera, Nos. 1-30. The title page and index were published by Mr. Edwards. A limited number of copies were issued, and only about ten contain the three plates.)

1880.—Descriptions of some new species of *Catocala*. (Bull. Bklyn. Ent. Soc., II., pp. 93-95.)

- 1880.—Notes upon the Genus *Catocala*, with descriptions of new varieties and species. (Bull. Bklyn. Ent. Soc., III., pp. 53-62.)
- 1880.—Descriptions of some new forms of *Ægeriadæ*. (Bull. Bklyn. Ent. Soc., III., pp. 71, 72.)
- 1881.—Introductory notice of *Papilio*. (*Papilio*, I., p. 1.)
- 1881.—On two new forms of the Genus *Parnassius*. (*Papilio*, I., pp. 2-4.)
- 1881.—Description of two new species of *Lithosidæ*. (*Papilio*, I., p. 12.)
- 1881.—New genera and species of N. American *Noctuidæ*. (*Papilio*, I., pp. 19-28.)
- 1881.—Notes on the Pacific Coast Species of *Hepialus*, with descriptions of new forms. (*Papilio*, I., pp. 35-36.)
- 1881.—Description of new species and varieties of *Arctiidæ*. (*Papilio*, I., pp. 38-39.)
- 1881.—On some apparently new forms of *Diurnal Lepidoptera*. (*Papilio*, I., pp. 50-55.)
- 1881.—Notes on the Pacific Coast Species of *Orgyia*, with descriptions of Larvæ and new forms. (*Papilio*, I., pp. 60-62.)
- 1881.—Descriptions of some species of *Catocala*, (published in *Strecker's Lepid. Rhopal et Heterocera*, vol. I., pp. 99, 100.)
- 1881.—A New Genus and some new forms of North American *Zyganidæ*. (*Papilio*, I., pp. 80-81.)
- 1881.—Description of some new species of N. American Moths. (*Papilio*, I., pp. 100-101.)
- 1881.—Descriptions of some new species of *Heterocera*. (*Papilio*, I., pp. 115-121.)
- 1881.—A new and remarkable *Bombycid* Moth from Arizona. (*Papilio*, I., pp. 171-172.)
- 1881.—New genera and species of the family *Ægeriadæ*. (*Papilio*, I., pp. 179-208, pl. 1.)
- 1881.—Biographical Sketch of Joseph Duncan Putnam. (*Papilio*, I., p. 223.)
- 1882.—New Species of *Heterocera*. (*Papilio*, II., pp. 9-15.)
- 1882.—Notes on N. American *Ægeriadæ*, with descriptions of new forms. (*Papilio*, II., pp. 52-57.)
- 1882.—Index to *Papilio*, vol. I.

- 1882.—Note on Mr. Swinton's work on "Wing Variations in Lepidoptera. (Papilio, II., p. 18.)
- 1882.—Powerful Insecticide—note on. (Papilio, II., p. 34.)
- 1882.—Swarming of *Colias Philodice*. (Papilio, II., p. 34.)
- 1882.—Note on Dr. Packard's Paper on Butterfly Parasites. (Papilio, II., p. 34.)
- 1882.—Insect Pests in California. (Papilio, II., p. 34.)
- 1882.—Dwarf Butterflies—note on. (Papilio, II., p. 34.)
- 1882.—Synopsis of Noctuidæ, by J. B. Smith—note on. (Papilio, II., p. 50.)
- 1882.—Bombycidæ of N. America, by R. H. Stretch—note on. (Papilio, II., p. 50.)
- 1882.—Obituary notice of Charles Robert Darwin, F.R.S. (Papilio, II., p. 81.)
- 1882.—Sale of Mr. Grote's collection—note on. (Papilio, II., p. 82.)
- 1882.—Early Appearance of *Actias Luna*. (Papilio, II., p. 82.)
- 1882.—Further notes and descriptions of N. American *Ægeriadæ*. (Papilio, II., pp. 96-99.)
- 1882.—On the early stages of *Papilio Rutulus*, Bdv. (Papilio, II., p. 112.)
- 1882.—*Papilio albanus*, Feld.—note on. (Papilio II., p. 122.)
- Descriptions of New Species of N. American Heterocera. (Papilio, II., pp. 123-130.)
- 1882.—Obituary notice of Charles Godfrey Siewers. (Papilio, II., p. 145.)
- 1882.—Notice of Grote's New Check List and Illustrated Essay. (Papilio, II., p. 146.)
- 1882.—Fans on the Feet of Catocaline Moths. (Papilio, II., p. 146.)
- 1882.—Naphthaline Cones. (Papilio, II., p. 147.)
- 1882.—Phycidæ of the United States—note on. (Papilio, II., p. 148.)
- 1882.—On *Parnassius Thor*. (Papilio, II., p. 148.)
- 1883.—A Mingled Yarn, sketches on various subjects, New York, 12 mo., 157 pp.
- This volume contains the following subjects :—
- Three Weeks in Mazatlan—pp. 1-64.
- Iron and its Relation to Civilization—pp. 65-85.
- Shakespeare—pp. 89-98.
- Address on the occasion of the removal of the Bohemian Club from Sacramento street to Pine street, December, 1876—pp. 99-105.

- Edwin Adams (obituary notice)—pp. 106-111.
 James Hamilton (funeral address)—pp. 112-115.
 Joseph Maquire (funeral address)—pp. 116-120.
 Midsummer "High Jinks,"—pp. 121-127.
 Two Balloon Voyages—pp. 131-138.
 The Church and the Stage—pp. 139-147.
 Agassiz (obituary notice)—pp. 148-150.
 Major Harry Larkyns (funeral address)—pp. 151-154.
 William Barry (funeral address)—pp. 155-157.
 1883.—Notes on the Early Stages of some Heterocera. (*Papilio*, III., p. 24.)
 1883.—Sphinx Sequoiæ. (*Papilio*, III., p. 25.)
 1883.—Rare Lepidoptera in New Jersey. (*Papilio*, III., p. 25.)
 1883.—Asilus and Geometers. (*Papilio*, III., p. 25.)
 1883.—*Papilio* Chresphontes, Cr. (*Papilio*, III., p. 26.)
 1883.—New forms of the Genus *Alypia*. (*Papilio*, III., pp. 33-34.)
 1883.—*Callidryas* Fisheri—Description of. (*Papilio*, III., p. 43.)
 1883.—Obituary notice of G. W. Belfrage. (*Papilio*, III., p. 83.)
 1883.—"The Caterpillar Pest," Letters to the Evening Telegram on depredations of *Orgyia leucostigma*, June 26th, June 29th, July 12th.
 1883.—On the Transformations of some species of Lepidoptera (written in conjunction with S. L. Elliott). (*Papilio*, III., pp. 125-136.)
 1883.—Some species of *Euchaetes*. (*Papilio*, III., pp. 145-148.)
 1883.—New species of *Ægeriadæ*. (*Papilio*, III., pp. 155-157.)
 1883.—Obituary notice of James Spencer Bailey. (*Papilio*, III., p. 166.)
 1883.—Obituary notice of John L. Leconte. (*Papilio*, III., p. 168.)
 1883.—Eggs of *Tolyte velleda*. (*Papilio*, III., p. 189.)
 1883.—*Orgyia Badia*—note on. (*Papilio*, III., p. 189.)
 1883.—*Spilosoma latipennis*, Stretch. (*Papilio*, III., p. 190.)
 1883.—*Etudes d'Entomologie*—note on. (*Papilio*, III., p. 193.)
 1883.—Farewell to subscribers of *Papilio*. (*Papilio*, III., p. 193.)
 1884.—Address to subscribers of *Papilio*. (*Papilio*, IV., p. 1.)
 1884.—Notes on Mexican Lepidoptera, with descriptions of new species. (*Papilio*, IV., pp. 11-19.)
 1884.—*Papilio Antimachus*, Dr.—note on. (*Papilio*, IV., p. 21.)
 1884.—The Lepidopterous Genus *Datana*. (*Papilio*, IV., pp. 23-26.)

- 1884.—Monographs of North American Lepidoptera. (Papilio, IV., p. 38.)
- 1884.—Mexican Lepidoptera—note on. (Papilio, IV., p. 41.)
- 1884.—Some new forms of North American Moths. (Papilio, IV., pp. 43-48.)
- 1884.—Notes on Mexican Lepidoptera, with descriptions of new species (2nd paper). (Papilio, IV., pp. 59-61.)
- 1884.—Notes on Mexican Lepidoptera, with descriptions of new species (3rd paper). Papilio, IV., pp. 75-80.)
- 1884.—The Genus Gloveria. (Papilio, IV., pp. 105-109.)
- 1884.—Apparently new species of North American Heterocera. (Papilio, IV., pp. 121-126.)
- 1885.—New Bombycidæ from Colorado. (Ent. Am., I., p. 17.)
- 1885.—New Species of California Moths. (Ent. Am., I., pp. 49-50.)
- 1885.—Notes on Mexican Lepidoptera, with descriptions of new species (4th paper). (Ent. Am., I., pp. 128-129.)
- 1885.—A New Arctian. (Can. Ent., XVII., p. 65.)
- 1886.—Notes on North American Zygænidæ and Bombycidæ, with descriptions of new forms. (Ent. Am., II., pp. 8-15.)
- 1886.—Apparently new forms of N. American Heterocera. (Ent. Am., II., pp. 165-171.)
- 1887.—Apparently new species of Mexican Heterocera (5th paper.) (Ent. Am., III., pp. 89-92.)
- 1887.—Early stages of *Orgyia Nova*, Fitch. (Ent. Am., III., p. 146.)
- 1887.—Early stages of some North American Lepidoptera. (Ent. Am., III., pp. 161-170.)
- 1887.—Descriptions of new species of North American Heterocera, with notes. (Can. Ent., XIX., pp. 145-147.)
- 1887.—A New Variety of *Papilio* and a New *Catocala* from the Pacific Coast. (Can. Ent., XIX., p. 199.)
- 1888.—New Genera and species of North American Moths. (Ent. Am., III., pp. 181-185.)
- 1888.—Catalogue of the species of the Higher Families of North American Heterocera, described since Grote's "New Check List," (1882.) with those omitted from that publication. (Ent. Am., III., pp. 221-232.)
- 1888.—*Euproserpinus Euterpe*, a new species of Sphingidæ. (Ent. Am., IV., pp. 25-26.)

- 1888.—Early Stages of some North American Moths. (Ent. Am., IV., pp. 61-62.)
- 1888.—Notes on Lepidoptera. (Ent. Am. IV., p. 63.)
- 1888.—Three species of Moths new to our Fauna. (Can. Ent., XX., pp. 12-15.)
- 1888.—Three Moths new to our Fauna. (Can. Ent. XX., pp. 111-113.)
- 1889.—Notes on Noises made by Lepidoptera. (Insect Life, II., pp. 11-15.)
- 1889.—Bibliographical Catalogue of the described Transformations of North American Lepidoptera. (Bull. U. S. Nat. Mus., No. 35, 147 pp.)
- 1890.—Notes on the Habits and earlier stages of *Cryptophasia unipunctata*. (Proc. Linn. Soc., N. S. Wales, V., pp. 300-302.)
Republished in Insect Life, III., p. 384, fig.
- 1890.—Some apparently new Noctuidæ in the collection of the British Museum. (Ent. Am., VI., pp. 114-115.)
- 1891.—Birth of a beautiful exotic Lepidopterous Insect in New York. (Insect Life, III., p. 316.)
- 1891.—Descriptions of two new species of *Ægeriadæ*, published in Dr. Otto Lugger's paper on Two New Lepidopterous Borers. (Psyche, vol. VI., pp. 108-109.)

A CATALOGUE OF THE THYSANOURA OF NORTH AMERICA

BY ALEX. D. MACGILLIVRAY, CORNELL UNIVERSITY.

There being no published list of the American species of Thysanoura, I have thought it advisable to bring my notes together in a connected form. The names adopted are based on a careful study of many specimens from all parts of the country, and the arrangement of families and genera is a combination of that of Tullberg, Lubbock, and Comstock. I have preceded the catalogue by a list of the more important papers containing descriptions of American species, and I have followed the names of all those species known to me by an exclamation point. The specimens upon which this study is based are deposited in the Entomological Museum of Cornell University. I desire to take this opportunity of thanking Mr. Nathan Banks, Washington, D. C.; Prof. H. E. Summers, Knoxville, Tenn.; Mr. A. P. Morse, Wellesley College, Mass., and Mr. Trevor Kincaid, Olympia, Washington State, for numerous new and interesting species.

- Bergroth, E.—*Entomologica Americana*, VI., (1890) p. 233.
- Bilimek.—*Verhand der Kaiserlichen-Königlichen Zoolbot. Gesellschaft in Wien*, XVII., p. 905.
- Brooks, George.—A Revision of the Genus *Entomobrya* Rond., *Journ. Linn. Soc. Zool.*, XVII., (1883) pp. 270-282, 2 pls.
- Comstock, J. H.—An Introduction to the Study of Entomology, 1888, pp. 53-61, figs.
- Fabricus, Otto.—*Fauna Groenlandica* (1780).
- Fitch, Asa.—Winter Insects of Eastern N. Y.—*Amer. Jour. Sci. and Agr.*, V., (1846) pp. 274-284.
—Eighth Rept. on Noxious Insects of N. Y. (1862), pp. 668-675.
- Humbert.—*Review et Magazine Zoologie*, (1868), p. 345.
- Lubbock, Sir John.—*Monograph of the Collembola and Thysanoura*, Ray Society (1873).
- Nicolet, H.—*Essai sur une Classification des Insectes Apteres de l'ordre des Thysanoures*.—*Ann. Soc. Ent. Fr. Ser. 2* (1847).
Tome V.
- Packard, A. S.—*Proc. Bost. Soc. Nat. Hist.*, XIII., (1871) p. 409.
—Embryological Studies on *Diplax*, *Perithemis* and the Thysanourous genus *Isotoma*—*Memoirs Peab. Acad. 2* (1871), p. 19.
—*American Naturalist*, V., (1871) p. 747.
—*Guide to the Study of Insects*, 3d. ed., (1872).
—Synopsis of the Thysanoura of Essex Co., Mass., with descriptions of a few extra limital forms,—*Ann. Rept. Peab. Acad. Sci.*, V., (1873) pp. 23-51.
—*American Naturalist*, VIII., (1874) p. 501.
—*ibid.*, XI. (1877), pp. 51-52, foot-note.
—*ibid.*, XII. (1878), p. 383.
Cave Fauna N. A.—*National Academy Sciences*, IV., (1886) pp. 65-67, pls. 16, 17.
- Ryder, John.—*Proc. Acad. Nat. Sci. Philad.* (1878), p. 335, fig.
—*American Naturalist*, XIV., (1880) p. 375.
—*Proc. Acad. Nat. Sci. Philad.* (1881), pp. 79-86, figs.
- Say, Thomas.—*Descriptions of the Thysanourae of the U. S.*—*Journ. Acad. Nat. Sci.*, 11, (1821) pp. 11-14; *LeConte Edition*, 11, pp. 7-9.

- Scudder, S. H.—Bost. Soc. Nat. Hist., XXII., p. 65.
 Tellkamp, T. A.—Archiv. für Naturgesshichte, X., Bd. 1, p. 321.
 Tullberg, Tycho.—Om Skandin. Podurider of underfam. Lipur., 1869,
 —Sveriges Podurider, (1871), 12 plates.
 —Collembola Borealia, —Ofver. Köngl. Vetenskaps.
 Akade. Förhand. (1876), plates.

Suborder SYMPHYLA, Ryder.

Family SCOLOPENDRELLIDÆ, Newport.

Genus SCOLOPENDRELLA, Gervais.

1. *gratiae* Ryder. (!) Amer. Nat., XIV., (1880) p. 375; Proc. Acad. Nat., Sci. p. 85, fig. N. Y., Penn., Md., D. C., Ohio, Tenn.
2. *notocantha* Gerv. Aptères, IV., p. 301, pl. 39, fig 7.; Ryder, Proc. Acad. Nat. Sci., p. 84, fig. France, (?) Penn., Md.
3. *latipes* Scudder. Bost. Soc. Nat. Hist., XXII., p. 65. Mass.

Suborder CINURA, Packard.

Family JAPYGDIDÆ, Haliday.

Genus JAPYX, Haliday.

4. *Saussurii* Humbert. Rev. et Mag. Zool. (1868), p. 345. Mexico.
5. *subterraneus* Packard. ! Amer. Nat., VIII., (1874), p. 501. Kentucky, D. C.

Family CAMPODEIDÆ, Lubbock.

Genus CAMPODEA, Westwood.

6. *Americana* Packard. (!) Proc. Bost. Soc. Nat. Hist., XIII., (1871) p. 409; Syn. Thysan. Essex Co. (1873), p. 45. Mass., N. Y., D. C., Ohio, Tenn.
7. *Cookei* Packard. American Naturalist, V., (1871) p. 747; Syn. Thysan. Essex Co. (1873), p. 46; Cave Fauna N. A., p. 67, pl. XVII., figs. 1, 1a-i. Caves of Kentucky and Indiana.
8. *Mexicana* Packard. American Naturalist, XX, (1878) p. 383. Mexico.

Family LEPISMIDÆ, Leach.

Genus MACHILIS, Latreille.

9. *brevicornis* Packard. (!) Syn. Thysan. Essex Co. (1873), p. 49. Texas, Tenn.

10. *cavernicola* Tellkmpf. *Triura cavernicola* Tell., *Archiv. für naturgeschichte*, X., Bd. I., p. 321; Packard, *Amer. Nat.*, V., p. 747; *Syn. Thysan. Essex Co.* (1873), p. 51; *Cave Fauna N. A.*, p. 67. Kentucky.
11. *orbitalis* Packard.(!) *Syn. Thysan. Essex Co.* (1873), p. 50. Idaho, Washington State.
12. *variabilis* Say.(!) *Journ. Acad. Nat. Sci. Philad.*, II., (1821), p. 12; *Le Conte Edition*, II, p. 7; Packard, *Syn. Thysan. Essex Co.* (1873), p. 50; Lubbock, *Monog. Collem. and Thysan.* (1873), p. 240. Mass., N. Y.; Ind., Tenn.
13. *vittata* Burmeister. *Hand. d. Ent.*; Nicolet, *Ann. Soc. Ent., France*, (1847); Lubbock, *Monog. Collem. and Thysan.* (1873), p. 241. Carolina.

GENUS LEPISMA, Linn.

14. *anopthalma* Bilimek. *Vehr. d. Kais.-Konig. Zool.-Botan. Ges. in Wien*, XVII., p. 905. Mexico.
15. *collaris* Fabricius.(!) *Ent. Sys.*; Gervais, *Hist. Ins. Apt.*, III.; Burmeister, *Hand. d. Ent.*; Packard, *Syn. Thysan. Essex Co.* (1873), p. 47; Lubbock, *Monog. Collem. and Thysan.* (1873), p. 223. West Indies.
16. *mucronata* Packard. *Syn. Thysan. Essex Co.* (1873), p. 49. West Coast of Nicaragua.
17. *quadriseriata* Packard.(!) *ibid.*, p. 47. Mass., Rhode Island, N. Y. Conn., Tenn.
18. *saccharina* Linnaeus.(!) *Faun. Suec.*; Burmeister, *Hand. d. Ent.*; Nicolet, *Ann. Soc. Ent. France* (1847); Packard, *Syn. Thysan. Essex Co.* (1873), p. 47; Lubbock, *Monog. Collem. and Thysan.* (1873), p. 268. Europe, North America.

GENUS THERMOBIA, Bergroth.

19. *domestica* Packard. *Lepisma domestica* Pack., *Syn. Thysan. Essex Co.* (1873), p. 48. Mass.

Suborder COLLEMBOLA, Lubbock.

Family SMYNTHURIDÆ, Lubbock.

Genus SMYNTHURUS, Latreille

20. *arvalis* Fitch. (!) Eighth Rept. Ins. N. Y. (1862), p. 673; Cucumerus Harris (MSS.), Correspondence p. 362; roseus Packard, Syn. Thysan. Essex Co. (1873), p. 43. Mass., N. Y., Ohio.
21. *elegans* Fitch. (!) Eighth Rept. Ins. N. Y. (1862), p. 674; Packard, Syn. Thysan. Essex Co. (1873), p. 43. Mass., N. Y., Ohio, West Virginia, Tenn.
22. *ferrugineus* Packard. Cave Fauna N. A., p. 67, pl. XVI, figs. 4, 4a-c. Caves of Virginia.
23. *hortensis* Fitch. (!) Eighth Rept. Ins. N. Y. (1862), p. 668; signifer Fitch, *ibid.*, p. 675. N. Y., Ohio.
24. *quadrinaculatus* Ryder. (!) Proc. Acad. Nat. Sci., Philad. (1878), p. 335, fig. Mass., Penn.
25. *quadrisignatus* Packard. Syn. Thysan. Essex Co. (1873), p. 44. Maine.

Genus PAPIRUS, Lubbock.

26. *guttatus* Say. *Smynturus guttatus* Say, Journ. Acad. Nat. Sci., II., p. 13; LeConte Edition, II., p. 8; Lubbock, Monog. Collem and Thysan. (1873), p. 115. Georgia.
27. *marmoratus* Packard. (!) Syn. Thysan. Essex Co. (1873), p. 42. Maine, Mass., Long Island, N. Y.
28. *novæboracensis* Fitch. (!) *Smynturus novæboracensis* Fitch, Eighth Rept. Ins. N. Y. (1862), p. 674. N. Y., Ohio.
29. *texensis* Packard. Syn. Thysan. Essex Co. (1873), p. 43. Texas.

Family ENTOMOBRYIDÆ, Comstock.

Genus ORCHESELLA, Templeton.

30. *flavopicta* Packard. (!) Syn. Thysan. Essex Co. (1873), p. 41. N. Y., Long Island, Mass., Tenn.

Genus TOMOCERUS, Nicolet.

31. *plumbeus* Linnaeus. (!) *Podura plumbea* Linn., Systema Naturae;

bicolor Say, Journ. Acad. Nat. Sci. Philad., II., p. 13; LeConte Edition, II., p. 8; longicornis Muller, Zool. Dan. Prod. (1776); iricolor Say, Journ. Acad. Nat. Sci. Philad., II., (1821) p. 13; LeConte Edition, II., p. 8; Tomocerus longicornis Lubbock, Monog. Collem. and Thysan., (1873) p. 137, pls. 17 and 18; Packard, Syn. Thysan. Essex Co. (1873), p. 38; Isotoma bicolor Lubbock, Monog. Collem. and Thysan., p. 177; Lepidocyrtus iricolor Lubbock, *ibid.*, p. 157. Europe and North America.

Genus SEIRA, Lubbock.

32. *Buskii* Lubbock. (!) Monog. Collem. and Thysan. (1873), p. 145. Great Britain, N. Y.

Genus BECKIA, Lubbock.

33. *cavernarum* Packard. Degeeria cavernarum Pack., Cave Fauna N. A., p. 66, pl. XVI., figs. 2, 2 a-g. Kentucky, Indiana.

Genus LEPIDOCYRTUS, Bourlet.

34. *albus* Packard. (!) Syn. Thysan. Essex Co., (1873), p. 73, Maine, Mass., N. Y., Ohio, Tenn.
35. *atropurpureus* Packard. Cave Fauna N. A., p. 66, pl. XVI., figs. 3, 3a-b. Kentucky.
36. *bipunctatus* Packard. (!) Syn. Thysan. Essex Co. (1873), p. 37. Texas.
37. *marmoratus* Packard. *ibid.*, p. 36. Mass.
38. *metallicus* Packard. (!) *ibid.*, p. 36. Maine, Mass., N. Y., Ohio, Tenn.
39. *pusillus* Linnaeus. Lubbock. Monog. Collem. and Thysan. (1873), p. 156; Packard, Syn. Thysan. Essex Co. (1873), p. 37. Greenland, Europe.

Genus ENTOMOBRYA, Rondani.

40. *carneiceps* Packard. (!) Orchesella Carneiceps Pack., Syn. Thysan. Essex Co. (1873), p. 40. Ohio, D. C., Tenn.

41. *fasciata* Say. (!) *Podura fasciata* Say, Journ. Acad. Nat. Sci., Philad., II., (1821) p. 12; LeConte Edition, II., p. 8; *Degeeria fasciata* Lubbock, Monog. Collem. and Thysan. (1873), p. 166; *10-fasciata* Pack., Syn. Thysan. Essex Co. (1873), p. 40; *Entomobrya multifasciata* Tullb. Brooks, Journ. Linn. Soc.—Zool., XVII., p. 275. Maine, Mass., N. Y., Ohio, Tenn., Texas, Georgia, East Florida.
42. *griseo-olivata* Packard. (!) *Degeeria griseo-olivata* Pack., Syn. Thysan. Essex Co. (1873), p. 39; *Entomobrya griseo-olivata*, Brooks, Journ. Linn. Soc.—Zool., XVII., p. 281. Mass., N. Y.
43. *perpulchra* Packard. (!) *Degeeria perpulchra* Pack., Syn. Thysan. Essex Co. (1873), p. 38; *Entomobrya perpulchra* Brooks, Journ. Linn. Soc.—Zool., XVII., p. 281. Texas.
44. *purpurascens* Packard. (!) *Degeeria purpurascens* Pack., Syn. Thysan. Essex Co. (1873), p. 39; *Entomobrya purpurascens* Brooks, Journ. Linn. Soc.—Zool., XVII., p. 282. Maine, Mass., Tenn.

Genus ISOTOMA, Bourlet.

45. *albella* Packard. (!) Syn. Thysan. Essex Co. (1873), p. 32. Maine, Mass., N. Y.
46. *Belfragei* Packard. *ibid.*, p. 33. Texas.
47. *Besselsii* Packard. Amer. Nat. (1877), pp. 51, 52, foot-note. Polaris Bay.
48. *bidenticulata* Tullburg. *Collembola borealia* (1876), p. 35, Tab. X., figs. 17 and 18. Greenland, Northern Europe.
49. *finetaria* Linnaeus. *Podura finetaria* Linn., Syst. Nat., Ed. X., P. I., p. 609; *Isotoma finetaria* Tullb., Sv. Podur., p. 48; *Collembola borealia* (1876), p. 37. Greenland, Siberia.
50. *glauca* Packard. (!) Syn. Thysan. Essex Co. (1873), p. 33. Mass., Ohio.
51. *leonina* Packard. (!) *ibid.*, p. 32. Mass., N. Y.
52. *nivalis* Packard. (!) *ibid.*, p. 31. Maine, Mass.

53. *plumbea* Packard. (!) *ibid.*, p. 35; Guide to the Study of Insects, pl. X., figs. 6, 7. Mass., Long Island, Ohio.
54. *purpurascens* Packard. (!) Syn. Thysan. Essex Co. (1873), p. 34. Texas.
55. *quadrioculata* Tullberg. Fört öfver. sv. Podr. (1871), p. 152; Collembola borealia (1876), p. 36. Greenland, Northern Europe.
56. *tricolor* Packard. (!) Syn. Thysan. Essex Co. (1873), p. 34. Mass., D. C., Texas.
57. *Walkerii* Packard. (!) Memoirs Peab. Acad. Sci. 2 (1873), p. 19; Syn. Thysan. Essex Co. (1873), p. 34. Mass., Eastern, Ohio.

Family PODURIDÆ, Burmeister.

Genus ACHORUTES, Templeton.

58. *armatus* Nicolet. Podura armata Nic, Resch. p. serv. à l' Hist. des Podur. (1841), p. 57. Achorutes armatus Lubbock, Monog. Collem. and Thysan. (1873), p. 180; Tullberg, Fört öfver Sv. Podur, (1871), p. 153; Collembola borealia (1876), p. 38, Tab. X., fig. 35. Greenland, Siberia.
59. *boletivorus* Packard. (!) Syn. Thysan. Essex Co. (1873), p. 30. Maine, Mass., New York, D. C.
60. *marmorata* Packard. (!) *Ibid.*, p. 30. Maine, (?) Ohio.
61. *nivicola* Fitch. (!) Podura nivicola Fitch, Emmon's Journ. Sci. Agr., V., (1846-47), p. 151; Achorutes nivicola Pack., Syn. Thysan. Essex Co. (1873), p. 29; Lintner, Second Rept. N. Y. Entom., p. 203. Mass., New York, Penn., (?) Wisconsin.
62. *pratorum* Packard. (!) Syn. Thysan. Essex Co. (1873), p. 31. Maine, New York.
63. *texensis* Packard. *Ibid.*, p. 30. Texas.

Genus XENYLLA, Tullberg.

64. *humicola* Fabricius. Podura humicola Fab., Fauna Groen., (1780), p. 213; Achorutes humicola Lubbock, Monog. Collem. and Thy-

- san. (1873), p. 183; *Isotoma humicola* Packard, Syn. Thysan. Essex Co. (1873), p. 35; *Xenylla humicola* Tullberg, *Collembola borealia*, (1876) p. 38. Norway, Sweden, Greenland.
65. *maritima*, O. Fabr. *Podura maritima* O. Fabricius, Fauna Groenlandica; *Xenylla maritima* Tullberg, Skand. Podur af underfam. Lip. (1869), p. 11; Sveriges Poduridea, (1872), p. 52, Tab. XI., figs. 7, 8; Lubbock, Monog. Collem. and Thysan., p. 187. Greenland, Sweden.

Genus *PODURA*, Linnaeus.

66. *aquatica* Linnaeus. *Podura aquatica* Linn., Syst. Nat. Ed., X., p. 609; *Hypogastrura aquatica* Bourlet, Mem. Soc. Roy. Lille (1839), p. 31; *Podura aquatica* Lubbock, Monog. Collem. and Thysan., (1873), p. 185, pl. 42; Tullberg, Sveriges Podurider, p. 50, Tab. X., figs. 1-6; Packard, Syn. Thysan. Essex Co. (1873), p. 35. Greenland, Europe.

Family *LIPURIDÆ*, Lubbock.Genus *LIPURA*, Burmeister.

67. *ambulans* Linnaeus.(!) *Podura ambulans* Linn., Syst. Nat. Ed., X., P. 1, p. 609; *Lipura ambulans* Burm., Hand. d. Entom. (1838), B. 11., p. 447; Lubbock, Monog. Collem. and Thysan. (1873), p. 189, pl. 43; Tullberg, Sveriges Podurider (1871), p. 55, Tab. XI., figs. 16-29; Packard, Syn. Thysan. Essex Co. (1873), p. 29. New York, Ohio, D. C.
68. *armata* Tullberg. Skand. Podur. of. underfam. Lip. (1869), p. 18; *Collembola borealia*, p. 39. Greenland.
69. *fimetaria* Linnaeus.(!) *Podura fimetaria* Linn., Sys. Nat. Ed., X., P. 1., p. 609; *Lipura fimetaria* Burm., Hand. d. Ent. (1838); Lubbock, Monog. Collem. and Thysan., (1873), p. 191., pl. 46; Packard, Syn. Thysan. Essex Co. (1873), p. 28; Lintner, Second Rept. N. Y. Entom.p., 208. Mass., N. Y., D. C., Ohio.
70. *Grønlandica* Tullberg. *Collembola borealia* (1876), p. 41, Tab. XI., figs. 57 and 58. Greenland, Spitzbergen.

71. *lucifugus* Packard. Cave Fauna N. A. (1886), p. 65, pl. 16, fig. 1 placed in this genus provisionally by Packard. Kentucky.

Genus ANURIDA, Laboulbene.

72. *maritima* Guerin. Achortes maritimus Guer., Iconog. du Regne Animal, Texte Explic; Lipura maritima, Lubbock, Monog. Collem. and Thysan., (1873), p. 193, pl. 47; Anurida maritima Laboul., Ann. Soc. Ent., France, (1864); Packard, Syn. Thysan. Essex Co. (1873), p. 28. Europe, Eastern Coast of U. S.

Genus ANOURA, Gervais.

73. *gibbosa* Packard. (!) Syn. Thysan. Essex Co. (1873), p. 27. Maine, New York.
74. *granaria* Nicolet. (!) Ann. Soc. Ent. France (1847), p. 387; anurida granaria Tullberg, Skand. Podur. of. Underfam. Lip. (1869), p. 20; Anoura granaria Lubbock, Monog. Collem. and Thysan. (1873), p. 198, pl. 49. Europe, Ohio.

THE GENUS PACKARDIA G. & R.

BY HARRISON G. DYAR.

In the Trans. Am. Ent. Soc. I offered a revision of the species of this genus, in which I reduced the number of species to five; but, from recent experience, I am of the opinion that this number will have to be still further reduced. I have bred a moth that forms an intergrade between *P. elegans* and *P. fusca*, and have noticed no difference between the larvæ that produced typical *elegans* and *fusca*. The same is true of larvæ that produces *geminata* and *albipunctata*. Therefore, if I am correct, the species of *Packardia* must be reduced to two, as follows. I regard the evidence as conclusive concerning the synonymy of the first species: that of the second, being more involved, is less certain, especially as I have bred but few of the moths, though I have little doubt but that it will prove correct.

PACKARDIA ELEGANS Packard.

nigripunctata Goodell.*var. fusca* Pack.

Larva.—Head retracted under joint 2; joint 2 partly under joint 3; dorsal region narrow; body highest at joint 7, rounding to the extremities. Subdorsal ridges distinct, not raised, segmentally undulate, approaching each other posteriorly and marked with a yellow line which begins on joint 3, not joining over the dorsum. Sides nearly perpendicular, a little sloping and bulging superstigmatally, but not forming a decided lateral ridge; joint 13 produced into a rather long, narrow, pointed tail, marked with reddish purple above. Body closely covered with small transparent granulations; colour, light yellowish green, dorsal region dark green, with a small dorsal dot on each joint (joints 6-11) largely surrounded with pale yellowish green, reaching to the subdorsal lines except on joint 11. Sides nearly uniform yellowish green; above the lateral bulge is a segmental row of depressed darker spots, beginning on joint 4 and becoming indistinct after joint 9; on the lateral bulge a row of yellowish spots on joint 6-9. Spiracles white, small, round, conically elevated. A white line borders the venter, which is colourless. Thoracic feet small, abdominal ones wanting as usual in the subfamily. Head green, jaws brown, ocelli black. Length of larva 11 mm., width 5.5 mm., height 3.5 mm.

The subdorsal and lateral ridges have traces of tubercles, not elevated, but a little smoother than the rest of the body, bearing very minute short setæ; just perceptible with a lens in certain lights. These represent the tubercles of the following species:—

PACKARDIA GEMINATA Packard.

Var. albipunctata Pack.*ocellata* Grote.*goodellii* Grote.

Larva.—Body elongate elliptical, sides nearly perpendicular, slightly ridged above the spiracles; dorsal region flat, highest at joint 7 and sloping each way; subdorsal ridge moderately prominent, straight; joint 13 prolonged into a pointed tail very faintly marked with reddish toward the end. Along each subdorsal ridge is a series of little conical tubercles (seen with a lens), two per segment, close together and each bearing a very short seta; a similar row along the superstigmatal ridge, but single and smaller, and the setæ even shorter and finer than those on the sub-

dorsal ridge. A series of dorsal and lateral depressions, not distinctly different from the rest of the body in structure or colour, though the lateral ones are slightly darker. The body is thickly covered with little transparent granulations. Colour, pale, decidedly whitish green (not yellowish), a white line along the subdorsal ridge bordered above with dark green, the lines obsoletely connected on joint 3, but not passing on to the tail. A row of obscure white dashes along the superstigmatal ridge, looking as if beneath the surface of the skin. Spiracles small, round, projecting, white. A faint whitish line separates the clear colourless venter from the body. Head pale green, the mouth parts largely dark brown. It is retracted below, and folded within joint 2, which has the spiracle somewhat flattened. Length of larva 14 mm., width 6.5 mm.

Food plants of both species of *Packardia*, various deciduous trees.

It may be that *P. albipunctata* is distinct from *P. geminata*, but the only difference of importance is the colour of the secondaries, which are pale in the latter and nearly black in the former; but I have not been able to distinguish the larvæ. *Ocellata* and *goodellii* might be considered as varieties of *albipunctata* with the primaries respectively paler and darker than in the typical form.

DESCRIPTIONS OF SOME BUTTERFLY LARVÆ FROM YOSEMITE.—IV.

BY HARRISON G. DYAR.

Heterochroa californica Butler.

Egg.—Nearly spherical, flattened a little at base; covered with hexagonal elevated reticulations, from the intersections of which arise short spines. Colour uniform leaf-green, with a silvery lustre; width 1.5 mm. Laid singly at the tip of a leaf on the upper side. Duration of this stage eleven days.

First larval stage.—Head large, round, flat on the posterior side, roughened with a few little tubercles that bear minute setæ. Colour pale wood-brown, not shiny, the mouth parts dark brown and ocelli black; width 1.1 mm. Body cylindrical, with short conical tubercles and many minute granulations, each with a minute seta. The subdorsal tubercles on joints 3, 4, 6 and 12 are larger than the others and shaded with blackish. Colour leaf-green, the tubercles and all of joints 12 and 13 pale

yellowish. Feet concolorous with the body. Length on exclusion from the egg, 4.5 mm. The larva builds a perch at the end of a leaf in the manner of *Limenitis* larvæ.

Second stage.—Head large, rounded, densely covered with conical tubercles, with three spines arranged in a triangle at the apex of each lobe; pale greenish, with a brownish tinge, and two brown shades, one before and one behind the eyes on each side, running nearly to the vertex. Clypeus small, triangular, pale; jaws brown, ocelli and the three apical spines black; many of the longer tubercles at the sides of the head are tipped with black; width 1.8 mm. Body of uniform width, densely covered with yellowish conical tubercles and a subdorsal row of tuberculated processes, those on joints 3, 4, 6 and 12 much larger than the rest (especially the one on joint 3), and ending in four or five black conical spines. Colour pale brownish yellow, paler subventrally, with indications of a blackish subdorsal band. As the stage advances the dorsum becomes shaded with brown.

Third stage.—Head larger than the body, flat behind and somewhat flattened in front, not bilobed, but central suture depressed; clypeus small, densely covered with tubercles and a double row of long conical spines along the sides and over the vertex; another spine below the vertex of each lobe, and a large rounded tubercle above the ocelli. Reddish brown, the clypeus, a band on the ocelli tapering upward to a point, and all the tubercles and spines yellowish-white; ocelli and the tips of the vertical and lateral spines black; width 2.8 mm. Body as before, densely tuberculated, many of the tubercles in the subdorsal and subventral regions partaking of the character of branching spines. On joints 3, 4, 6 and 12 are a pair of large, thick, subdorsal processes (2.5 mm. long), covered with granulations and large conical spines like those on the head; on joints 8 and 11 a smaller but similar pair. General colour light reddish-brown, with a greenish tinge, especially on the sides. The processes are brown, most of the tubercles and spines yellowish, but the larger spines are tipped with black. Traces of a black subdorsal line and black dorsal marks between the long processes.

Fourth stage.—Head very large, flattened before and behind, almost disc-like, not bilobed, the outline from in front obtusely conical; clypeus rather small; median suture deeper on the vertex than elsewhere. Front nearly smooth, with only a few slight granulations, but around the lateral edge and vertex is a double row of long spines, the vertical ones most

prominent, all intermixed with many shorter tubercles, much as in the previous stage. Colour brown with a pinkish tinge in front, pale behind and below, a tapering whitish band over the ocelli and another obscure one on each side of the clypeus; labrum white; ocelli black; the spines, except a black one below the apex of each lobe, yellowish-white; width 4 mm. The jaws are greenish, black at base and tip. Body densely covered with small, conical, pointed, yellowish tubercles on an olive green ground, which gives it a beautiful mossy green appearance; along the subventral fold these tubercles are very long and thick, which gives the appearance of a yellowish subventral line. The region below this, the legs and venter are brown. A lateral row of super-stigmatal conical tubercles, one on each segment, larger than those covering the body; the one on joint 3 is branched, but there are none on joints 2 and 13. The subdorsal processes are very long and large, those on joints 3, 4, 6 and 12 the largest (5 mm. long), dark brown, covered with many conical thick spines of varying length which are white and tipped with black. On joint 2 there is no subdorsal process; on joint 5 only a slight tubercle; on joint 7 a somewhat larger one, which is branched; on joints 8 and 11 a moderate process (2 mm. long); on joints 9, 10 and 13 and on the anal plate is a branched tubercle. On the feet, and less distinctly also on the subventral region, short hairs arise from the granulations, but not elsewhere on the body. The spiracles on joint 2 are faintly black rimmed, the others concolorous with the body. As the stage advances the olive green colour assumes a rather lighter tint and shades into yellowish at the subventral row of spines. When at rest the head is turned down, the anal feet elevated, the processes on joints 3 and 4 point forward, those on joint 4 also projecting laterally, while the pair on joint 6 lean backward. At the end of the stage the larva fades to a uniform straw-yellow, the head pale brown, and spins its button of silk for suspension.

Chrysalis—Shaped somewhat as in *Limenitis*; a long pointed, tri-lateral, angular prominence over each eye; a carinated ridge runs the length of the dorsum, elevated into a prominence on the thorax posteriorly; on the anterior part of the abdomen is a flattened prominence, much as in *Limenitis*, but less disc-like, from which the ridge continues down the abdomen, ending two segments from the cremaster. Wing cases very prominent, projecting above the surface of the pupa, with an angular point at base and the outer margin elevated. Colour pale wood-brown,

with many short, darker brown strigæ ; a dark brown tinge along dorsal line, the edges of wing cases and the points over the eyes. Between the thoracic and abdominal prominences, along the thorax laterally and back of the eyes are large yellowish-white metallic patches. Length, 23 mm. ; width through wing-cases, 9 mm.

Food-plants.—Species of oak (*Quercus.*)

ON CATOCALA FLEBILIS AND C. FRATERCULA.

BY A. R. GROTE, A. M.

In describing *C. resecta* and *C. flebilis*, it appears, from Mr. Hulst's statements, that I included certain dark shaded specimens, one or more of *resecta*, under *flebilis*. Mr. Hulst says :—"The typical specimens in Phila. cover both species." This may be true, as also that Mr. Strecker figures a dark shaded *resecta* as *flebilis*. I have not his work. But there is no doubt in my mind as to what was *flebilis*, and there is no excuse for Mr. Hulst's renaming my species as *luctuosa*. Considerable material of *flebilis* from various sources was named by me at the time and notably for Mr. Angus, and there is no doubt as to my original intention. I noticed from the first the brown shade on primaries of *flebilis*, and imagined it might be accidental on my specimens and due to cyanide, as then we were hearing for the first time of the action of that poison on colour.

Without the slightest reason, Mr. Hulst quotes *fratercula* as the species intended by Guenee as *micronympha*. Under *sancta*, Mr. Hulst writes :—"Mr. A. G. Butler writes me this latter is *connubialis*, Guen., but the description does not fit, and it was described from a drawing, and so the name does not in any case hold." Without agreeing, this statement seems to me to apply to the use of *micronympha* for *fratercula*, and, in any event, I hope entomologists will not adopt these changes. Mr. Hulst has adopted, without acknowledgment, most of my corrections of his former work on this genus, as to the value of certain species and varieties, and one or two points of difference may be ultimately decided in his favour. I am, however, of a very strong mind upon two points, namely, that *C. residua* (photographed by me in Bull. Buff. Soc. Nat. Sci.) is a perfectly distinct species, and that the same is true of *Meskei*. Secondly, that my genus *Euparthenos* (Ann. Lyc.) is a valid genus, and the species *E. nubilis* structurally different from *Catocala*. I reserve until another occasion a criticism of Mr. Hulst's paper.

SOME BRITISH COLUMBIA COLEOPTERA.

BY THE REV. J. H. KEEN, MASSETT, QUEEN CHARLOTTE ISLAND, B. C.

Last year (1890) I spent the months of July and August at Inverness—a salmon-canning station at the mouth of the River Skeena, and paid what attention I could spare to the beetles of the locality, a list of which I give below. For the identification of my specimens I am indebted to the courtesy of the British Museum authorities at South Kensington. Some few species, it will be observed, still await complete recognition; meanwhile, the following list may not be without interest:—

<i>Cychnus velutinus</i> , Menetr.	<i>Coccinella 9-notata</i> , Hbst.
<i>Notiophilus sylvaticus</i> , Esch.	<i>Dermestes Mannerheimii</i> , Lec.
<i>Amara impuncticollis</i> , Say.	<i>Platysoma validum</i> , Esch.
<i>Bradycellus cognatus</i> , Lec.	<i>Peltis (Ostoma) ferruginea</i> , Linn.
<i>Stenolophus nigrinus</i> , Esch.	<i>Corymbites umbricola</i> , Esch.
<i>Amphizoa</i> (near <i>insolens</i> , Lec.)	“ (near <i>sagitticollis</i> , Esch.)
<i>Rhantus</i> (very near <i>divisus</i> , Aube.)	“ — (?)
<i>Acilius fraternus</i> , Harris.	<i>Melanophila atropurpurea</i> , Say.
<i>Gyrinus Sayi</i> , Aube (?)	<i>Eros simplicipes</i> , Esch.
<i>Cercyon limbatum</i> , Mann (?)	<i>Telephorus</i> — (?)
“ <i>adumbratum</i> , Mann (?)	<i>Aphodius</i> — (?)
<i>Necrophorus maritimus</i> (?)	<i>Tetropium</i> — (?)
<i>Silpha lapponica</i> , Hbst.	<i>Syncta carinata</i> , Mann.
<i>Anisotoma</i> — (?)	<i>Marolia</i> — (?)
<i>Creophilus villosus</i> , Grav.	<i>Dircaea</i> — (?)
<i>Quedius</i> — (?)	<i>Crymodes discicollis</i> , Lec. (?)
<i>Baptolinus melanocephalus</i> , Esch.	<i>Ditylus</i> — (?)
<i>Stenus</i> — (?)	<i>Cephaloon lepturides</i> , Newm.
<i>Tachinus instabilis</i> , Makl.	<i>Anaspis sericea</i> , Mann.
<i>Oxytelus fuscipennis</i> , Esch.	<i>Dendroides ephemeroides</i> , Mann.
<i>Amphichroum testaceum</i> , Esch.	<i>Hylobius pales</i> , Hbst.
<i>Homalium foraminosum</i> , Makl.	<i>Rhyncolus</i> (very near <i>brunneus</i> , Mann.)
<i>Anthobium pothos</i> , Mann.	<i>Tomicus interruptus</i> , Mann.

NOTES.

ASOPIA FARINALIS AS A CLOVER PEST.

In the proceedings of the Entomological Club of the A. A. A. S., at Washington, published in CANADIAN ENTOMOLOGIST, page 220, it is stated that I mentioned a suspicion that *Asopia farinalis* fed in clover, and asked if any one present had any knowledge of the matter. The circumstance shows the desirability of looking such questions up with some care before going on record, as I find that this habit has long since been observed and recorded. In French's Economic Entomology, Part II., Lepidoptera, 7th Rept. State Entomologist of Ill., p. 247, there is a statement that "Dr. Harris says of this that it may be found in old flour barrels; but, according to others, it feeds on corn, straw, and clover." In Tenth Report Ill. State Entomologist, p. 157, we find "Lives in a silken tube in old flour and old clover hay, sometimes burrowing into clover stalks. July to May. (D. W. Coquillet.)"

HERBERT OSBORN.

ULOHÆTES LEONINUS IN VANCOUVER ISLAND.

I have lately received from Mr. W. H. Danby, of Victoria, B. C., a specimen of the above-named Longicorn, which forms an interesting addition to our Canadian fauna. A drawing and description of the specimen were sent to Mr. E. A. Schwarz, of the Division of Entomology at Washington, who writes of it as follows:—"There is not the least doubt that your beetle from Vancouver Island is *Ulochætes leoninus*, Lec., of the family Cerambycidae, a very rare insect, and one of the few short-winged species of this family in our fauna. The genus and species are described and figured by Leconte in "Report upon Insects collected on the Survey" (U. S. Pac. R. R. Exp. 47th Parallel), p. 62. pl. II., fig. 12. It is known to pass its stages under pine-bark. Dr. Horn's short note in Proc. Ent. Soc., Phila., VI., p. 293, is all that has been recorded on the habits of *Ulochætes*." It is a large, handsome, yellow and black, hairy beetle, one inch in length, having much the general appearance of a staphylinid with long antennae. The elytra are very short, the wings not folded at the tips, and the abdomen turned up at the end.

J. FLETCHER.

ANNUAL MEETING OF THE ENTOMOLOGICAL SOCIETY OF ONTARIO.

The annual meeting of the Society was held in its rooms in Victoria Hall, London, on Wednesday and Thursday, Nov. 25th and 26th, the President, Rev. C. J. S. Bethune, of Port Hope, occupying the chair. The reports of the Council, Treasurer, Librarian and Curator, the Montreal Branch, the Delegate to the Royal Society of Canada, and those of the Botanical, Geological, Microscopical and Ornithological Sections were read and approved, and were ordered for publication in the Annual Report to the Legislature.

The following gentlemen were elected officers for the ensuing year:—

President—Rev. C. J. S. Bethune, M. A., D. C. L., Port Hope.

Vice-President—W. Hague Harrington, Ottawa.

Secretary—W. E. Saunders, London.

Treasurer—J. M. Denton, London.

Directors—Division 1—James Fletcher, F. R. S. C., Ottawa,

“ 2—J. D. Evans, Sudbury.

“ 3—Gamble Geddes, Toronto.

“ 4—A. H. Kilman, Ridgeway.

“ 5—J. A. Moffat, London.

Librarian and Curator—J. Alston Moffat, London.

Editor of the CANADIAN ENTOMOLOGIST—Rev. Dr. Bethune.

Editing Committee—H. H. Lyman, Montreal; J. Fletcher, Ottawa; Rev. T. W. Fyles, South Quebec.

Delegate to the Royal Society of Canada—The President.

Auditors—J. H. Bowman and W. E. Saunders, London.

A public meeting was held on Wednesday evening, at which the President delivered his annual address, in which he dealt especially with the chief insect attacks of the year, and the best modes of dealing with them. Papers were read and addresses given by Mr. Lyman on “Can Insects Survive Freezing?” and “*Pamphila Manitoba*”; by Rev. T. W. Fyles on “The Larch Saw-fly—*Nematus Erichsonii*”, and “The Larva of *Gelechia gallæ-diplopappus* and its Parasites”; by Mr. Harrington on “Insects Collected and Observed in Japan”; by Mr. Fletcher on “A Visit to Mr. W. H. Edwards”; by Mr. Geddes on “Entomology in Germany”; by Mr. Moffat on “Microscopical Observation of an Unexpanded Wing of *Callosamia promethea*”. Many specimens were exhibited in illustration of the various subjects brought before the meeting, and interesting discussions took place upon them. Full reports, with the papers in detail, will be given in the forthcoming Annual Report. The meeting was highly successful and enjoyable, and was very well attended.

INDEX TO VOLUME XXIII.

- Acrididae, some Indiana, 74, 98.
 Agrotis, Smith's revision of genus, 45, 90, 147.
 Agrotis, the male genitalia and subdivisions of, 147.
 Aldrich, J. M., article by, 136.
 Among the moths and butterflies, Ballard, 44.
 Annual Meeting Entomological Club, A. A. S., 210, 223.
 Annual Meeting Entomological Society of Ontario, 284.
 Aphidivorous habits of Feniseca Tarquinus, 66.
 Arctiadae of North America, 43.
 Arctia rectilinea, preparatory stages of, 130.
 Argynnis, new species from Alberta, 198.
 Ashmead, W. H., article by, 1.
 Asopia farinalis as a clover pest, 220, 282.
 Attracting butterflies, 110.

 Acalyptus carpini, 25.
 Acoptus suturalis, 25.
 Acridium alutaceum, 79.
 " Americanum, 191.
 Acronycta hamamelis, 121.
 Aellopos Titan, 41.
 Agabus discolor, 185.
 " Lecontei, 185.
 " oblitteratus, 185.
 " phaeopterus, 185.
 Agaspharops nigra, 22.
 Agrotis costata, 152, 202.
 " exsertistigma, 151.
 " haruspica, 147.
 " herilis, 202.
 " indirecta, 120.
 " inextricata, 120.
 " jaculifera, 159, 202.
 " jessoria, 220.
 " Morrisonistigma, 151.
 " ordinata, 119.
 " pellucidalis, 149.
 " reticens, 119.
 " subgothica, 151, 159, 202.
 " tricolor, 151, 202.
 " tritici, 159.
 " velusta, 20.
 " ypsilon, 220.
 Alypia Lorquini, 42.
 Amara fulvipes, 182.

Amblycorypha Scudderi, n. sp., 73.
 Amblyopone pallipes, 65, 138.
 Ammophila robusta, 136.
 Anchus pusillus, 102.
Antarctia Beantii, n. sp., 123.
 " " var *fuscosa*, n. v., 124.
 Anthonomus corvulus, 24
 Anthophilax malachitus, 63.
 " viridis, 63.
 Apamea rubescens, 121.
 " sera, 121.
 " velata, 121.
Aphidius bifasciatus, n. sp., 6
 " *crassicornis*, n. sp., 5.
 " *macrogaster*, n. sp., 5.
 " *nigriceps*, n. sp., 6
 " *pinaphidius*, n. sp., 6.
 Aphodius explanatus, 61.
 " leopardus, 61.
 Aramigus Fulleri, 23.
 Arctia Arizonensis, 114.
 " Brucei, 124.
 Argas reflexus, 248.
Argynnis Victoria, n. sp., 198.
 Arotos amoenus, 112.
 Arphia sulphureus, 77.
 " xanthoptera, 77.
 " " *carinata*, 78.
 Asopia costalis, 219
Atenuus Californicus, n. sp., 165.
Athysanus parallelus, n. sp., 169.
 Attelabus rhois, 21. 66.
 Azelina hulmerata, 112.

 Ballard's Among the Moths and Butterflies, 44.
 Banks, N., articles by, 161, 207.
 Bethune, A. M., article by, 200.
 Bethune, C. J. S., articles by, 20, 139, 140.
 Beutenmuller, W., articles by, 14, 141, 259.
 Bibliographical Catalogue of transformations of N. American Lepidoptera, H. Edwards, 67.
 Blatchley, W. S., articles by, 74, 98.
 Book notices, 20, 44, 67, 115, 139, 140, 160.
 Bos's Manual of animals injurious and beneficial to agriculture, 115.

- Braconidæ, some new Canadian, 1.
 Brodie, W., article by, 137.
 Bruce, D., articles by, 42, 110, 114.
 Bruner, L., articles by, 36, 56, 70, 189.
 Butterflies, attracting, 110.
 Butterfly, new, from California, 126.

 Barynotus Schœnherri, 21.
 Batrachidea cristata, 100.
Bracon brachyurus, n. sp., 1.
 " *melanaspis*, n. sp., 1.
 " *nigrodorsum*, n. sp., 2.
 Bradycellus cognatus, 182.

 Cannibal cricket, 137.
 Cerura borealis, preparatory stages of, 83.
 " new species of, 197.
 " table of species of, 86.
 Chernetidæ, notes on North American, 161.
 Claypole, F. W., article by, 253.
 Coleoptera, new to Montreal, 102.
 " notes on, 60, 181.
 " of British Columbia, 281.
 " of Great Salt Lake, Utah, 239.
 Colias philodice, destruction of, 92.
 Collecting in 1890, observations on, 111.
 Cordylura, list of species of, 155.
 Cork, cheap substitute for, 253.
 Corrections, 67, 201, 202.
 " of list of Arctiada, 43.
 Cucullia, on the species of, 251.

 Cammula pellucida, 191, 194.
 Canthon chalcites, 60.
 " levis, 60.
 Caradrina multifer, 121.
 Carneades messoria, 119, 120.
 " tessellata, 120.
 Catocala flebilis, 281.
 " fratercula, 281.
 " relecta, 281.
 Catopsilia neleis, 122.
 " " var. *floridensis*, 122.
 " agarithe, var. *maxima*, 122.
 Centrinus prolixus, 26.
 " rectirostris, 26.
 Ceresa bubalus, 219.
 Cerura aquilonaria, 86, 197.
 " modesta, n. sp., 197.
 " scolopendrina, 186.
Ceuthophilus pallescens, n. sp., 37.
 Charadra deridens, 97.
Chelanops tristis, n. sp., 163.
Chelifer floridanus, n. sp., 162.
 " *texanus*, n. sp., 162.

 Chionobas bore, 16, 32.
 " *Brucei*, n. sp., 33.
 " crambis, 32.
 " semidea, 33.
 " taygete, 32.
 Chloëaltis curtippennis, 76.
 Chortophaga viridifasciata, 76
 " " infuscata, 76.
 Chrysochraon conspersa, 75.
 " viridis, 75.
 Chrysophanus arota, 204.
Chthonius longipalpis, n. sp., 164.
 " *maestus*, n. sp., 165.
 " Pennsylvanicus, 164.
 " species of, 165.
 Cicadula punctifrons, 169.
 " " var. *Americana*, 169.
 Cicindela hæmorrhagica, 226.
 " lepida, 175, 221.
 Cleigastra, species of, 153.
 " *Suisleri*, n. sp., 155.
 Cœliodes nebulosus, 25.
Cænophanes borealis, n. sp., 2.
 Compsomyia macellaria, 243.
Conocephalus Nebrascensis, n. sp., 72.
 Corixa decolor, 239.
 Cossonini, sp. of, 26.
 Crocota Treatii, 97.
 Cromatia Amœna, 64.
 Cryptorhynchus parochus, 25.
Cycloptilus borealis, n. sp., 37.

 Danby, W. H., article by, 113.
 Datana perspicua, preparatory stages of, 82.
 Davis, W. T., article by, 9.
 Dyar, H. G., articles by, 40, 43, 67, 82, 106, 156, 159, 172, 186, 187, 200, 201, 203, 205, 276, 278.
 Dysderidæ of the U. States, 207.

 Dasychira Lintneri, 159.
 Dasylophia interna, 121.
 Deltocephalus debilis, 95.
 " inimicus, 95.
 Dendroctonus simplex, 27.
 Dendrotettix longipennis, 191.
 Dilophonota ello, 97.
 Diplosis pyrivora, 223.
 Dissosteira Carolina, 78.
 " longipennis, 189.
 " oblitterata, 190.
 Dryocetes affaber, 26.
 " septentrionalis, 26.

- Dryocampa rubicunda*, 97.
- Edwards, W. H., articles by, 16, 31, 44, 49, 198.
- " Butterflies of North America, 140.
- " Henry, obituary notice of, 141.
- " " list of writings of, 259.
- Electric light, collecting at, 244.
- Entomological Club, proceedings of, 210, 223.
- " Education, address on, 211.
- " Field day, 174.
- " Manual, proposed. 234.
- " Meetings at Washington, 177, 210, 223.
- " Nomenclature. 49.
- " Society of Ontario, 69, 108, 196, 284.
- Errata, 92, 160.
- Erebia, a new species from Colorado, 31.
- Excursion, 137, 174.
- Experimental Farms, Annual Report of, 139.
- Eye-spotted bud-moth, 231.
- Ecpantheria scribonia*, 106.
- Edema albifrons*, 111.
- Elleschus bipunctatus*, 25.
- " *ephippiatus*, 25.
- Encoptolophus sordidus*, 77.
- Ephydra gracilis*, 236.
- Erebia epipsodea*, 31.
- " *ethela*, n. sp., 31.
- Enchaetes abdominalis*, 136.
- " *conspicua*, 136.
- Eurois occulta*, 148.
- Fernald, C. H., article by, 29.
- Fletcher, J., articles by, 180, 252, 283.
- Food plants of some Bombycidae and Noctuidae, 34.
- French, G. H., articles by, 130, 143.
- Fyles, T. W., article by, 135.
- Feniseca Tarquinius, 66.
- Genitalia, value of, in determining species, 55, 105, 147.
- Gortyna Cataphracta, preparatory stages of, 157.
- Graphiphora, note on, 101.
- Great Salt Lake, Utah, insect Fauna of, 235.
- Grote, A. R., articles by, 45, 101, 109, 147, 160, 201, 202, 281.
- Guignard, J. A., article by, 116.
- Gluphisia Lintneri*, 159.
- " *trilineata*, 159.
- Goniagnathus Palmeri*, n. sp., 171.
- Goniodonta unica*, n. sp., 125.
- Gracilia minuta*, 103.
- Grapta interrogationis*, 55.
- Gryllus neglectus*, 137.
- Grypus granulatus*, n. sp., 163.
- Hamilton, J., articles by, 60, 181.
- Harrington, W. H., articles by, 21, 114, 115, 132, 138.
- Hausen, J. F., article by, 102.
- Holland, W. J. article by, 16.
- Homoptera, new N. American, 169.
- Hornet, habits of a ground, 9.
- Hot-springs of the Yellowstone Park, insects in the, 225.
- Hubbard, H. G., article by, 226.
- Hudson, G. H., articles by, 197, 244.
- Hypena abalienalis*, preparatory stages of, 157.
- Hadena devastatrix*, 119.
- " *ducta*, 118.
- Hematobia alcis*, n. sp., 88.
- " *serrata*, 87.
- Halisidota specularis*, 43, 109, 158, 201.
- " *trigona*, 43, 109, 158, 201.
- Heliadora*, n. gen., 125.
- " *magnifica*, n. sp., 125.
- Heliopsis binotata*, 121.
- " *temperata*, 121.
- Heterocampa biundata*, 67.
- " *guttivitta*, 111.
- " *nivea*, n. sp., 124.
- " *subrotata*, 67.
- Heterochroa Californica*, 278.
- Hippiscus phœnicoptera*, 79.
- " *rugosus*, 78.
- " *paradoxa*, 79.
- Histeromerus Canadensis*, n. sp., 7
- Hybernia defoliaria*, 15.
- Hylobius confusus*, 24.
- " *pales*, 24.
- " *stupidus*, 24.
- Hyperchiria io*, 218, 219.
- Insecta, by Hyatt and Arms, 20.
- Insects and insecticides, Weed, 180.
- Iaiasta macrocera*, n. sp., 5.

- Jassidæ causing "Silver-top" in grass, 96.
 Junonia Cœnia, preparatory stages of, 187.
- Keen, J. H., article by, 282.
 Kellicott, D. S., article by, 250.
- Larvæ, a method of preserving, 253, 255.
 " descriptions of Lepidopterous, 14, 16, 18, 42, 82, 106, 130, 143, 156, 172, 187, 203, 205, 277, 278.
 Lepidoptera taken near Montreal, 96.
 " " at Little Metis, 10.
 " classification of, 245
 Lepisiesia flavo-fasciata, occurrence of, 8, 42.
 Library. donations to the, 140.
 Limacodes, scent glands in larvæ of, 42.
 Lintner, J. A., articles by, 223, 230, 231.
 Locusts, destructive, of N America. 189.
 Longevity and vitality of Argas and Trombidium, 248.
 Lyman, H. H., articles by, 8, 67.
- Lamenia Californica*, n. sp., 169.
Leptinus Americanus, 183.
 " *Caucasicus*, 183.
 " *testaceus*, 183.
Lepyrus geminatus, 23.
Limenitis Arthemis, 49, 104.
 " *Astyanax*, 49.
 " *Lorquini*, 172, 201.
 " *Proserpina*, 49, 104.
 " *Ursula*, 49, 104.
Limothrips poaphagus, 93.
Lipolcxis fuscicornis, n. sp., 7.
Listronotus, sp. of, 24.
Lucillia macellaria, 222.
- MacGillivray, A. D., article by, 267.
 Melanism and Humidity, 128.
 Microlepidoptera, additions to Canadian list, 167.
 " new N. American, 29.
 Moffat, J. A., articles, by, 41, 66, 112, 140, 167, 178.
 Montreal Branch, meetings of, 69, 196.
- Moose fly, 87.
 Mountain Ash, two borers injurious to, 250.
 Murtfeldt, Miss M. E., article by, 248.
 Muscid bred from Swine's dung, 152.
- Magdalis Lecontei*, 24.
Mamestra contenta, 119.
 " *displiciens*, 119.
 " *inextricata*, 120.
 " *insulsa*, 118.
 " *nigriceps*, 119.
 " *unicolor*, 119.
- Marmopteryx strigularia*, 97.
Meligena Websteri, n. sp., 206.
Melanoplus atlantis, 98, 192.
 " *bivittatus*, 99, 193.
 " *collinus*, 99.
 " *devastator*, 193.
 " *differentialis*, 99, 193.
 " *femur-rubrum*, 98, 194.
 " *minor*, 81.
 " *ponderosus*, 193.
 " *spretus*, 192.
- Melitæa phaëton*, 200.
Miarus hispidulus, 25.
Micracis aculeata, 65.
 " *suturalis*, 65.
Microclytus gazellula, 61.
 " *gibbulus*, 61.
 " *niger*, 61.
- Microplitis cincta*, n. sp., 3.
Mononychus vulpeculus, 25.
Mythimna vetusta, 120.
- Neumoegen B., articles by, 122, 136, 145.
 New Rhopalocera and Heterocera, 122.
 Noctuidæ, on some species described by F. Waiker, 117.
- Nematus palliventris*, 135.
Noctua dandestina, 119.
- Orthoptera, ten new species from Nebraska, 36, 56, 70.
 Osborn, H., articles by, 93, 211, 282.
- Oeneis Bore, 16, 32.
Oeta compta, var. *Floridana*, 122.
Olpium rufulum, n. sp., 166.
Opius bicarinatus, n. sp., 4.
 " *Canadensis* n. sp., 4.

- Orchelimum gladiator*, n. sp., 71.
 " *gracilis*, n. sp., 70.
 " species of, 59.
Orchestes ephippiatus, 25.
 " *niger*, 24.
 " *pallicornis*, 24.
 " *rufipes*, 24.
 " *subhirtus*, 25.
Orgyia definita, 232.
 " *leucostigma*, 232.
Otiorynchus ovatus, 22.
 " *rugifrons*, 114.
 " *sulcatus*, 22.
- Packardia*, the genus, 276.
 Patton, W. H., articles by, 42, 66.
 Pear midge, 223.
 " *psylla*, 230.
Phyciodes mylitta, preparatory stages of, 203.
Pimplinae, two new sp. of, 132.
Platynus new to Canada, 115.
 Preserving larvæ, a method of, 253, 255.
Pseudohazis and its variations, 145.
- Pachylobius picivorus*, 24.
Packardia geminata, 112, 277.
 " *elegans*, 277.
Pamphila Leonardus, 97.
Panagæus crucigerus, 181.
Papilio indra, 110.
Parastichtis perbellis, 121.
Pezotettix gracilis, 81.
 " *rotundipennis*, 80.
 " *Scudderi*, 80.
 " *viola*, 81.
 " *viridipes*?, 80.
Phengodes laticollis, 256.
Philonthus quediinus, 60.
Phragmatobia fuliginosa, 40.
 " *rubricosa*, 40.
Piazorhinus scutellaris, 25.
Piazurus oculatus, 25.
Pimpla pterelas, 25.
Platynus crenistriatus, 102.
 " *Hardyi*, 115.
Plusia areæ, 121.
 " *æreoides*, 121.
Podapion gallica, 23.
Podosesia syringæ, 250.
Propexis magnificus, n. sp., 3c.
Pseudocadia deltiella, n. sp., 29.
Psenocerus supernotatus, 64.
- Pseudohazis eglanterina*, 145.
 " " var. *denudata*, 145.
 " *hera*, 145.
 " var. *marcata*, 146.
Pseudomus truncatus, 25.
Psylla pyricola, 230.
Ptomophagus parasitus, 64.
Pyrgus pelagica, n. sp., 126.
Pyrophila tragopogonis, 119.
- Quedioides fulgidus*, 182.
- Rhyncophora*, a few Canadian, 21, 66, 114.
 Riley, C. V., articles by, 256.
 Rowley, R. R., article by, 92.
- Rhogas mellipes*, n. sp., 3.
Rhyncites aratus, 21.
 " *bicolor*, 21, 66.
 " *cyanelus*, 21.
- Scent-glands in larva of *Limacodes*, 42.
 Schwarz, E. A., article by, 235.
 Screw-worm, attack by, 222, 243.
 Silver top in grass, 93.
Smerinthus exæcatus, preparatory stages of, 14.
 " *ophthalmicus*, preparatory stages of, 143, 200.
 Smith, J. B., articles by, 43, 90, 104, 117, 158, 241, 242, 245, 251.
 Smith, J. B., revision of genus *Agrotis*, 45, 90.
 Snow, W. A., article by, 87.
 Staining insect tissues, 251.
- Salda coriacea*, 239.
 " *interstitialis*, 238.
Saprinus estriatus, 238.
Schistocera Americana, 79.
Schænobius Maximellus, n. sp., 30.
Sciaphilus muricatus, 114.
Scopelosoma, sp. of, 178.
Scythrops elegans, 23.
Segestria pacifica, n. sp., 209.
Semiophora Catharina, 120.
 " *tenebrifera*, 120.
Smerinthus geminatus, 144.
Spathius Canadensis, n. sp., 2.

- Sphecius speciosus*, 256.
Sparagemon balteatum, 78.
Sphenophorus pertinax, 26.
Stenoscelis brevis, 26.
Stenura cyanea, 63.
Stizus speciosus, 9.
Strophosomus coryli, 23.
Syneda Alleni, 97.
Syrbula admirabilis, 76.
- Tachinid bred from a chrysalis, 206.
 Taylor, G. W., article by, 15.
Teniocampa alia, preparatory stages of, 156.
 Thaxter, R., articles by, 34, 92.
 Thoughts on species, 178.
Thysanoura of N. America, catalogue of, 267.
 Townsend, C. H. T., articles by, 152, 206.
 Tutt, J. W., articles by, 128, 159.
 Tutt's British Noctuae and their varieties, 160.
- Tanarthrus salicola*, 183.
Tanyssphyrus lemnae, 24.
Teniocampa rubrescens, 121.
 " *venata*, 121.
Tettigidea lateralis, 100.
 " *polymorpha*, 100.
Tettix ornata, 100.
Thecla Acadica, 96.
 " *Lacta*, 96.
 " *Strigosa*, 97.
Thyatira pudens, 97.
Tmetocera ocellana, 231.
Trombidium Sericeum, 249.
Truxalis brevicornis, 75.
- Udeopsylla compacta*, n. sp., 38
 " *gigantea*, 39.
Ulochætes leoninus 283.
- Vancouver Island, insects in, 113.
 Van Duzee, E. P., article by, 169.
Vanessa Californica, 27, 113.
Volucella fasciata, 242.
- Walker, F, some species of Noctuidæ described by, 117.
 Weed, H. E., article by, 243.
 Weed's Insects and insecticides, 180.
 Weeks, A. G., article by, 126.
 Winn, A. F., articles by, 10, 69, 96, 196.
 Wright, W. G., article by, 27.
- Xantholinus cephalus*, 60.
 " *sanguinipennis*, 60.
Xiphidium attenuatum, 57.
 " *modestum*, n. sp., 56.
 " *nigropleurum*, n. sp. 58.
 " *strictum*, 56.
Xorides carya, n. sp., 132.
 " species of, 133.
Xyleborus dispar, 241.
Xylina signata, 121.
Xylonomus Canadensis, n. sp., 133.
 " species of, 134.
- Year in Canada, notes of the, 252.
 Yosemite, descriptions of Butterfly larvæ from, 172, 187, 203, 278.
- Zarhipis riversii*, 256.
Zeuzera on Elms.
Zeuzophora semifuneralis, 250.
Zotheca tranquilla, larva of, 205.