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NEW PSAMMOCHARIDÆ AND PHILANTHIDÆ.

BY NATHAN BANKS, CAMBRIDGE, MASS.

The following new species are mostly from the northern and northwestern parts of the United States or from Canada.

PSAMMOCHARIDÆ.

Psammochares lasiope, n. sp.

♀ Black, basal part of abdomen reddish above and below, extreme base of first segment black. Head, pro- and metanotum densely clothed with rather long hairs. Clypeus truncate, margined; antennæ slender, second plus third joints fully equal vertex width, vertex from in front hardly convex; the lateral ocelli nearer to each other than to the eyes; hind border of pronotum angulate; base, tip, and venter of abdomen with few fine hairs, no bristles near tip of abdomen; legs slender, with short spines, three in comb on basitarsus, not very long; inner spur of hind tibia about one-half of the basitarsus. Wings nearly uniformly blackish, but not very dark; second and third submarginals subequal in size, both broad above, separated by a vertical vein, and receiving the recurrent veins near the middle; basal vein before transverse; in hind wings the fork is interstitial with the end of the cell.

Length 11 mm.

From Saranac Lake, 26 Aug.; Wilmington, 20-26 Aug.; New Russia, Essex Co., 18 Aug., all in New York, (Bradley). Differs from *atlanticus*, *autumnalis*, *marginalis*, in having longer hair on metanotum and broad-topped third submarginal cell; the spines of the comb are about the length of those in *marginalis*, much shorter than in *autumnalis* and *atlanticus*.

Anoplus depressipes, n. sp.

♀. Deep black throughout; wings uniformly black. The face is rather broader below than above, the clypeus very broad, nearly truncate below, but rounded at outer sides, vertex straight across, hind ocelli about as close to eyes as to each other, antennæ slender, second plus third joint equal vertex width; pronotum behind angulate, metanotum sloping, not very long, with a deep median groove, with long hair. Abdomen slender, basal and apical segments hairy above, all below; legs slender, not very spiny, those on the tibiæ hardly one-half of the width of joint, inner spur of hind tibia about one-half of basitarsus, anterior tarsi flattened, the outer edge angulate, concave below, no spines above on basitarsus, 2 in the concavity on lower outer side. Wings moderately long, second submarginal cell longer than wide, receiving the first recurrent beyond middle, third submarginal fully as long as the second, narrowed above, receiving the second recurrent vein near middle, latter curved, basal vein a little before the transverse; in hind wing the fork interstitial with the end of the cell. The head and thorax are clothed with rather long hair.

Length 12 to 16 mm.

From Ithaca, N.Y., 12 July (Needham); Spring Creek, Decatur Co., Ga., 16 July, (Bradley) and Burton, Ga., 21 May, (Bradley).

The nature of the anterior tarsus, especially the basal joint, will distinguish it from our other species of this genus.

April, 1919

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Bohart

Separate
title on
page 85

Hymenoptera Pompilidae
Species - Philanthinae
Carcinina

Anoplius similis, n. sp.

♀. Black throughout; wings uniformly black. Closely to *A. illinoiensis*. The clypeus is broadly, evenly concave below, in *illinoiensis* it is truncate and consequently longer. The face is a little broader at vertex than in *illinoiensis*; antennae and ocelli about the same as in that species; the metanotum is a little shorter, more deeply grooved, the posterior slope more flattened across, the hairs shorter and much fewer than in *A. illinoiensis*. The abdomen similar but the last segment has only a few fine hairs, not the stiff bristles of *A. illinoiensis*. Legs slender, hardly as spiny as in *illinoiensis*, the inner spur of hind tibia a little more than one-half of basitarsus; the front basitarsus has no noticeable spines above, but two or three on the outer under side. Venation similar to *A. illinoiensis*, but submarginal cells a little larger, and the second recurrent vein not curved.

Length 15 to 16 mm.

From Ithaca, N.Y., 14, 25 July, (Bradley).

Lophopompilus autilone, n. sp.

♂. Related by the male genitalia to *L. aethiops*, differs in that there is a median, hairy ridge the whole length of the genital plate (in *aethiops* only at base). The under side of the first joint of the antennae is hardly hairy; the hairs on the metanotum are not nearly as long or as dense as in *aethiops*, and the whole body is less hairy. The clypeal margin is slightly concave; the third submarginal cell is triangular, receiving the second recurrent vein near the middle, the latter bent near the middle; hind margin of pronotum almost angular; apical ventral segments with scattered hairs only.

Length 14 mm.

From La Belle, 8-10 May, Ft. Meyers, 7 May, Florida, and Billy Island, Okefenokee Swamp, Ga., all taken by Prof. Bradley.

Pompiloides canadensis, n. sp.

♀. Similar to *P. cylindricus* and *P. insolens*; differs from both by the shape of the basal plate of male genitalia being triangularly emarginate, the sides of the emargination divergent (instead of parallel); the last ventral segment is not so deeply emarginate behind as in *P. cylindricus*. Black throughout, not as much silvery as in *P. cylindricus*, the silvery appearance noticeable on face, thorax and coxae. Head with rather longer hair than *P. cylindricus*, venter with few, but distinct hairs. Third submarginal cell usually short petiolate, the second sub-quadrate. About the size of *P. insolens*.

From Truro, Nova Scotia, 12 Aug., (Matheson); and Val Morin, 29-30 July, Canada (Ouellet).

Sophropompilus quadrispinosus, n. sp.

♀. Deep blue; wings blackish, nearly uniform, legs and antennae black; clothed with short hairs. Clypeus truncate, third antennal joint hardly equal first, faint line to anterior ocellus, hind ocelli nearer to each other than to the eyes, vertex from in front slightly convex, pronotum arcuate behind; metanotum short, hairy, faint groove on the base; abdomen with short hairs above, longer at tip and below; femora plainly hairy above, inner spur of hind tibiae two-thirds of the basitarsus, front tarsus has four long spines in comb on the first joint, these are almost flattened; wings and venation as in *S. hyacinthinus*.

Length 10 to 12 mm.

From Long Beach, L. I., N.Y., Aug., (Shannon); Chesapeake Beach, Md., 18 to 21 Sept.; Gulfport, Fla., April, (Reynolds); Billy's Island, Okefenokee Swamp, Ga., 1 to 5 Sept., (Bradley), and Tybee Island, Ga., (Bradley); evidently a coastal species. Body and legs more hairy than *hyacinthinus*, and with longer comb, four on first joint.

***Ageniella eximia*, n. sp.**

♂. Black, apical parts of legs more brown; wings slightly fumose, not darker on tips. Small and very slender; face rather broad, hardly narrowed below, lateral ocelli plainly nearer to each other than to the eyes; pronotum behind strongly arcuate, metathorax sericeous on its sides. Abdomen very slender, basal segment about one and a half times longer than broad at tip; inner spur of the hind tibia little more than one-half of the basitarsus. Wings slender, rather short, marginal cell not its length from wing-tip, third submarginal higher than long, slightly narrowed above, receiving the second recurrent a little before middle, basal vein a little before the transverse.

Length $3\frac{1}{2}$ to $4\frac{1}{2}$ mm.

From Falls Church, Va., Ithaca, N.Y., 15 July to 10 Aug., (Bradley), Albany, and McLean, N.Y., 3 July.

Related to *A. iridipennis* Cress., but very much smaller, darker spurs and front legs, and slightly different in venation. Several specimens have the apical part of hind femora reddish, but otherwise agree.

***Agriogenia*, n. gen.**

Based on *Agenia brevis* Cress. It agrees in general with *Ageniella*, but differs in being clothed with a fine, appressed, greyish yellow pubescence; the legs, especially the femora, are shorter and stouter than in *Agenia*, and the shape of marginal cell and third submarginal was noted by Cresson. The female, however, has on the underside of the head back of the mouth a curved row of long white bristles which look as though arranged to hold food. Nothing similar occurs in *Ageniella*; the head is flatter in the frontal region than in *Ageniella*.

PHILANTHIDÆ.

***Cerceris completa*, n. sp.**

Male from Claremont, California, (Baker). Black, with yellow marks; face below antennæ, base of mandibles, stripe on scape beneath, spots on pronotum, the postscutellum, and legs (except basal two-thirds of femora, yellowish. Basal segment of abdomen black, second yellow above, with a median transverse black spot, pointed at each side, the following segments yellow with large basal, transverse, black spot, that on the third and fourth segments narrowed at extreme base; the venter with pale bands on second, third and fourth segments broader on sides, fifth with spots on side. Clypeus truncate in middle below; hair lobes small; enclosure smooth and shining; first abdominal segment plainly longer than broad, and not one-half the width of the second; other segments broad; pygidial area once and two-thirds longer than broad at base, rather broader at base than elsewhere. Body rather finely and densely punctate; head, thorax, and first segment plainly hairy; stigma yellowish.

Length 11 mm.

***Cerceris snowi*, n. sp.**

Males from Tucson, Arizona (Snow) and San Diego Co., Cal., (Van Duzee). Black; lateral face marks, scape beneath, two spots on pronotum, the postscutellum, tegulae, apical bands on the second and following segments, cream yellow, those on face nearly white; band on second segment much broader than others which are narrow and may be broken each side; tibiae and extreme tips of femora pale, a dark spot behind on mid and hind tibiae, the basitarsi pale. Flagellum of antennae rather rufous beneath, especially toward tip. Face below densely white-haired; clypeal margin at middle faintly tridentate; enclosure smooth; the pygidial area elongate, about as in *C. kennicotti*. Head, thorax, first and second segments very plainly hairy. One specimen has two small spots on first segment, two have faint lateral spots on the scutellum.

Length 8 mm.

By small size and coarse punctuation related to *C. erigoni* and *C. acanthophila*, but distinct by having clypeus all black.

***Cerceris interjecta*, n. sp.**

Male from Lake Point, Utah, 18 July, (Titus).

Black marked with yellow; first abdominal segment red above and below. Face with middle clypeal spot not reaching lower margin, and lateral spots yellow, sides of clypeus and the mandibles black; basal part of flagellum slightly rufous beneath; two spots on pronotum, the postscutellum, and broad abdominal bands, yellow, that on the second segment occupying one-half of the segment, not emarginate; third, fourth and fifth broadly emarginate in front, but on sides reaching the front margin of the segment, sixth with a small basal, median dark spot; venter all black; legs black, the tibiae yellow in front, tarsi dark brown; stigma yellowish; pygidium mostly rufous. Face very broad; clypeal margin slightly rounded, hair-lobes very small; last joint of antenna as long as preceding, slightly curved; enclosure large, smooth, polished; pygidial area once and one-half longer than broad, sides nearly parallel. Body moderately, coarsely punctate; abdomen broad, basal segment.

Length 10 mm.

***Cerceris abbreviata*, n. sp.**

Males from Yakima River, Little Spokane, and Umatilla, Washington, June and July, (S. Henshaw).

Black, marked with yellow, face, base of mandibles, scape beneath, dot behind eyes, pronotum, tegulae, postscutellum, two spots on basal segment, narrow bands, all about of the same width on following segments, yellow; three pairs of ventral spots, usually connected; legs yellow, front and mid femora with black spot near base, hind femora and tibiae black near tips; stigma yellowish; flagellum rufous beneath, last joint of antenna rufous, slender, curved. Face is narrower than *C. occipitomaculata*, the lateral lobes of clypeus being proportionately higher. Clypeal margin truncate; enclosure plainly longitudinally striate, but on sides more oblique; basal segment of abdomen very broad; pygidial area elongate, the sides parallel; head and thorax short-haired.

Length 8 mm.

In appearance a *C. nigrescens* marked with bright yellow instead of white, but a slightly smaller, and shorter bodied species.

Philanthus yakima, n. sp.

Washington—Yakima, 2 to 4 July, 1882, (S. Henshaw).

♀. Close to *P. flavifrons*, but smaller. Face, mandibles, scape beneath, streak behind eyes, two dots on vertex, collar, tegulae, tubercles, spot behind, larger spot below, spot at posterior corners of mesonotum, adjoining spot each side on base of scutellum, postscutellum, spot each side on metanotum, broadly interrupted bands on first and second segments, bands on others, broad on sides, very narrow in middle, that on third deeply indented each side behind, broad bands on second, third and fourth ventral segments, all yellow. Legs (including coxae) yellow, basal part of femora, rather more than one-half on hind femora, and spot toward tip of hind tibia black. Underside of flagellum rufous; stigma yellow. Punctured as in *flavifrons*, striately on front, few on mesonotum, rather deeply and evenly scattered on abdomen, but hardly as large as in *flavifrons*. Differs from *flavifrons* in that the enclosure has the posterior as well as lateral margins raised and smooth, making a horse-shoe-shaped area. The last dorsal segment is broadly triangular, and the sides not concave toward tip as in *flavifrons*.

Length 10 mm.

FURTHER NOTES ON THE LATIMANUS GROUP OF THE BEE GENUS MEGACHILE.

BY F. W. L. SLADEN, APIARIST, DOMINION EXPERIMENTAL FARMS.

In the Agricultural Gazette of Canada, February, 1918, page 125, I proposed the name *diligens* for *Megachile latimanus*, Ckll. not of Say. Professor Cockerell has informed me that the name *diligens* was given by F. Smith in 1879 to a *Megachile* in the Hawaiian fauna, so that it becomes necessary to find a new name for *latimanus* Ckll., and I propose *dentitarsus*. The difference between this and the other Canadian species of the *latimanus* group were pointed out in my table given in the Canadian Entomologist, September, 1918, page 302. There is, however, another character to which Professor Cockerell has called my attention. When the abdomen is viewed from above and slightly tilted, black hairs are prominent laterally in *dentitarsus* (*latimanus* Ckll.), but no black hairs project at side in *perihirta*, Ckll. (*grindeliarum* Ckll.).

OCCURRENCE OF THE PEAR THRIPS IN ONTARIO.

BY WM. A. ROSS, DOMINION ENTOMOLOGICAL LABORATORY, VINELAND STA., ONT.

The notorious pear thrips *Tæniothrips inconsequens* Uzel, hitherto unrecorded in Ontario, was taken by the writer last spring (1918) on pear trees in a large orchard near Beamsville. Fortunately the thrips was present in very small numbers and apparently was not causing any appreciable injury.

Thanks are due to Mr. P. J. Parrott, of the Geneva Agricultural Experiment Station, and Capt. J. D. Hood, Washington, D.C., for confirming the identification of this insect.

For the information of the reader it should be stated here that an excellent, detailed account of the known distribution, life history, habits and control of the pear thrips is given by A. E. Cameron and R. C. Treherne, of the Dominion Entomological Branch, in Bulletin No. 15—"The Pear Thrips and Its Control in British Columbia."

April, 1919

Hymenoptera Apidae—Megachilidae

NOTES ON THE LIFE-HISTORY AND EARLY STAGES OF BRACHYS OVATUS WEB., AND BRACHYS AEROSUS MELSH.

BY HARRY B. WEISS AND ALAN S. NICOLAY, NEW BRUNSWICK, N.J.

Packard in his "Forest Insects" records *B. aerosus* as occurring on oak early in summer in Maine and late in May near Providence, R.I., and states that Gillette (Canad. Ent. July, 1887) reared it from larvæ in poplar leaves, the mines being finished in October and the beetles appearing early the following May. Concerning *B. ovatus*, this species is recorded by Packard as follows "on laurel oak; imago issues latter part of April and early May (Riley's unpublished notes)." Gillette also reports rearing the beetle from a larva mining a leaf of either red or black oak. Felt (N. Y. State Mus. Mem. 8; 2, p. 512-3) states that *B. aerosus* was taken while feeding on elm during the latter half of May, and that *B. ovatus* was common on scrub oak the latter part of May and June. Blatchley in his "Coleoptera of Indiana" records *aerosus* as throughout the state, frequent, May 16-June 18, occurring on oak, hickory, elm and *ovatus* also as throughout the state and frequent, May 16-July 13, on oak in the leaves of which the larvæ dwell. According to Smith (Rept. N. J. State Mus. 1909) *aerosus* is found throughout New Jersey, not rare, on oak, May, June and *ovatus* is common throughout the state, June to August on oak. Burke (U. S. Dept. Agric. Bull. No. 437, 1917) summarizes the distribution, common habits and host trees of the genus *Brachys* as follows:—"Eastern and Central States, leaf miner in leaves: *Populus* ?, alder (*Alnus*), *Fagus* ?, chestnut (*Castanea*), oak (*Quercus*), *Ulmus* ?, and *Acer*?"

In New Jersey, we have found the distribution of both species to be as reported by Smith, and have observed the adults feeding on foliage as follows: *B. ovatus* on elm (*Ulmus americana*), sugar maple (*Acer saccharum*), white oak (*Quercus alba*), chestnut oak (*Q. prinus*), pin oak (*Q. palustris*), chestnut (*Castanea dentata*), scrub oak (*Q. ilicifolia*), black oak (*Q. velutina*), post oak (*Q. minor*), beech (*Fagus ferruginea*), and hickory (*Hicoria glabra*) with the various species of oaks as preferred food plants; *B. aerosus* feeding on beech (*F. ferruginea*), linden (*Tilia americana*), witch hazel (*Hamamelis virginiana*), elm (*Ulmus americana*), chestnut (*C. dentata*), sugar maple (*A. saccharum*), red maple (*A. rubrum*), and various species of oaks with the oaks as preferred food plants, although quite a few adults were taken while feeding on red maple and beech.

The feeding of both species is quite characteristic. The beetles feed on the upper leaf surfaces usually near the edges consuming the tissue between the larger veins and working, as a rule, along a large vein. This habit results in feeding areas which are bounded on one or more sides by straight edges or lines giving the injury a sort of ragged geometrical appearance. After much feeding has been done at one spot, the small amount of remaining uninjured tissue weathers away in the course of time, resulting in irregular holes.

The mines of both species are somewhat irregular and blotch-like and may be found on any part of a leaf, the majority, however, occurring near the edge. As a rule each mine contains only one larva, and is found on a leaf which is comparatively uninjured by adult feeding. *Aerosus* mines take up only a small portion of a leaf, while an *ovatus* larva will frequently mine one-half or more of a medium-sized leaf. The mines of both species are visible on both leaf surfaces, more so on the upper where they appear as brown dead spots or areas. Some

leaves when held up to the light are so mined that the characteristic larva is readily identified as a *Brachys* sp., while others have the mined area so brown that the light will not penetrate. However, a *Brachys* sp. mine can usually be identified as such by the dried, oval, flat, glistening egg shell which remains sticking to some portion of the upper surface of the mine long after the larva has left it. Mined leaves were found on small as well as large trees. On the large trees, however, only the outer leaves exposed to plenty of sunlight were infested.

Not all of the trees selected as food plants by the adults seem to harbour the larvæ in their foliage, and we have observed mines of both species only, as a rule, in the leaves of various oaks. In a few cases we have noted mines on chestnut and have taken larvæ therefrom. At Uhlerstown, Pa., eggs and adults of *B. aerosus* were plentiful on red maple leaves, but an opportunity for visiting this place later in the season was not afforded us, and it is not known if the leaves were mined.

In general, the life-history of both species is as follows. Adults appear about the middle or latter part of May and disappear by the first part of August, being most plentiful during June and the first part of July. Soon after emergence and feeding, eggs are deposited on the upper leaf surfaces, many being laid near the edges. After hatching, the larvæ mine the leaves until the latter part of August and September, at which time many leave the mines through the lower surface and drop to the soil where pupation takes place. Sometimes it is possible to find larvæ in their mines as late as the middle of October. The winter is evidently passed in the pupal stage, as a specimen under our observation pupated during the first part of October.

EGG OF *B. ovatus*. Length 2.2 mm. Width 1.7 mm. Flat, oval, rounded at both ends. Side resting against leaf flat. Upper surface slightly convex. Chorion apparently smooth, shining. Transparent when first laid, later becoming yellowish white. Just before hatching larva can be seen through the transparent chorion, resting with the abdomen bent back sidewise upon itself the tip touching the second thoracic segment. Except for its smaller size, (Length 1.7 mm., width 1.1 mm.,) the egg of *B. aerosus* appears to be similar to that of *ovatus*.

In depositing the egg, the female protrudes the tip of the vagina slightly and rubs it back and forth against the leaf surface. This operation which ends in three or four minutes results in an oval, flat, transparent, watery-like mass, the outer surface of which soon hardens into a thin film or skin. The entire thing resembles an oval drop of transparent, watery excrement rather than an egg.

Of a pair of *B. ovatus* collected May 27 and placed in a cage, the female deposited sixteen eggs. A pair of *B. aerosus* collected at the same time and caged resulted in the female depositing forty-five eggs. Another pair of *aerosus* yielded thirty-five eggs. Inasmuch as no eggs were noted in the field when the specimens were collected, these numbers may be fairly representative. All of the above specimens lived and fed for six weeks, the eggs being deposited during the first four. All eggs were deposited on the upper leaf surface, many of them close to the edges. As a rule, leaves uninjured by adult feeding were selected. The young larva usually enters the leaf tissue directly beneath the egg and mines

either in an irregular area around the egg or in a gradually widening, elongate area away from the egg and parallel to and against the leaf edge.

Practically all of the *ovatus* eggs in our cages and many in the field were parasitized by *Closterocerus cinctipennis* Ash. In the cage containing forty-five *aerosus* eggs, nineteen mines were started, 17 eggs were parasitized and nine appeared to dry up. In the cage containing thirty-five *aerosus* eggs, ten mines were started, fifteen eggs were parasitized, and ten failed to hatch for some reason or another. Most of the larvæ which started the mines were also parasitized by the same species. Parasitized eggs became black in colour and many such were noted in the field. A few good eggs were noted as late as July 15, showing that egg deposition evidently extends over a considerable period.

FULL GROWN LARVA OF *B. ovatus*. Length 7 to 9 mm. Width of first thoracic segment 2.4 to 2.85 mm. Slightly wedge-shaped, much flattened. Body composed of thirteen well-defined segments which are deeply notched and lobed. Head and mouth-parts dark. Head more or less retracted into first segment. First segment as broad or slightly broader than the following, body gradually tapering to the twelfth segment. First segment with large, well-developed, comparatively smooth, shining, subquadrate plate on both dorsal and ventral surfaces. Dorsal plate with median line groove. Abdominal segments one to seven with pronounced rounded lobes. Lobes of abdominal segments five to nine each bearing a group of several stout, minute spines. Posterior dorsal edge of eighth abdominal segment fringed with row of minute, stout spines. Colour whitish, broad median dorsal line indicated on abdominal segments one to eight. Lateral dorsal portion of each body segment except the first varies from light gray in some specimens to black in others. (Immature specimens are entirely whitish). Entire dorsal surface except plate of first segment covered with somewhat slightly raised dots. These are more apparent laterally and bear the dark colour. Ventral surface somewhat similar to dorsal. Entire lateral surface of body sparsely hairy.

The larva of *B. aerosus* appears to be somewhat similar to the above, except that it is smaller (Length 4-5 mm. Width of first segment 1.53 mm.), and that the sides of the body appear to be slightly rougher, and the spines on the lobes of the fifth to ninth abdominal segments appear to be less pronounced.

PUPA OF *B. ovatus*. Length 6.7 mm. Greatest width 3.5 mm. Colour brown ochre (Nomenclature of Windsor & Newton's Water Colours). Shape similar to that of the adult. Surface smooth, shining.

This stage is probably passed on top of the soil in rubbish or under the surface of the soil. Many mines were examined in the field, but no pupæ were ever found. It was noted that in every case, the larva had made its exit through the lower surface of the mine. In our cages only one larva of *ovatus* pupated, and it did so on the surface of the soil. When full grown they left the mines, and for some reason or another all except one died on the surface.

Ovatus was described by Weber in 1801 (Observ. Ent., Vol. 1), and *aerosus* by Melsheimer in 1846 (Proc. Acad. Nat. Sc. Phila., Vol. 2). There is some synonymy indicated, but this need not be gone into here.