

**SPECIAL BULLETIN. HATCH
EXPERIMENT STATION OF THE
MASSACHUSETTS AGRICULTURAL
COLLEGE. THE PTEROPHORIDAE
OF NORTH AMERICA**

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C. H. FERNALD

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HATCH EXPERIMENT STATION

OF THE

MASSACHUSETTS AGRICULTURAL COLLEGE.

THE PTEROPHORIDÆ
OF NORTH AMERICA.

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THE PTEROPHORIDÆ OF NORTH AMERICA.

The species of moths taken up in this work are known by the common names of plume-moths and feather-wings. They have been studied but very little, and our knowledge of the early stages and habits of a large proportion of our native American species is very imperfect, but it is hoped that our entomologists will give more attention to them hereafter.

GEOGRAPHICAL DISTRIBUTION.

The Pterophoridae are distributed very widely over the globe, but appear to be most numerous in the temperate regions, particularly in Europe, North America and Australia; yet, when other parts of the globe have been as carefully explored, it is probable that many additional species will be discovered, and that they may be more evenly distributed than at present appears to be the case.

GEOLOGICAL DISTRIBUTION.

I am indebted to Mr. S. H. Scudder, our highest authority on fossil insects, for the information that no Pterophoridae have yet been recognized among the fossils, not even in amber.

ECONOMIC IMPORTANCE.

A few species of the Pterophoridae are injurious to plants of economic importance, and the larvæ of several others feed on plants raised for ornamental purposes or for flowers.

NATURAL ENEMIES.

While it is probable that the species of this family are preyed upon not only by insect enemies but also by birds, yet I have been able to find but few recorded observations with regard to them. Ashmead has described *Pimpla pterophori* and *Limneria pterophoræ* from Pterophorids in California, and the latter species has also been taken in Texas. Prof. Kellicott bred *Ichneumon humilis* Prov. from *Platyptilia carduidactyla*.

HISTORY.

Linnaeus, in the tenth edition of his "Systema Naturæ," Vol. 1, page 542, published in 1758, established the genus *Alucita* for the plume-moths with the following six species under it in order: *monodactyla*, *didactyla*, *tridactyla*, *tetradactyla*, *pentadactyla* and *hexadactyla*,—all placed under the heading *ALUCITÆ*. Some of these insects had been figured and described more or less fully by authors previous to the time of Linnaeus, as Aldrovandus, 1602; Madam Merian, 1679; Peliver, 1702; Ray, 1710; Frisch, 1721; Reaumur, 1736; and Roscl, 1746; but, as Linnaeus in the above work first consistently used the binomial nomenclature, it has been decided almost universally by zoölogists to adopt this edition of the "Systema Naturæ" as the starting-point in zoölogical nomenclature.

In 1761, Poda published his "Insecta Musci Græcensis," in which, on page 94, he adopted the generic name *Alucita* with *pentadactyla* L. the only species under it, and this species is therefore regarded as the type of the genus *Alucita* by Lord Walsingham and other eminent authorities. Geoffroy, in 1762, published the first edition of his "Histoire abrégée des Insectes," in two volumes. In the second volume this author, rejecting the genus *Alucita* of Linnaeus, established the genus *Pterophorus*, a name which he stated was given to these insects by some naturalist in former times, and placed under it *pentadactyla* L. *didactyla* L. and *hexadactyla* L. From his description of *didactyla*, there can be no doubt that, instead of this species, he had *monodactyla* L. before him, and therefore we must consider *didactyla* Geoff. the same as *monodactyla* L. As Poda had already used *pentadactyla* as the type of *Alucita*, only the species *monodactyla* L. and *hexadactyla* L. could be considered as belonging under *Pterophorus*.

Scopoli, in his "Entomologia Carniolica," published in 1762, gives five species of plume-moths under *Phalæna*, which he appears to have used in a generic sense. In 1775, Fabricius, in his "Systema Entomologicæ," page 667, very improperly made use of the genus *Alucita* for *xylostella* L. and nineteen other Tineids, and followed Geoffroy in using *Pterophorus* for the plume-moths. This use of these generic names he continued through all his writings. The authors of the "Systematische Verzeichniss der Schmetterlinge der Wienergegend," 1776, page 144, adopted the genus *Alucita* in the strict Linnæan sense.

Latreille, in his "Précis des Caracteres generique des Insectes,"

published in 1796, page 148, separated *hexadactyla* from the group and established for it the genus *Orneodes*, but retained the rest of the plume-moths under *Pterophorus*. Latreille repeated this use of these generic names in his "Histoire naturelle des Crustacés et Insectes," Vol. XIV., page 255 (1805), and used the generic name *Alucita* in the Fabrician sense. This action of Latreille in removing *hexadactylus* from *Pterophorus* left only the species *monodactylus* L. under it which must now be regarded as the type, while *Orneodes* must be recognized with *hexadactyla* L. as the type.

In 1806, Hübner published his "Tentamen," in which these insects are placed in Phalanx 9; Alucitæ, in Tribus 1: *indubitata*. There are two divisions under this, the first of which is *Pterophora* with *Pterophora pentadactyla*, and the second is *Ripidophora* with *Ripidophora hexadactyla*. The "Tentamen" has caused a great deal of controversy as to whether it was a true publication, and whether its generic names should be recognized. No question can arise in case of the plume-moths, as Poda had long before adopted *pentadactyla* as the type of *Alucita*, and Latreille had very properly separated *hexadactyla* from the group and established for it the genus *Orneodes*. Schrank, in the second part of Vol. II. of his "Fauna Boica" (1802), page 139, adopted the Linnæan genus *Alucita* for these insects.

In 1811, Haworth published the third part of his "Lepidoptera Britannica," in which he adopted the genus *Alucita* in the Linnæan sense for the plume-moths. In 1815, Leach published his article "Entomology" in the "Edinburgh Encyclopædia," in which, under Tribe VII, Alucitides, the genus *Pterophorus* Geoff. is adopted with *pentadactylus* and *didactylus* under it, and the genus *Alucita* with *hexadactyla* under it. In 1819, Samouelle published his "Entomologist's Useful Compendium," in which he adopted the classification of Leach.

Hübner, in his "Verzeichniss bekannter Schmetterlinge," adopted the term Alucitæ for his ninth phalanx, the plume-moths. This part of the "Verzeichniss" was published between Aug. 27, 1825, and the time of Hübner's death, which occurred Sept. 13, 1826. This author divided these insects into three tribes: the first including those with unfissured wings, for which he established the genus *Agdistis*; the second with those having one fissure in the fore wings and two in the hind wings. This tribe was further divided into two families, each containing two genera. The first family, *Obtusæ*, contained the genera *Platyptilia* and *Amblyptilia*, and the second family, *Cuspides*, contained the

genera *Stenoptilia* and *Aciptilia*. The third tribe included those species in which each wing is divided into six parts, and these were all placed under the genus *Euchiradia*, which is of course synonymous with *Orneodes*.

In 1827, Curtis published Vol. IV. of his "British Entomology," in which he adopted the genus *Pterophorus* and names *pentadactyla* L. as the type. In Vol. X. of the same work (1833), he established the genus *Adactylus* with *adactyla* Hüb. for the type. In Vol. XV., published in 1838, he adopted the genus *Alucita* and named *hexadactyla* as the type. Curtis, in 1829, in his "Guide to an arrangement of the British insects," had taken the genus *Adactylus* for the species with undivided wings, *Alucita* for "*hexadactyla* and its allies" and *Pterophorus* for the remainder. In the same year Stephens published his "Catalogue of British insects," in which he adopted the genus *Agdistis* Hüb. for the species with undivided wings, and *Pterophorus* and *Alucita* in the same sense as Curtis had used them. This same classification was used by Stephens in 1834, in his "Illustrations of British Entomology."

Treitschke, in Vol. IX., Part 2, of his "Schmetterlinge von Europa," published in 1838, adopted the generic name *Alucita* for the species placed by Stephens under *Agdistis* and *Pterophorus*, while he used *Orneodes* for *hexadactylus* and its allies. In 1836, Duponchel, in his "Histoire naturelle des Lepidopteres," Vol. IX., adopted the classification of Latreille, but in his "Catalogue Methodique," published in 1844, he used the genus *Adactyla* Zell. for *hübneri* Curt., *Orneodes*, for *hexadactyla* and its allies, and *Pterophorus* for the remaining species. Westwood, in Vol. 1. of his "Classification of insects," page 115, published in 1839, adopted the classification of Stephens.

Zeller, in 1841, published his monograph of the plume-moths in "Isis," Vol. X. This author adopted the name *Pterophoridae* for the group, and divided them into the *Pterophoridae proprii*, and *Alucitina*. Under the first division he established the genus *Adactyla*, apparently unconscious of the fact that Curtis had already used the same name. Under this same division Zeller adopted the genus *Pterophorus* Geoff., which he divided into groups or subgenera as follows: *Platypilus* (*Platypilia* Hüb.), *Oxyptilus* (*Amblyptilia* Hüb.), *Pterophorus* (*Stenoptilia* Hüb.), *Aciptilus* (*Aciptilia* Hüb.). The division *Alucitina* contained the genus *Alucita* with *hexadactyla* and allies under it. In 1852, Zeller published his "Revision of the Pterophoridae" in "Linnaea Entomologia," Vol.

VI., page 319, in which he sinks his genus *Adactyla* and adopts Hübner's *Aydistis*, and establishes the genus *Deuterocopus* for the species *tengstromi* of Java.

In 1840, Zetterstedt, in his "Insecta Laponica," placed all his plume-moths under the genus *Alucita*, but in a note refers to *Orneodes hexadactyla* indicating his adoption of this generic name. Herrich-Schäffer, in his "Schmetterlinge von Europa," Vol. V., published in 1853-55, follows the classification of Zeller. Stainton, in his "Manual of British Butterflies and Moths" (1859), adopted the generic name *Adactyla* for *bennetti*, *Pterophorus* for *rhododactylus* and its allies and *Alucita* for *polydactyla*.

In 1859, Wallengren published his work on the Scandinavian plume-moths, which, like Zeller's works, marked an era in the classification of these insects. Wallengren followed Zeller in dividing them into the *Pterophoridae* and *Alucitina*, under the first of which he established four new genera, and used, in addition to these, five genera established by earlier authors. Under *Alucitina* he adopted the genus *Alucita* for *hexadactyla*.

In 1864, Walker published Part 30 of his "List of the Lepidopterous Insects in the British Museum," in which he refers to all the described species of the plume-moths, and added thirty-five new species and two new genera founded on new species from Ega, South America. In this work Walker followed the classification of Zeller.

In 1869, Dr. Jordan, in the "Entomologist's Monthly Magazine," Vol. VI., pages 119 and 149, gave a review of Wallengren's work, referred to above, which contains valuable information. Mr. South has given a most interesting and valuable series of illustrated papers on the early stages, habits and food plants of the British plume-moths in the "Entomologist," Vol. XIV. and following volumes. Tutt's "Monograph of the Pterophorina of Britain" is also a valuable paper on the British plume-moths. In 1877, Dr. Woocke, in "Die Schmetterlinge Deutschlands und der Schweiz," Vol. II., Part 2, followed very closely the classification of Wallengren. In 1886, Leech, in his British Pyralides," including the Pterophoridae published in 1886, uses the super-family Pterophori with the families *Pterophoridae* and *Alucitidae* under it.

Meyrick, in his paper "On the Classification of the Pyralidina of the European Fauna," published in 1890, in the "Transactions of the Entomological Society of London," placed these insects as families under the super-family Pyralidina. Mr. Meyrick had already made critical studies on these insects in his researches on