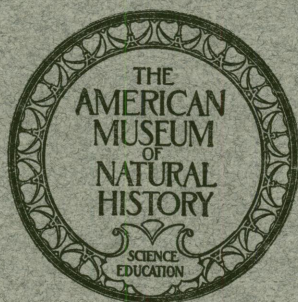


AMERICAN MUSEUM NOVITATES

No. 36

BEES OF THE GENUS *PANURGINUS* OBTAINED BY THE AMERICAN MUSEUM ROCKY MOUNTAIN EXPEDITIONS

By T. D. A. COCKERELL



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The bees recorded below were collected by Dr. Frank E. Lutz, except when the contrary is stated. I have included certain species of *Greeleyella* and *Hypomacrotera*, which are likely to be confused with *Panurginus*.

The genus *Panurginus* was first distinguished by Nylander in 1848, the type being *P. niger* Nylander, known from a female, 5 mm. long, collected by Sahlberg in Siberia. Nylander thought that the lack of copious pollen-carrying pubescence indicated a parasitic mode of life and, on this ground, separated the genus from *Panurgus*. The hair on the legs was, however, more abundant than that on the body. When Friese revised the Palæarctic *Panurginæ* in 1901, he had not seen *P. niger*, nor have any additional specimens been collected, so far as I am aware. The species is not in the British Museum, at Oxford, or in any of the American collections. The precise definition of *Panurginus*, therefore, remains somewhat uncertain, though it is probable that *P. niger* belongs to the genus as we now understand it.

F. Morawitz in 1876 founded a genus *Epimethea* on certain species differing from *Panurginus* in having yellow tegumentary markings on the abdomen and other parts of the body. *E. variegata* F. Morawitz may be taken as the type. It is recorded as occurring in the Caucasus and in Algeria. Probably *Epimethea* should be recognized as a genus but, although I have seen *E. variegata* in the British Museum, I have never made a close examination of any species of this group.

In 1894 Gribodo based his genus *Scapteroides* on *S. difformis* Gribodo, which is now considered identical with *Panurginus albopilosus* (Lucas), a species of Spain and Algeria. I possess this species and find that it has a black face in the male and that the first recurrent nervure falls considerably basad of the first intercubitus (transversocubital). In these respects it resembles our American *P. atriceps* (Cresson), but the latter has a much longer flagellum in the male.

Panurginus is confined to the Palæarctic, Nearctic, and Neotropical Regions. If we exclude *Epimethea* (6 species), *Greeleyella*, and *Pseudo-panurgus*, we find that, as at present known (including the species de-

scribed below), *Panurginus* has 51 Nearctic, 25 Neotropical, and only 20 Palæarctic species. In the Swiss Alps and adjacent regions one may find *P. montanus* Giraud (1861) visiting flowers of *Ranunculus* and *Hieracium*. But the collector who would obtain other species has to travel far—to Spain for *P. albopilosus* Lucas and *P. hispanicus* Giraud, to northern Sweden for *P. romani* Aurivillius, to Russia for *P. lactipennis* Friese¹ and *P. sculpturatus* Morawitz. Contrast with this the abundance of species in our Rocky Mountain country, which appears to be the headquarters of the genus. In Asia, species occur in Japan (*P. crawfordi* Cockerell) and China (*P. nitidulus* Morawitz, *P. nigripes* Morawitz, *P. picitarsis* Cockerell), but we do not find them in the typical Oriental tropics. In America, on the other hand, they occur in the moist tropics, as in the "Tierra caliente" of Mexico (*P. bidentis* Cockerell) and in Brazil (*P. solani* Ducke). Nevertheless, the strictly tropical species are not very numerous.

If we are surprised that the Central European *P. montanus* has not produced any segregates, we must note that our closely analogous species, *P. cressoniellus*, is also without a series of closely related forms. These bees are indiscriminate feeders on a considerable series of flowers, and it appears to be true that oligotropic habits favor the evolution of new species. We know that species of *Greeleyella* and *Hypomacrotera* are oligotropic and there are reasons for regarding several species of *Panurginus* as such, but the subject requires much more minute study. In general sweeping, it is easy to obtain from a clump of flowers bees which were not actually feeding on the flowers cited, and even oligotropic bees wander from their proper plants at times.

The collections of Dr. Lutz greatly increase our knowledge of the species and distribution of western *Panurginus*, but it is evident that, with all that has been done, we still have but an imperfect knowledge of this rich fauna.

***Panurginus irregularis*, new species**

COLORADO: 2 ♂, Boulder, about 5300 ft. alt., on plains, August 12, 1919.

Taken with *P. piercei* Crawford and *P. nebrascensis* Crawford. Related to *P. horizontalis* Swenk and Cockerell, but easily known by the dark tubercles and other characters.

♂.—Length about 6 mm.; slender. Black; mandibles (except apex), labrum, and face up to level of antennæ bright yellow, upper level of yellow irregular, denticulate, with a slender process on each side a little way up orbits. Second joint of labial palpi much longer than third; third and fourth subequal. Process of labrum very broad, truncate. Front dull, vertex shining, with distinct punctures. Scape yellow

¹The British Museum has specimens of *P. lactipennis* from Persia.

in front; flagellum pale ferruginous beneath except base and last joint, the latter abruptly dark. Thorax above with thin dull white hair; mesothorax and scutellum polished, with sparse distinct punctures; area of metathorax with fine rugæ; tubercles black (yellow in *P. horizontalis*); tegulæ testaceous. Wings strongly dusky; nervures fuscous, stigma dilute reddish; second submarginal cell much shorter than first, receiving the recurrent nervures about equally distant from base and apex. Femora black, yellow at apex; tibiæ yellow, the anterior ones with a black patch behind, middle and hind ones each with two black marks (tibiæ thus as in *P. citripes* Ashmead, but face-marks different); tarsi yellow, reddish apically; abdomen with fine punctures. The clypeus has a fine median groove.

Panurginus altissimus, new species

COLORADO: 1 ♂ (Type), 2 ♀, Ouray, about 8000 ft. alt., July 11, 1919, collected by Herbert F. Schwarz; 1 ♀, Ouray, about 8500 ft. alt., sweeping grass among Douglas fir, aspen, scrub oak, etc., July 11, 1919.

♂ (Type).—Length about 7 mm., rather slender. Black; mandibles black; labrum black, but the process pale yellow, with sloping sides, and the binodose or subemarginate apical margin black; clypeus, irregularly subtriangular supraclypeal mark and large triangular lateral face-marks (almost reaching upper corners of clypeus) sulphur-yellow. Clypeus sparsely punctured, and with a faintly indicated median groove. Scape black; flagellum black, very obscurely reddish beneath. Mesothorax and scutellum polished, sparsely punctured; area of metathorax finely plicatulate; tegulæ rufous, piceous in front. Wings dusky, especially the broad apical margin; stigma and nervures dark brown; first submarginal cell about as long as second on lower side; first recurrent nervure joining second submarginal cell a long way from base, fully three times as far as second from apex. Legs (including anterior tibiæ) black, small joints of tarsi becoming brownish apically. Abdomen ordinary, with very fine punctures.

♀.—Length about 7 mm. Black without light markings. Mesothorax highly polished, almost impunctate.

The female is so like *P. piercei* Crawford that I should have regarded it as a mountain race with dusky wings, but the male is much more different.

Panurginus opaculus, new species

ARIZONA: 1 ♀ (Type), Mud Springs, Pine Canyon, Sta. Catalina Mts., about 6800 ft. alt., among oak, pinyon, juniper, walnut, etc., July 17–20, 1916; 1 ♀, same locality, August 19, 1916.

♀.—Length about 5 mm. Black. Clypeus and supraclypeal area shining, rather closely punctured. Antennæ dark, the flagellum very obscurely brownish beneath. Mesothorax dull, with a strong median groove; scutellum shining, flattened on disc, finely punctured; tegulæ rufous. Wings dusky, stigma and nervures very dark brown.

Very close to *P. pauper* Cresson (specimens collected by Banks at Ceanothus, Falls Church, Va., compared) and at first sight appearing identical, but distinguished by the dark antennæ, granular basal area of metathorax (plicatulate in *pauper*), and very broadly truncate process of

labrum (rounded in *pauper*). It is larger than *P. flavotinctus* (Cockerell) and has the process of labrum more broadly truncate (*flavotinctus* having the labrum intermediate between *pauper* and *opaculus*).

***Panurginus pernitens*, new species**

ARIZONA: 1 ♀, S. E. of Kitt's Peak, Baboquivari Mts., about 4000 ft. alt., among mesquite with considerable oak, August 1-4, 1916.

♀.—Similar to *P. opaculus*, and at first glance appearing identical, but easily distinguished by the rather oblong head, with facial quadrangle considerably longer than broad. Clypeus and supraclypeal area elevated, forming a very obtuse ridge, with a few scattered punctures on a highly polished surface. Process of labrum narrower than in *P. pauper*, rounded at end. Area of metathorax minutely, microscopically plicatulate. Stigma rather dilute reddish-sepia. Ventral abdominal segments pale reddish basally. Compared with *P. pauper*, the wings are longer, hyaline (not dusky as in *pauper*) and the stigma is smaller. The mesothorax, though excessively finely punctured, is somewhat shining, and the scutellum is similarly sculptured. The flagellum is bright ferruginous beneath except at base. The insect is much larger than *P. flavotinctus*.

The following key separates the females of the *pauper* group.

1. Flagellum entirely dark.....*opaculus* Cockerell.
Flagellum red beneath except at base.....2.
2. Facial quadrangle much longer than broad.....*pernitens* Cockerell.
Facial quadrangle about square.....3.
3. Larger; process of labrum rounded.....*pauper* (Cresson).
Smaller; process of labrum subtruncate.....*flavotinctus* (Cockerell).

***Panurginus porteræ* Cockerell**

ARIZONA: 1 ♂, 1 ♀, near Soldier's Camp, Sta. Catalina Mts., about 9100 ft. alt., at flowers of *Oenothera*, July 14, 1916. COLORADO: 2 ♂, Estes Park, one, July 23, 1916, collected by A. E. Butler, the other August 18, 1919, collected by Herbert F. Schwarz.

The Arizona female cannot be distinguished from *porteræ* from Beulah, New Mexico. The Arizona male is smaller, and has the eyes very dark gray instead of green. This male certainly appears to be conspecific with the form I recorded (Ann. Mag. Nat. Hist., April 1916, p. 279) from Pecos, New Mexico, as *P. picipes* Cresson. The original *picipes* was based on two males collected by Belfrage in Texas. Mr. W. J. Fox kindly sent me a drawing of the face of Cresson's type, and it shows the band-like lateral marks sharply truncate above, with the inner corner of the truncation a little higher than that on the orbit. My so-called *picipes* have the lateral marks pointed on or very close to the orbital margin and are nearer to *porteræ*. It is possible that they should be separated, but at present I regard them as a form of that species. The

Arizona male has the basitarsi black; the hind ones are largely testaceous in the Pecos specimens.

Panurginus perlævis (Cockerell)

COLORADO: 1 ♂, 4 ♀, Wray, about 3700 ft. alt., August 17-19, 1919. One female was collected by Pearce Bailey, Jr. A male and female were at *Helianthus*.

This is very close to *P. piercei* Crawford, but amply distinct. The females may be separated thus:

Flagellum beneath bright ferruginous in middle and dark at ends; clypeus not depressed in middle and may be faintly carinate; supraclypeal area with many punctures. *perlævis*.

Flagellum beneath dusky reddish from near base to apex; clypeus depressed in middle; supraclypeal area with very few punctures. *piercei*.

Male *perlævis* differs from *piercei* by lack of the median groove on clypeus. There is only a small yellow triangle on the supraclypeal area, and between this and the lateral marks are large black areas (the outline of the yellow forming a broad W), while the lateral marks are obliquely truncate above. The flagellum is light yellowish-ferruginous beneath, except the last two joints and extreme base. The hind tibiæ have about the basal half yellow (less in *piercei*), and the wings are not dusky. The process of labrum is yellow with a black apical margin, very broadly truncate, the truncation somewhat concave.

The type of *P. perlævis* was collected on *Helianthus* at Las Cruces, New Mexico.

Panurginus piercei Crawford

COLORADO: 1 ♂, Boulder, about 5300 ft. alt., on the plains, August 7-12, 1919.

Panurginus nebrascensis Crawford

COLORADO: 2 ♂, Boulder, about 5300 ft. alt., on the plains, August 7-12, 1919; 1 ♂, Denver, August 28, 1919, collected by Barbara M. and Marjorie D. Schwarz.

Crawford (1912, *Canad. Ent.*, XLIV, p. 368) states that the tibiæ are completely annulate with black. They are not so in the Boulder specimens, nor in a cotype received from Crawford.

Panurginus atricornis (Cresson)

COLORADO: 2 ♂, 4 ♀, Estes Park, two females collected by Herbert F. Schwarz, August 13-14, 1919, the remainder by A. E. Butler, July 19, 1916, at about 7800 ft. alt.

The males agree with *P. atricornis* from Beulah, New Mexico, and Viereck recognized this as *atricornis* after seeing Cresson's type. Cresson's description agrees, except that he says the face-marks are white,

perhaps in consequence of using artificial light. The females differ from *P. porteræ* by having the highly polished mesothorax almost impunctate. Many years ago Mr. Fox sent me a supposed ♀ *P. ornatipes*, from Colorado, out of the Cresson series. It is not *ornatipes*, but *atricornis*.

***Panurginus renimaculatus* (Cockerell)**

WYOMING: 1 ♀, Sheridan, collected by C. W. Metz.

***Panurginus didirupa* Cockerell**

COLORADO: 1 ♂, Estes Park, August 17, 1919, collected by Herbert F. Schwarz; 2 ♂, 2 ♀, Ward, August 8–10, 1919, the females collected by Miss Sara Branham; 1 ♂, Elbert Creek, near Electric Lake, La Plata Co., about 10,000 ft. alt., June 30, 1919. IDAHO: 1 ♀, near Montpelier, about 6100 ft. alt., July 6, 1920.

The female is smaller than *P. porteræ*, with the sides of face shining and finely punctured, and the wings strongly brownish.

***Panurginus bakeri* (Cockerell)**

ARIZONA: 1 ♀, southwest end of Coyote Mts., about 3500 ft. alt., among mesquite, palo verde, etc., August 4–7, 1916; 1 ♀, Bear Wallow, Sta Catalina Mts., about 8100 ft. alt., near Soldier's Camp, among Douglass firs, etc., at (?) *Pseudocymopterus montanus*, July 13, 1916. COLORADO: 1 ♀, Ouray, about 10,000 ft. alt. on Summit Road, July 13, 1919; 1 ♀, in a meadow at Warren Lake, near Aspen, about 10,800 ft. alt., July 26, 1919; 1 ♂, Electra Lake, near Durango, about 8400 ft. alt., at *Potentilla filipes*, June 29, 1910; 3 ♀, 1 ♂, Leadville, about 10,200 ft. alt., in the town, August 4, 1919, collected by Bailey, Schwarz, and Lutz; 1 ♂, 1 ♀, Ward, August 9, 1919, collected by Sara Branham; 3 ♂, 5 ♀ (one female with two female stylopids, *Crawfordia*), Tennessee Pass, about 10,300 ft. alt., August 1–8.

For a description of the female, see Cockerell, 1910, *Psyche*, XVII, p. 245.

***Panurginus cressoniellus* Cockerell**

COLORADO: 2 ♀, Ward, about 9300 ft. alt. near town, August 9, 1919; 2 ♀, Pagosa Springs, one along west bank of river below town, about 7200 ft. alt., and one in U. S. Forest, about 7400 ft. alt., June 21–24, 1919.

The female flagellum is mainly ferruginous beneath.

***Panurginus cressoniellus* variety *calochorti* Cockerell**

COLORADO: 39 ♀, 17 ♂, Tennessee Pass, about 10,300 ft. alt., July 30–August 8,¹ various collectors; 5 ♀, Ouray, about 10,000 ft. alt., on the Summit Road, July 13, 1919, collected by Messrs. Schwarz and Lutz; 1 ♀ (first recurrent vein considerably basad of the first transversocubital), Malta, about 10,000 ft. alt., August 4, 1919; 1 ♂, Elbert Creek, La Plata County, about 10,200 ft. alt., June 30, 1919; 5 ♀, Estes Park, about 7700 ft. alt., July 19, 1916, collected by A. E. Butler.

¹Females abounded at the beginning of August, males appeared about a week later.

The female flagellum is dark. The Ward specimens of *P. cressonielus* cited above come from almost exactly the type locality of variety *calochorti*. The *calochorti* form is the prevalent one in Colorado, especially at high altitudes.

About half the Tennessee Pass specimens have the first recurrent nervure more or less basad of the first transversocubital, and so should fall with the form named *verus*. The original type of *P. verus* Cockerell distinctly differs in some other respects, especially in having the upper apical corner of marginal cell rounded, the cell not sharply truncate as in all these Colorado insects. It is quite certain that the bees here referred to *calochorti* all belong together, but as among this large series I cannot match the type of *P. verus*, it remains at least possible that the latter represents a different species, not including the specimens later referred to it. See also Entomological News, XXIII (1912), p. 445, where it was assumed that the later discovered specimens were properly referred to *verus*.

***Panurginus lutzæ*, new species**

COLORADO: 1 ♀, La Junta, along the road between irrigated fields, near town about 4100 ft. alt., August 12, 1920, collected by Mrs. F. E. Lutz.

♀.—Length about 6.4 mm. Black, without light markings, excepting pale yellow dots on anterior and middle knees. Thorax above with abundant, stiff, erect pale brown pubescence, not hiding the surface; vertex with similar pale brownish hair. Head ordinary, shining, facial quadrangle broader than long; tufts of whitish hair at extreme sides of clypeus below; mandibles dark, reddened subapically, simple, somewhat elbowed externally, the apical part of the right one densely rugosopunctate above; labial palpi rather short, the second joint not much longer than the third; process of labrum very broad, subtruncate, the margin gently rounded; clypeus and adjacent parts highly polished, with sparse punctures; clypeus with a large but shallow circular median depression; facial foveæ with the upper end diverging from the orbits; flagellum dusky reddish beneath except at base. Mesothorax and scutellum shining, without evident punctures under a lens, though the microscope shows that the numerous hairs arise from small punctures; metathorax shining, the basal area reduced to a narrow transverse rugulose channel; tegulae reddish-testaceous. Wings hyaline, very faintly brownish; stigma large, solid reddish brown, nervures pale brown; first recurrent joining second submarginal cell at a distance from its base much greater than half length of first transversocubital. Legs ordinary, with pale hair, middle basitarsi comparatively short and broad. Abdomen shining, the apex with white hair.

On account of characters of sculpture and wings, it does not seem possible that this is the female of *P. expallidus* Swenk and Cockerell or *P. horizontalis* Swenk and Cockerell, described from males collected in Nebraska. In many respects, it resembles *P. piercei* Crawford, but the latter is considerably larger, with much lighter and redder stigma. I

take it that *P. lutzæ* is a comparatively recent segregate from the *piercei* type, adapted to a different flower. Compared with *P. innuptus* Cockerell, the area of metathorax and other characters are quite distinctive.

***Panurginus pulchricornis*, new species**

COLORADO: 1 ♀, Tennessee Pass, about 10,500 ft. alt., August 6-8, 1920.

♀.—Length about 7 mm. Black, similar to *P. atricornis* Cresson, but the flagellum is ferruginous beneath except at base and apex, and the stigma is piceous, appearing black by reflected light. The process of labrum is broad, truncate, with the margin gently convex; in *atricornis* it is much narrower. The clypeus is very coarsely punctured though shining, without any smoother space in middle. The mesothorax and tegulæ are as in *atricornis*, but the thorax is considerably smaller. The area of metathorax is rather larger, entirely rugulose and opaque. The wings are conspicuously dusky. The apical plate of the abdomen is long, with straight sides.

***Panurginus ineptus*, new species**

COLORADO: 1 ♀, Tennessee Pass, about 10,500 ft. alt., August 6-8, 1920.

♀.—Length hardly 6 mm. Black, the head and thorax with scanty but long white hair; eyes dark gray; facial quadrangle somewhat broader than long, orbits converging a little below; mandibles reddened about middle; process of labrum broad and truncate; palpi and tongue short. Third antennal joint unusually short, not much longer than broad, and not as long as the next two together, though they are very short; flagellum dusky red beneath, including the last joint. Clypeus highly polished, with scattered punctures; supraclypeal area shining; vertex smooth, with very feeble punctures. Mesothorax shining, with very weak punctures, median groove strong; area of metathorax dull and granular, the heavy posterior rim feebly shining; mesopleura dullish above, more shining below; tegulæ piceous with a large pallid discal area. Wings brownish hyaline, stigma and nervures dilute reddish brown; stigma robust; marginal cell broadly, obliquely truncate, the angles not rounded; first submarginal cell much longer than second; first recurrent nervure going only just beyond the first transversocubital. Legs black, with pale hair, that on anterior basitarsi thick and pale straw-yellow. Abdomen highly polished, shining throughout, with only scattered very minute piliferous punctures; apex with shining white hair.

An isolated species.

***Hypomacrotera callops* Cockerell and Porter**

COLORADO: 2 ♀, Regnier, Baca County, about 4400 ft. alt., in Gallinas Canyon, at *Quincula lobata*, June 8, 1919.

***Hypomacrotera callops persimilis* Cockerell**

ARIZONA: 2 ♀, 2 ♂, San Xavier Mission, near Tucson, on flood-plains of Santa Cruz, at *Physalis angulata*, July 24, 1916.

The eyes are dark brown in both sexes; in typical *persimilis* from Phoenix, Arizona, they are blue-green in both sexes. The supraclypeal mark of the male is well-developed.

Greeleyella beardsleyi Cockerell

COLORADO: 2 ♂, 11 ♀, Regnier, Baca County, about 4400 ft. alt., at *Quincula lobata*, *Sphæralcea coccinea*, and *Monarda pectinata*, June 6-9, 1919.

According to my experience, this species is oligotropic on *Malvastrum coccineum* (*Sphæralcea coccinea* of Rydberg).

The following key will facilitate the separation of the species recorded above.

- Males.....1.
 Females.....13.
1. Light color of face confined to clypeus.....2.
 Light color of face not confined to clypeus.....4.
 2. Tibiæ red and yellow; first recurrent nervure meeting first intercubitus.
 G. beardsleyi Cockerell.
 Tibiæ black, or at most anterior ones pale in front.....3.
 3. First recurrent nervure going far beyond first intercubitus; mesothorax dullish.
 P. bakeri Cockerell.
 First recurrent meeting first intercubitus, or falling basad of it; mesothorax polished.....*P. cressoniellus* Cockerell.
 4. Supraclypeal mark wholly absent; labrum black, flagellum dark.....5.
 Supraclypeal mark at least represented by a spot.....6.
 5. Larger; clypeus with two black spots; upper corner of lateral face-marks forming a larger angle.....*P. porteræ* Cockerell.
 Smaller; clypeus without black spots; upper corner of lateral face-marks forming a smaller angle.....*P. porteræ* Cockerell, variety (Arizona).
 6. Anterior wings with conspicuous apical cloud; head very broad.
 H. callops persimilis Cockerell.
 Anterior wings without such a cloud.....7.
 7. Scape yellow in front.....8.
 Scape wholly black.....9.
 8. Face chrome-yellow.....*P. irregularis* Cockerell.
 Face pale primrose-yellow.....*P. nebrascensis* Crawford.
 9. Flagellum clear reddish orange beneath, except at base and apex.
 P. perlævis (Cockerell).
 - Flagellum dark or dusky beneath.....10.
 10. Lateral face-marks forming practically right angles on orbits above.
 P. piercei Crawford.
 Lateral face-marks ending above in acute angles.....11.
 11. Anterior tibiæ dark.....12.
 Anterior tibiæ light in front; eyes green.....*P. didirupa* Cockerell.
 12. Small joints of tarsi red.....*P. atricornis* (Cresson).
 Small joints of tarsi more slender, not red.....*P. altissimus* Cockerell.
 13. (Females) A light patch in middle of face; tarsi ferruginous.
 P. renimaculatus Cockerell.

- No light patch on face.....14.
14. Anterior tibiae pale yellowish red in front; flagellum red beneath.
G. beardleyi Cockerell.
 Anterior tibiae dark in front.....15.
15. Mandibles bright red in middle; mesothorax highly polished; stigma very slender, pale with dusky margin.....*H. callops* Cockerell and Porter.
 Mandibles dark, or if partly reddened, mesothorax or stigma different16.
16. First recurrent nervure joining first intercubitus, or falling basad of it.....17.
 First recurrent nervure going beyond first intercubitus.....18.
17. Flagellum red beneath.....*P. cressoniellus* Cockerell.
 Flagellum entirely dark.....*P. cressoniellus calochorti* Cockerell.
18. Mesothorax dull or dullish, not highly polished; smallish species.....19.
 Mesothorax polished; mainly larger species.....21.
19. Tegulae rufotestaceous.....20.
 Tegulae piceous.....*P. bakeri* Cockerell.
20. Clypeus and supraclypeal area punctured, dullish; stigma very dark.
P. opaculus Cockerell.
 Clypeus and supraclypeal area highly polished; stigma dilute brown.
P. pernitens Cockerell.
21. Mesothorax with conspicuous fulvous hair; tegulae rufotestaceous.....22.
 Mesothorax without such hair.....23.
22. Larger; mesothorax with conspicuous punctures.....*P. porterae* Cockerell.
 Smaller; mesothorax without conspicuous punctures.....*P. lutzæ* Cockerell.
23. Flagellum black; mesothorax highly polished, without conspicuous punctures; stigma dark brown; wings strongly dusky.....*P. atricornis* (Cresson).
 Flagellum at least largely pale beneath, or if somewhat dusky, mesothorax evidently punctured.....24.
24. Stigma reddish brown, large and broad; flagellum light yellowish-ferruginous beneath, except base and apex; base of metathorax distinctly plicatulate.
P. perlævis (Cockerell).
 Stigma more slender, dark or reddish; flagellum dusky beneath, or if paler, mountain forms, smaller than *perlævis*, with base of metathorax granular.25.
25. Stigma piceous; first recurrent nervure going far beyond first intercubitus; flagellum red beneath except at ends.....*P. pulchricornis* Cockerell.
 Stigma rather dilute brown.....26.
26. First recurrent going only just beyond first intercubitus; flagellum pale beneath; rather small species.....*P. ineptus* Cockerell.
 First recurrent going considerably beyond first intercubitus.....27.
27. Mesothorax hardly at all punctured; sides of face shining, feebly punctured.
P. altissimus Cockerell.
 Mesothorax evidently punctured; sides of face distinctly punctured.
P. didirupa Cockerell.

AMERICAN MUSEUM NOVITATES

FRANK E. LUTZ, Editor

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The articles are numbered serially but paged independently. An index will be provided for each 300 (approximately) pages.