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XXVII

EXPEDITION OF THE CALIFORNIA ACADEMY OF SCIENCES TO THE GULF OF CALIFORNIA IN 1921[1]

THE BEES (II)

BY

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HYLÆIDÆ (PROSOPIDIDÆ)

HYLÆUS Fabricius

(PROSOPIS Fabricius)

The species in the collection are readily separable thus:

Clypeus entirely black; female.....*asininus* (Cockerell & Casad)
Clypeus entirely light; males..... 1
Clypeus marked with black and light; females..... 2

1. Larger; supraclypeal mark present....*asininus* (Cockerell & Casad)
   Smaller; supraclypeal mark absent.....*aztecus* (Cresson)
2. Supraclypeal mark present.....*sonorensis* n. sp.
   Supraclypeal mark absent..... 3
3. Larger; light mark on clypeus narrow above, with much the outline of a church steeple.....*sonorensis melanorhinus* n. var.
   Smaller; light mark on clypeus broad, obtuse above.*aztecus* (Cresson)

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[1]A map showing all the islands, etc., visited by this Expedition will be found in Vol. XII, No. 6, of these Proceedings, copies of which can be supplied at nominal cost.

51. Hylæus asininus (Cockerell & Casad)

Las Animas Bay, May 8, 2♀, 1♂. In the females the face-marks are yellower than in specimens from the Mesilla Valley, New Mexico. This species was previously known from New Mexico and Arizona.

52. Hylæus aztecus (Cresson)

San Evaristo, June 10, 2♂; Guadalupe Point, Concepcion Bay, June 17, 1♂, 2♀; San Esteban Island, April 19, 5♀, one labelled "sage"; Guaymas, April 8 to 10, 3♀; Agua Verde, May 26, 1♀; Tortuga Island, May 11, 1 ♀. This has been known as a species of tropical Mexico; I have it from the Rio Nautla, State of Vera Cruz, collected by C. H. T. Townsend. Cresson described only the female. The male runs in my table to *P. nevadensis*, but in that of Metz to *P. polifolii*, but it is abundantly distinct from both. It is only about 4 mm. long, the face-markings are creamy-white, and the orbits converge strongly below. The lateral marks are shaped like a closed hand with a very long index finger pointed, the abruptly separated linear upward extension being very distinctive. Thus it is very easily separated from *polifolii* and *nevadensis*. The pale collar is interrupted in the middle, the tubercles are pale. The knees, tibiæ in large part and all the tarsi are creamy-white or pale yellowish. The stigma is sepia-brown.

53. Hylæus sonorensis, new species

♀. Length about 6.5 mm.; black, with extremely scanty pale hair, forming however distinct white bands at sides of first abdominal segment; light markings very pale yellow (face marks in type turned somewhat orange by cyanide), consisting of the face-markings, upper border of prothorax (not interrupted), tubercles, pyriform spot on tegulæ, basal part of tibiæ (on front tibiæ with a line extending apicad), and middle and hind basitarsi, except apically; clypeus with lower part yellow, this color extending upwards as a cuneiform mark, ending obtusely just before apex, and having on each side a small rounded extension; supraclypeal mark broad-triangular; lateral marks shaped like feet with very long toes, ending broadly and obtusely about half-way up front; flagellum ferruginous beneath; mesothorax dull, finely and extremely densely punctured; scutellum somewhat shining; with distinctly separated punctures; area of metathorax coarsely rugose; mesopleura finely and closely punctured; wings hyaline, with dark stigma and nervures; first recurrent meeting intercubitus; abdomen broad, first segment shining, finely punctured; margin of second segment somewhat upturned. The second abdominal segment is transversely lineate, and the excessively minute punctures are only visible under the

compound microscope. The microscope shows that the clypeus is very finely longitudinally striate.

Variety **melanorhinus,** n. var. Supraclypeal mark absent; clypeal mark reduced to a transverse apical band supporting an upward extension which is narrowly pointed, in outline like a church steeple.

Guaymas, Mexico (Van Duzee), the type (1♀) April 10, the variety (1♀) April 8. There is some resemblance to *H. mexicanus* (Cresson), but that has the scutellum yellow, and the face narrower above. The species seems to be more related to those of tropical Mexico than to species of the United States.

Type: Female, No. 1496, Mus. Calif., Acad. Sci., and *type* of variety, female, No. 1497, collected at **Guaymas, Sonora.**

Colletidæ

Colletes Latreille

54. Colletes daleæ Cockerell

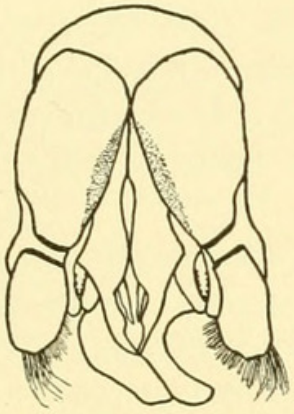

Fig. 1. Male genitalia.

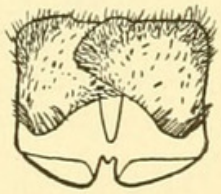

Fig. 2. Seventh ventral plate.

Males: Three from S. Francisquito Bay, May 10; seven from Guaymas, April 8; one from Escondido Bay, June 14.

Females: One from S. Francisquito Bay, June 23; six from Guaymas, April 7 to 15; one from Guadalupe Point, Concepcion Bay, June 17; one from Angeles Bay, May 7; three from Bay south end of Tiburon Island, May 5.

C. daleæ was described from the male, collected in the Mesilla Valley, New Mexico, at flowers of *Dalea scoparia*

(*Parosela scoparia*). The female has remained unknown, but I think there can be no doubt that the females recorded above belong to this species. They are however, so close to *C. algarobiæ* Ckll., found in the Mesilla Valley at flowers of *Prosopis glandulosa*, that were it not for the males I might regard them as a race of that species. The male *daleæ* is easily known from that sex of *algarobiæ* by the dark tarsi, these being clear bright ferruginous in the latter species. Compared with *C. algarobiæ*, the female *C. daleæ* seems to average smaller; the base of metathorax is sculptured with heavy ridges, closely set together except sometimes in the middle; the wings are clearer; the clypeus is highly polished and more sparsely punctured, always with an evident median sulcus. The general aspect is, however, exactly the same, and the species are very closely allied. The pale greyish or brownish hair on the scutellum is never conspicuous, and the more usual form has the hair of the thorax above entirely white (as in the male), or a slight dusky shade can be seen with difficulty. In *C. algarobiæ*, so far as observed, the females have about as much dark hair on the thorax above as in the darkest specimens of *C. daleæ*. In *C. algarobiæ* female the anterior and middle knees are narrowly red; this is not the case in *C. daleæ*.

In the male of *C. daleæ* the seventh ventral plate is of the short type, rather closely similar to that of the European *C. brachycerus* Swenk (*C. brevicornis* Pérez) as figured by Morice. The genitalia also quite closely resemble those of *C. brachycerus*, so there may be some real affinity. Among the American species figured by Swenk the genitalia resemble those of *C. validus* Cresson, but the seventh ventral plate of *C. daleæ* is quite different in detail, though of the same broad and abbreviated type.

55. Colletes algarobiæ Cockerell

One female from Guaymas, April 7, exactly agrees with this species.

56. Colletes albocinctus, new species

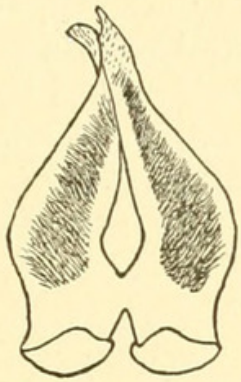

Fig. 3. Seventh ventral plate.

♂. (Type). Length about 10 mm., anterior wing 7 mm.; black, including tarsi and antennæ, the flagellum very faintly brownish beneath; tegulæ dusky ochreous, shining; wings hyaline, faintly dusky; stigma short, dusky rufous, nervures black; hair of head and thorax long and abundant, white on face, pleura and under parts, dorsally pale greyish ochreous, mixed with fuscous on vertex and scutellum; face broad; eyes dark brown; malar space about as long as broad; flagellum long and stout, middle joints long; mesothorax and scutellum highly polished, the first practically impunctate, the scutellum with scattered distinct punctures on apical half; mesopleura rather closely punctured; base of metathorax, above the transverse keel, presenting a rather broad transverse band crossed by strong sharp ridges, separating shining areas which are longer than broad; second cubital cell broad, receiving recurrent nervure about middle; legs ordinary, spurs pallid; abdomen shining, with extremely fine punctures; hind margins of segments with entire rather broad white hair-bands; dorsum of segments 4 and 5 with short black hair; ventral segments 2 to 4 with narrow marginal white bands. Seventh ventral plate of the elongate type, resembling in a general way that of *C. macconnelli* Metz from Guadalajara; but differs in details, and that species has the abdomen densely punctured, and with yellowish hair-bands.

♀. Length about or nearly 12 mm., resembling the male, except for the usual sexual differences. Clypeus convex, very coarsely but sparsely punctured, with a strong median sulcus; vertex and scutellum with greyish brown hair, and a little of the same intermixed on disc of mesothorax; malar space more than twice as broad as long, but not linear; tegulæ reddish-ochreous; stigma very dark reddish; abdominal bands broad.

Type: Male, No. 1498, Mus. Calif. Acad. Sci., collected by Van Duzee June 30, at **Pond Island Bay, Angel de la Guarda Island, Gulf of California.**

The female is from San Evaristo, Lower California, June 10 (Van Duzee). Although the localities are far apart, I think there can be no mistake in associating the sexes.

The male is very like *C. intermixtus* Swenk, but the seventh ventral plate is wholly different. In my table of male Colletes, *C. albocinctus* runs to *C. gaudialis*, which it really resembles very much, but the abdomen and base of metathorax are

quite different. The female runs in tables to *C. texanus* Cresson or *C. algarobiæ* Cockerell, but is much larger than these. The female resembles in a general way *C. armatus* Patton, but is easily distinguished by the excessively weak, evanescent punctures of first abdominal segments. There is also some resemblance to *C. mexiconis* Strand, described from Tehuakan, some 220 miles southeast of Mexico City.

57. Colletes mulegensis, new species

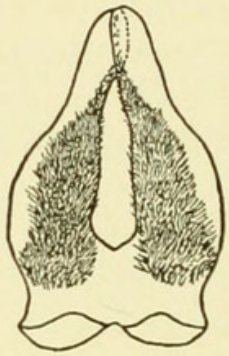

Fig. 4. Seventh ventral plate.

♂. Length about 8 mm.; similar to *C. albocinctus*, but differing thus: Malar space distinctly broader than long; hair of head and thorax white, a scarcely perceptible yellowish tint on vertex; stigma much redder; tarsi decidedly rufescent apically. The species are, however, very closely allied, and have the same type of seventh ventral plate, differing only in minor details. The elongate lobes of the plate are broader and blunter than in *C. albocinctus*, and the broader elongate patch of hair reaches the inner margin of the lobes, instead of leaving a free space as in *C. albocinctus*. There can be no doubt that these two species and *C. macconnelli* Metz are to be associated to form a little group of the genus, so far as at present known confined to Mexico.

Type: A male, No. 1499, Mus. Calif. Acad. Sci., collected by Van Duzee, May 14, at **Mulegé, Lower California.**

In my table of male *Colletes* this runs to *C. gaudialis*, and does in fact closely resemble it, though easily distinguished by the structure of metathorax. The transverse band above the keel being very much narrower in *gaudialis*. The abdomen of *gaudialis* is much more shaggy, with longer and more abundant hair on first segment.

58. Colletes profectus, new species

♂. Length about 8.5 mm., anterior wing 5.3 mm.; slender, black, with entirely ferruginous tarsi; flagellum very long, very obscurely brownish beneath; mandibles red at the bidentate apex; malar space considerably longer than wide, but not nearly twice as long; hair of head and thorax long and abundant, pure white throughout; face broad; mesothorax and scutellum highly polished, practically impunctate; basal band of metathorax, above the keel, unusually broad, polished, with only a few feeble imperfect plicæ about the middle; tegulæ reddish-brown; wings clear hyaline; stigma pale brownish with a dark margin; nervures brown, second cubital cell broad, receiving recurrent nervure about middle; legs slender, hind tarsi long; abdomen narrow, subcylindrical, distinctly glaucous, the punctures so fine as to be hardly perceptible under a lens; six entire pure white hair bands.

Type: A male, No. 1500, Mus. Calif. Acad. Sci., collected by Van Duzee, April 23, at **Freshwater Bay, Tiburon Island.**

In my table runs to *C. gaudialis*, but is entirely different. On account of the long flagellum and red tarsi it resembles *C. algarobiæ*, but the malar space and base of metathorax will at once distinguish it. By the slender form and general appearance it resembles *C. daleæ*.

59. Colletes perileucus, new species

♀. Length about 11.5 mm., anterior wing about 7.3; robust, black, including tarsi, mandibles and tegulæ, but flagellum obscure brownish beneath; hair of head and thorax white, but black on vertex, disc of mesothorax, and scutellum; head broad; malar space more than twice as broad as long, but not linear; labrum with two strong median ridges; clypeus densely and coarsely striate-punctate, distinctly depressed in middle; a polished impunctate area above each eye; mesothorax coarsely and densely punctured anteriorly and at sides, the posterior middle smooth; scutellum smooth anteriorly, rugosopunctate posteriorly; basal band of metathorax, above the keel, broad, with strong plicæ which only go about half way, leaving a shining apical transverse band or channel, but the whole basal region is usually hidden by the over-lapping hair of postscutellum; mesopleura strongly punctured; wings hyaline, the short stigma very dark reddish, nervures black; second cubital cell very broad, much broader on marginal cell than first or third; legs ordinary, red at base of claws, spurs red; tufts of red hair at apices of joints of hind tarsi; abdomen broad, shining, with extremely weak and minute punctures; five rather broad even pure white hair-bands; hind spur with about 20 very fine oblique teeth.

Type: A female, No. 1501, Mus. Calif. Acad. Sci., collected by Van Duzee, April 15, at **Guaymas, Mexico.** Two other females taken at same place, April 7 to 15, 3 ♀ (Van Duzee).

In my table of New Mexico species, this runs out next to the much smaller *C. texanus*. In Swenk's table of species with dark hair on thorax above it runs to *C. scopiventer* Swenk, from Texas, but that is only 9.5 mm. long, and is

closely allied to *C. texanus*. The hind spur of *C. perileucus* is formed as in *C. scopiventer*, not as in *C. texanus*.

The above species may be separated as follows:

Females 1
Males 4

1. Comparatively large, robust species, 11 mm. long or over; malar space short 2
   Smaller, usually more slender species; malar space well developed, but not longer than broad 3
2. Tegulæ pale reddish; darker hairs of scutellum only pale brownish ..... *albocinctus*, n. sp.
   Tegulæ black; darker hairs of scutellum black or blackish ..... *perileucus*, n. sp.
3. Clypeus with no median sulcus; anterior and middle knees red ..... *algarobiæ* Ckll.
   Clypeus with a median sulcus; anterior and middle knees not red ..... *daleæ* Ckll.
4. Robust species, with broad abdomen; tarsi not red 5
   Small or slender species 6
5. Hair of head and thorax above strongly tinted with brown; malar space about as long as broad ..... *albocinctus* n. sp.
   Hair of head and thorax above dull white; malar space distinctly broader than long ..... *mulegensis* n. sp.
6. Tarsi red ..... *profectus* n. sp.
   Tarsi dark ..... *daleæ* Ckll.

I am greatly indebted to Miss Grace Sandhouse for preparing and drawing the abdominal structures of three of the species.

ANDRENIDÆ

HALICTINÆ

AGAPOSTEMON Smith

The material of this genus is particularly interesting. It consists of six species, one of which (*A. nasutus* Smith) is a well-known neotropical form. It is interesting to note that it was collected only at La Paz, near the end of the Peninsula. All the others are closely allied to described species, yet in every case appreciably distinct. I treat them as species, but some or all may later be reduced to subspecific rank. The *A. digueti* was actually discovered in Lower California by Diguet, the well-known French explorer of that region. Vachal recorded Diguet's specimen as *A. melliventris* Cresson, but gave enough information to show clearly what he had. Fox reported a female of *A. melliventris* from San José del Cabo; possibly it was really *digueti*, but there is nothing to

show this, beyond the locality. The forms present in the collection may be separated thus:

Abdomen green; females 1
Abdomen not green 2

1. Area of metathorax coarsely ridged or plicate ..... *angelicus* n. sp.
   Area of metathorax finely ridged or striate ..... *proscriptellus* n. sp.
2. Mesothorax purple; abdomen black; female ..... *purpureopictus* n. sp.
   Mesothorax emerald green 3
3. Males 4
   Females ..... *digueti* n. sp.
4. Region above mouth flattened, snout-like ..... *nasutus* Smith
   Region above mouth ordinary 5
5. Hind femora robust, with a tooth beneath; base of first abdominal segment black ..... *cyanozonus* n. sp.
   Hind femora slender, without a tooth; base of first abdominal segment very pale reddish ..... *digueti* n. sp.

60. Agapostemon nasutus Smith

La Paz, June 3 to 5, 3 ♂. The female was not obtained; it would run in the above table to *A. digueti*, from which it is easily known by the entirely black abdomen and dark hairs on scutellum.

61. Agapostemon angelicus, new species

♀. Length about 10 mm.; bright emerald green, with white hair, including that on thorax above, but that at apex of abdomen black; apex of clypeus broadly black, with no yellow band; labrum black, basal half of mandibles yellow; flagellum dusky ferruginous beneath, bright on last joint; mesothorax highly polished, with very fine and delicate punctures, and scattered larger (but still small) ones; truncation of metathorax very sharply defined; basal area with no defined space, but with very coarse longitudinal plicæ, a small triangular space in the middle rather bluer green and more finely sculptured; mesopleuræ very coarsely rugose; tegulæ pale testaceous with a yellow spot; wings hyaline, a little dusky, stigma clear ferruginous; legs black, tarsi reddish at tip, anterior and middle knees yellow, hind tibiæ with dark brown hair on hinder margin; abdomen closely and finely punctured, but shining, bases of segments 2 to 4 with broad bands of white tomentum; venter black.

Type: A female, No. 1502, Mus. Calif. Acad. Sci., collected at **Pond Island Bay, Angel de la Guarda Island,** July 1 (Van Duzee).

Runs in Crawford's and Vachal's tables straight to *A. texanus* Cresson, but has the base of metathorax after the manner of *A. radiatus* (Say). The mesothorax is more polished than in *texanus*, and the second and third cubital cells are shorter. It therefore seems proper to consider it a distinct though closely allied species.

62. Agapostemon proscriptellus, new species

♀. Length about 9.5 mm., bright green, a distinctly bluer green than *A. angelicus;* pubescence white, black at apex of abdomen; head broad; clypeus elevated in middle, apex broadly black; labrum dusky red; mandibles dull whitish subbasally; flagellum dull red beneath; mesothorax dullish, extremely finely and closely punctured, with slight indications of scattered punctures in the style of *texanus;* metathorax sharply truncate, its base finely rugose, without a distinct area; mesopleura rugose; tegulæ hyaline, testaceous posteriorly, with an obscure yellow spot; wings faintly dusky, stigma light ferruginous; trochanters, and femora except apical spot, black; anterior and middle knees yellow; tibiæ and tarsi red, the anterior and middle tibiæ suffused with black; abdomen shining, extremely finely punctured, black bands across first three segments, weak and incomplete on third; white tomentum at bases of segments 2 to 4; venter black, reddened on first two segments.

Type: No. 1503, Mus. Calif. Acad Sci., collected at **Guaymas, Mexico,** April 8 (Van Duzee). 1 ♀.

In Vachal's table this falls near what he doubtfully referred to *A. pulcher* Smith, a species described from California. *A. pulcher*, according to Smith, has rufotestaceous legs. Robertson in 1902 said it was the female of *A. femoratus* Crawford. In the North American fauna, *A. proscriptellus* is really closest to *A. cockerelli* Crawford; but its closest relative is tropical, namely *A. proscriptus* Cockerell from Guatemala City, Guatemala. Compared with *A. proscriptus*, it is much bluer green, with the orbits more converging below, and the pubescence much whiter. The wings of *proscriptus* are redder. The form is therefore readily separable, whether regarded as a species or a race.

63. Agapostemon purpureopictus, new species

♀. Length about 10 mm.; head and thorax blue-green, strongly suffused with brilliant purple on face and front, mesothorax, scutellum and postscutellum, and sides of thorax, but the purple areas on mesothorax and front dull; pubescence white, mixed with black on thorax above, on occiput faintly yellowish, apex of abdomen with black hair; head very broad; clypeus with a dull yellow submarginal band; labrum black; mandibles dull yellowish-white basally; flagellum bright ferruginous beneath; mesothorax dull and very finely and densely punctured; anterior edge of scutellum shining; metathorax sharply truncate, the broad basal part coarsely rugose laterally striate, without a defined area; mesopleura very finely rugose; tegulæ ferruginous with a yellow spot; wings faintly dusky, conspicuously so on apical margin, stigma dull red; legs black, small joints of tarsi red; hind tibiæ with pure black hair posteriorly, and pale golden on inner side; their tarsi also have dark hair on outer side of first two joints, but apical brush of basitarsi is brilliant copper-red; abdomen black, shining, very finely punctured; basal bands of tomentum on segments 2 to 4 very broad and distinct.

Type: No. 1504, Mus. Calif. Acad. Sci., collected at **Guaymas, Mexico,** April 8 (Van Duzee). 1 ♀.

Runs in Crawford's table to *A. fasciatus* Crawford, but easily distinguished by the purple color. It is a more robust insect than *fasciatus*, with much broader face. In Vachal's table it runs to the vicinity of *A. nasutus* Smith and *A. leunculus* Vachal, but is quite distinct by the purple color and other features. The real affinity is evidently with *A. nasutus*, from which it has presumably been derived. *A. nasutus* var. *gualanieus* Cockerell, from Guatemala, has (male) a purple metathorax, so it may be that intermediates will be found between ordinary *nasutus* and the insect now described.

64. Agapostemon digueti, new species

♀. (Type). Like *A. melliventris* Cresson, but easily distinguished by having four very broad black bands on the abdomen. In one specimen (Angeles Bay) the first two of these bands are absent, the second however, represented by a narrower dusky shade; thus the first two segments are clear red, an evident transition toward *melliventris*. The scape, as in *melliventris*, has a yellow stripe.

♂. Almost exactly like *melliventris*, but averaging larger, with broader bands on abdomen. This could be regarded as a subspecies of *A. melliventris*, especially in view of the one intermediate specimen.

Type: No. 1505, Mus. Calif. Acad. Sci., collected at **Las Animas Bay, Lower California,** May 8 (Van Duzee), 11 ♀; Guaymas, April 8, 1 ♀; Angeles Bay, 5 ♀ June 25, 1♂ June 27; Agua Verde, May 26, 1 ♀; San Fancisquito Bay, May 10, 1 ♀; San Francisco I., May 30, 2 ♂; Pond I. Bay, Angel de la Guarda I., June 30, 8 ♂; Loreto, May 30, 12 ♂; San Marcos I., May 12, 2 ♂; La Paz, June 3 to 4, 3 ♂; San Nicholas Bay, May 16, 1 ♂. All collected by E. P. Van Duzee.

65. Agapostemon cyanozonus, new species

♂. Length about 9 mm., anterior wing 5.8 mm.; a member of the group with moderately thick hind femora, having a tooth beneath near apex; apical part of the broad abdominal bands steel-blue; trochanters yellow and black, the first four broadly yellow in front, the hind pair with about apical half yellow; first ventral segment of abdomen with a large green patch at base, the rest very pale reddish, emarginate apically; second ventral yellow, with an apical pale red band; third similarly colored, but the reddish region with a pair of transverse thickenings, convex caudad; fourth with a very thick curved dusky callus; apical segment with no keel. This species is so close to several others that it is best separated by comparisons.

(a) From *A. virescens* (Fab.) it is easily known by the mainly light ventral surface of abdomen and lack of keel on last ventral.
(b) From *A. coloradensis* Crawf., by the much smaller size, emerald green head and thorax (without blue or purple), and pale venter of abdomen.
(c) From *A. radiatus* (Say), by the light hair on apex of abdomen above, the more delicately sculptured base of metathorax, clear wings and more pointed stigma.
(d) From *A. brachycerus* (Vachal), by the color of trochanters and the distinctly larger size. I cannot make anything tangible of the supposed difference in the antennæ said to distinguish *brachycerus*.
(e) From *A. fasciatus* Crawf., by the color of trochanters (entirely green in *fasciatus*), small dark stripe on hind tibiæ, elongate black patch on middle tibiæ, and partly blue abdominal bands.
(f) From *A. californicus* Crawf., (which has the blue on abdominal bands), by the the smaller size, lack of black bands on second and third ventral segments, second cubital cell higher than broad (broader than high in *californicus*), base of metathorax less finely sculptured, and posterior truncation brilliantly shining.
(g) From *A. texanus* Cresson, by the smaller size, lack of a black band on inner side of hind tibiæ, lack of black bands on ventral segments 2 and 3, fourth ventral with a continuous callus (in *texana* two calli, separated by a smooth metallic area.)
(h) From *A. texanus subtilior* Ckll., by the color of trochanters, and characters similar to those which distinguish *texanus*.

The closest affinity is with *A. californicus*, but in that the callus on fourth ventral segment is more distincly though narrowly interrupted, *californicus* in this respect being intermediate between *cyanozonus* and *texanus*.

Type: No. 1506, Mus. Calif. Acad. Sci., collected at **Guaymas, Mexico,** April 7 (Van Duzee), 1 ♂.

By the sculpture of the metathorax, this cannot be the male of *A. angelicus*.

NOMIINÆ

The following species was overlooked when dealing with *Nomia:*

66. Nomia howardi vanduzeei, new subspecies

♀. Rather larger, length fully 10 mm.; punctures of clypeus conspicuously running into striæ; scutellum with scattered fine punctures on middle; legs black, the hind pair dark brown on inner side. Additional characters are: flagellum bright ferruginous beneath, except first joint; pubescence in general white, a little black hair on disc of mesothorax and scutellum; apical part of abdomen with black hair, chocolate at tip, but shining white hair on venter and showing at extreme sides of fifth segment, viewed from above; stigma piceous; abdominal bands very pale greenish suffused with light yellow, the narrower first band blue-green.

Type: No. 1509, Mus. Calif. Acad. Sci., collected at **Loreto, Lower California,** May 20 (Van Duzee).

It is really impossible to say whether this is an individual variation of *N. howardi* Crawford (described from one specimen collected at San José de Guaymas), or a distinct race, or a separate species. Crawford's description is rather insufficient, and more material is required. *N. howardi vanduzeei* is much smaller than *N. californica*, the abdominal bands are much paler, the second to fourth not nearly so broad, the antennæ are differently colored, the tegulæ are redder, and the base of the second abdominal segment has larger punctures.

Panurgidæ

When reporting on the Panurgidæ last year the following species were overlooked.

Hesperapis Cockerell, 1898

A genus known from the southwestern United States; for details see Psyche, 1916, p. 176.

67. **Hesperapis macrocephala,** new species

♀. Length about 10.5 mm.; black, with white hair, faintly yellowish on upper part of head, and red on inner side of tarsi; head extremely broad, facial quadrangle broader than long; mandibles bidentate, obscurely rufescent apically; clypeus polished, minutely rugulose and dull above, the punctures so fine as to be barely visible under a lens; face and front with long white hair; flagellum short and thick, dusky red beneath; vertex dull and minutely granular; hair of thorax above not moss-like; mesothorax and scutellum dullish, somewhat shining, without distinct punctures as seen under a lens, but the microscope shows fine very dense punctures on a dull surface; pleura covered with long hair, hiding the surface; area of metathorax dull; tegulæ reddish-testaceous; wings dusky-hyaline, stigma elongate-lanceolate, dusky reddish; nervures fuscous; second cubital cell receiving recurrent nervures about equally far from base and apex; legs black, with white hair; spurs white, slightly brownish apically; abdomen broad and flattened, dullish, first segment more shining; hind margins of segments broadly pallid, but covered by broad white hair-bands; apical plate long and narrow, with a delicate, but very distinct median keel. The type carries large masses of consolidated hard pollen on the hind tibiæ.

Type: No. 1510, Mus. Calif. Acad. Sci., collected at **San Francisquito Bay, Lower California,** May 10 (Van Duzee).

1 ♀.

Nearest to *H. semirudis* Cockerell, from the San Jacinto Mountains, California, but easily separated by the much broader head, and much narrower, more pointed apical plate of abdomen.

68. **Hesperapis leucura,** new species

♀. Length about 7 mm., black including legs, but mandibles with a broad red median band, and flagellum very bright ferruginous beneath; pubescence white, faintly greyish or yellowish (not moss-like), on head and thorax above, pale reddish on inner side of tarsi; head broad, facial quadrangle about square, eyes greyish-green; clypeus shining, front dull, but vertex shining; mesothorax dull, posterior middle glistening; under the microscope the mesothorax appears very minutely but not densely punctured, and the marginal area all around carries very minute moss-like hairs, distinct from the long erect hairs noticeable on first inspection; area of metathorax shining; sides of metathorax with long white hair; mesopleura strongly convex, shining; tegulæ testaceous; wings very faintly dusky; stigma lanceolate, dusky red, nervures fuscous; second cubital cell rather short; tibiæ and tarsi densely covered with white hair; abdomen broad, dullish, with broad white hair-bands; fifth segment and apex densely covered with white hair; apical plate reddish, rather broad, truncate and emarginate, its basal middle with a microscopically tessellate sculpture.

Type: No. 1511, Mus. Calif. Acad. Sci., collected at **San Francisquito Bay, Lower California,** May 10, (Van Duzee). 2 ♀.

Somewhat related to *H. rhodocerata* Cockerell, but much smaller.

CERATINIDÆ

CERATINA Latreille

69. **Ceratina nanula** Cockerell

Guaymas, Mexico, April 10, 1 ♂. This specimen caused me some perplexity. It agrees with the original description, except that the nervures are distinctly paler. The end of the abdomen is as figured by H. S. Smith for *nanula,* except that there is a distinct bulging of the margin on each side. But the peculiar feature is, that on both sides there are only two cubital cells, the first intercubitus being absent. There is, however, some disturbance of the venation, as there is on the left side an extra vein passing from the basal nervure to the subcosta. On the whole, it seems safe to regard the specimen as an abnormal *C. nanula.*

The northward distribution of *C. nanula* is subject to reconsideration. A male collected by S. A. Rohwer at Boulder, Colorado, has the end of the abdomen as in Smith's figure of *C. acantha*, not as in *C. nanula*. Many years ago, being aware that the Rocky Mountain *Ceratina* needed revision, I sent a quantity of material to Mr. H. S. Smith, who had recently revised the American species. Unfortunately he was never able to proceed with the work. The specimens are, I believe, at the University of Nebraska.

The male of *C. nanula* is easily known from the tropical Mexican *C. nautlana* Cockerell by the sharp angle on hind femur.

70. Ceratina arizonensis vanduzeei, new subspecies

♀. Length nearly 4 mm., black, with light tubercles and face-marks; mesothorax punctured anteriorly, smooth and impunctate on disc, posteriorly with a broad rugosopunctate band; scutellum densely punctured posteriorly, sparsely anteriorly, except quite in front where the punctures are denser. The wings are greyish hyaline, in true *C. arizonensis* they are browner. The main point of distinction is in the clypeal mark, which is as broad as the distance between it and the orbits, squarely truncate above, but incised on each side a little below the middle. In *C. arizonensis* female this mark is a comparatively narrow bar.

Type: No. 1507, Mus. Calif. Acad. Sci., collected at **Guaymas, Mexico,** April 10 (Van Duzee), 1 ♀.

The male may show this to be a distinct species, or it is possible that it is an extreme individual variant of *C. arizonensis*. The anterior knees, tibiæ in front, their tarsi, and small joints of the other tarsi are pale, but the legs are not testaceous as in *C. cockerelli* H. S. Smith, and the scutellum differs. *C. arizonensis* Cockerell is known from Southern California, Arizona and Texas; *C. cockerelli* from Texas. Smith says that the female of *C. cockerelli* has a "rectangular ivory-white mark" on clypeus. This is ambiguous, but might refer to something similar to that in *vanduzeei*.

71. Ceratina melanoptera, new species

♂. (Type). Length about or slightly over 6 mm.; rather dark olive green; head and thorax well punctured, posterior disc of mesothorax impunctate and black, slightly purplish; trilobed mark almost covering clypeus, large spot on labrum and tubercles ivory white; mandibles black, or obscurely rufescent apically; sides of face with very large but only moderately dense punctures;

antennæ entirely dark; sides of mesothorax sparsely punctured; scutellum sparsely punctured anteriorly, densely posteriorly; cheeks and mesopleura strongly but not densely punctured; area of metathorax basally dull and granular, with a broad shining rim; tegulæ dark rufous, with a very obscure pale spot; wings deep fuliginous, pallid basally; first recurrent nervure joining the large second cubital cell not far from end; anterior femora with an ivory-white spot at apex, and their tibiæ with a narrow stripe, not reaching apex; tarsi rufescent apically; hind femora with a sharp and well-developed dentiform angle below; abdomen closely punctured, and with a snow-white tuft at end.

♀. Length a little over 7 mm.; sides of thorax bluer green; head large; labrum entirely black; clypeus with a pale broad parallel-sided bar, less than half as broad as distance between it and orbits; hind knees with a light spot; hair on inner side of hind tarsi pale fulvous.

The end of the male abdomen is broad, with a median sharp point, after the fashion of *C. atrata* H. S. Smith, except that the dentiform prominence is distinctly larger. *C. atrata* is a minute black species.

Type: No. 1508, Mus. Calif. Acad. Sci., collected at **Guaymas, Mexico,** April 10, 2 ♂ (Van Duzee).

One female from San Pedro Bay, Gulf of California, July 7 (Van Duzee). In H. S. Smith's arrangement this falls nearest to the much larger and otherwise different *C. azteca* Cresson, or the female may be run to *C. neomexicana* Cockerell, from which it differs by the much darker wings, clypeal mark, etc. It is easily known from *C. townsendi* Cockerell by the much less densely punctured sides of face, and different clypeal mark.

It may be worth while to note that Friese in 1910 described a *C. laticeps* from Costa Rica, and in 1921 again described *C. laticeps* as new from the same locality. It is to be hoped that no one will rename the second one, as the descriptions, though differing somewhat, appear to refer to the same species. I have seen this *C. laticeps* in the U. S. National Museum.

Another species described by Friese from Costa Rica (1921), *C. aurata*, is (specimens from Friese in U. S. National Museum) very near *C. amabilis* Cockerell, but differs (♀) by the golden-green (instead of bluish-green) head and thorax, punctures at sides of thorax finer, abdomen crimson rather than magenta. *C. amabilis* from Quirigua, Guatemala, approaches *C. aurata*, and I think Friese's insect should be reduced to subspecific rank.

The species now reported on may be separated thus:

Black species; very small.....*arizonensis vanduzeei* n. subsp.
Green species..... 1

1. Less than 5 mm. long; wings clear.....*nanula* Ckll.
   Over 5 mm. long; wings fuliginous..... 2
2. Male, with trilobed light mark on face.....*melanoptera* n. sp.
   Female, with a broad elongate light mark on face...*melanoptera* n. sp.

MEGACHILIDÆ

MEGACHILE Latreille

(Leaf-cutting Bees)

In his reports on the bees of Lower California and adjacent regions, Mr. W. J. Fox included six named species (one as a *Lithurgus*), and three not definitely determined. Of the named ones we have in the present collection *M. longula* Fox, *M. occidentalis* Fox and *M. pollicaris* Say, the last represented by a race not then separated. The other three, *M. mexicana* Cresson, *M. exilis* Cresson, and *M. sayi* Cresson, were not obtained by Mr. Van Duzee. The two latter are well-known species of the United States. *M. mexicana*, described from a long series collected by Sumichrast in Mexico, has the ventral scopa of the female yellow, black on last segment; the male has dense yellow pubescence on the face, simple anterior tarsi, and anterior coxæ spined. Taking the combined lists, we have a small tropical element (*M. mexicana* and *M. poculifera*), and a series of species identical with or more or less related to those of the arid southwestern states. Thus the results are entirely parallel with those obtained from the study of the Anthophoridæ.

The species collected are readily separable by the following key:

Males..... 1
Females..... 10

1. Anterior tarsi simple..... 2
   Anterior tarsi modified..... 6
2. Middle and hind femora mainly red; small species...*lobatifrons* n. sp.
   Middle and hind femora black..... 3
3. Transverse keel of sixth abdominal segment contracted and narrowly emarginate.....*adelphodonta* n. sp.
   Transverse keel of sixth abdominal segment broadly emarginate.... 4

4. Transverse keel of sixth segment shallowly emarginate; small joints of tarsi red ..... *pratti* (Ckll.)
   Transverse keel of sixth segment deeply emarginate; small joints of tarsi not red 5
5. Emargination of sixth segment much broader than long, its inner side nearly straight ..... *frugalis* Cress.
   Emargination of sixth segment rounded, its inner side much curved. ..... *generosa* Cress.
6. Anterior tarsi not yellow ..... *occidentalis* Fox.
   Anterior tarsi pale yellow 7
7. Middle (but not hind) femora clear red .. *pollicaris pereximia* (Ckll.)
   Middle femora black 8
8. First joint of anterior tarsi without a hollowed boat-like structure, all tarsi with last joint pale yellow ..... *sidalceæ* Ckll.
   First joint of anterior tarsi with a hollowed boat-like structure; middle and hind tarsi with last joint red or dark 9
9. Anterior femora black; anterior coxal spines very long .. *howardi* Ckll.
   Anterior femora at least largely pale; middle femora with a thorn-like tooth beneath ..... *poculifera* Ckll.
10. Femora red; face and mandibles with immense processes ..... *lobatifrons* n. sp.
    Femora not red 11
11. Mesothorax with two spots of white hair anteriorly; parallel-sided species, with clypeus modified 12
    Mesothorax with two lines of white hair anteriorly (if denuded, see next category); broad species with normal clypeus .. *vanduzeei* n. sp.
    Mesothorax without two spots or lines of white hair anteriorly 16
12. Snout-like excavation of clypeus without a projecting median lobe .. 13
    Clypeus with a median lobe or tubercle, and not snout-like 14
13. Upper part of clypeus showing a broad punctured surface, *longula* Fox
    Upper part of clypeus showing no such surface ..... *discorhina* n. sp.
14. Clypeus with a median tubercle on disc ..... *odontostoma* n. sp.
    Clypeus without such a tubercle 15
15. Median process of clypeus bifid; tegulæ red ..... *prosopidis* Ckll.
    Median process of clypeus entire; tegulæ dark with red margin ..... *prosopidis testudinis* n. var.
16. Hind tarsi bright chestnut red; clypeus short and broad . *slevini* n. sp.
    Hind tarsi not red 17
17. Clypeus short and broad ..... *frugalis* Cress.
    Clypeus of ordinary shape 18
18. Sixth abdominal segment abruptly descending, covered with coarse black hair ..... *pollicaris pereximia* Ckll.
    Sixth abdominal segment not abruptly descending 19
19. Sixth abdominal segment pruinose with pale hairs, and without outstanding hairs ..... *vanduzeei* n. sp.
    Sixth abdominal segment otherwise; if slightly pale-pruinose (*estebana, tiburonensis*), segment with outstanding hairs and an evident lip; size averaging smaller; ventral scopa white or (*estebana, tiburonensis*), faintly creamy, black on last segment 20
20. Vertex with white hair, and a little black behind ocelli; disc of thorax without dark hair; tegulæ black; sixth dorsal segment with long black hairs, and slightly concave in lateral profile . . . *sonorana* n. sp.
    Vertex with conspicuous black hair 21
21. Clypeus with no distinct smooth area; hair on its disc greyish brown; mesothorax excessively densely punctured; wings strongly dusky; sixth dorsal segment with black hair, and strongly concave in lateral profile ..... *brachysoma* n. sp.
    Clypeus with a shining sparsely punctured space in middle; hair of clypeus long and pale, directed mesad; wings not so dark; scutellum with conspicuous dark hairs; sixth dorsal segment concave in lateral profile 22

22. Tegulæ black; scutellum distinctly shining ..... *estebana* n. sp.
Tegulæ red; scutellum entirely dull; black hair on scutellum shorter.
..... *tiburonensis* n. sp.

72. **Megachile lobatifrons,** new species

Belongs to the group in which anterior tarsi of male are simple, and their coxæ have dentiform projections, but no true spines.

♀. (Type). Length about 9.5 mm., of parallel-sided type, black, with clear pure white bands on thorax anteriorly (weakened in middle), hind border of mesothorax, behind scutellum, on hind margins of abdominal segments 1 to 4 (enlarged to triangular patches at sides of 1), and at base of segment 6; checks and sides of face with white hair; eyes dark brown; inner orbits parallel, facial quadrangle about square; mandibles broad and massive, quadridentate, base with a very large rounded lobe below, and a similarly large lobe, but angulate in front, above; clypeus deeply excavated, with a large projecting lobe at each side, and the projecting margin above presenting a pair of low rounded lobes; front polished but distinctly punctured, sculpture of vertex weak; scape black, flagellum dull red, dusky above; mesothorax closely punctured, but shining between the punctures; scutellum with punctures rather larger and sparser than on mesothorax; pleura and metathorax with much white hair; tegulæ yellowish-ferruginous; wings clear, rather short, stigma ferruginous, nervures fuscous; basal nervure meeting nervulus; second cubital cell long, receiving recurrent nervures equally distant from base and apex; femora and tibiæ bright chestnut red, but tarsi dark; hind basitarsi not enlarged; abdomen glistening, the first three segments closely punctured; ventral scopa white, black on last segment.

♂. Similar in appearance to the female; clypeus and mandibles ordinary; face densely covered with pure white hair; eyes slightly converging below; flagellum long, very obscure reddish; sixth abdominal segment with a narrow projecting bidentate process.

22 ♀. 3♂. Puerto Refugio, Angel de la Guarda Island, June 29, 1921 (Van Duzee). One female is marked as collected on Dalea. 1 ♂ Puerta Ballandra, Carmen I., May 22 (Van Duzee). A very neat little species, not closely related to any known to me. It will be easily known in the female by the structure of the face and mandibles, in the male by the end of the abdomen. The Carmen I. ♂ is hardly 7.5 mm. long.

Type: Female, No. 1512, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, June 29, 1921, at **Puerto Refugio, Angel de la Guarda Island, Gulf of California.**

73. **Megachile frugalis** Cresson

1 ♂. San Nicolas Bay, May 16; 3♀, Angeles Bay, June 25-26; 1 ♀ San Pedro Bay, July 7; 1 ♀, Bay South End of Tiburon Island, July 4; 1 ♀, Lagoon Cove, Angel de la Guarda I., May 2.

74. **Megachile pollicaris pereximia** Cockerell

1 ♂, San Marcos Island, May 12; 1♀ S. Nicolas Bay, May 16. The female was described as *M. vallorum* Cockerell. The male appears to differ from Say's type by the red middle legs, and is the western or desert form of the species. *M. pollicaris* male is easily known from *M. sayi* Cresson, by the yellow spines of anterior coxæ, as duly indicated by Say.

75. **Megachile (Chelostomoides) pratti** Cockerell

1 ♂. Guaymas, April 7. Described from Texas.

76. **Megachile generosa** Cresson

2 ♂. Angeles Bay, June 27.

77. **Megachile occidentalis** Fox

1 ♂. Tortuga Island, May 11. The female is known, but is not in the collection.

78. **Megachile sidalceæ** Cockerell

4 ♂. Three from Guaymas, April 8, 11 and 15; one from Bay S. end of Tiburon Island, July 5. The female of *sidalceæ* is known, but is not in the collection. *M. furcata* Vachal, from Chihuahua, is a synonym.

79. **Megachile howardi** Cockerell

2 ♂; one Guaymas, April 15; one Puerta Ballandra, May 22.

80. **Megachile poculifera** Cockerell

4 ♂. Guaymas, April 6 to 15. This species ranges into the tropics, and was recently taken by Dr. W. M. Wheeler on the Isthmus of Panama.

81. **Megachile longula** Fox

3 ♀. Agua Verde, May 28. 1 ♀ Mulegé May 14. 1 ♀ Angeles Bay, June 27. Originally described by Fox as *Lithurgus oblongus*, but the specific name then given had been used in *Megachile*. *Megachile chilopsidis* Cockerell is very closely allied, and perhaps only subspecifically distinct. The name *chilopsidis* was published in 1900, *longula* in 1902.

82. **Megachile adelphodonta** new species

Belongs to group with male anterior tarsi slender and simple, and coxæ without any trace of spines. Wings clear hyaline.

♂. Length 9 mm.; black, including tarsi, mandibles and antennæ, but tegulæ translucent, brownish, and hind tibial spurs white; hair of head and thorax white, abundant on cheeks, pleura, scutellum and metathorax, but not

hiding surface; face bare (probably denuded), except white hair at sides, and along lower margin of clypeus; head broad, facial quadrangle broader than long; eyes very dark; mandibles simple, not toothed below, cutting margin extremely oblique, with a short obtuse inner tooth; clypeus short and broad, the anterior margin depressed, and shallowly excavated, the disc finely punctured and shining; supraclypeal area more finely and closely punctured, with a slight median ridge; front closely punctured in middle, at sides shining and very delicately punctured; antennæ slender, simple; mesothorax and scutellum shining, with strong rather dense punctures; area of metathorax dull and finely granular, the margin slightly shining; legs simple, tarsi slender; claws bidentate apically, and with a strong, sharp inner tooth; abdomen stout, broad at base, strongly punctured, little hairy; narrow white sutural hair-bands, and hind margins of segments 2 to 4 pellucid pale brownish, broadening at sides; sixth segment retracted so as to be invisible from above, the transverse keel projecting, bidentate, with a narrow but deep emargination, the teeth short and obtuse, the margin laterad of them gently concave in outline.

1 ♂. Guadalupe Point, Concepcion Bay, Gulf of California, June 17 (E. P. Van Duzee). Related to the group of species which Robertson has segregated as *Chelostomoides*, but distinct, and easily recognized by the character of the end of the abdomen.

Type: Male No. 1513 Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, June 17, 1921 on **Guadalupe Point, Concepcion Bay, Lower California.**

83. **Megachile discorhina** new species

Belongs to group of comparatively narrow, parallel-sided species, with excavated clypeal region bounded by a rim, and long curved mandibles.

♀. Length 13 mm.; black, including legs, antennæ and mandibles, but tegulæ ferruginous, and spurs of hind legs curved and pale ferruginous; hair of head and thorax white, but thin dark fuscous hair on vertex, disc of mesothorax, and scutellum; sides of face with conspicuous white hair; head large, eyes diverging below; cheeks broad and rounded, obtusely angulate below; clypeus presenting a projecting sharp semicircular keel, obtusely lobulate laterally, and beneath this the broad concave surface smooth and shining, with a secondary excavation or large pit above; face of the very broad labrum also smooth and shining, continuous with the similar surface of clypeus; mandibles very long, curved, apically bidentate, the teeth far apart, and on inner side with a dentiform angle, the inner margin with long fulvous hairs; mesothorax and scutellum shining, with strong well-separated punctures; area of metathorax with a sericeous surface; a conspicuous spot of white pubescence mesad of each wing-base, and white hair in scutello-mesothoracic suture; wings hyaline, very faintly brownish, stigma and nervures piceous, recurrent nervures joining second cubital cell very near base and apex; legs simple, with white hair, hind basitarsi not broadened; abdomen punctured, with five narrow but very conspicuous white hair-bands; sixth segment descending, nearly vertical, with scanty black hair, last ventral projecting beyond it; ventral scopa clear white, brown at tip of last segment.

1 ♀. Palm Canon, Angel de la Guarda Island, Gulf of California, May 3 (Van Duzee). Resembles *M. longula* Fox, but upper part of clypeus without any broad punctured surface. The end of mandibles, with a single pair of widely separated teeth, at once separates it from *M. chilopsidis* Cockerell. The mesothorax of *chilopsidis* has in front a pair of very conspicuous marks

due to white hair; these are present in *discorhina*, but much smaller. The head of *chilopsidis* is much broader and more massive than that of *discorhina*. The venation of *chilopsidis* also differs, the first recurrent joining second cubital a considerable distance from base.

Type: Female, No. 1514, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, May 3, 1921, at **Palm Canyon, Angel de la Guarda Island, Gulf of California.**

84. **Megachile odontostoma** new species

♀. Length 11 mm.; narrow and parallel-sided; black, including legs and mandibles, but flagellum dull ferruginous beneath, tegulæ reddish-brown with hyaline margins, spurs testaceous; head and thorax with thin white hair, long and dense at sides of face, on thorax forming two marks anteriorly, a band in scutello-mesothoracic suture, and a spot above each wing, these markings having a slightly yellowish tint; head oblong, eyes diverging below; facial quadrangle longer than broad; mandibles of the long and narrow type, with pale creamy hair on inner side, but no inner tooth, and oblique cutting margin without salient teeth; clypeus broad and low, with a median boss or tubercle, the anterior margin excavated in middle, and with a pair of forwardly directed spines, which are seen to project when the head is looked at from above; cheeks rounded, not angulate below; face and front very densely punctured, glistening between the punctures on supraclypeal area; vertex also very densely punctured, and with hardly any hair; mesothorax and scutellum strongly and closely punctured; wings hyaline, faintly brownish apically; stigma and nervures piceous; first recurrent nervure joining second cubital cell about twice as far from base as second from apex; legs simple, tarsi slightly reddened apically; hind basitarsi not broadened, or hardly so; abdomen parallel-sided, with four distinct narrow pure white hair-bands, and a fifth less distinct one; fifth and sixth segments with scanty short black hair; last dorsal as long as last ventral; ventral scopa entirely white.

1 ♀. Puerta Ballandra, Carmen Island, Gulf of California, May 22 (Van Duzee). A distinct species, without very near relatives, but in a general way allied to the group of *M. longula*, etc.

Type: Female, No. 1515, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, May 22, 1921, at **Puerta Ballandra, Carmen Island, Gulf of California.**

85. **Megachile prosopidis** Cockerell

1 ♀. Bay south end of Tiburon Island, July 5. Described from New Mexico.

86. **Megachile prosopidis** var. **testudinis,** new variety

♀. Differs by having median process of clypeus entire, more or less pointed; tegulæ dark, with red margin. It represents perhaps a variation rather than a subspecies.

1 ♀. (Type), about 14 mm. long, Tortuga Island, Gulf of California, May 11 (Van Duzee). The other two females are smaller, hardly 12 mm.; one Angeles Bay, June 27; one Guaymas, April 8.

Type: Female, No. 1544, Mus. Calif. Acad. Sci., collected May 11, 1921, by E. P. Van Duzee, on **Tortuga Island, Gulf of California.**

87. **Megachile slevini,** new species

♀. Length about 13.5 mm.; robust, but abdomen not of the triangular type; black, including mandibles, antennæ and tegulæ, but tarsi chestnut red (anterior basitarsi blackened), and a little red on tibiæ at apex; spurs red; hair of head and thorax long and white, but pale red hair on vertex, long red hair from beneath margin of clypeus, red hair on under side of mandibles, and long bright ferruginous hair at apex of labrum; head large and broad, facial quadrangle somewhat broader than long; sides of face with long white hair, that between antennæ slightly reddish; mandibles broad and massive, with three strong teeth not counting inner corner; clypeus short and broad, margin concave on each side of the obtusely projecting middle; head and thorax very finely rugoso punctate; no patches or bands of white hair on thorax above; wings dusky, stigma bright ferruginous, nervures piceous, the basal nervure red, and the membrane basad of it broadly suffused with red; second cubital cell receiving first recurrent nervure nearer base than second to apex; tarsi with orange-red hair; hind basitarsi not much broadened; abdomen with conspicuous white hair-bands on apices of segments 2 to 5, the thin discal hair on segments 4 and 5 red, on 6 brownish; sixth segment descending, but with abrupt outwardly directed lip, which is not surpassed by the last ventral; ventral scopa entirely white.

1 ♀. Gonzales Bay, Lower California, April 29 (Van Duzee). I have taken the liberty of naming this distinct species after the leader of the expedition. It resembles *M. pollicaris pereximia*, but is easily distinguished by the color of tarsi, scopa, etc.

Type: Female, No. 1516, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, April 29, 1921, at **Gonzales Bay, Lower California.**

88. **Megachile vanduzeei,** new species

♀. Short and broad, with narrow clear white bands on abdomen; ventral scopa long, silky and white, black on last segment; flagellum variably red beneath; mesothorax in front with a pair of lines due to hair, but these are slender and weak and often abraded and lost; a white band in scutello-mesothoracic suture, also sometimes abraded; vertex with black or brown hair. I had at first taken this for *M. newelli* Cockerell, the type of which is from Louisiana, but although the resemblance is very close, it is certainly distinct, *newelli* having much broader hind basitarsi, with the anterior side strongly convex. The middle tarsi are however, of the *newelli* type, as is the straight profile (in lateral view) of the sixth abdominal segment. The lower margin of the clypeus is straight, with a shining edge; in *newelli* it is distinctly concave or arched, with practically no shining edge. Although the punctures of mesothorax are very fine, they are quite distinct under a lens, on a slightly shining surface, while in *newelli* the whole mesothorax is dull, and a lens will hardly resolve the punctures. *M. kallstræmiæ* Cockerell, which also has the straight profile of sixth segment, has the hind basitarsus very broad in the fashion of *newelli*, but is easily known by the anterior margin of mesothorax broadly covered with white hair except in the middle. *M. townsendiana* Cockerell has the ventral scopa

entirely white, and the sixth segment concave in profile. *M. cleomis* Cockerell and *M. lippiæ* Cockerell, which are exceedingly like our species in appearance, have the sixth segment concave in profile, and the ventral scopa yellowish, black on last segment. When the abdomen is looked at from the side, the white bands are seen to be conspicuously overlapped by black hairs in *cleomis*, but this is not the case with *lippiæ*, nor with the species now described. The type of *M. vanduzeei*, from Guaymas, is about 12 mm. long; others are smaller, one (also from Guaymas) being only 10 mm.

3 ♀. Guaymas, Mexico, April 8; two ♀, bay south end of Tiburon Island, July 5; one ♀, San Francisquito Bay, June 23. All collected by Mr. E. P. Van Duzee. The sixth dorsal segment does show a very slight concavity in profile just before the apex, but has nothing of the distinct lip and median concavity of the *M. brevis* group. It also lacks the outstanding hairs of that group.

The remaining four species have exactly the aspect of the common *M. brevis* Say, of the Eastern States, but are separable by readily appreciable characters.

Type: Female, No. 1517, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, April 8, 1921, at **Guaymas, Sonora, Mexico.**

89. **Megachile sonorana,** new species

♀. Length about 10 mm.; black with long-cordiform abdomen; pubescence white, short and scanty on mesothorax, black behind ocelli but white on occiput; ventral scopa pure white, black on last segment and sides of the one before; no white hair marks on mesothorax anteriorly, but a white band in scutello-mesothoracic suture, and also above tegulæ; mandibles broad, quadridentate, strongly convex on outer side; front and sides of face with much white hair, but clypeus thinly haired, appearing bare seen from in front; clypeus densely and minutely punctured at sides, in middle shining, with coarser punctures in oblique lines, but no impunctate space; lower margin of clypeus straight; supraclypeal area with a smooth shining space; antennæ entirely black; mesothorax and scutellum finely and closely punctured; sides of metathorax, below enclosure, shining with a silky lustre; tegulæ black, with a spot of white hair in front; wings hyaline, slightly dusky; stigma dusky ferruginous, nervures fuscous; second cubital cell receiving second recurrent nervure nearer apex than first from base; legs black, hind spurs creamy-white, tipped with brown; hair on inner side of tarsi pale red; hind basitarsi broad, but anterior margin only gently convex; first five abdominal segments with narrow pure white apical hair-bands; sixth segment gently concave in lateral profile with outstanding black hairs on basal half.

1 ♀. Guaymas, Mexico, April 8 (Van Duzee). The venation and other characters negative the idea that this can be the female of *M. onobrychidis* Cockerell, described from New Mexico. The last abdominal segment and other characters separate it from *M. petulans* Cresson. In the key above, *M. petulans* would run out at *M. estebana*, from which it is easily known by the last dorsal segment.

Type: Female, No. 1518, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, April 8, 1921, at **Guaymas, Sonora, Mexico.**

90. **Megachile brachysoma,** new species

♀. Length about 10 mm.; black with mainly white pubescence, but pale brownish on disc of clypeus, coarse and black on vertex, thin, short and white on mesothorax and scutellum, with a very little, hardly visible dark hair on disc of mesothorax; ventral scopa white, black on last segment; hair on inner side of tarsi fulvous. This is the species which most resembles *M. brevis*, from which it is readily known by the dense tuft of pure white hair behind base of wings, the darker wings and dark stigma, and black hair on last ventral segment, but it is perhaps no more than a western subspecies of *brevis*. The clypeus is strongly and densely punctured, and its lower margin is slightly undulate. The antennæ are entirely black; the tegulæ dark, but reddish in middle, and the outer margin pallid. The second cubital cell receives the second recurrent a trifle nearer its apex than first to base; the veins are much heavier and darker than in *brevis*. The hind spurs are pale ferruginous.

1 ♀. San Francisquito Bay, Gulf of California, May 10 (Van Duzee). The darker wings and the venation separate this from *M. perbrevis* Cresson.

Type: Female, No. 1519, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, May 10, 1921, at **San Francisquito Bay, Gulf of California.**

91. **Megachile estebana,** new species

♀. Length nearly 11 mm.; black, with white hair, the ventral scopa faintly creamy, black on last segment except basally; vertex with coarse black hair; mesothorax and scutellum with black hairs on disc; abdomen with conspicuous white bands on hind margins of segments 2 to 5, but that on first not distinctly defined; clypeus and supraclypeal area each with a shining median space or line. I had at first taken this for a small example of *M. lippiæ* Cockerell, especially on account of the perceptible yellowish tint of the ventral scopa but it is certainly distinct by the smaller and more slender basitarsi; the black tegulæ, the black hair at sides of abdominal segments 5 and 6, so reduced as to be inconspicuous, and the entirely black antennæ. Nevertheless, additional material may reduce it to a subspecies of *M. lippiæ*.

1♀. San Esteban Island, Gulf of California, April 19 (Van Duzee).

Type: Female, No. 1520, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, April 19, 1921, on **San Esteban Island, Gulf of California.**

92. **Megachile tiburonensis,** new species

♀. Length about 11 mm.; similar to *M. estebana*, but tegulæ red, scutellum dull, and black hair at sides of fifth abdominal segment long and conspicuous. Ventral scopa slightly creamy, black on last segment. This is another insular derivative of *M. lippiæ*, and could be treated as a subspecies. The antennæ are entirely black, and the first recurrent nervure joins the second cubital cell much nearer the base than in *lippiæ*. There is a slight elevation in the middle of the occipital margin.

1 ♀. Bay S. end of Tiburon I., Gulf of California, July 4 (Van Duzee).

Type: Female, No. 1521, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, July 4, 1921, at Bay, south end of **Tiburon Island, Gulf of California.**

There are two forms which might be confused with one or more of the above, namely:

(1). *M. nupta* Cresson. Messrs. H. Skinner and E. T. Cresson, Jr., kindly examined Cresson's type, and reported ventral scopa entirely pale. It is really very light yellow, and a cotype showed fuscous hairs at extreme sides of last ventral segment. The eyes were dark brown, and the middle of mesothorax dull between the punctures. I noted from the cotype that it was in all respects very close to *M. brevis*, but distinguished by absence of black hair on vertex and mesothorax. The last dorsal segment has erect black hair, but apically has appressed light hair. What I called *M. nupta*, var. a., is certainly another species.

(2). *M. murinella* Cockerell. I have regarded this as a race of *M. brevis*. In the above table it runs to *M. brachysoma*, but the wings are not so dark and the venation is more delicate, the last dorsal segment is practically straight in profile, and the mesothorax is glistening anteriorly. This is evidently to be separated both from *brevis* and *brachysoma*.

Ashmeadiella Cockerell, 1897

Ashmeadiella is a North American genus of small or smallish bees, especially abundant in the southwest. The species are often closely allied, and it is probable that a thorough revision based on abundant material would show many more species than at present recognized. The forms in the present collection may be separated as follows:

At least middle and hind femora red 1
Femora black 3

1. Males; apex of abdomen quadridentate ..... *rufipes* Titus
   Females, with white ventral scopa 2
2. Anterior femora black, or slightly brownish or reddish .. *rufipes* Titus
   Anterior femora bright red, with a black streak beneath at base .. *haematopoda* n. sp.
3. Males; apex of abdomen quadridentate 4
   Females, with white ventral scopa 7
4. Very minute, length 4 mm. or less; stipites with long hairs 5
   Larger, at least 5 mm. 6
5. Apical teeth of abdomen clear red ..... *schwarzi* Titus
   Apical teeth of abdomen dark brown; smallest species, about 3 mm. long ..... *microsoma* n. sp.
6. Apical teeth of abdomen pallid, short and broad ..... *leucozona* n. sp.
   Apical teeth of abdomen dark brown, long and narrow ..... *digiticauda* n. sp.
7. Very small, considerably less than 5 mm. long; tegulæ dark brown .. *schwarzi* Titus
   Larger, at least 5 mm. long 8
8. Tegulæ clear reddish; comparatively large form, 6 or 7 mm. long ... 9
   Tegulæ dark brown or black 10
9. Sixth abdominal segment densely covered with white hair; mandibles red ..... *rhodognatha* n. sp.
   Sixth abdominal segment thinly covered with white hair; mandibles not red ..... *leucozona* n. sp.
10. Small species, less than 6 mm. long; raised part of second abdominal segment dullish, with excessively close minute punctures; mesothorax very finely and closely punctured ..... *echinocerei* Ckll.

Raised part of second abdominal segment shining, with distinctly separate punctures 11
11. Smaller; abdomen narrow ..... *subangusta* n. sp.
Larger; abdomen broad ..... *crassa* n. sp.

93. Ashmeadiella rufipes Titus, 1904

Described from San Diego County, California.

Angeles Bay, June 26-27, 4 ♀; Gonzales Bay, April 29, 2 ♀; Puerto Refugio, Angel de la Guarda Island, June 29, 1 ♀; Monserrate Island, June 13, 1 ♂; Coronado Island, Gulf of California, May 18, 1 ♂. In the females the hind tarsi vary from practically all black to nearly all red, and the tegulæ from dark to red. These differences are not correlated with different localities.

94. Ashmeadiella schwarzi Titus, 1904

Described from Arizona; our females are smaller than the type.

Guaymas, April 6, 1 ♂, April 8 and 10, 2 ♀.

95. Ashmeadiella echinocerei Cockerell, 1911

Described from Flagstaff, Arizona.

Puerto Refugio, Angel de la Guarda Island, May 1, 2 ♀. I at first thought that *A. digiticauda* might be the male, but the pubescence is differently colored, and on close comparison I feel sure they are distinct.

96. Ashmeadiella hæmatopoda, new species

♀. Length about 5 mm.; black, with entirely white hair, dense on sides of face, very long on scutellum, on abdomen forming narrow white bands, sixth segment thinly pubescent; hind margins of first four abdominal segments narrowly rufous; apical part of mandibles clear red, except black tip; flagellum ferruginous beneath; tegulæ dilute reddish; wings clear, nervures dark, pale reddish at base of wing; legs shining bright ferruginous, the anterior pair dark at base, and with a black stripe on their femora behind basally; eyes pale green; facial quadrangle much longer than broad; clypeus convex, very finely and closely punctured; mesothorax and scutellum shining, the punctures rather widely separated; abdomen shining, finely punctured, basin of first segment large.

Tiburon Island, taken at Freshwater Bay, April 23, 1 ♀ (Van Duzee). Resembles *A. rufipes*, but easily distinguished as shown in the key.

Type: Female, No. 1522, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, April 23, 1921, at **Freshwater Bay, Tiburon Island, Gulf of California.**

97. Ashmeadiella microsoma, new species

♂. Length about 3 mm.; black, with entirely white pubescence, dense on face and front, very long on scutellum; head large, circular; eyes dark; mandibles red subapically; front rough but shining on each side of median ocellus; flagellum obscurely reddish beneath; mesothorax shining; but with strong punctures, its front and sides with moss-like white hairs; tegulæ brown; wings clear, second cubital cell higher and shorter than usual, with end of first recurrent distant from its base not much more than equal to half length of first intercubitus; small joints of tarsi brownish; abdomen with the usual white bands; apical teeth dark reddish brown, short, the median ones not much longer than broad; genitalia of the type usual in the genus, but stipites acutely pointed, instead of obtuse at tip as in *A. meliloti* Ckll.

Guaymas, Mexico, April 6, 1 ♂ (Van Duzee).

Type: Male, No. 1523, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, April 6, 1921, at **Guaymas, Sonora, Mexico.**

98. Ashmeadiella leucozona, new species

♂ (Type). Length about 6 mm.; black, the abundant pubescence entirely pure white, dense on face, front and cheeks, forming a broad gently curved band across mesothorax anteriorly, long on scutellum, long and dense along margins of mesopleura, forming a dense fringe along hind margins of trochanters and femora, a dense broad band on hind tibiæ posteriorly, and rather broad bands on abdomen, that on first expanding at sides into large triangular patches; mandibles reddened subapically; flagellum slender, dull ferruginous beneath; front coarsely punctured, but vertex shining, with punctures more separate; mesothorax highly polished, with well separated punctures; scutellum roughened with punctures, but shining; tegulæ rufous; wings hyaline, with dark nervures, second cubital cell long; small joints of tarsi bright ferruginous; abdomen rather closely and finely punctured, apical teeth testaceous, short, the median ones very broad and truncate, more than twice as broad as long.

♀. Length about 7 mm.; similar to the male, except for the usual sexual characters; hair of clypeus long, but not altogether hiding the roughened surface; lower margin of clypeus undulate; mandibles black; flagel um dusky reddish beneath; hair of scutellum faintly tinged with yellowish; abdominal bands delicately suffused with yellowish; sixth segment thinly pubescent; ventral scopa white. The hair on inner side of hind tarsi is pale orange. Eyes olive green.

Guaymas, Mexico, April 10, 3 ♂, 2 ♀ (Van Duzee). The female is separated from *A. meliloti* especially by the transverse band of white hair on mesothorax anteriorly. One specimen (male, variety a) has the median apical teeth of abdomen considerably narrower, but appears to belong to the same species.

Type: Male, No. 1524, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, April 10, 1921, at **Guaymas, Sonora, Mexico.**

99. Ashmeadiella digiticauda, new species

♂. Length about 5 mm.; black, with mainly white pubescence, but on vertex and dorsum of thorax it is pale yellowish, and the abdominal bands have a slightly yellowish tint; clypeus not so densely covered as to hide the disc, which has very coarse punctures placed as closely as possible; mesothorax with no band of hair or spots anteriorly; head moderate; eyes black; mandibles reddish apically; flagellum obscure reddish beneath; region on each side of ocelli very densely punctured, not polished; mesothorax dull and very closely punctured; tegulæ dark; wings greyish; legs black, tarsi a little reddish apically; abdomen closely punctured; apical teeth dark, the lateral ones red on inner side, the middle ones long and narrow, like the end of a finger, and copiously hairy.

Tortuga Island, Gulf of California, May 11 (J. C. Chamberlin). A distinct species, especially known by the apical teeth of abdomen. *A. californica* Ashmead runs to the same place in the table, but differs by the much more shining abdomen, even longer median apical teeth of abdomen, and green eyes. *A. aridula* Cockerell and *A. wislizeni* Cockerell are somewhat allied, but easily distinguished by the pure white hair on thorax above. *A. digiticauda* differs at once from *A. cactorum* Cockerell by the color of pubescence and densely punctured mesothorax.

A. prosopidis Cockerell runs out of the table because of the very small size, pale tegulæ and highly polished second abdominal segment.

Type: Male, No. 1525, Mus. Calif. Acad. Sci., collected by J. C. Chamberlin, May 11, 1921, on **Tortuga Island, Gulf of California.**

100. Ashmeadiella rhodognatha, new species

♀. Length about 6 mm., robust, with broad face; black, the pubescence entirely white, except that it is pale yellow on inner side of tarsi; it is dense on cheeks and sides of face, forms a transverse patch (not sharply defined) on mesothorax anteriorly, dense along hind margin of mesothorax, very dense and white on hind tibiæ posteriorly, and forming the usual abdominal bands, the sixth segment densely covered; hind margins of first four abdominal segments reddened. Clypeus closely punctured but shining, concave before apex; mandibles broad, chestnut red, the teeth black; flagellum short, rather obscure red beneath, except at base; front dull and very densely punctured, vertex closely punctured, but glistening; eyes dark greyish; mesothorax highly polished, with very distinct but well separated punctures; area of metathorax smooth and polished; tegulæ clear bright ferruginous; wings clear, with dark nervures; first recurrent at least twice as far from base of second cubital cell as second from apex; legs black, with abundant white hair; abdomen shining, finely punctured, basin of first segment large.

San José Island, Gulf of California, May 28 (Van Duzee). 1 ♀. Easily known by the red mandibles and other characters.

Type: Female, No. 1526, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, May 28, 1921, on **San José Island, Gulf of California.**

101. Ashmeadiella subangusta, new species

♀. Length nearly 6 mm.; black, slender, the pubescence entirely white, except slightly yellowish on inner side of tarsi; face rather narrow, with dense white hair at sides; eyes green, blackish anteriorly; clypeus extremely densely punctured; mandibles obscurely rufescent apically; flagellum slightly reddened beneath; vertex with large strong punctures, but the intervals shining; mesothorax strongly convex, shining, strongly punctured, without spots or band of hair in front; mesopleura closely punctured; tegulæ brown; wings hyaline, with dark nervures, second cubital cell much shorter than in *A. crassa;* legs not very hairy; abdomen remarkably narrow for the genus, but basin of first segment sharply defined; white hair-band slender, distinct only on first four segments; sixth segment sparsely hairy; punctures of abdomen fine, on a shining surface; ventral scopa pure white, rather thin.

Guaymas, Mexico, April 8 (Van Duzee). Recognizable by the peculiar slender form.

Type: Female, No. 1527, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, April 8, 1921, at **Guaymas, Sonora, Mexico.**

102. Ashmeadiella crassa, new species

♀. Length about 6.6 mm., robust; black, with white pubescence, tinged with ochreous on scutellum, the abdominal bands slightly yellowish, hair on inner side of tarsi orange; head large, but facial quadrangle considerably longer than broad; sides of face with dense white hair; clypeus very densely punctured, the lower margin not crenulate or undulate, but very broadly shallowly excavated, concave; mandibles black; eyes green, blackish in front; flagellum very obscurely brown beneath; vertex closely punctured; mesothorax rather dull, very closely and finely punctured, in front with thin erect hair, in the type forming a pair of distinct spots, lacking in the Puerto Refugio specimen; posterior margin of mesothorax with dull white hair, contrasting with the yellowish of scutellum; mesopleura densely rugosopunctate; tegulæ black (dark reddish in Puerto Refugio specimen); wings hyaline, with dark nervures; legs black; abdomen broad, shining but well punctured, sixth segment thinly hairy; ventral scopa white.

Type (1 ♀) from San Francisquito Bay, Gulf of California, May 10 (Van Duzee). One ♀ from Puerto Refugio, Angel de la Guarda Island, May 1 (Van Duzee). Related to *A. coquilletti*, Titus, but mandibles with no red band, tegulæ with no red spot, and ventral scopa white. The clypeal structure also differs.

Type: Female, No. 1528, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, May 10, 1921, at **San Francisquito Bay, Lower California.**

Coelioxys Latreille

The species in the collection are separable thus:

First three abdominal segments red ..... *menthæ* Ckll.
At least second and third segments black; females 1

1. Last ventral segment very broadly rounded at end, with hairy margin ..... *tiburonensis* n. sp.
   Last ventral segment otherwise 2
2. Scutellum partly red, and with a strong median projection ..... *gonaspis* n. sp.
   Scutellum entirely black, with no median projection. . *novomexicana* Ckll.

These bees are parasitic in nests of *Megachile*.

103. Coelioxys menthæ Cockerell

Guaymas, Mexico, 2 ♂, April 7 (Van Duzee). This species has been known from females collected in Arizona and southern New Mexico. The present males agree well, except for the straight and black axillar spines. I do not believe they can belong to a different species, and the scutellum shows that they are not *C. slossoni* Viereck. The last segment has four apical spines (no median one), the lower very slender and sharp; the basal lateral spines are long and slender.

104. Coelioxys novomexicana Cockerell

San Francisquito Bay, Gulf of California, June 23 (Van Duzee). 1 ♀. Known from Arizona and southern New Mexico.

105. Coelioxys tiburonensis, new species

♀. Length a little over 9 mm., rather slender; black, with the mandibles (but teeth black), scape, large patch at each side of mesothorax in front, ends of axillar spines, apical middle of scutellum, sides of first abdominal segment broadly, extreme sides of segments 2 to 4, and venter suffusedly, all dark red; tegulæ and legs bright ferruginous; clypeus ordinary; face and sides of front covered with white hair; cheeks with white hair, the broad depression hairy; third antennal joint about as long as fourth, but more slender; mesothorax and scutellum closely and very coarsely punctured, but the intervals shining; anterior margin of mesothorax with a band of dull white hair, but no hair-spots here or on scutellum; tubercles reddish at end; hind margin of scutellum broadly subangulate, with a small median tubercle, but no median keel; axillar spines long, sharp and straight; postscutellum with dense white hair in middle; truncation of metathorax dull; wings strongly dusky in marginal cell and on apical margin; first recurrent nervure joining second cubital cell well beyond base; spurs red; abdomen highly polished, with small sparse punctures, evanescent on segments 5 and 6; six narrow white hair-bands, the first bounding basin of first segment; last dorsal obtuse, shorter than last ventral (but not greatly so), apically covered with dark chocolate-colored hair; last ventral, very broad, angularly subtruncate, with a sharp black median spine,

almost concealed by the dense fringe of black hair, which it does not surpass; fourth and fifth ventral with smaller and closer punctures than second and third. Hair of eyes short.

Bay south end of Tiburon Island, July 4 (Van Duzee). 1 ♀.

In my table and that of Crawford this runs to *C. texana* Cresson, but it is really quite distinct, and the scutellum shows that it cannot be the female of *C. texana sonorensis* Cockerell. It is actually nearer to *C. sanguinicollis* Friese, which occurs from Orizaba, Mexico, to Paraguay, but is readily separated by the color of the thorax and the white abdominal bands.

Type: Female, No. 1529, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, July 4, 1921, at Bay at south end of **Tiburon Island, Gulf of California.**

106. Coelioxys gonaspis, new species

♀. Length about 11.5 mm.; black, with the following parts red, greater part of mandibles, obscure patch on upper part of mesopleura, axillæ, apical middle of scutellum broadly, first abdominal segment (except lower part of basin), extreme sides of second segment, and venter except last segment; tegulæ bright ferruginous; legs bright red, the hind tibiæ (except in front) and tarsi black; hair of eyes short; face covered with ochreous-tinted hair; antennæ black, third joint shorter than fourth; cheeks hairy, including the depression; tubercles reddened, seen from in front pointed, thorn-like; mesothorax and scutellum closely and very coarsely punctured, without distinct hair-spots; axillar spines long and pointed, slightly curved; hind margin of scutellum with a salient tubercle, pyramidal in outline; metathorax with much white hair, but the area bare and entirely dull; disc of mesopleura thinly hairy; wings dusky in marginal cell and along apical margin; first recurrent nervure joining second cubital cell well beyond base; tarsi with golden hair on inner side; spurs red; abdomen conical, broad at base, shining, with sparse punctures, stronger and closer on basal part, but on sixth segment minute and very much closer than on fifth; hair-bands tinged with ochreous; last dorsal segment produced, not very abruptly narrowed, apically keeled; sixth ventral extending beyond dorsal, but not very greatly so, its apical part parallel-sided, not notched, broadly rounded, with a small median point; third and fourth ventral segments punctured nearly alike, fifth more closely. Neither in this species nor *C. tiburonensis*, is the sixth dorsal turned up at end, or the sixth ventral curved downward.

Guadalupe Point, Concepcion Bay, Gulf of California, June 17 (Van Duzee). 1 ♀. In my table this runs out near *C. zapoteca* Cresson; in Crawford's to *C. sculptifrons* Crawford, a species from New York which is not allied. The last ventral segment is not unlike that of the South American *C. lævis* Friese, but in other respects the bees are quite different.

Type: Female, No. 1530, Mus. Calif. Acad. Sci., collected by E. P. Van Duzee, June 17, 1921, at **Guadalupe Point, Concepcion Bay, Lower California.**