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PSYCHE

TABLES FOR THE SEPARATION OF SOME BEES OF THE GENERA COELIOXYS AND COLLETES.

BY T. D. A. COCKERELL, BOULDER, COLORADO.

American Apidology is greatly indebted to Mr. E. T. Cresson for the careful description of some 540 new species of bees, this count excluding a few which are now known not to be valid, but including the species of Central America and the West Indies. There is, however, one difficulty in using Mr. Cresson's work, and that arises from the absence of tables; in some of the more difficult genera this becomes so serious that the worker is at times discouraged. Two or three weeks work would provide us with tables for the separation of all the Cressonian bees; in fact, I presume that they could be made in less time than that, but nobody has seemed willing to undertake the task. When recently spending a few days in Philadelphia I took occasion to make tables of *Anthophora*, *Colletes*, (males) and *Coelioxys* (females), and the two latter are herewith presented. Some non-Cressonian species which I found in the collection at the Philadelphia Academy are included; particularly Mr. Viereck's *Colletes* from Beulah, N. M., which have never been tabulated.

Colletes Latreille

- | | |
|--|-------------------------|
| Pubescence of thorax above deep orange ferruginous | 1 |
| Pubescence of thorax not brightly colored; males only tabulated | 2 |
| 1. Large; abdomen shining, without definite bands | <i>thoracica</i> Smith. |
| Small; length about 10 mm.; abdomen well banded | <i>azteca</i> Cr. |
| 2. Malar space exceedingly long, at least twice as long as broad; pubescence above strongly ochraceous; legs dark red (Mass.) | <i>valida</i> Cr. |
| Malar space not exceedingly long, but as long as broad, at least, or almost so (hardly so in the M. N. " <i>consors</i> ") | 3 |
| Malar space short, obviously broader than long | 7 |
| 3. The abundant hair of face clear white | 4 |
| Hair of face ochery or greyish-white; thorax above with some or many long plumose fuscous hairs; size larger than in the group following: flagellum all dark | 5 |
| Hair of face and thorax above strongly yellowish or fulvous | 6 |

4. Larger: flagellum not red beneath; hair of thorax above ochraceous; stigma dark brown; second submarginal cell broader (La Jolla, Calif.)

gaudialis Ckll

Smaller: flagellum red beneath; hair of thorax above white; stigma ferruginous; second submarginal cell narrower. (Las Cruces, N. M.)

prosopidis Ckll.

5. Malar space a little longer than broad; mesothorax with much dark hair; abdomen comparatively narrow and parallel-sided *compacta* Cr

Malar space a little broader than long; mesothorax with little dark hair; abdomen broader; otherwise much like the last (Hanover, N. H.)

inaequalis Say.

Like *compacta*, with the same transverse ridges on lower part of area of metathorax; but differing from *compacta* by its shorter malar space and shorter fourth antennal joint; differing from *inaequalis* by its narrower abdomen, smaller size, and much less yellow pubescence of thorax

skinneri Viereck.

6. Basal (lower) margin of second submarginal cell about as long as basal margin of third: tegulae black. (Washington State) *kincaidii* Ckll

Basal (lower) margin of second submarginal cell much longer than that of third; tegulae light rufous. (New Mexico) . sp. incert. (placed in series of *consors*, but distinct from the type of that species).

7. Hair of face and thorax above all pure white, with no dark intermixed: malar space about twice as broad as long: flagellum all dark.

gypsicolens Ckll.

Hair of face not white; or if so, that of thorax partly dark. . . . 8

8. Hair of thorax above decidedly yellow or fulvous (very pale ochraceous in *zonatus*) 9

Hair of thorax above greyish or whitish, or partly black 15

9. Hair of thorax with long fuscous hairs intermixed; abdomen strongly punctured; second submarginal cell very broad (Colorado)

simulans Cr.

Hair of thorax without fuscous hairs intermixed; flagellum at most very faintly reddish beneath 10

10. Tegulae light reddish, size small 11

Tegulae dark 12

11. Hind tarsi dark like their tibiae; abdomen less hairy (Illinois)

americana Cr.

of thorax above ochraceous;
cell broader (La Jolla, Calif.)

gaudialis Ckll

thorax above white; stigma
narrower. (Las Cruces, N. M.)

prosopidis Ckll.

mesothorax with much dark
parallel-sided *compacta* Cr

mesothorax with little dark
like the last (Hanover, N. H.)

inaequalis Say.

ridges on lower part of area of
by its shorter malar space and
from *inaequalis* by its narrower
yellow pubescence of thorax

skinneri Viereck.

mal cell about as long as basal
(ngton State) *kincaidii* Ckll

mal cell much longer than that
(Mexico) . sp. incert. (placed
type of that species).

white, with no dark intermixed;
flagellum all dark.

gypsicolens Ckll.

thorax partly dark. 8
fulvous (very pale ochraceous

. 9
partly black 15

intermixed; abdomen strongly
broad (Colorado)

simulans Cr.

mixed; flagellum at most very
. 10

. 11
. 12

less hairy (Illinois)

americana Cr.

Hind tarsi red, their tibiae red at base and apex; abdomen more
hairy *anne* Ckll.

12. Smaller; first abdominal segment with strong punctures; hair of face
strongly yellowish; malar space extremely short (Georgia)

mandibularis Smith.

Larger; first abdominal segment much more feebly punctured . . . 13

13. First two abdominal segments extremely shiny, and not very hairy;
punctures of scutellum extremely large (Georgia). . . . *distincta* Cr.

First two abdominal segments not so shiny, and quite hairy . . . 14

14. Hair of thorax above fulvous; bands of abdomen ochraceous; second
submarginal cell narrower, the recurrent nervure entering near end of
first third. (Colorado.) *consors* Cr.

Hair of thorax above very pale; bands of abdomen white; second sub-
marginal cell broader, the recurrent nervure entering a little basad of
its middle *zonatus* Viereck.

15. Hair of thorax above without any, or any conspicuous admixture of
dark hair; small species; stigma and nervures dark 16

Hair of thorax above with very conspicuous black hairs, that on the
scutellum mainly or all dark 17

16. Base of metathorax more strongly sculptured, and with a transverse
ridge; abdomen narrower; hind spurs light reddish . . . *spureus* Viereck.

Base of metathorax less strongly sculptured, and without a transverse
ridge; hind spurs dark *paniscus* Viereck.

17. Much larger; abdomen with extremely large and strong punctures

gilensis Ckll.

Much smaller; abdomen with fine delicate punctures (Cuba)

submarginata Cr.

Coelioxys Latreille. (females).

Abdomen entirely red *abdominalis* Guér.

Abdomen with the first three segments red, the last three black

slossoni Viereck.

Abdomen black, the first segment sometimes dark red 1

1. Middle of scutellum smooth, shining and impunctate (only partially so
in *totonaca*, *uhleri* and *germana*) 2

Middle of scutellum densely punctured like the rest (with sparse
punctures, or a small shiny space, in *totonaca*, *uhleri*, and *germana*) . . . 11

2. Tegulae dark 3

Tegulae red 5

3. Abdomen not obviously banded; wings very dark fuliginous; apical dorsal segment subtruncate and strongly keeled. . . . *dolichos* Fox.
Abdomen obviously banded; wings not so dark, though apical half of anterior wings is fuliginous 4
4. Last ventral segment extending far beyond last dorsal; face with much white hair (Cuba) *uhleri* Cr.
Last ventral extending only a little beyond last dorsal; face without white hair (Cuba) *producta* Cr.
5. Thorax mainly red; last ventral segment extending far beyond the last dorsal; legs red; sides of abdomen largely red; clypeus deeply emarginate, its anterior margin like a broad W (Mexico) *azteca* Cr.
Thorax not red 6
6. Last ventral segment extending very far beyond last dorsal; sides of first abdominal segment red; legs red 7
Last ventral segment extending only a moderate or short distance beyond last dorsal; or if rather far (*germana*), sides of first abdominal segment not red 8
7. Scutellar teeth short; median process of scutellum very broad and short (Mexico) *otomita* Cr.
Scutellar teeth very long; median process of scutellum long (Mexico) *tepaneca* Cr.
8. Scutellar teeth extremely short; pubescent markings of thorax above orange-fulvous (Jamaica) *foxii* Viereck
Scutellar teeth fairly or very long; legs red 9
9. Hair of sides of face yellowish; last ventral segment only slightly surpassing last dorsal; face between antennæ with a large elevated ridge (Mexico) *tolteca* Cr.
Hair of sides of face white; last ventral segment surpassing last dorsal by some distance; scutellar teeth long 10
10. Sides of first abdominal segment, and venter, red (Mexico) *totonaca* Cr.
Sides of first abdominal segment, and venter, only faintly stained with red (Illinois) *germana* Cr.
11. Tegulæ bright red 12
Tegulæ dark, black to dark reddish 21
12. Last ventral segment very broad 13
Last ventral segment rather or quite narrow 14
13. Last ventral segment fringed with short black hair, and without an apical projection (Dallas, Texas) *texana* Cr.

14.

15. I

16. S

17. I

18. I

19. L

20. A

21. I

22. I

23. S

24. I

25. I

very dark fuliginous; apical
 eled. *dolichos* Fox.
 dark, though apical half of
 4
 last dorsal; face with much
 *uhleri* Cr.
 and last dorsal; face without
 *producta* Cr.
 extending far beyond the last
 red; clypeus deeply emargi-
 (Mexico) *azteca* Cr.
 6
 beyond last dorsal; sides of
 7
 moderate or short distance
 (a), sides of first abdominal
 8
 ellum very broad and short
 *otomita* Cr.
 scutellum long (Mexico)
 *tepaneca* Cr.
 markings of thorax above
 *foxii* Viereck
 9
 l segment only slightly sur-
 with a large elevated ridge
 *tolteca* Cr.
 ment surpassing last dorsal
 10
 red (Mexico) *totonaca* Cr.
 er, only faintly stained with
 *germana* Cr.
 12
 21
 13
 14
 black hair, and without an
 *texana* Cr.

- Last ventral segment not so fringed, and with a large apical projection
 (Kansas) *deplanata* Cr.
14. Last ventral segment with a strong fringe of black hair; first abdominal
 segment red; middle of scutellum with an impunctate line (Mexico)
 *chichimeca* Cr.
- Last ventral segment not so fringed 15
15. Last ventral segment very narrow, not notched at sides (Mexico)
 *zapoteca* Cr.
- Last ventral segment notched at sides, legs red (dark in *octodentata*) 16
16. Scutellum with a rather large median projection 17
 Scutellum without any projection 18
17. Lateral teeth of scutellum slender (Illinois) *germana* Cr.
 Lateral teeth of scutellum broad (Mexico) *totonaca* Cr.
18. Last dorsal segment narrowed and strongly keeled apically, looking like
 a chicken's beak; size larger than *octodentata* or *altilis* (Texas) *insita* Cr.
 Last dorsal not so 19
19. Larger; last dorsal long (Mexico) *mexicana* Cr.
 Smaller; last dorsal shorter 20
20. Abdominal hair-bands white *octodentata* Say, Cresson
 Abdominal hair-bands stained with yellowish *altilis* Cr.
 (Robertson calls *octodentata* "Say" of Cresson, *C. sayi* rob., and
 regards *altilis* as the real *octodentata*. However, he admits that *sayi* was
 included in *octodentata* by Say.)
21. Last ventral ending in a very long spine, and with a very long fringe of
 black hair (Cuba) *uhlerii* Cr.
 Last ventral not so ending 22
22. Last ventral broad, fringed with hair, and not notched at the sides 23
 Last ventral notched at sides 24
23. Smaller; last ventral with a very small apical point or spine (Pa.)
 *modesta* Smith.
- Larger; last ventral without such a point (Colorado) *alternata* Say.
24. Last ventral very broad, abruptly narrowed, the apical process forming
 about an equilateral triangle; scutellum with a median tubercle
 (Colorado) *aperta* Cr.
 Last ventral not so; scutellum without a median tubercle, last dorsal
 not curved upwards at end 25
25. Last dorsal, seen from above, abruptly narrowed 26
 Last dorsal, seen from above, not abruptly narrowed 27

