

Described from many specimens of both sexes, Coapa, Mexico, bred as above indicated.

Type.—Male, Cat. No. 26097, U. S. N. M.

It was at first anticipated that this species would be found among those described by Van der Wulp in his large work in *Biologia Centrali-Americana*. As experience has shown that these species are not recognizable with certainty from the descriptions, specimens were sent to the British Museum, where Van der Wulp's types are deposited; and Major E. E. Austen very kindly compared them with the types, coming to the conclusion that our species is different from all of them.

I refer the species to the genus *Paradexodes* after much examination of related forms. The type species of the genus is *aurifrons* Townsend, both genus and species having been described by him in *Smithsonian Miscellaneous Contributions*, No. 1803 (*Taxonomy of the Muscoidean Flies*), p. 101, 1908. The single male specimen there described as *aurifrons* is in the National Museum, and no additional material has been obtained. Townsend's later genus *Urodexodes* from Peru (*Proc. U. S. N. M.*, Vol. 56, p. 572, 1919, type *charapensis* in the same place) I would consider a synonym, as on comparing the two type specimens of the genotype species I see no differences that I can regard as generic; the differences mentioned in the description do not exist, save for a few of trifling importance. Absence of ocellars in *Urodexodes* is not generic, as other specimens collected at the same time and place and of barely subspecific difference have ocellars.

The genus *Ptilodegeeria* of Brauer and Bergenstamm (*Zweifl. Kais. Mus.*, v, 1891, 373, 375), with type *Hypostena obumbrata* Van der Wulp, (*Biologia, Dipt.*, ii, 143, 1890), is closely related, as shown by specimens of *obumbrata* from the type lot, which we have received from the British Museum. The latter species however has densely hairy eyes, and the discal bristles are poorly developed.

Epilachnae is somewhat more closely related to *charapensis* than to *aurifrons* or *obumbrata*.

NEW ACULEATE HYMENOPTERA FROM THE UNITED STATES.

BY S. A. ROHWER, *U. S. Bureau of Entomology.*

The species described below have been submitted for identification and the descriptions are presented at this time so the names will be available.

Nysson (*Brachystegus*) *hoplisivora*, new species.

Because the apical band on first tergite is yellow instead of

white, this species runs in Bradley's key¹ to *opulentus* var. *basilaris* Cresson better than it does to *opulentus opulentus* although the abdomen is almost completely black. It differs from both the typical form and the variety *basilaris* in the color of the legs, greatly reduced yellow band on the pronotum, the absence of yellow spot on the scutellum, the great reduction in the yellow markings of the abdomen, the more robust and less upturned spine on the propodeum, and the more strongly dentate anterior angle of the pronotum. *N. tuberculatus* of Handlirsch which Fox thought to be the same as *basalaris* may, according to the description, be distinguished from this new species by the pale marks on the scutellum, more extensive yellow markings on the abdomen and by the presence of pale marks on the hind tibiae and tarsi. In both Fox's and Cresson's keys the species runs to *mellipes* Cresson, but the color, sculpture of the tergites and dentation of the pronotum readily separate it from Cresson's species. The punctuation of the head, mesepisternum, sculpture of the propodeum and abdomen readily separate it from the description of the male of *submellipes* Viereck.

Female.—Length 7 mm. Clypeus convex, very finely granular and with a few small scattered punctures in addition, the anterior margin rounded; frons with close, small, well defined punctures and in addition with separated, distinct, large punctures; no raised line from anterior ocellus; no tubercle between antennae; between the posterior ocelli there are two shining, elongate, prominent tubercles; vertex and occiput sculptured like the frons except the smaller punctures are more widely separated and the large ones are closer together; antenna stout, third joint one-fifth longer than fourth, terminal joint obtuse and a little shorter than the two proceeding; lateral anterior angles of pronotum with a well defined, broad, acute tooth; scutum bipunctate, the large punctures close and in a few places confluent; scutellum margined laterally, shining, more coarsely punctured than the scutum and with many of the punctures confluent; metanotum medianly with a few large punctures; propodeum subshining with an irregular carina separating the dorsal and posterior surfaces, the dorsal aspect has about ten longitudinal rugae, the median ones being more pronounced; the posterior face irregularly reticulate with an irregularly-shaped transverse area at the top, the lower portion of the posterior aspect with four carinae which diverge dorsally; propodeal spine stout, directed posteriorly; mesepisternum sculptured like the scutum; sides of the propodeum shining, with fine, separated, setigerous punctures; abdomen shining with distinct, well defined punctures which are a trifle larger on the first tergite; second sternite convex, obliquely truncate anteriorly and sculptured like the tergites; pygidium about one-half longer than the posterior width, the surface coarsely, striato-punctate; venation normal. Black; small median spot on the anterior margin of the pronotum, narrowly interrupted band on the first tergite and two small lateral spots on the apical margin of the second tergite yellow; first tergite, except obscure, reddish,

¹Trans. Amer. Ent. Soc., vol. 46, 1920, p. 122.

lateral spots and the apical yellow band, black; legs black; anterior femur and tibia beneath obscurely reddish, the intermediate femur apically and entire posterior femur dark rufous; body covered with silvery pile which is denser on the clypeus, face, sides of frons and lateral dorsal aspect of propodeum; wings subhyaline, slightly darker along anterior margin; venation black.

In one of the paratypes the anterior femora are almost entirely rufous and the anterior tibiae are rufous at base.

Type-locality.—Woodstock, Maryland.

Described from three females received from E. G. Reinhard, S. J., collected in the summer of 1922, the type bearing the label "Parasite in nest *Hoplisus costalis*."

Type and paratype.—Cat. No. 25645, U. S. N. M. One paratype returned to the collector.

Didineis stevensi, new species.

This new species resembles *D. peculiaris* Fox but can readily be distinguished from Fox's species by the black head.

Female.—Length 7.5 mm. Clypeus convex clothed with long hair, the apical margin depressed and with three obtusely rounded teeth; frons coriaceous-reticulate; vertex and orbits shining, with separate punctures; postocellar line subequal with ocellular line; third antennal joint distinctly shorter than the fourth and fifth; mesoscutum with close, distinct punctures; scutellum shining, more sparsely punctured; dorsal aspect of propodeum with a distinct triangular-shaped area which is coarsely and irregularly wrinkled, the area immediately outside the enclosure with short oblique striae; posterior aspect of propodeum granular and with irregular dorsad-ventrad wrinkles; abdomen shining, the third and following segments finely punctured. Ferruginous; mesosternum, head (except clypeus, mandibles and narrow inner orbits below which are yellowish) and apical ten joints of antennae black; rather sparsely clothed with silvery pile, the apical margins of tergites with a silvery hair band, that on the first broadly interrupted; wings subhyaline, the radial, second cubital and apical part of second discoidal cells with a fuscous cloud; venation brown.

Type-locality.—Sheldon, North Dakota.

Described from a single female collected August 10, 1919, by O. A. Stevens and given his number 12289. Named for the collector.

Type.—Cat. No. 24613, U. S. N. M.

Tachysphex dakotensis, new species.

This species seems to be closely allied with *T. sepulcralis* Williams but may be distinguished from the description of Williams' species by the sparsely punctured frons, the punctures of the scutum not being compact, the pygidium not being finely reticulate and the abdomen without distinct fasciae. From *T. bruesi* Rohwer it may be distinguished by the sparsely punctured frons and scutum and the longer fourth abscissa of the radius. The sparsely punctured vertex and abundant hair

on the thorax will serve to distinguish it from *T. nigrrior* Fox. *T. punctifrons* Fox has darker wings, is larger and has the scutum closely punctured.

Female.—Length 8 mm. Clypeus convex, the basal half with distinct rather close punctures the apical half polished, the apical margin rather narrowly depressed, broadly produced medianly, the lateral angles of projection sharp but not dentate, the middle of the projection *slightly* rounded out; frons with distinct, rather close punctures on a granular surface; vertex shining, with distinct well separated punctures; dorsal interocular space greater than antennal joints three plus four but less than two plus three (ratio: interocular space 10, three plus four 13, two plus three 8.5); mesoscutum shining, with distinct well separated punctures (closer above and behind tegulae); scutellum shining, not impressed; dorsal aspect of propodeum coriaceous, with a few raised lines at base; posterior aspect of propodeum transversely rugose, separated from the dorsal aspect by a more or less distinct carina; mesepisternum with distinct, separated punctures on a granular surface; sides of the propodeum with distinct striae; legs rather feebly spined; longer spur of hind tibia shorter than basi tarsus; fourth abscissa of radius distinctly longer than second which is longer than third; abdomen shining; pygidium more than twice as long as basal width, shining, with a few large punctures. Black; rather densely clothed with silvery hair and pile; abdomen with distinct fasciae of silvery pile; wings hyaline, venation dark brown.

Type locality.—Gascoyne, North Dakota.

Described from a single female collected June 19, 1918, at flowers of *Malvastrum coccineum* by O. A. Stevens and recorded under his number 11373.

Type.—Cat. No. 24557 U. S. N. M.

Epicrossocerus rauli, new species.

Evidently closely allied to (*Crabro*) *Epicrossocerus insolens* (Fox) but differs from the original description in having a distinct impressed line from the anterior ocellus.

Female.—Length 3 mm. Antenna short, thickening apically, third joint nearly twice as long as the fourth; head shining, under high magnification finely reticulate; a narrow impressed line in front of anterior ocellus; postocellar and ocellular lines subequal in length; anterior lateral angle of pronotum angulate but not strongly dentate, the carina somewhat emarginate medianly; scutellum and scutum finely, closely punctured; propodeum finely punctate-reticulate, lateral carinae of the posterior face feeble, median depression spear-shaped; mesepisternum and sides of propodeum reticulate; abdomen impunctate, shining; pygidium fully twice as long as basal width, narrowed and channeled apically. Black; mandibles except apices and all tarsi whitish; tibiae brownish, at base and apex; scape beneath yellowish; wings hyaline, venation black.

Type-locality.—St. Louis, Missouri.

Type.—Cat. No. 24593 U. S. N. M.

Described from five females (one type) collected by Phil Rau and under his number 4125. Named for the collector.

Stigmus fraternus subspecies **raui**, new subspecies.

Closely allied to *coloradensis* Rohwer but the scutum is entirely smooth and polished (not with indistinct granulations); the recurrent is the length of the first intercubitus or less from the end of the cell; and the second flagellar joint is subequal with the first (not slightly shorter).

Type-locality.—St. Louis, Missouri.

Type.—Cat. No. 24592 U. S. N. M.

Described from six females (one type) and one male (allotype) under Rau number 4052. Material collected May, 1920, by Phil Rau for whom the subspecies is named.

Nitela virginensis, new species.

This species, which is the first from the Nearctic region, differs from the European *spinolae* Latreille as determined by Lichtenstein in the stronger carina on the anterior margin of the pronotum; the shorter first cubital cell—the first abscissa of the radius is one-third the length of the second (not about one-half); and in the front being shiny and punctate, rather than opaque and coriaceous.

Female.—Length 3.5 mm. Clypeus with a distinct median carina; the anterior margin truncate; the surface finely coriaceous; frons subshining, with sparse, fine, setigerous punctures; an indistinct, impressed line from the anterior ocellus between the bases of the antennae; postocellar line twice as long as the interocellar line; antenna stout, the third and fourth joints subequal; the anterior margin of the pronotum sharply carinate, subdentate laterally but the carina narrowly interrupted medianly; mesoscutum finely coriaceous, irregularly wrinkly immediately in front of the scutellum; scutellum subshining with small, separated punctures; dorsal surface of the propodeum coriaceous and with strong, irregular rugae, the two median ones diverging and reaching the posterior aspect; mesepisternum subshining; the episternauli and suture below tegula deeply impressed; sides of the propodeum coriaceous and with irregular wrinkles; posterior face of propodeum transversely rugulose; abdomen shining, impunctate; first cubital cell short, not exceeding discoidal cell; first abscissa of brachius obsolete. Black; face with sparse, silvery pubescence; wings hyaline; costa and stigma brown, the rest of the venation testaceous.

Type-locality.—Chain Bridge, Virginia.

Described from a single female collected September 18, 1921, by J. R. Malloch.

Type.—Cat. No. 25846, U. S. N. M.

Anthophora (Anthemoëssa) raui, new species.

The following new species is closely allied to *sodalis* Cresson and I had so determined it for Phil Rau, but on comparison with Cresson's type it was seen to differ in the characters given in couplet nine of the following key.

Female.—Length 16 mm. Labrum with large, close punctures; clypeus dull and covered with close (sometimes confluent) punctures; eyes separated by a distance subequal to their length; third antennal joint but little shorter than the three following; first recurrent received a short distance beyond middle of second cubital cell; abdomen opaque, finely granular. Black, clothed with long black hair except as follows: area at bases of antennae and the occiput with pale hair intermixed with the black; thorax and propodeum dorsally, upper half of mesepisternum, first tergite and a median patch on the second tergite with long, dense yellowish-white hair; wings fuliginous, venation black.

In the two paratype females the vertex also has pale hair intermixed with the black.

Male.—Length 12 mm. Labrum with large punctures; scutellum with distinct punctures which are well separated; third antennal joint subequal with the two following; distance between the eyes slightly less than the length of an eye; first recurrent at middle of second cubital; tooth on hind basitarsus large, blunt, slightly before middle; abdomen opaque, finely tessellate; apical plate sub squarely emarginate. Black; labrum except lateral spots, clypeus, line above and triangular spots at sides, spot on scape beneath yellow; head, thorax, first two tergites and anterior legs with dense pale hair, that on the dorsal parts ferruginous the hair becomes paler to venter so that on front legs and sternum it is yellowish-white; hair of hind legs, sternites and tergites beyond the second black; wings fuliginous, venation black.

The paratype male differs in having the hair on dorsal parts yellowish instead of ferruginous.

Type-locality.—St. Louis, Missouri.

Described from three (one type) females and one male (allotype) received from Phil Rau and under his numbers 4161 (type) 4450, 4448 and 4449 (allotype); and from one male from Colorado under Baker No. 1232. Named for Phil Rau. One female paratype (Rau No. 4448) lacks the abdomen.

Type.—Cat. No. 25588 U. S. N. M.

Key to certain Nearctic species of Anthemoëssa.

1. Scutellum (at least) with black hair 2.
- Scutellum with pale hair; in one case a patch of black hair on scutum but otherwise hair of thorax all pale 3.
2. Abdomen clothed with pale hair which is closer on the first three tergites; sides of propodeum with pale hair; female *solitaria* Ritsema.
- First two tergites of male and only second of female with pale hair; sides of propodeum with pale hair in male, entirely black in female
stanfordiana Cockerell.
3. Hair of abdomen pale; tooth on basitarsus at middle 4.
- Hair on at least some of the tergites black 5.
4. Length about 10 mm.; hair on abdomen sparse and erect; hair white
gohrmanae Cockerell.
- Length about 14 mm.; hair on abdomen dense and subappressed; hair fulvous *occidentalis* Cresson.
5. Hair of abdomen all black or with a few pale hairs on first tergite
abrupta Say.

- At least the first two tergites with pale hair 6.
6. First three tergites completely clothed with dense pale hair
neomexicana Cockerell.
- Hair of third tergite largely or entirely black 7.
7. Scutum with a patch of black hair 8.
- Scutum entirely covered with pale hair 9.
8. Head above the antennae with black hair; pubescence of abdomen yellowish *canadensis* Cresson.
- Vertex with some pale hair; pubescence of abdomen whitish
bomboides Wm. Kirby.
9. Femora with white hair (hind femora with black hair posteriorly); apical sternites with long white hair; emargination of apical plate U-shaped; base of third tergite with fulvous hair *sodalis* Cresson.
- Hair of four hind femora, sternites and tergite beyond the second all black; emargination of apical plate broad and subquadrate
raui, new species.

Anthophora (Anthemoëssa) bomboides (Wm. Kirby).

In the above key I have followed Cresson's interpretation of this species but I am not sure that it is correct. The original description makes no mention of the patch of dark hair on the scutum. It will be necessary to study Kirby's type and if such a study proves that Cresson's determination is correct it seems likely that *canadensis* should be placed as a synonym of *bomboides*. The characters used in the above key to distinguish these two forms will undoubtedly be subject to such variation that they can not be used to distinguish even varieties.

Megachile cockerelli, new species.

This species, which has stood in the Museum Collection for many years, resembles much more closely certain species from Africa than any species from the neotropical or nearctic regions.

Female.—Length 20 mm. Robust; abdomen as long as head and thorax parallel-sided; mandibles robust, coarsely striato-punctate (except at the lateral base where they are finely punctate) broad apically and armed with four strong teeth; anterior margin of the clypeus deeply broadly emarginate, lobes of the emargination broad and rounded, medianly the emargination has a small rounded tooth as a projection of the indistinct ridge on the surface of the clypeus; surface of the clypeus convex with rather close well defined punctures; impressed line from anterior ocellus to between the bases of the antennae; front, vertex and posterior orbits shining with separated well defined punctures; inner orbits bounded by a strong carina; third antennal joint slightly longer than the fourth; thorax with close punctures; first recurrent bent at right angles a short distance before it joins the cubitus; third and fourth abscissae of cubitus subequal; first abscissa of radius two-thirds as long as second; legs robust; abdomen shining with sparse setigerous punctures. Black; densely covered with long, ferruginous hair which on the abdomen is closer on the apical margins of the tergites; scopa

concolorous with the rest of the pubescence; wings deep brown; venation dark brown.

Male.—Length 20 mm. Mandibles more elongate than in female and armed apically with three teeth; the distance between the inner and middle tooth much greater than the distance between the outer and inner tooth; anterior margin of the clypeus truncate with a small median tooth formed as a projection of the median ridge; surface of the clypeus with large close punctures; rest of head and thorax as in female; anterior tarsi cylindrical and besides the ordinary pubescence, covered exteriorly with a row of long hairs; coxae not spined; venation as in female; apical tergite with a reflex median projection which is deeply emarginate; laterally and beneath the apical tergite has two pairs of strong teeth, the median of which is much broader and longer; apical sternite armed with strong median spines. Color as in female.

In the series of specimens before me, there is very little variation. The females are almost uniformly the same size as the type; however one of the specimens is only 16 mm. long. In the males the color of the pubescence shows some slight variation, and in some of them it is not so distinctly ferruginous as in others.

Type-locality.—Meadow Valley, Mexico.

Described from twenty females (one type) and five males (one allotype) collected by C. H. T. Townsend.

Type, Allotype and Paratypes.—Cat. No. 14103, U. S. N. M.

This species was originally given the manuscript name *cockerelli* by E. S. G. Titus, and I take great pleasure in using this name and dedicating the species to Professor Cockerell in recognition of his work on bees and his great service to the collections of the National Museum.

REARING DIPTEROUS LARVAE ON NUTRIENT AGAR.

By R. C. SHANNON, *Bureau of Entomology*.

In the American Journal Tropical Medicine, Vol. II, 555, 1922, the writer gives an account of an attempt to rear Tabanid larvae on Bacto-Nutrient agar. Although some larvae remained alive for a period of over eight months in this medium it was evident that they would not thrive on the 3 per cent beef extract contained in the agar. Experiments were then undertaken to ascertain what concentration of food was necessary to make this medium sufficient for predaceous and carrion feeding larvae. Larvae of Sarcophagidae were chosen for this purpose for several reasons—the abundance of adults facilitated obtaining larvae; if successful, the larvae could be easily raised as food for Tabanids and other insects; and the rearing of species of this group would be preparatory to rearing the larvae of such parasitic forms as *Wohlfartia* and *Chrysomyia* when material of these comparatively rare forms (rare in central New York) could