

it a necessity (perhaps for protection against injury, as Korschelt and Heider suggest (4)) for the embryo to be covered over at an early stage in its development. The physico-chemical forces which led to the origin of this adaptive covering cannot be defined at present, but the result was that as soon as the first rudiment of the embryo, the germ-disk, became established a portion of it folded over the rest and became the amnion. This would occur most readily in forms which, like some Orthoptera and the termite, begin in a small germ-disk. When forms arose among the higher insects as adaptations to special conditions of life the early completion of this process became less important, and in a few extreme cases this led to the degeneration and disappearance of the membranes.

- (1) BRANDT, A.—'Beiträge zur Entwicklungsgeschichte der Libelliden und Hemipteren.' 1869.
- (2) BRUCE, A. T.—'Embryology of Insects and Arachnids.' 1887.
- (3) GRABER, V.—'Vergleichende Studien am Keimstreif der Insecten.' 1890.
- (4) KORSCHOLT und HEIDER.—'Lehrbuch der vergleichenden Entwicklungsgeschichte.' 1890.
- (5) McMURRICH, J. P.—'Embryology of Isopod Crustacea.' 1895.
- (6) PATTEN, WM.—'The Development of Phryganids.' 1884.
- (7) VIALLANES, H.—'Sur quelques points de l'histoire du développement Embryonnaire de la Mante religieuse.' 1889-90.
- (8) WHEELER, W. M.—'The Embryology of *Blatta germanica* and *Doryphora decemlineata*.' 1890.
- (9) WHEELER, W. M.—'Contributions to Insect Embryology.' 1893.
- (10) HEYMONS.—'Development of Orthoptera and Dermaptera.' 1895. (Abstracted in Journ. Roy. Micr. Soc. 1894.)

XLIV.—*Contributions from the New Mexico Biological Station.*  
 —I. *Descriptions of new Bees collected by Prof. C. H. T. Townsend in the State of Vera Cruz.* By T. D. A. COCKERELL.

WHEN Prof. Townsend lately went for a collecting trip in Mexico I pointed out to him that, although many bees had been described from that country, we were totally ignorant of their habits, the flowers they visited, and so forth. Accordingly he collected a large series of specimens, noting in every case the exact locality and date, and preserving specimens of the flowers on which the bees were caught. The collection thus brought together is of great interest, not only for the



new species it contains, but for the light it throws on the natural history of a number of those described by Smith, Cresson, and others. At the present time only descriptions are offered; but a future paper will contain the determination of the plants, with lists of species visiting them, and various remarks on the bee-fauna of Vera Cruz.

The two localities cited—San Rafael and Paso de Telaya—are only about two miles apart, both on the north bank of the Rio Nautla, not over 30 to 40 feet above sea-level. San Rafael is about 4 or 5 miles from the coast in a straight line and about 75 miles north of Jalapa by road. From Vera Cruz to the mouth of the Rio Nautla is about 70 miles. Coffee, vanilla, coconut, and cacao do well, but mangoes do not ripen well.

(1) *Calliopsis bidentis*, sp. n.

♀. Length 6 millim. Entirely black, the mandibles only rufescent towards tips, very shiny; face densely punctured; thorax closely punctured in front, much more sparsely on middle, extreme base of metathorax minutely roughened. Wings smoky, nervures and stigma dark vandyke-brown. Tegulæ shining, dark testaceous.

♂. Almost or quite as long, but more slender. Patch on upper median margin of labrum, clypeus (except the two black dots and the anterior edge), lateral face-marks, tubercles (with a dark dot), knees, anterior tibiæ in front, and the tarsi more or less, reddish yellow, probably yellow turned reddish by cyanide. The lateral face-marks are narrow, triangular, pointed above, not quite reaching level of antennæ, but ending abruptly below at or near the level of the clypeal dots.

5 ♀, 3 ♂, San Rafael, March 14, 18, and 23; on flowers of *Bidens* and another composite. Paso de Telaya; one ♀, April 8, on a composite.

This species is of Nearctic affinities, being closely allied to those which frequent Compositæ in the United States. It differs:—

(a) From *C. margaritensis* by being a little larger, the flagellum not testaceous beneath, apical margins of abdominal segments not testaceous.

(b) From *C. albitarsis* ♀ at once by the darkened wings, the marginal cell more narrowly and not at all obliquely truncate, and in the first recurrent nervure joining the second submarginal cell one fifth of its length from its base; whereas in *albitarsis* (a Colorado specimen identified by Mr. Fox) it meets the transverso-cubital nervure.



(c) From *C. albitarsis* ♂ (from Sta. Fé) in the darkened wings, the shorter marginal cell, but not in the first recurrent nervure, which in the male *albitarsis* examined agrees with *bidentis* and does not join the transverso-cubital nervure. The lateral face-marks in *albitarsis* are blunt above and produced below, thus different from *bidentis*.

(d) From *C. ornatipes* ♀ in the somewhat smaller size, the very dark stigmata. The scopa on hind legs is exactly as in *ornatipes*.

(e) From *C. ornatipes* ♂ in the wholly dark scape, the labrum with only a light spot, the tibiae not yellow except the anterior ones in front.

(f) From *C. Rudbeckiae* ♀ in the shorter second submarginal cell, which receives the first recurrent nervure nearer its base (one third of its length from its base in *Rudbeckiae*), and in the margins of the abdominal segments not being dark testaceous.

(g) From *C. Rudbeckiae* ♂ in the absence of the supraclypeal mark, the lateral face-marks narrower above and not pointed below.

(h) From *C. perlævis* by its much smaller size, &c.

## (2) *Megachile chrysophila*, sp. n.

♀. Length about 11 millim. Short and broad; black throughout, including the legs, mandibles, and antennæ. Head rather broad; face and front with rather dense greyish-white hairs, some sparse, darker, yellowish and blackish hairs converging over clypeus, which is strongly and closely punctured. Supraclypeal area hairless, strongly punctured, except a small, smooth, shining central patch. Cheeks with white hairs. Vertex with rather sparse black hairs. Mandibles bidentate, with a broad inner lamina representing the third tooth; only one groove on outer surface. Thorax very closely punctured, with short sparse inconspicuous pubescence, black and yellowish white mixed, on dorsum, denser and whiter on anterior margin of mesothorax; a conspicuous line of dense yellowish-white pubescence running along suture between mesothorax and scutellum. Pleura and sides of metathorax with white pubescence, dense, so as to form a conspicuous patch beneath the tegulæ. Tegulæ piceous. Wings smoky hyaline, greyish, not yellowish; nervures black. Legs with short, thin, whitish pubescence; basal joints of tarsi with dark rufous pubescence on inner side. Claws not cleft. Abdomen short, subcordiform, rather shiny, closely punctured; hind margins of dorsal segments



with narrow, even, pale fulvous hair-bands. Dark portions with short black pubescence. Apical segment pruinose. Ventral scopa orange-fulvous, mixed with black at extreme apex.

San Rafael, June 20; one, on an orange-flowered composite.

Very near to *M. montezuma*, Cresson, but differs in the black tegulæ, &c.

(3) *Megachile veræcrucis*, sp. n.

♂. Length about or a little over 11 millim. Broad and short; black, legs partly red, all the tarsi pale lemon-yellow. Head of ordinary shape; face densely covered with silky pale yellowish pubescence, flat and directed downwards on clypeus, directed upwards above, with an erect fringe along top of clypeus and thence upwards on each side to the antenna. The light pubescence abruptly terminates just above the level of the anterior ocellus, leaving the vertex with sparse erect yellowish hairs, not concealing the surface, which is densely punctured. A patch behind the summits of the eyes hairless. Cheeks with short, thin, dull subochraceous pubescence, except at extreme base, where it is dense and white. Mandibles wholly black. Antennæ black, the flagellum obscurely ferruginous beneath. First joint of flagellum equal to second; terminal joint broadened and flattened, like a spear-head. Thorax dull and very densely punctured; pubescence above pale ochraceous, short and thin, not concealing the surface, except anterior border of mesothorax, triangularly produced backwards on each side of the middle, a patch above base of wings, anterior border of scutellum, and metathorax, where it is dense. Pleura with fairly dense and long hairs, white on lower part. Tegulæ ferruginous. Wings dusky hyaline, broadly darker on outer margin; nervures fuscous, ferruginous towards base of wing. Coxæ and trochanters black, the anterior ones suffused with reddish. Anterior femora rufous; middle femora rufous in front except base, black behind except apical half below; hind femora black. Anterior tibiæ rufous, the angles more or less black; middle tibiæ rufous, largely suffused with black behind; hind tibiæ dark rufo-fuscous, more or less suffused with rufous. Tarsi all very pale yellow, ends of claws black. Anterior coxæ with a stout spine, fringed with white hairs on inner side; there is a patch of dense white pubescence laterad of the spine, separated from it by a shining smooth space. Anterior femora short and three-sided, the tibiæ also three-sided but shorter. Hind tibiæ in front



covered with very large close pits or punctures. First joint of anterior tarsi broad, flat, thin, convex without, concave within, narrowest at base, not produced at apex, without shining, sparsely clothed with short white hairs; hind margin fringed with long silky dull white hairs, black only at extreme tips, anterior margin within with a short brush of black hairs; inner concave surface black, with white specks. Second to fourth joints of anterior tarsi successively smaller, fringed on hind margin like the first; second with a black spot on inner surface. Median tarsi with the first joint broadly dilated, pyriform, with a dense oblique fringe of silky yellowish-white hairs on outer side, and at base within a deep pit to admit an angular projection of the tibia. Basal joint of hind tarsi somewhat flattened. Abdomen short and broad, rather shining, closely punctured, apical margins of the segments with narrow fringes of pale ochreous hairs. Fifth segment at base and apex largely covered with appressed pale pubescence. Apex emarginate, not very deeply. Base of venter with a strong keel.

San Rafael, June 18; one, on plant no. 29.

Superficially this is much like the male of *M. candida*, Smith, which Prof. Townsend took at Paso de Telaya on April 8. The following table at once separates them:—

*M. candida* ♂.

Hairs of fringe of first joint of anterior tarsi largely black at ends.

First joint of anterior tarsi not so broad.

First joint of middle tarsi slender, ordinary.

First joint of hind tarsi a little shorter than the three following joints together.

Spines on anterior coxæ longer and more slender.

Tegulæ rufo-piceous.

Second submarginal cell higher.

*M. veræcrucis* ♂.

These hairs black only at extreme tips.

First joint of middle tarsi pyriform.

First joint of hind tarsi distinctly longer than the three following joints together.

Tegulæ ferruginous.

Second submarginal cell very low.

(4) *Megachile perpunctata*, sp. n.

♀. Length about 11 millim. Black throughout, including antennæ, mandibles, and legs. Shape of a *Cœlioxys*. Face strongly and closely punctured; clypeus with a median smooth line, its median apex trituberculate, with a few dark rufo-fulvous hairs. Pubescence of face and vertex sparse and black, mixed with white in front, and a broad band of white hairs in front of each eye. Cheeks with white pubes-



cence; mandibles tridentate. Thorax dullish, very closely punctured, more sparsely on metathorax, and not at all on the dull enclosure. The surface of the mesothorax, between the punctures, appears to be microscopically tessellate. Pubescence of dorsum of thorax black and very sparse; anterior margins of meso- and metathorax with a narrow band of dense white hairs, but none between scutellum and mesothorax. Sides of metathorax with a white fringe. A spot of dense white pubescence above the tegulæ. Pleura with thin dirty white pubescence. Tegulæ piceous. Wings pale fuliginous, the costa broadly dark fuliginous, shining violaceous; nervures black. Legs with short sparse whitish pubescence; tarsi with shining rufous pubescence on inner side. Claws simple. Abdomen tapering to a point, conical, shining, sparsely punctured, thinly pale pruinose, the first two segments with extremely narrow white hair-bands, first and last segments with a few black hairs. Ventral scopa yellowish white, mixed with black at tip; it cannot be well seen, as it is carrying a great mass of orange pollen.

San Rafael, March 18; one, on plant no. 4.

At first I thought this must be the female of *M. coelioxoides*, Cresson, although that has fulvo-ferruginous legs and is not closely punctured. But Smith describes a female from Orizaba as *M. irritans* which is like *perpunctata*, but has the thorax "finely and not very closely punctured." Thus, if there is any synonymy involved, it must be *irritans*, not *perpunctata*, that is the female of *coelioxoides*.

(5) *Megachile rhodopus*, sp. n.

♀. Length 13 millim. Black, legs and antennæ red. Head ordinary; mandibles dark ferruginous except their ends, which are 3-dentate, outer surface of mandibles with two strong grooves. Pubescence of head and thorax thin and short, ochraceous above, greyish white below and on sides; face with greyish-white pubescence, not dense. Clypeus and front closely punctured; scape punctured; first joint of flagellum not much longer than second. Mesothorax very closely punctured, the punctures fairly large; metathorax strongly punctured, the enclosure very distinct, dull, minutely granular. Tegulæ shining fulvous. Wings hyaline, with a strong yellowish-fulvous tinge, nervures fulvous. Anterior trochanters largely black; anterior femora with a black stripe on outer side. Pubescence of legs sparse and white, becoming fulvescent on tarsi, rufous on inner side of basal joint of tarsi. Basal joint of hind tarsi broad and flat.



Abdomen of ordinary shape, microscopically tessellate, closely punctured; first segment beneath, and following segments slightly at extreme sides, dark rufous. Apical margins of segments 1 to 5 with a band of orange-fulvous hairs—broader, thinner, and erect on first, narrow and appressed on the others. Apical segment with sparse short greyish pubescence, one might say pruinose. Ventral segment 1 without a fringe, 2 and 3 with very long fringes of shining white hairs, fringe of 4 mixed white and black, of 5 black with a few white hairs; extreme apex with pale brownish hairs.

♂. Face densely covered with shining pale yellow silky hairs, an erect fringe of black hairs along top of clypeus; vertex and thorax above with thin foxy-red pubescence. Tegulae ferruginous. Antennae black above; apical joint a little flattened and broadened; first joint of flagellum a little shorter than second. Legs largely suffused and blotched with black; tarsi rufous throughout. Anterior legs with a dense long silky fringe behind, the fringe white at base, the long hairs emerging from behind the white ones orange-fulvous. Basal joint of anterior tarsi produced at apex into a long blunt hollow projection; basal joint of middle tarsi ordinary, but with a very long rather thin fringe of yellowish-white hairs on hind border. Spines on anterior coxae short, flat, and rather broad, blade-like. Hind tibiae curved. Apex of abdomen broadly, not deeply, emarginate.

San Rafael: the female March 3, on flower no. 1; the males June 18, on flowers nos. 1 and 29. The flowers are Compositae.

*M. rhodopus* is allied to certain of the species found in Brazil.

(6) *Megachile bidentis*, sp. n.

♀. Length about 6 millim. With a very short abdomen. Black; head and thorax with thin appressed golden pile, only well seen in certain lights. On each side of the clypeus, and especially along its front edge, the pubescence is denser and conspicuous, pale yellowish. On the front and vertex and beneath each antenna are erect dark fuscous hairs; such hairs are also scattered over the thoracic dorsum, and there are black hairs just before the tegulae. Head round seen from in front; occiput deeply concave, meeting the vertex at a sharp angle, which continues down the cheeks. Clypeus strongly punctured, but not so densely as the supraclypeal area. Front strongly mammillate. Mandibles very broad, strongly tridentate, wholly black. Antennae wholly black. Thorax shining in



front, otherwise dull and very closely punctured, seen from the side appearing hardly so large as the head seen from in front. Tegulæ piceous, shining. Wings large for the size of the body; anterior wings 5 millim. long, strongly tinged with reddish yellow, except the portion beyond the cells, which is greyish, the apico-costal margin with a dark grey cloud which extends into marginal cell. Nervures ferruginous; marginal cell broad and rounded at tip, second submarginal very long. Legs shining black, rather slender, very sparsely pubescent; the hairs pale; the hind legs not more pubescent than the others. Inner sides of basal joints of tarsi with dense shining reddish-brown hairs. Abdomen broad and very short, punctured, the first two segments above black, without light hairs, except the hind margin of second segment, which has a narrow fulvous hair-band. Remaining segments covered with appressed fulvo-ochraceous pubescence, that on the third sparse enough to show up the marginal band in contrast. Apex with a broad shallow emargination. Ventral scopa consisting simply of three narrow bands of short fulvo-ochraceous pubescence, hardly fitted to carry pollen, though there is a very little pollen attached to the under surface of the abdomen. Apex with dense pubescence beneath as above.

San Rafael, March 8, on *Bidens*.

A singular little species, very near to *M. pilosa*, Smith, from the Amazons, but differing in colour of tegulæ and of pubescence of abdomen beneath.

(7) *Melissodes pernigra*, sp. n.

♂. Length  $12\frac{1}{2}$  millim. Shining, deep black, the pubescence all black, except that on cheeks and pleura beneath it is slightly pallid (dark greyish brown, nearly black), and on inner side of basal joint of all the tarsi it is shining dark rufous. Face about square. Clypeus prominent, arched, wholly dark, its anterior edge shining brownish, its surface microscopically tessellate and beset with close shallow punctures—one might almost say malleate. Mandibles wholly dark. Antennæ long, wholly black, reaching to base of second abdominal segment; scape short and swollen; first joint of flagellum one fourth longer than second. Pubescence of thorax dense but short. Tegulæ black. Wings smoky, nervures black. Short joints of tarsi brown. Abdomen naked above, except base of first segment, which has black pubescence; rather closely punctured; apical third of first



segment impunctate. Ventral segments sparsely fringed with black hairs. Apex truncate.

San Rafael, March 16; Paso de Telaya, March 26, on flowers of *Ipomœa*.

Closely allied to *M. atrata* and *bimaculata*, but differs by the wholly dark clypeus and pubescence. At Paso de Telaya, April 7, on plant no. 9, was taken a female which I am obliged to refer to *atrata*, Smith; but the male of *atrata* was not observed. In the U. S., Robertson has observed the allied *M. bimaculata* visiting *Ipomœa*.

(8) *Melissodes floris*, sp. n.

♂. Length about 9 millim.; antennæ  $6\frac{1}{2}$  millim. Black, with pale ochreous pubescence, whitish on lower part of face and cheeks, mixed with black on scutellum, and a few black hairs on hind part of mesothorax; no black hairs on vertex or occiput. Clypeus lemon-yellow, the dots represented by a black notch on each side, anterior edge black. Labrum black. Mandibles dark ferruginous at tips; no yellow spot. Flagellum ferruginous beneath, its first joint about one fourth length of second, not twice as long as funicle. Head broad; pubescence of face, occiput, and cheeks long and fairly abundant. Thorax shining, tolerably closely punctured. Tegulæ dark brown, pubescent. Wings clear, with a slightly yellowish tinge; nervures dark reddish brown. Second submarginal cell not very oblique; third submarginal narrowed at least half to marginal. Legs with thin whitish pubescence, rufous on inner sides of basal joints of tarsi. Claw-joints ferruginous. Abdomen black, the hind margins of the segments broadly testaceous; the surface, especially of segments 3 and 4, more or less pale pruinose; thin subapical white bands of microscopical pubescence on segments 2 to 5, that on 2 sometimes failing in the middle. Base of first segment with long thin pale ochreous pubescence. Dark portions of segments with black hairs. Extreme apex with dark fuscous pubescence. The second segment may show a basal hair-band like the subapical one.

♀. Stouter; antennæ short, reaching only to tegulæ; flagellum only obscurely rufescent beneath; clypeus black, vertex with some black hairs. Wings, perhaps, rather more dusky. Punctuation of mesothorax sparse; abdominal hair-bands on segments 2 to 4 broad, ochreous, that on 2 interrupted broadly in middle, but basal band of 2 conspicuous and entire; fifth segment and apex with greyish-black



pubescence ; basal joints of first four tarsi with dense brown-black pubescence on outer side ; outer side of median tibiæ with short dark fuscous pubescence ; brush of hind tarsi brown-black or sooty.

San Rafael, three males, March 8, 13, and 23, on *Bidens* and another composite ; one female, March 8, on *Bidens*.

This is closely allied to the U.S. *M. agilis*, Cresson. They may be separated thus :—

*M. agilis* ♂.

Front edge of clypeus rufous.  
Mandibles with a yellow spot.  
No black hairs on dorsum of thorax.

Subapical lateral teeth of abdomen better developed.

9 hooks on costa of hind wing ; but this is not constant.

*M. floris* ♂.

Front edge of clypeus black.  
Mandibles without a yellow spot.  
Some black hairs on dorsum of thorax.

Subapical teeth less developed, sometimes not noticeable.

11 hooks on costa of hind wing ; not constant.

(9) *Melissodes labiatarum*, sp. n.

♂. Length about 11 millim. ; antennæ 7. Black ; clypeus, labrum, and a small dot on mandibles yellow. Clypeus with the usual two black dots ; its anterior margin dark rufous. Flagellum ferruginous beneath, its first joint hardly a quarter length of second, but about twice as long as funicle. Head broad ; face, occiput, and cheeks with tolerably dense long yellowish-white hairs, none black on vertex, but occiput behind with black hairs. Mesothorax with rather large, not very close punctures, as also the scutellum, postscutellum, and metathorax. Thorax above with erect, not very long, moderately dense pubescence, pale ochreous varying to dull fulvous, black on prothorax, median hind portion of mesothorax, and scutellum ; some long black hairs at sides of metathorax. Where the pubescence is black the shining punctured surface is visible. Pubescence of pleura pale ochraceous. Tegulæ black. Wings smoky hyaline, outer margin broadly darker, nervures black ; third submarginal cell narrowed about one half to marginal ; first transverso-cubital nervure oblique, second bent at its middle. Legs with fulvous pubescence, especially dense and bright on hind tibiæ and tarsi, orange-rufous on basal joints of tarsi within ; hind femora above with scattered brown-black hairs. Abdomen black, shining, with thin inconspicuous black pubescence ; base of first segment with long pale fulvous or ochraceous pubescence, black at extreme base ; second



segment basally with a very thin inconspicuous pale hair-band; extreme sides with rather long pale hairs; ventral segments with thin fringes, centrally black, laterally pale; fifth segment dorsally with an interrupted series of pale hairs; hardly forming a band. Punctuation of abdomen sparse.

Six specimens, San Rafael, March 11; Paso de Telaya, April 7 and 8. Three on no. 27, a labiate; one on flower no. 1.

Seems to be allied to *M. dubitata*, Cresson, from Georgia. It has some superficial resemblance to *Synhalonia atriventris*.

(10) *Melissodes raphaelis*, sp. n.

♂. Length about 10 millim.; antennæ 7 millim. Black; clypeus (except the usual black dots and the more or less rufescent anterior edge), labrum, and a rather obscure spot on mandibles yellow. Flagellum ferruginous beneath, its first joint not longer than funicle and hardly one eighth as long as second. Head broad, face broader than in *labiatarum*. Face, occiput, and cheeks with long but rather thin pale greyish-ochreous pubescence, white on cheeks beneath, slightly mixed with black on sides of face and conspicuously on occiput just behind the ocelli. Thorax shining, strongly but sparsely punctured; median groove of mesothorax distinct. Thoracic pubescence thin, pale greyish ochreous, black on scutellum and disk of mesothorax, mixed with black on sides of metathorax. Tegulæ black, mostly naked. Wings greyish hyaline, darkest apically; nervures black; second submarginal cell oblique, third submarginal narrowed variously one half or two thirds to marginal. Claw-joints rufous, but the claws black except at base. Pubescence of legs thin and pale, rufous on inner sides of basal joints of tarsi, white on outer sides of basal joints of hind tarsi, white in front and black behind on hind tibiæ. Abdomen shining, sparsely punctured; base of first segment with erect pale pubescence, bases of remaining segments with broad but thin pale bands of short pubescence, often largely worn away; dark portions with inconspicuous black hairs. Apical segment with a little black or very dark fuscous pubescence. Apical truncation rather broad. Subapical teeth short.

Seven specimens, San Rafael, March 8, 11, 13, and 15; on flowers nos. 1, 7, 5, and 10. The last is an *Ipomœa*.

*M. raphaelis* will be readily known by the peculiarly



coloured pubescence of hind tibiae. It is allied to *M. gilensis*, Ckll. ined., from New Mexico\*.

(11) *Halictus Townsendi*, sp. n.

♀. Length about 11 millim. Black, with sparse, very pale brownish-grey pubescence. Head broader than thorax, extremely large, subquadrate; cheeks very broad behind the eyes, produced into a blunt spine behind. Eyes small, face nearly twice as broad as the length of an eye. Ocelli close together, the distance between the hind ocelli hardly half the distance between one ocellus and the eye. Vertex and front very closely punctured; clypeus and lower part of face shining, with larger sparse punctures. Mandibles scimitar-shaped,

\* While on the subject of *Melissodes*, I will describe a species which, though taken in New Mexico, appears to have Neotropical affinities:—

*Melissodes luteicornis*, sp. n.

♂. Length  $13\frac{1}{2}$  millim.; anterior wing  $9\frac{1}{2}$  millim.; antenna 8 millim. Black; pubescence of head, thorax, and basal segment of abdomen bright orange-fulvous, that on thorax rather short but very dense, concealing the surface, not at all intermixed with black. Head broad, face not far from square; ocelli large, placed in only a slight curve; sides of vertex shining; clypeus seen from in front looks naked, large, punctured, bright lemon-yellow, with a black spot, partly hidden by a brush of hairs, on each side. Labrum pale yellow, its apex with a brush of rufous hairs. Mandibles practically simple, obscurely notched within, basal portion broadly pale yellow. Antennae entirely yellow, except that the funicle and much of the first joint of flagellum are rufescent above, and the whole flagellum is obscurely tinged with rufous above, each joint having a dark dot at its base. First joint of flagellum a very little shorter than second. Tegulae pubescent. Wings hyaline, nervures fuscous. Legs rather densely covered with pale greyish-ochreous hairs; inner side of tarsi with shining dark rufous hairs. Abdomen stout, black; bases of second and third segments with broad uniform bands of appressed greyish-white pubescence; a similar band on the fourth segment appears dirty grey from the presence of numerous erect black hairs. The rest of the abdomen above, except the first segment, with short black hairs, only conspicuous towards the apex.

Four at Rincon, N. M., July 5, 1896; three at Colorado, a small town near Rincon, July 10, 1896: all at flowers of mesquite (*Prosopis juliflora*, var. *glandulosa*). The student is requested to remember that the locality Colorado has nothing to do with the State of that name.—*M. luteicornis* is a very beautiful species, easily recognized by its yellow antennae. Its general build is suggestive of *M. obliqua*; but, besides the quite different coloration, the face is broader and the first recurrent nervure joins the second submarginal cell nearer its end than in that species. Judging by the description, Smith's *Tetralonia fervens*, from Chili and La Plata (not Brazil, as Dalla Torre has it), must greatly resemble our species. The antennae of *fervens*, according to Smith, are bright red; but the antennae of *luteicornis* turn bright carmine when the bees are left too long in a damp cyanide bottle.



deeply grooved without. Antennæ short, wholly dark; flagellum beneath becoming very dark coffee-brown. Thorax very small, the pubescence only conspicuous on the pleura; mesothorax strongly and very closely punctured; scutellum more sparsely punctured; postscutellum with close smaller punctures. Metathorax finely punctured, the enclosure strongly rugose-cancellate, not bounded by a sharp rim. Tegulæ dark mahogany-brown. Wings pale fuliginous; stigma dark dull yellowish brown; nervures fuscous; third submarginal cell narrowed fully one half to marginal. Tibiæ and tarsi with tolerably dense pale fulvous pubescence; hind femora, coxæ, and trochanters beneath with rather copious hairs, which in the type specimen are largely covered with orange pollen. Abdomen only moderately shiny, minutely and very closely punctured; conspicuous bands of appressed dirty white hairs (more or less rubbed off in type specimen) on hind margins of segments 1 to 4, the adjacent bases of the segments also bearing thinner hair-bands.

Another example has the abdominal bands better defined, the bands are narrow on segments 1 and 2, coming almost to a line in middle, but broad, even, and very white on segments 3 and 4. In another the band on segment 1 is broadly interrupted; this last has the hind legs covered with orange pollen.

San Rafael, March 8 and 23, on *Bidens* and another composite.

A very distinct species, allied to *H. ligatus*, which frequents Compositæ in the United States. *H. politus*, Smith, which was also taken at San Rafael, is somewhat similar in general appearance.

(12) *Halictus pseudotegularis*, sp. n.

♀. Length about 5 millim. Head and thorax dark green; abdomen black, pruinose; tegulæ black, punctured. This is so near to the U.S. *H. tegularis*, Rob., that a comparative description is needed for its identification:—

*H. tegularis* ♀.

Face broad, inner orbits arched.

Head and thorax bluish green.

Marginal cell rather longer and second submarginal larger.

Median groove of mesothorax obscure.

Wings clear.

Paso de Telaya, March 29, on *Argemone mexicana*.

*H. pseudotegularis* ♀.

Face narrow, inner orbits nearly straight.

Head and thorax brassy green.

Stigma somewhat darker.

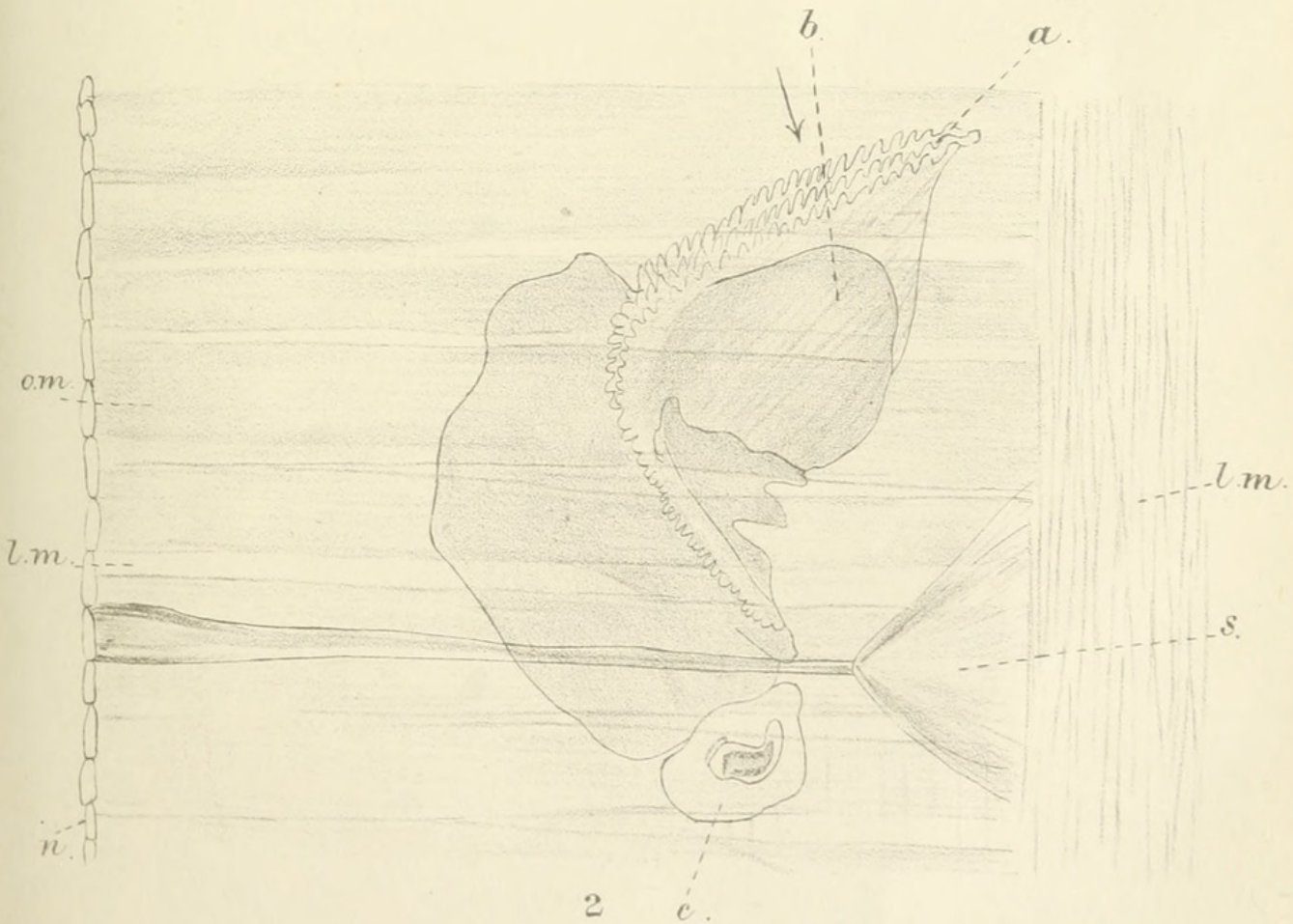
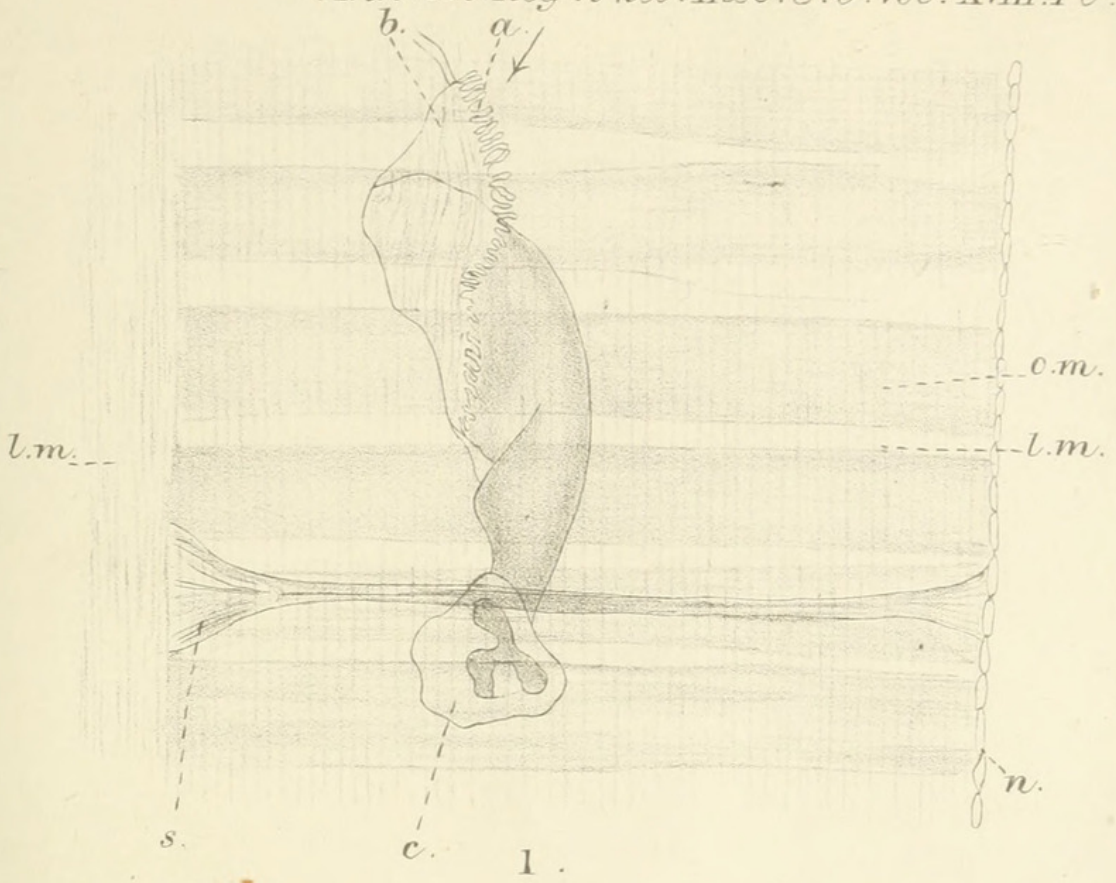
Enclosure of metathorax more triangular, hardly so strongly sculptured.

Abdomen somewhat narrower.

Median groove of mesothorax very distinct.

Wings slightly dusky.









Cockerell, Theodore D. A. 1896. "XLIV.—Contributions from the New Mexico biological station—I. descriptions of new bees collected by Prof. C. H. T. Townsend in the state of Vera Cruz." *The Annals and magazine of natural history; zoology, botany, and geology* 18, 282–295.  
<https://doi.org/10.1080/00222939608680457>.

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