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XXXIX.—Contributions from the New Mexico biological station—XII. On some genera of bees

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Hab. Pampa Aullaga. Alt. 3700 m.

Type. Female. B.M. no. 2. 2. 2. 81. Original number 1642. Killed 21st October, 1901.

The specimen from Sevaruya, a place I fail to identify, but not on the Pampa Aullaga, is rather darker than the Pampa ones, representing an intermediate colour between these and the typical Sahama series.

17. *Marmosa elegans*, Waterh.

2 ♂, 4 ♀. Challapata, 3700 m.

♂ ♀. Sucre, 3000 m.

XXXIX.—*Contributions from the New Mexico Biological Station.*—XII. *On some Genera of Bees.* By T. D. A. COCKERELL and EMERSON ATKINS.

THE family Stelidæ of Ashmead consists of a series of parasitic bees which can hardly be grouped together in a classification based on actual blood-relationship. The subfamily Stelidinae appears to be an offshoot from the Anthidiinae; while it has been suggested that the other subfamily, Cœlioxinae, is similarly related to the Megachilinae. The Cœlioxinae, however, appear to be a composite group, *Cœlioxys* and its allies being close to *Megachile*, while the genera with 4- to 6-jointed maxillary palpi must be referred to quite another series.

Dioxys (Hoplospites) producta, var. *subrubra* (Ckll.).

Labial palpi.—1 * longer than 2; 3 + 4 less than half length of 2.

Maxillary palpi.—Apparently 2-jointed; 1 oval, much longer than broad, 2 minute. There is presumably a basal tubercle, representing the true first joint, so that the palpi are properly 3-jointed.

Galea.—Slender, falciform, with transverse striæ; inner margin ciliate.

Mr. Ashmead states that *Hoplospites* is distinct from *Dioxys*, but no distinctive characters have been pointed out, nor have we found them.

The transverse striæ on the galea are noteworthy, as they do not occur in the supposedly allied genera *Cœlioxys* &c., but do occur in *Heriades* and *Chelostoma*.

* In this paper the figures in the descriptions of the palpi are to be understood to refer to the joints: thus, 1 = first joint.

Heriades truncorum (L.).

Labial palpi.—1 much shorter than 2.

Maxillary palpi 3-jointed.

Chelostoma campanularum (Kirby).

Labial palpi.—1 extremely short, 2 very long; last joint only diverging from the straight line.

Maxillary palpi 3-jointed.

Phileremus mesillæ, Ckll.

Labial palpi.—1 longer than 2; palpi shorter than in *Dioxys productus*; 3 + 4 more than half length of 2.

Tongue very broadly fimbriate, the lateral fimbriæ towards the tip longer than breadth of tongue at that point.

Maxillary palpi 2-jointed; 1 a low broad tubercle, 2 long-oval, rather large. The palpi look as if 1-jointed.

Galea.—Comparatively short and broad, broadly rounded at end, inner margin not ciliate; striæ longitudinal.

The galea is wholly unlike that of *Cælioxyys*, *Megachile*, *Dioxys*, &c., and resembles that of *Epeolus*. It seems likely that this and the *Epeolus*-like outward appearance of the bees are indications of real relationship.

This appears to fall in *Phileremus* as defined by Taschenberg, but it is by no means an *Ammobates*, of which *Phileremus* has been lately regarded a synonym. It accordingly finds no place in Ashmead's tables.

Cælioxyys gilensis, Ckll.

Labial palpi.—1 shorter than 2; 3 + 4 not half length of 2.

Maxillary palpi 3-jointed; 1 a rounded tubercle; 2 broad, subquadrate viewed laterally; 3 rather small but stout.

Galea.—Long-falciform; striæ oblique, decussating; inner margin ciliate. The mouth-parts confirm the view that this genus is closely related to *Megachile*.

Megachile apicalis, Spinola.

Labial palpi.—1 and 2 about equal, very much broadened, each with a row of strong bristles.

Maxillary palpi 3-jointed; 3 much longer than in *Cælioxyys*.

Galea.—Broad and tapering, with a margin on each side of the double rib. The inner area is rather narrow, decussated, and strongly ciliated on the edge; the outer area is broad, plain (not striated), and its edge is not ciliated. The rib bears a row of long bristles and shows some hyaline dots.

This differs from *Cælioxya* in the greatly developed outer area of the galea; but this is only a specific character, as the following cases show:—

M. fortis.—Decussated area much the broadest, plain area very small.

M. fidelis.—Plain area even more reduced.

M. pugnata.—Plain area on apical half a little larger than the decussated, but it is narrow below.

M. manifesta.—Plain area larger than the decussated.

M. exilis.—Plain area very narrow. (This species is peculiar for the maxillary palpi, which are covered with long bristles, and the third joint is remarkably long.)

M. cleomis.—Plain area almost as large as the decussated.

Phileremulus nanus, Ckll.

Labial palpi.—1 long, a little longer than 2 + 3 + 4; 2 short, not very much longer than 3; 3 and 4 similar in character to 2. (Compare with *nomada*.)

Tongue.—Very long and slender, about twice as long as labial palpi. The tongue resembles that of *Allodape*.

Maxillary palpi 5-jointed; 1 broad and flattened; 2 long, cylindrical; 3 broader than 2 or 4; 5 somewhat constricted at middle. Measurements of joints in μ :—(1) 15, (2) 66, (3) 27, (4) 24, (5) 66.

Galea.—Slender, falciform, sepia-colour, with the inner margin of apical half colourless; the sepia portion with minute hyaline dots; inner margin with few minute hairs.

Neolarra pruinosa, Ashm.

Description from material taken at Mesilla Park, N. M., May 7, on flowers of *Dithyrea Wislizenii*.

Labial palpi.—2 longer than in *Phileremulus* and nearly twice as long as 3.

Maxillary palpi 6-jointed; 4 broad at end; 6 very slender, only half as broad as 5. Measurements in μ :—(1) 24, (2) 69, (3) 36, (4) 45, (5) 57, (6) 69.

Neolarra and *Phileremulus* agree nearly with *Allodape* in the mouth-parts. Smith figures, but does not count, a first joint in the maxillary palpus of *Allodape* similar to that of *Phileremulus*; on the other hand, he appears to count the long terminal joint as two. The habits of *Allodape* seem to resemble those of *Phileremulus*.

ASHMEADIELLA.

A. buconis, *A. cactorum*, and *A. bigeloviae* examined. Maxillary palpi 4-jointed. Galea very slender, decussated. In *bucconis* and *cactorum* the first two joints of the labial palpi are very long and about equal; in *cactorum* the third joint is narrowly heart-shaped. In *A. bigeloviae* the first two joints of labial palpi are broadened and the first joint is noticeably longer than the second.

Ashmeadiella appears to be related to *Osmia*, but not to be much allied to *Heriades* or *Chlostoma*.

All the slides which form the basis of this paper were prepared by Mrs. W. P. Cockerell.

APPENDIX. By T. D. A. COCKERELL.

I would propose, in view of the above facts, to split up the Cœlioxinæ* of Ashmead (Tr. Am. Ent. Soc. xxvi. p. 80) into several subfamilies:—

- (1) Cœlioxinæ proper, including *Cœlioxys*, to follow Megachilinæ in the series.
- (2) Dioxinæ, including *Dioxys* (with *Hoploprsites*), position somewhat uncertain. The separation of this from Cœlioxinæ may perhaps be erroneous.
- (3) Philereminæ, including *Philereinus* (sens. Taschenberg), to follow the series of *Epeolus* &c.†
- (4) Allodapinæ, apparently including *Allodape*, *Philereinus*, and *Neolarra*; but I know the first genus only from description.

This leaves numerous genera not accounted for; I do not place them, because I have no specimens, though their position can usually be guessed at.

Dioxys Martii, Ckll., sp. n.

♀.—Length about 7 millim. Black (without any red); pubescence about as in *D. producta subrubra*, the five hair-bands on abdomen very dense and white; legs black; tibial

* The Cœlioxynæ of Dalla-Torre and Friese is even more composite, including all the European parasitic bees except *Psithyrus* and *Stelis*! Ashmead (Tr. Am. Ent. Soc. xxvi. p. 53) has given an excellent criticism of this arrangement, and my only objection to his reforms is that they do not go nearly far enough along the lines he has indicated.

† *Philereinus* and *Epeolus* would form a more natural group than *Epeolus* and *Nomada*.

spurs orange; antennæ formed and coloured as in *subrubra*, the flagellum ferruginous beneath; tegulæ piceous, with a dark ferruginous patch; first recurrent nervure joining *first* submarginal cell a little before its end; thoracic spine &c. as in *subrubra*; abdomen oval, not tapering apically, apical segment not produced. Otherwise about as in *subrubra*.

Hab. Picacho Mountain, Mesilla Valley, New Mexico, March 25, 1900, at flowers of *Sphæralcea Martii*. The plant was also new and was described in 'Botanical Gazette,' July 1901, p. 60.

East Las Vegas, New Mexico, U.S.A.,
Feb. 4, 1902.

BIBLIOGRAPHICAL NOTICES.

A Treatise on Zoology. Edited by E. RAY LANKESTER, M.A., LL D., F.R.S.—Part IV. *The Platyhelminia, Mesozoa, and Nemertini.* By W. BLAXLAND BENHAM, D.Sc. (Lond.), M.A. (Oxon.). London: Adam & Charles Black, 1901.

THE present volume—the fourth in order of the complete series—is by Prof. Benham, who is to be congratulated on having fulfilled a very arduous task in a most successful manner. Singularly unattractive animals, and mostly parasitic in habit, it is not surprising that their study is attempted only by those keenly interested in the advancement of zoological science or in the investigation of the many and often very painful devastating diseases which are inflicted on mankind and the lower animals as a result of this parasitism.

Condensed into a surprisingly small compass, the author has contrived to embody practically everything that is known of these animals; so that this volume will form a source of reference of the highest value alike to the systematist, the morphologist, and the physician.

The historical sections of the various chapters are extremely interesting reading, and bear eloquent testimony to the extreme difficulty which besets the correct interpretation of the structure of these animals and the many pitfalls in the path of the investigator.

The Mesozoa of Van Beneden are very fully dealt with in an appendix to the Platyhelminths, being regarded by the author as degenerate forms of this phylum—a view shared by Whitman and others—and therefore not needing the formation of a special grade to contain them. To this appendix the editor adds a very interesting paragraph on four new species of Orthonectids parasitic in Chaetopods and Nemertines.

The work having been somewhat delayed in the press, a few notes have been added to the chapter on the Nemertines by Mr. R. C. Punnett, of St. Andrews, in order to bring the work completely up