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CLASSIFICATION OF THE FOSSORIAL, PREDACEOUS AND PARASITIC WASPS, OR THE SUPERFAMILY VESPOIDEA.

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(Paper No. 9.—Continued from p. 231.)

FAMILY XXXII.—Bethyllidae.


1830. Mutilliidae, Family (partim), Leach. Opus cit., p. 147.


This family was first defined by that astute British systematist, A. H. Haliday, who, as early as 1839, very correctly placed the family among the Fossores.

In 1893 the writer, in his Monograph of the North American Proctotrypidae, followed the views of Prof. Westwood, and treated these insects as a subfamily in the Proctotrypidae. Since that time, however, the extensive studies I have made into all families of the Hymenoptera have given me a much broader and more thorough knowledge of the families and their affinities, and I am now convinced that Haliday was right, that these insects are allied to the fossorial wasps, and have nothing to do with genuine Proctotrypoids; they are clearly allied to the Chrysididae, through the Cleptinae and Amérginae, and to the Sapygidae, Tiphidae, Cosilidae, Thyrididae, Myrmosidae and Mutiliidae,—all parasitic families.

The family Trigonalidae, too, which is usually classified with the terebrant Hymenoptera, also belongs to the same category, being undoubtedly allied to the Bethyllidae and the Sapygidae, the two-jointed trochanters, the long multijointed antennæ, and the superficial resemblance to genuine ichneumonids having misled most systematists as to its true position.

In this connection it may be well to call special attention to the new Bethylid genus, Probethylus, discovered by Mr. E. A. Schwarz, in Arizona, with 23-jointed antennæ, and to the genus Sclerogibba, Stefani, October, 1902.
with 26-jointed antennæ, since these genera differ so widely in antennal characters from others in the group, and apparently emphasize the affinities between these wasps.

Table of Subfamilies.

Wingless forms .................................... 3.
Winged, the hind wings with a lobe at base; front wings with one or two basal cells.
   Head not oblong .................................. 2.
   Head oblong.
      Antennæ inserted at the clypeus, usually 12- or 13-jointed, rarely 23- or 26-jointed; front femora usually more or less swollen.............................. Subfamily I.—Bethylinae.

2. Head globose or rounded; front wings with a lanceolate stigma; front tarsi in ♀ never chelate; antennæ in ♀ 13-jointed, in ♂ 10-jointed .................... Subfamily II.—Emboleminae.
   Head transverse or subquadrate; front wings usually with a large stigma; front tarsi in ♀ frequently chelate; antennæ 10-jointed in both sexes .................. Subfamily III.—Dryiniae.

3. Front femora much swollen.
   Head oblong; antennæ usually 12- or 13-jointed, alike in both sexes, rarely 23-26-jointed .................. I.—Bethylinae
   Head transverse or subquadrature, or globose.
      Head globose; antennæ in ♀ 13-jointed; front tarsi normal .................. II.—Emboleminae.
      Head transverse or subquadrature; antennæ 10-jointed; front tarsi in ♀ chelate .................. III.—Dryiniae.

SUBFAMILY I.—Bethylinae.

This subfamily may be divided into two very distinct tribes:

Table of Tribes.

Antennæ 23- to 26-jointed ..................... Tribe I.—Sclerogibbini.
Antennæ 12- to 13-jointed ..................... Tribe II.—Bethylini.

TRIBE I.—Sclerogibbini.

In this tribe only two genera are known, and they are easily recognized from other Bethylids by the multiarticulated antennæ, the antennæ being 23- or 26-jointed. In the Bethylini the antennæ are never more than 13-jointed.
Table of Genera.

1. Males

- Females.
  - Wingless forms
    - Antennæ 26-jointed; ocelli wanting (♀ unknown) (1) Sclerogibba, Stefani.
      (Type S. crassifemorata, Stef.)
  - Winged forms

2. Front wings with a closed marginal cell **without** discoidal cells;
   antennæ 23-jointed (♀ unknown) (2) Probethylus, Ashmead, g. nov.
   (Type P. Schwarzi, Ashmead, MS.)

**TRIBE II.—Bethylini.**

The antennæ are 12- or 13-jointed, alike in both sexes. Among the females, wingless forms are common, and in many cases are totally different from the males, so that the sexes are not easily correlated.

Many of them, too, were it not for their oblong heads, could be easily mistaken for apterous females in the families Thynnidae and Mutilidae.

Table of Genera.

1. Males

- Females.
  - Wingless forms
  - Winged forms

2. Head with ocelli

3. Metathorax quadrate or nearly, not much constricted at the base
   Metathorax not quadrate, much constricted or strangulated at base

4. Scutellum present; mandibles 3- or 4-dentate; maxillary palpi 6-jointed
   (1) Pristocera, Klug.
   (Type Bethylus depressa, Fabr.)

5. Scutellum wanting; mandibles 3-dentate; maxillary palpi 6-jointed
   (2) Isobrachium, Förster.
   (Type Omalus fuscicornis, Nees.)

6. Scutellum present; metathorax quadrate or trapezoidal
   Scutellum wanting; metathorax rounded off posteriorly
   (3) Ecitopria, Wasmann.
   (Type E. crassicornis, Wasm.)

7. Metathorax 2- or 3-dentate; maxillary palpi 4-jointed
   Mandibles 4-dentate; maxillary palpi 5-jointed
   (4) Scleroderma, Latreille.
   (Type S. domesticus, Latr.)

8. Maxillary palpi normal; labial palpi 3-jointed. ............... 9. Ateleopterus, Förster. (Type A. Försteri, Kirchner.)

Maxillary palpi deformed; labial palpi 3-jointed. ............... (7) Apenesia, Westwood. (Type A. amazonica, Westw.)

9. Antennae 12-jointed; maxillary palpi 4-jointed ................ (8) Cephalonomia, Westwood. (Type C. formiciformis, Westw.)

10. Front wings with a stigmated marginal vein and a marginal cell, the radial vein always well developed .......... 11. Front wings without a stigmated marginal vein and marginal cell, the radial vein not at all or only slightly developed, sometimes wholly absent. .......... 12. Front wings with a short linear marginal vein and a short radius. Front wings without a marginal and a radial vein.


12. Two basal cells about of an equal length.

Antennae 13-jointed. ........................................ (9) Laelius, Ashmead. (Type L. trogoderma, Ashm.)

Antennae 12-jointed. ........................................ (10) Bethylas, Latreille. (Type B. cenopterus, Latr.)

13. Basal vein with a branch directed backwards, sometimes forming a small closed cell; parastigma usually present ....... 14. Basal vein without such a branch; no parastigma. Front wings with an incomplete or open marginal cell. Front wings with a complete marginal cell; antennae 13-jointed.

With one discoidal cell ................................ (11) Sierola, Cameron. (Type S. testaceipes, Cam.)

With two discoidal cells ................................ (12) Eupsenella, Westwood. (Type E. agilis, Westw.)

14. Mesonotum without furrows, or the furrows are incomplete and indistinct. ........................................ 16.
Mesonotum with distinct, complete furrows

   Scutellum bifoveate at base. (13) Mesitius, Spinola.
   (Type M. Ghilianii, Spin.)
   Scutellum not bifoveate at base, but with a transverse grooved line.
   Maxilla bilobed at apex. (14) Epyrus, Westwood.
   (Type E. niger, Westw.)
   Maxilla trilobed at apex. (15) Calyoza, Westwood.
   (Type C. staphylinoides, Westw.)

   (Type A. boops, Thoms.)
   Antennæ 13-jointed.
   Scutellum bifoveate at base. (13) Mesitius, Spinola.
   ? = Dolus, Motsch.
   (Type M. Ghilianii, Spinola.)
   Scutellum with a transverse grooved line at base. (14) Epyris, Westwood.
   (Type E. niger, Westw.)

   (Type P. Triareolatus, Först.)
   (Type G. clavipennis, Först.)

18. Front wings with a distinct marginal cell, the radius always long, sometimes forming a closed marginal cell. 23.
   Front wings without a distinct marginal cell, the radius wanting or very short. 19.

   Front wings without marginal and radial veins. 20.

   Antennæ 13-jointed.
   Front wings with one basal cell. (6) Ateleopterus, Förster.
   Front wings with two basal cells. Scleroderma, Klug.

21. Two basal cells in front wings.
   Antennæ 13-jointed. Laelius, Ashmead.

22. Front wings with an incomplete marginal cell. 22.
   Front wings with a complete or closed marginal cell.
Antennae 13-jointed.
  One discoidal cell ........................................ (11) Sierola, Cam.
  Two discoidal cells ...................................... (12) Eupsenella, Westwood.

23. Basal nervure without a backward-directed branch; no parastigma. 24.
   Basal nervure with a branch directed backwards; a parastigma 27.

24. Mesonotum without furrows, or the furrows very indistinct. 26.
   Mesonotum with furrows distinct .......................... 25.

   Scutellum bifoveate at base; maxilla terminating in two
   lobes ................................................................ (14) Epyris, Westwood.
   Scutellum with a transverse furrow or fovea at base; maxilla
   with three lobes .............................................. (13) Mesitius, Spinola.
   (Type C. staphylinoides, Westw.)

26 Antennæ 12-jointed; eyes hairy ............................ (16) Anoxus, Thomson.
   Antennæ 13-jointed.
   Mandibles long, slender, bifid at apex ............... (7) Apenesia, Westw.
   Laelius, Ashmead.
   Mandibles 4- to 6-dentate.
   Scutellum bifoveate at base ............................... (13) Mesitius.
   Scutellum with a transverse grooved line or furrow at
   base .................................................................. (14) Epyris, Westwood.

   Antennæ 13-jointed .......................................... (17) Goniozus, Förster.

A TORTOISE-BEETLE NEW TO QUEBEC.

BY THE REV. THOS. W. FYLES, LEVIS, P. Q.

In July last I noticed that the leaves of the burdocks on the Heights
of Levis were riddled as if from a discharge of small shot. On
examination, I found that the damage to the leaves was caused by
numerous larvae of a species of Cassida. The creatures were there in
strength, each supporting, by means of the forked prolongation of its anal
segment, its "stercoraceous parasol." Towards the end of the month
the grim-looking pupæ were to be seen, bristling round their edges
with white branched spines, and attached to the leaves by a natural
cement. In the present month (August) the beetles have appeared.
They are about eight millimetres in length and five millimetres in breadth.
The elytra and the thoracic shield are pea green and are closely indented,
The body-colour is dark brown, approaching to black. The antennæ are moniliform and somewhat clavate; for part of their length they are pale green and for the rest light brown. The thighs are brown, and the tibiae and tarsi are pale green. The tarsi are four-jointed.

This insect, I take it, is the *Cassida viridis* of Linnaeus, advanced from Europe. It is in such numbers that it is evidently well established—is come to stay; and, as it feeds on the burdock and Canada thistle, nobody, I presume, will object to its advent.

**HYDRŒCIA NELITA, STRECKER.**

*By Henry H. Lyman, Montreal.*

In Supplement No. 1 to his work "Lepidoptera, Rhopaloceres and Heteroceres, Indigenous and Exotic," dated Sept. 15th, 1898, Dr. Herman Strecker described a species under the above name as follows:

"At first glance might be taken for a small *Nitela*, but it is a darker, warmer colour, more towards a rich chestnut. The t. p. is not so conspicuous, and is much more upright, and its course is rather from the costa outwardly oblique than inwardly oblique. One example has the space from the base to t. p. chestnut brown, externally the t. p. is accompanied by a broad, paler ashen shade, beyond which the brown again prevails. In another the whole wing is brown, the t. p. only being discernible on the closest inspection. Beyond what I have mentioned, the differences between this and *Nitela*, excepting size, are not very marked. Expands one inch. Types, two examples from Chicago, Illinois."

When I attended the annual meeting of the A. A. A. S. at Pittsburg, at the end of June and beginning of July last, I took with me, among other things, two of my types of *Gortyna ærata*. When I showed my specimens to Dr. Holland, he immediately expressed the opinion that these two belonged to *Necopina*, showing that he also saw the close resemblance to that species.

When, however, I showed them to Dr. J. B. Smith, he asked me if the flown specimen which Mr. Winn had given to Mr. Bird was of the same species, for if so, the species was *Nelita*, Strecker. I immediately arranged to visit Reading, in order to see the types of Strecker's species, and upon comparing the types of *Ærata* with them, I was forced to the conclusion that Dr. Smith was right.

I greatly regret having created a synonym, but I have sinned in the best of entomological company, and do not think I can be blamed for not having recognized in my beautiful bred specimens the species so inadequately described by Dr. Strecker from a pair of flown dwarfs.