Contributions from the New Mexico Biological Station. VII. Observations on Bees, with Descriptions of New Genera and Species

T. D. A. Cockerell
New Mexico Agricultural Experiment Station

Wilmatte Porter
New Mexico Agricultural Experiment Station

Follow this and additional works at: https://digitalcommons.usu.edu/bee_lab_ca

Part of the Entomology Commons

Recommended Citation

This Article is brought to you for free and open access by the Bee Lab at DigitalCommons@USU. It has been accepted for inclusion in Ca by an authorized administrator of DigitalCommons@USU. For more information, please contact digitalcommons@usu.edu.
MEGACHILE, Latr.

Cresson, Saunders, and Bingham state that the maxillary palpi are 2-jointed, but Ashmead calls them 4-jointed. We have examined a great many species, including two from Europe, and find in every case three joints to the maxillary palpi.

**APIS, Linné.**

The maxillary palpi of *Apis* are said by authors to be 1-jointed, but in the honey-bee we find two joints fairly well differentiated.

**BOMBUS, Fabr.**

Various species examined show 2-jointed maxillary palpi, the basal joint stout, the other slender and cylindrical, *B. Kincaidii*, Ckll., has the maxillary palpi 3-jointed, with two cylindrical joints instead of one.
Ashmead says of *Croisia*, "labial palpi 2-jointed, maxillary palpi 5-jointed." Smith says the maxillary palpi are 2-jointed, labial palpi 5-jointed. Bingham agrees with Smith. In *Croisia ramosa*, Lep., we find the maxillary palpi 2-jointed, the first joint short and globose, but the labial palpi are only 4-jointed, the suture figured by Bingham and Smith between the second and third long joints being non-existent. The true third joint (i.e. the first of the small terminal ones) is very stout.

**Ashmeadiella**, Ckll.

In *A. bigelowi* (Ckll.) the maxillary palpi are 4-jointed; joint 1 short and broad, 2 longest, 3 and 4 about equal.

**Alcidamea**, Cresson.

According to Cresson the maxillary palpi of this genus are 4-jointed, but in *Alcidamea simplex* (Cress.), from Kansas, we find the maxillary palpi with five very distinct joints, 1 and 2 short, 3 long and cylindrical, 4 and 5 also cylindrical, 4 a good deal shorter than 3, 5 shorter still and perhaps a little shorter than 1 or 2.

**Ceratina**, Latr.

The type of this genus is *C. albilabris*, Fabricius, a synonym of *C. cucurbitina*, Rossi. This insect is black, and has 5-jointed maxillary palpi, as stated by Friese and confirmed by us in specimens received from him. Taschenberg and Friese state that the maxillary palpi of *Ceratina* have from 4 to 6 joints; F. Smith says there are 6 joints, the three basal ones about equal, the three apical minute. Ashmead has recently (Tr. Am. Ent. Soc. 1890, p. 69) regarded the species with 6-jointed maxillary palpi as typical *Ceratina*, and has proposed a new genus, *Zaodontomerus* (printed *Zadontomerus*), but corrected by the author in my copy, for those with the maxillary palpi 4-jointed.

We have examined a number of species, and find three with 5-jointed maxillary palpi, seven with 6 joints, and none with 4. Moreover, a specimen of *C. tejonensis*, the type of *Zaodontomerus*, has 6-jointed maxillary palpi. This example of *tejonensis* is an Illinois one, received from Mr. Robertson, and we believe it is correctly identified. It seems not impossible that the records of *Ceratina* with 4-jointed maxillary palpi are based on broken specimens, as we have found that the loss of one or two joints of a palpus is often very difficult to detect without the use of a high power of the compound microscope.

The species with 5-jointed maxillary palpi are very diverse among themselves, as follows:

1. Joint 4 about equal to 5 and not greatly shorter than 3; fourth joint of labial palpus narrow and cylindrical; insect black; apex of abdomen (♂) truncate *cucurbitina*, Rossi. (Europe.)

2. Joint 4 conspicuously shorter than 3 or 5.

(a) Joint 5 very narrow, only about half width of 3; fourth joint of labial palpus broadly truncate at end; insect with the thorax green, abdomen crimson *amabilis*, Ckll. (Tropical Mexico.)

(b) Joint 5 nearly as broad as 3; insect black, apex of ♀ abdomen truncate *arizonensis*, Ckll. (Arizona.)

These will stand as typical *Ceratina*, though perhaps *amabilis* (with *eximia*, Sm.) might be separated subgenerically. The series will also doubtless be found to include *nigra*, Handl., *bispinosa*, Handl., *nitidula*, Mor., and *parula*, Sm.

The species with 6-jointed maxillary palpi separate thus:

(A) Black, with yellow markings; joint 4 of maxillary palpi about equal to 5; *hieroglyphica*, Smith. (India, China.)

(B) Blue or green.

1. Apex of ♀ abdomen moderately broad, rounded, with a sharp tooth on each side; insect very bright blue or green *viridissima*, D. T. (India, Burma.)

2. No lateral teeth at apex of abdomen; insect dark green or blue.

(a) Apical portion of ♀ abdomen broader than long.

(i) Apical portion very broad; hind femora of ♀ triangular *tejonensis*, Cresson. (U.S.)

(ii) Apical portion not so broad; hind femora of ♀ normal *dupla*, Say, (U.S.)

(b) Apical portion of ♀ abdomen narrow or pointed.

(i) Hind femora of ♀ triangular; second submarginal cell subtriangular.

(a) ♀ with a light mark on clypeus *nanula*, Ckll. (New Mexico.)

(b) ♀ with clypeus dark *submaritima*, Ckll. (Washington.)

(ii) Hind femora of ♀ normal; second submarginal cell subquadrate; ♀ with clypeus dark *cyanea*, Kirby. (Europe.)

Here are three distinct series—the first consisting of the
Indian and Chinese *hieroglyphica* (with *Morawitzii* and *flavipes*), the second of the Indian *virdissima*, and the third of the ordinary dark green or blue species of Europe and North America.

*C. hieroglyphica* may be taken as the type of a new subgenus, *Ceratinidia*. Our specimen is from the Khasia Hills, India, sent by Mr. Sladen. The second submarginal cell is less narrowed above than in typical *Ceratina* (cucurbitina); and the first recurrent nervure, instead of joining the second submarginal cell at its extreme apex, joins it at about the end of its second third.

*C. virdissima* has the fourth joint of the maxillary palpus unusually short; the venation resembles that of *Ceratina*. It is possible that this insect will fall into *Pithitis*, Klug, which was based on the Javan *C. smaragdula*, Fabr., a species we do not possess.

The remaining species form a fairly compact group, not well separable into subgenera. For this group no subgeneric name has been proposed, unless it may be possible to apply *Zaodontum* (whether true *tejennisi* or not) in reality 6-jointed maxillary palpi.

The maxillary palpi in this group afford fairly good specific characters, thus:—

*C. cyanea* has joint 3 only about half as long as 2 (2 about 150, 3 about 70 μ); 4 and 5 are equal, both short.

*C. tejennisi* (Illinois) has joint 4 only about half as long as 6; 3 nearly as long as 2, but hardly as long as 6.

*C. nanula* has joint 3 much shorter than 2.


We have before us a ♀ type of *D. Coguitletti*, Ashm., kindly sent by Mr. Ashmead. The clypeus is yellow, but the venation is that of *Exomalopsis*, the second submarginal cell presenting no tangible difference. The maxillary palpi are slender and 6-jointed, joint 4 longest, 1 and 5 shortest and about equal. The mandibles are yellow without and the flagellum is orange beneath, but the oblique truncation of the last joint is black. The specimen is from San Diego Co., California.

This insect is manifestly congenereic with *Exomalopsis* (*Anthophorula*) *compactulus*, Ckll., concerning which see Ann. & Mag. Nat. Hist., Dec. 1898, p. 451. Indeed the two are so close together that they might be taken for the same species without very minute examination. In *E. compactulus* the fourth joint of the maxillary palpus is only about as long as the third, and the sixth is not much longer than the fifth. The first abdominal segment is much more coarsely and strongly punctured in *compactulus* than in *Coguitletti*, and the third transverso-cubital nervure is more bent.

Mr. Ashmead has referred *Anthophorula* to *Eucera*, assuming that the original specimen, with two submarginal cells, is normal. We cannot accept this conclusion, and as our specimens with three submarginals are congenereic with the type of *Diadasiella*, we hold this name to be a synonym of *Anthophorula*. The mouth-parts of *Anthophorula* are, however, practically as in *Exomalopsis*, and it seems that the group with a yellow clypeus in the male has at best only subgeneric value.

**Xenoglossodes**, Ashm.

We have before us three species of this genus, separable as follows:—

(A) Second joint of maxillary palpus considerably longer than third; fifth very minute; pubescence of abdomen white; wings very short, nervures fulvous ............... *X. alba* (Cresson).

(B) Second joint of maxillary palpus shorter or not longer than the third; fifth not so minute; pubescence of abdomen pale ochreous.

(1) Larger, flagellum of ♀ black .............. *X. imitatrix*, sp. n.

(2) Smaller, flagellum of ♀ orange fulvous beneath ............... *X. ericarpi* (Ckll.).

*X. ericarpi* was described as an *Exomalopsis*, but it belongs here. Mr. Ashmead, without examining the mouth-parts, referred it to *Tetraloniella* provisionally, since it agreed fairly well with that genus in venation and also in having the clypeus anteriorly margined with yellow. We have no material of *Tetraloniella* for comparison.

Our material of *X. alba* (♀ ♀) is from Texas (Belfrage), and was kindly sent by Mr. Ashmead. The description of the new species follows:—

**Xenoglossodes imitatrix**, sp. n.

♀.—Length about 12 millim.

Just like the male of *Enteclmia grisella* except in the following points:—Face broader, with the vertex flattened as viewed in front (in the *Enteclmia* it is rounded); sides of
vertex more or less roughened; punctures of thorax by no means so large or strong; tegulae smaller, without any reddish tint; costal and subcostal nervures separate; marginal cell smaller and blunter; first submarginal considerably smaller, third more narrowed towards the marginal; transverso-medial nervure of hind wings very oblique (in the Entechnia it is very little oblique); hind femora very short and not swollen; spurs dull white; hind tibiae and tarsi with a rather abundant scopum, hair on inner side of basal joint of hind tarsi pale ferruginous; claws much smaller; abdomen whiter, without bands. Eyes blue-grey. Mandibles blunt, simple. Clypeus, labrum, and mandibles entirely dark.

Blades of maxillae somewhat pointed; maxillary palpi 5-jointed; basal joint club-shaped, about 120 µ across at the base and 50 µ at the apex, 220 µ long; second joint about 40 µ wide and 160 long; third 180 µ long; fourth almost square in outline, 30 µ; fifth 20 µ wide and 30 long. Labial palpi with the first joint about 1000 µ, second 500, third 80, fourth 80. Paraglossae 1700 µ; tongue 1780 µ.

♂.—Length 10 millim.

Antennae long, reaching to middle of first segment of abdomen, somewhat crenulated, entirely black; flagellum without keels; clypeus and labrum white; mandibles with a white spot at base; posterior femora not swollen; abdomen sub-fasciate as in the male Entechnia grisella. The male of X. albota differs at once from this by having the flagellum ferruginous beneath and the face-marks quite yellow instead of creamy white.

Hab. Las Vegas, New Mexico, Aug. 8 (A. Garlick). Others taken subsequently by W. Porter. All were found at the flowers of Sphaeralcea lobata, Wooton.

Ashmead says of Xenoglossodes that the last two joints of the maxillary palpus united are scarcely longer than the third; we find them not so long.

ENTECHNIA, Patton.

A. Mesothorax with an angular band of black hair; scutellum with black hair.
   (1) E. taurea (Say). Illinois to Georgia.
   (2) E. fulifrons (Smith). Texas to South America.
B. Pubescence of thorax dense, entirely pale ochreous.
   a. Abdomen with distinct bands.
      (3) E. dakotensis, sp. n. Dakota.
   b. Abdomen uniformly covered with a velvety pile.
      (4) E. grisella, sp. n. New Mexico.

Entechnia grisella, sp. n.

♂.—Pubescence pale yellowish grey, short and dense, especially on the abdomen, where it resembles velvet. Antennae short, about 3½ millim. long; first joint of flagellum about three times as long as second; face wholly dark, facial quadrangle somewhat longer than broad; ocelli large, in a curve; vertex punctured behind the ocelli, smooth and shining at the sides; clypeus and labrum well punctured, the latter large, quadrate; mesothorax and scutellum with large close punctures; tegulae rather large, brownish testaceous; wings clear, nervures dark brown; costal and subcostal nervures united by chitin, forming a very thick costal margin; stigma minute, little developed; marginal cell lanceolate, the apex away from the costa; first submarginal cell only a little longer than third; second shortest, a little narrowed above, receiving the first recurrent nervure near the end; third narrowed about half to marginal, receiving the second recurrent nervure near its end; median and submedian cells practically equal on the externo-median nervure. Legs black, with short pubescence; claws deeply cleft, pulvillus large; hind femora swollen basally; spurs black; basal joint of hind tarsi long and slender, gently curved; abdomen with the pubescence on hind margins of segments 2 to 4 whiter than the rest, producing the effect of bands.

Length about 11 millim.

Hab. La Cueva, Gallinas River, S. of Las Vegas, New Mexico, Aug. 6, 1899 (W. Porter).

The first joint of the labial palpus is much less than half the length of the second, and the first joint of the maxillary palpus is conspicuously longer than the second.

Entechnia dakotensis, sp. n.

♀.—Length 12 millim.

Similar to E. grisella, but broader, with the abdominal pubescence scanty enough to give the effect of dust on a black surface, except for the three very distinct white bands on the hind margins of segments 2 to 4. Apex of abdomen with dark fuscous hair; ventral segments fringed with dark hair; hind tibiae and basal joint of tarsus with a long loose scopum of brown-black plumose hair. Flagellum brownish towards the end.

Hab. Hot Springs, Dakota (L. Bruner, no. 22).

It is just possible that E. dakotensis is the female of E. grisella, but the wide difference of locality and the conspicuous
difference in the ornamentation of the abdomen make this seem improbable. We wrote to Prof. Bruner for further information about *E. dakotensis*, and he replies:—“The *Entechnia* was represented in my collection by three female specimens. The young man who collected these said that he might have taken hundreds of them had he known that they were of any particular value, since the bank was full of them.”

Comparing *E. griseella* with the published accounts of *Entechnia*, we thought it seemed generically distinct; but on comparing specimens of the several species, we found them structurally identical within generic limits. We find only five joints to the maxillary palpi; but the first joint, which is very long, is slightly constricted at the middle, and on this account was taken by Patton for two equal joints. The small apical joints are constructed much in *Xenoglossodes*. As regards the mouth-parts *Entechnia* is to *Xenoglossodes* somewhat as *Eulema* is to *Bombus*.

**SYNHALONIA, Patton.**

Ashmead says of typical *Synhalonia*, “abdomen in female black, not fasciate.” This would apply to *S. atriventris* (Smith), which, however, is not mentioned by Patton in his original account of the genus. The type of *Synhalonia* is *S. fulvitarsis* (Cresson), which in the female has a more or less distinct pale band on the second abdominal segment. The differences in the venation between *Synhalonia* and *Eusynhalonia*, Ashm., seem unsatisfactory, and at most of specific value. In view of these facts it is probable that *Eusynhalonia* cannot be maintained.

*Synhalonia crenulaticornis* (Melissodes crenulaticornis, Ckll., Ann. & Mag. Nat. Hist., Dec. 1898, p. 454) is peculiar in having the first joint of the labial palpi relatively short, not twice the length of the remaining three together, as it is in *S. frater* and *atriventris*.

**OXEA, Klug.**

Mr. Ashmead has kindly sent us a male *O. flavescens*, Klug, collected in April at Chiapa, Brazil. We find the maxillary palpi to be absent, as stated by authors; and it becomes clear that *O. gloriaza* (Fox), which has 6-jointed maxillary palpi, must fall in another genus, which we propose to call *Protoxea*. The two genera are separable thus:

1. Apical plate of abdomen subtruncated, with rounded corners; tongue short, broad at base, filiform at apex.

2. Apical plate of abdomen bispinose; tongue much longer and narrower, more than twice the length of the other three together; maxillary palpi wanting.

**MEGACILISSA, Smith.**

We have before us an excellent series of *M. Yarrowi*, Cresson, collected by Prof. C. H. T. Townsend at La Cueva, Organ Mts., New Mexico, alt. 5300 feet, Sept. 5, at flowers of *Datura meteloides* before sunrise. Two specimens were taken Sept. 4, also before sunrise, at flowers of *Lippia Wrightii*. The early flight of this bee, from 5.15 to 6.15 A.M., as observed by Prof. Townsend, is very interesting.

Except that the scopa on the hind legs is white instead of dull brown, *M. Yarrowi* exactly agrees with the description of *M. superba*, Smith, the type of *Megacilissa*. It is indeed possible that the two are one species, but at all events they
must be congeneric. The second submarginal cell is sub-
triangular and about half the size of the third.
It seems questionable whether *Megacilissa* can be separated
from *Caspophilus*, Spinola, which has two years priority
over it; but it may be that the species with green abdomens,
referred by Friese to *Megacilissa*, should be generically sepa-
rated. In any event, typical *Megacilissa* is the form with a
black, white-banded abdomen, and not the green type, as
Friese has it. We do not propose a name for the latter
group, having no specimens.

**Calliopsis**, Smith.

*Calliopsis teucrii*, sp. n., Ckll.

♀.—Length 6½ millim.
Black; appearance of *C. andreniformis*, with the same
abdominal hair-bands, which are pale ochreous. Clypeus
entirely black, the only pale marks on face are a couple of
round or subquadrate white spots contiguous with the orbital
margins at the level of the supraclypeal area. Mandibles
rufescent about the middle; flagellum yellowish beneath
towards the end; scape strongly and densely punctured;
front below ocelli very closely punctured; clypeus with large
punctures on a shining surface; tegulae shining piceous;
mesothorax and scutellum very closely punctured; abdomen
with a minutely roughened sericeous surface; spot on tubercles
and an interrupted stripe on hind border of prothorax; white;
legs dark, with the tarsi pale fuscous, and the anterior
and middle knees with a small white spot; wings rather smoky;
marginal cell obliquely truncate; second submarginal narrowed about one half to marginal, and receiv-
ing the recurrent nervures at about the end of the first and
beginning of the last fifths; legs black, even to the tarsi, with
pale pubescence; middle femora curiously flattened and
broadened, the lower knife-like edge having a very short
brush of orange-fulvous hairs; basal joint of middle tarsi also
flat and broad; abdomen strongly but not densely punctured,
with the usual thin hair-bands; hair at apex pale.

♂.—About 7 millim. long. Face more hairy; white
markings more conspicuous; clypeus creamy white, with a
black mark on each side of its hind margin; lateral face-
marks rather more produced along the orbital margin than in
the female; basal part of mandibles mostly white; anterior
knees and anterior tibiae in front yellowish; spurs whitish;
tarsi sordid whitish, the small joints brown, quite dark on the
middle and hind tarsi.

**Hab.** Las Vegas, N. M., Aug. 9, several at owen’s o

*Calliopsis chlorops*, sp. n., Ckll.

♂.—Length 5½–6½ millim.
Black with grey and white pubescence. Head transversely
suboval; eyes prominent, in life yellowish green; face and
cheeks with fairly abundant white hair, not dense enough to
hide the surface; face-markings pale yellow, including the
clypeus, lateral marks, supraclypeal mark, dog-ear marks,
labrum, and mandibles except their reddish tips; the face
would be all yellow below the level of the antennae, except
the rather obscure clypeal dot, but for the fact that below
each dog-ear mark is a small triangle of black, bounded by
the clypeus, lateral mark, and dog-ear mark; lateral marks
rapidly narrowing from the upper margin of the dog-ear
marks to an acute point on the orbital margin less than the
length of the scape above the level of the antennal sockets;

flagellum brown beneath, except at the extreme base; vertex somewhat roughened; mesothorax dull, densely and strongly punctured; base of metathorax evenly and delicately longitudinally ridged; pubescence of thorax grey above, white on pleura and sides of metathorax; tubercles dark; prothorax with a small yellow line on each side of the hind margin; femora black, with yellow knees; tibio yellow in front and black behind; basal joints of tarsi cream-colour, of hind tarsi blackened behind; small joints brown; tegula brownish hyaline; wings clear, nervures and stigma dark brown; stigma almost obsolete; marginal cell appendiculate; second submarginal long, narrowed about half to marginal, receiving the first recurrent nervure about the end of its basal fourth, and the second about the beginning of its apical sixth; abdomen very closely punctured, the hind margins of the segments pallid, with very thin hair-bands; hair at apex white.

_Hab._ Las Vegas, N. M., at flowers of _Grindelia squarrosa_, Aug. 9 and 14 (W. Porter); also one at flowers of _Verbena enceioides_, Aug. 12 (Ckll.).

**Perdita**, Smith.

Mr. Ashmead, in dividing the old genus _Perdita_, has used the relative lengths of the joints of the labial palpi for diagnostic purposes. In some groups the first joint is twice the length of the other three together, or even more than twice, while in others it is not nearly so long. In the following table we give the measurements in _μ_ of a number of labial palpi; first the length of the first joint, then that of the other three together, then the latter in percentage of the former:

<table>
<thead>
<tr>
<th>Species</th>
<th>First joint</th>
<th>Last three</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>P. (Tetraperdita) sexmaculata</em>, Ckll.</td>
<td>630</td>
<td>550</td>
</tr>
<tr>
<td><em>P. sphaeroleca</em>, Ckll.</td>
<td>650</td>
<td>520</td>
</tr>
<tr>
<td><em>P. (Cockerella) verbesina</em>, Ckll.</td>
<td>600</td>
<td>500-370</td>
</tr>
<tr>
<td><em>P. (Cockerella) albovittata</em>, Ckll.</td>
<td>1500</td>
<td>1050</td>
</tr>
<tr>
<td><em>P. salciis</em>, Ckll.</td>
<td>350</td>
<td>300</td>
</tr>
<tr>
<td><em>P. affinis</em>, Cress.</td>
<td>760</td>
<td>430</td>
</tr>
<tr>
<td><em>P. sidon</em>, Ckll.</td>
<td>360</td>
<td>200</td>
</tr>
<tr>
<td><em>P. (Perdita) larrea</em>, Ckll.</td>
<td>420</td>
<td>240</td>
</tr>
<tr>
<td><em>P. Tosemendi</em>, Ckll.</td>
<td>800</td>
<td>470</td>
</tr>
<tr>
<td><em>P. rhodura</em>, Ckll.</td>
<td>500</td>
<td>300</td>
</tr>
<tr>
<td><em>P. Wootona</em>, Ckll.</td>
<td>580</td>
<td>380</td>
</tr>
<tr>
<td><em>P. litreo</em>, Ckll.</td>
<td>450</td>
<td>310</td>
</tr>
<tr>
<td><em>P. phacelia</em>, Ckll.</td>
<td>300</td>
<td>250</td>
</tr>
</tbody>
</table>

_Perdita sphaeroleca_ cannot be a _Cockerella_, as the claws are cleft in both sexes. _Neoperdita_, Ashm., was proposed for just such forms, judging from the diagnosis; but unfortunately _Perdita zebra_ having very differently formed labial palpi, is given as the type species.

**Tetraperdita**, subgen. nov., is proposed for _P. albovittata_, which has 5-jointed maxillary palpi, these palpi in the ordinary species having 6 joints. The claws are all cleft in the male, simple in the female. The face-markings are the same in both sexes.

**Tetraperdita**, subgen. nov., is proposed for _P. sexmaculata_, which has 4-jointed maxillary palpi, and the first joint of the labial palpi excessively long. Claws simple in the female, cleft in the male. Mandibles simple. Abdomen dark, with light spots.

_Geoperdita_, subgen. nov., is proposed for _P. chamæsaracha_, Ckll., which has the labial palpi only 3-jointed, i.e. with one long joint and two small ones; while the maxillary palpi are quite rudimentary, with 1 to 3 vaguely indicated joints.

_Perditella_, Ckll., is a subgenus based on _P. larrea_, with its curious venation and toothed cheeks. The maxillary palpi are slender and 6-jointed. _P. marcialis_ also belongs to this subgenus.

_Cockerella_, Ashm., may be held to include _P. albipennis_, _P. sparsa_, _P. verbescina_, _P. leptachidis_, and _P. utakensis_. _Philoxanthus_, Ashm., seems hardly separable from _Cockerella_.

_Perdita_, s. str., can never be certainly determined until new specimens are obtained; Smith's unique type, with the palpi lost, is cited vaguely from "North America." _P. semiroceae_ resembles Smith's _P. halictoides_ in its style of coloration, and may provisionally be regarded as typical; but there are other species, e. g. _P. chamæsaracha_, which are also similarly coloured, but differ greatly in the mouth-parts.

A new description of _P. sexmaculata_ is offered, the original description, from the female only, being rather too brief:—

28*
Perdita (Tetraperdita) sexmaculata, Ckll.

♀.—About 4½ millim. long.
Very shiny, with thin white pubescence on the cheeks, pleura, legs, and end of abdomen; fairly abundant pubescence on the legs, and widely scattered white hairs on the rest of the body; head and thorax dark green; mesothorax almost black; metathorax granular, dark bluish; face yellow, yellow extending above the antennae half the length of the scape, but the dark colour sending angular projections into the yellow as far as the sockets of the antennae; a yellow line (half the length of the scape) runs up the anterior orbital margin a short distance above the general level of the yellow; a yellow band extending halfway up on the posterior orbital margins; scape yellow, tipped at both ends with light orange; flagellum light orange, marked with black above, near base; mandibles with light brown tips and margins; frontal fovea elongate-oval; cheeks unarmed; tubercles yellow; legs yellow, under side of hind femora black, the tarsi becoming brownish; abdomen above shining black, with a pale cream spot at each side of segments 2, 3, 4, and 5, those on 5 smaller and more nearly circular than those on 2, 3, and 4; wings clear and iridescent.

Redescribed from numerous specimens taken at Las Vegas, N. M., at flowers of *Chamaesaracha coronopus*, during the first half of August. The male, in the table of *Perdita* in Bull. Denison Lab. 1898, runs to *P. salicis*, but has not a banded abdomen. *Perdita punctata* (P. sexmaculata, var. punctata, Ckll. Proc. Philad. Acad. 1896, p. 71) is a perfectly distinct species.

MACROTEROPSIS, Ashm.

Ashmead says of this, "palpi as in *Macrotera*, Smith." Examining *M. latior* (*Perdita latior*, Ckll.) we find the labial palpi 4-jointed, with the first joint longer than the remaining three together, and very broad and flat, as in the long-tongued bees, ending in a sharp claw-like point. The last three joints are narrow and cylindrical, subequal in length, but the first sometimes the longer, and the last the shorter, of the three. The second joint is attached to the side of the first, well before the end of the latter. The maxillary palpi are short, rather pale, and 4-jointed, with variations to 5 and 6, owing to the subdivision of the terminal joints; in the 6-jointed form there are three short joints, namely 3, 4, and 5. These palpi must be regarded as in a subrudimentary condition, which accounts for their variability, as in the more extreme case of *Geoperdita*. The tongue is narrow, with a blunt tip, and extends very little beyond the labial palpi.

It had formerly seemed possible that *Macroteropsis* might be the true *Macrotera*; but this cannot be if Smith’s description and figures are worth anything. A second species of the genus is *Macroteropsis texana* (Macrotera texana, Cress. Trans. Am. Ent. Soc. 1878, p. 70).
Callandrena, Ckll.

*Callandrena pectidis* (Ckll.). *(Panurgus pectidis, Ckll. Tr. Am. Ent. Soc. 1897, p. 148.)*

This has a broad galea, and the labial palpi have the first joint stout and curved, the third shortest, the fourth very narrow. The curved basal joint of the labial palpi is especially characteristic, and shows its affinity with the *pulchella* group of *Andrena*.

Hesperapis, Ckll.

*Hesperapis rhodoceratus* (Ckll.). *(Panurgus rhodoceratus, Ckll. Tr. Am. Ent. Soc. 1897, p. 148.)*

*Hesperapis olivice* (Ckll.). *(Panurgus olivicus, Ckll. Tr. Am. Ent. Soc. 1897, p. 149.)*

In *H. rhodoceratus* the tongue is very short, broad at base, the apex linear, with diverging branchlets; labial palpi as in typical *Hesperapis*; maxillary palpi short, 6-jointed, 1 only about twice as long as broad, 2 very little longer than 3 or 6, 4 as broad as 3, only 6 very slender.

The dagger-like tongue with a linear fimbriate tip at once separates this genus from *Rhophitoides*.

In *Rhophitoides canus* the tongue is long, slender, parallel-sided, with the end flattened and rounded, covered with little conical projections; the labial palpi also are different from those of *Hesperapis*, having the first two joints remarkably stout and large and about equal in length.

Hypomacrotera, gen. nov. *(Panurginae.)*

Type *H. callops*, sp. n. Includes also *H. subalpina* *(Calliopis subalpina, Ckll. 1894).*

Head broad, transversely oval; wings with a black apical spot in the male; marginal cell long and narrow, obliquely subtruncate at the end; two submarginal cells, the second about or nearly three quarters the length of the first, both being long; tongue short, fairly broad; paraglossae short; labial palpi 4-jointed, the first joint longer than, but not nearly twice as long as, the other three together; maxillary palpi 6-jointed; claws cleft.

This differs at once from *Macrotera*, Smith, by the much shorter tongue and the long narrow marginal cell. It resembles it in the narrow stigma and also quite closely in the palpi. In addition to the two species cited, it includes also *Calliopis semirufus*, Ckll., but that is probably the female of *H. subalpina*. The tongue is broader in the female *H. callops* than in the male.

**Hypomacrotera callops**, sp. n.

♂.—Length about 5½ millim. Shining black, with white pubescence, which is long and conspicuous on the face, cheeks, thorax, and end of abdomen, but dense only on the lower part of the face, where it overlaps the clypeus and forms a white beard; head transversely oval, facial quadrangle broader than long; eyes blue-grey; clypeus, labrum, and lateral face-marks white, the latter triangular; clypeus with the usual two black dots; labrum with a black spot in the middle; mandibles white, with rufous tips; front smooth and very shiny; ocelli in a slight curve; antennae black, flagellum very pale yellowish brown beneath; thorax very smooth and shiny; hind parts of scutellum and post-scutellum punctured; extreme base of metathorax roughened; tegulae hyaline; wings clear, the apex unusually produced, rounded, black; nervures dark brown; stigma very narrow, almost linear, hyaline, with a brown margin; marginal cell very long, narrow, appendiculate; second submarginal cell narrowed less than half to marginal; legs black and white; femora black, apical portion of anterior femur white in front, four hind knees white; tibiae white, with black patches, anterior one with a patch behind, the others with one on each side, occupying a large part of the surface; tarsi white, the last joint of middle tarsus and all the small joints of hind tarsus black; abdomen obpyriform seen from above, black without marks, hairy at the end.

**Hypomacrotera callops**, ♀.

♀.—Length about 7 millim. Face black; mandibles brown, with dark brown tips and
HALLICTOIDES, Nyl.

The type of this genus is H. dentiventris. Various species assigned here present considerable structural differences, as follows:

(A) Labial palpi with joint 1 longer than the other three together; joint 2 not one fourth the length of 1; abdomen of ♀ toothed at sides beneath. (Hallictoides, s. str.)

(B) Labial palpi with joint 1 not nearly so long as the other three together; joint 2 about three quarters length of 1; galea rather long; abdomen of ♀ simple, except that the last ventral segment has a longitudinal keel. (Ephyphalictoides, subgen. nov.)

(C) Labial palpi with joint 1 rather shorter than the other three together; joint 2 about half the length of 1. (Parahallictoides, subgen. nov.)

1. Shortest joint of maxillary palpi less than half the length of the longest; joints 1 and 2 large, the others small

2. Shortest joint of maxillary palpi more than half the length of the longest.

(a) Head in ♀ transversely oblong; abdomen of ♀ with a subapical ventral tuft

(b) Head in ♀ longitudinally oblong; abdomen of ♀ without a subapical ventral tuft

H. campyloides may be taken as the type of Parahallictoides.

HEMIHALICTUS, Ckll.

Ashmead has referred this to Dufouria, but the mouthparts are widely different, as follows:

Hemihalictus lustrans (Ckll.).—Tongue short, broad at base; paraglossae broad, much more than half the length of the tongue; galea broad and thin, notched within, the apical portion beyond the notch with large bristles; first joint of maxillary palpi shortest. These characters, except the long paraglossae, agree with Halictus.

Dufouria vulgaris, Schenck.—Tongue long and narrow; paraglossae slender, not half the length of the tongue; galea tapering, with bristles along its whole length; maxillary palpi with joint 1 longest, but barely longer than 2, the others shorter, but still long.

Mosilla Park, New Mexico, U.S.A.,
Sept. 25, 1890.

On Discocephalinae and Pentatominæ.

Discocephala scutellata.

Discocephala marmorea, Dall. (nee Lap.) List Hem. i. p. 146 (1851).

Discocephala marmorea.

Genus Discocephala.

Discocephala marmorea, Lap. Hém. p. 57, pl. liv. fig. 5 (1832).
Discocephala deplanata (part.), var. f, Walk. Cat. Hém. i. p. 185. n. 21 (1807).