

On the North American ASILIDÆ (Part II).

BY S. W. WILLISTON, M. D.

The present article is a continuation of the one in volume xi, pp. 1-35 of these Transactions, and includes the remainder of the Asilidæ, with the exception of the genus *Asilus* (*sensu lat.*). A considerable amount of material I have accumulated in this latter group, and descriptions are in manuscript, but the many problems they offer, yet unsolved, render their present publication inexpedient.

DASYPOGONINÆ.***Stichopogon trifasciatus* Say.**

Specimens from Kansas show no differences from New England ones.

***Ablautatus mimus* O. S.**

This species also occurs in Arizona.

***Laphystia sexfasciata* Say.**

Specimens of this species from Montana differ appreciably from those from the Southern States that I have seen. In all the Northern specimens the pollinose bands of the abdomen are all entire, while in the Southern ones they are mostly interrupted; the femora, moreover, in the former are mostly yellow, while in the others they are chiefly black. These differences, if not sufficient to warrant specific separation, may be varietally indicated by the name *notata* Bigot, for the Southern form.

***Myelaphus lobicornis* O. S.**

I have seen a specimen of this species in which the fourth posterior cell is wide open. It is doubtful whether the species which I described in the first part of this is the same. *Ceraturgus dispar* Loew (Syst. Besch. 3d Suppl. Band. p. 122) from Europe is apparently a *Myelaphus*.

***Aphamartania fur* n. sp.**

♂.—Length 6½ mm. Small, black, thickly white pollinose. Head and antennæ in structure like those of species of *Nicocles*, except that the vertex is not so deeply excavated on the sides of the ocelli. Face and front with a silvery-white pubescence, the former otherwise bare, except a thin row of white hair on the oral margin, and the latter with a few white hairs. Antennæ black, slender. Thorax thickly white pollinose, bare, except the weak white bristles; dorsum with two slender, brown, median stripes, and two small, less definite brown spots on each side, the one before, the other behind the suture. Abdomen rather short, and

slender, a little broader at the base, not flattened or expanded distally, shining bluish black; the venter, sides, and posterior angles above, not reaching quite across behind on the posterior segments, white pollinose like the thorax; hypopygium thickened, of moderate size, white pollinose. Legs black, rather thinly clothed with white pile and bristles, hind tibiae rather stout, in structure like those of *Nicocles scitulus* Will. Wings hyaline, faintly yellowish tinged on outer half, first longitudinal vein and costa, beyond the tip of auxiliary vein, a little thickened.

One specimen, Arizona (Prof. Comstock). I see no reason why this species should not be placed in this genus. I would also place *Taracticus brevicornis* and *Nicocles scitulus* of my previous paper in this same genus, and I doubt very much the expediency of separating *Blacodes bellus* Loew.

LAPHRINÆ.

LAPHRIA.

The following table includes only such species as are known to me. *Lampria felis* is included, as the femora below do not show the tubercles characteristic of that genus.

- 1.—Legs wholly black 2.
- Legs not wholly black 10.
- 2.—Wholly black pilose, except on dorsum of abdomen, where it is dense and bright red **anthrax** Will.
- Head and thorax not wholly black pilose 3.
- 3.—Dorsum of abdomen with a large, elongate, red-pilose, red spot; facial gibbosity large, hemispherical **gilva** Linné.
- Abdomen without such spot; facial gibbosity not unusually large 4.
- 4.—Head clothed wholly with reddish pile and hair; venter black **vultur** O. S.
- Head with more or less black hair or pile 5.
- 5.—Face with abundant long yellowish white pile more or less concealing the small gibbosity 6.
- Facial gibbosity conspicuous, the light colored pile confined to the sides above 7.
- 6.—Abdomen wholly black **vivax** Will.
- Venter, and posterior angles of the segments above, red. **ventralis** n. sp.
- 7.—Abdomen nearly bare 9.
- Abdomen with conspicuous light colored pile 8.
- 8.—Face with yellow pile, beard yellow **ferox** Will.
- Pile of face above and the beard white **sericeus** Say.
- 9.—Dorsum of the thorax in the male with light yellow, in the female wholly black pubescence and pile **franciscana** Big.
- Dorsum in both sexes with sparse white pubescence; eastern species. **canis** Will.
- 10.—Head, margin of the thorax, and the abdomen with thick yellow pile. **saffrana** Fabr.
- Thorax without such pile; smaller, nearly bare species 11.

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- 11.—Abdomen wholly black; legs yellowish red.....**pubescens** Will.
Tip of abdomen, legs, humeri, scutellum and antennæ yellowish red.
ruficauda n. sp.
Abdomen except the base, and hind femora below, yellowish red.
Xanthippe Will.
Abdomen except the base, and legs wholly, yellowish red.....**felis** O. S.

Laphria gilva Linné.

To the synonymy of this species, given in my previous paper, the following should be added:

Laphria bilineata Walker, List, etc.; iv, 1156; Williston, Trans. Amer. Ent. Soc. xi, 30.

Laphria ventralis n. sp.

♂, ♀.—Length 12-14 mm. Black. Face rather thickly clothed with straw-yellow pile and hair, on the gibbosity with some black bristles. Beard yellow. Antennæ black. Thorax with straw-yellow pile, the disk of the dorsum with short sparse black pile. Abdomen thickly clothed with appressed yellow pile, changeable in different lights, but the pile more erect on each side of the segments in front and ground color hence, here more apparent; the venter and the posterior angle of each segment on the dorsum, beginning with the second or third and successively becoming larger, so that the two spots approach or meet narrowly behind on the last segments yellowish red. Legs black, the tibiæ with short black pile; bristles black. Wings tinged with brownish, except at the base.

Two specimens, California (Baron).

Is closely related to *L. vivax*, but will be distinguished by the color of the venter and the posterior angles of the dorsal segments.

The length of *L. vivax* as given in the original description is too great; it should have been 18 mm. instead of 22 mm.

Laphria ruficauda n. sp.

♀.—Length 18 mm. Head black; face in the middle shining, on the sides lightly whitish pollinose and with sparse white hair, gibbosity small, covered with rigid, porrect, black bristles. Antennæ red. Occiput white pollinose; pile of the beard white; occipito-orbital and mental bristles black. Thorax bluish black, covered with a delicate whitish dust, leaving two slender median stripes that reach to about the suture, and a large spot in front and another behind the suture, on each side, shining; a spot on the humeri, and the scutellum, shining mahogany-red; dorsum bare, with sparse, slender rows of black hairs; bristles black; pleuræ, coxæ and femora with sparse, long, white pile. Abdomen nearly bare, shining cobalt-blue black; sixth and seventh segments and the ovipositor shining mahogany-red; pile on the sides of the first three segments white. Legs wholly shining red, the tibiæ with similarly colored, the tarsi in part, with black bristles, the tarsi with short golden pile. Wings tinged with blackish on outer part, near the base hyaline.

One specimen, San Domingo (Frazar).

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Laphria (Dasyllis) saffrana.

Laphria saffrana Fabricius, Syst. Antl. 160, 18; Wiedemann, Dipt. Exot. i, 234, 4; Auss. Zw. i, 504, 9.

♂, ♀.—Length 19-22 mm. Head black, concealed beneath abundant sulphur-yellow pile, on the sides of the face below, near the oral margin, with a small quantity of black pile. Antennæ yellowish red. Dorsum of thorax black, with a slight bluish reflection; humeri and post-alar callosities red; the margins except, in the middle in front, yellow pilose, leaving the black of the disk in the shape of a spade of playing cards, in the middle of which on the suture there are two small yellow pilose spots; pleuræ more pitchy black, with a small tuft of yellow pile in front of the wings. Abdomen black and yellow, densely clothed with appressed golden-yellow pile; venter yellow, thinly pilose. Coxæ and legs yellow with yellow pile, the femora on their upper sides sometimes brownish or blackish. Wings dark brownish, with sub-hyaline spots in the posterior cells.

Four specimens, Fla. (Frazar, Pergande); N. C. (Prof. Comstock)

Andrenosoma fulvicauda Say.

A comparison of specimens from Maine and California shows no appreciable differences.

Andrenosoma chalybea n. sp.

♀.—Length 10.5 mm. Head black; face and front thickly white dusted, the former with sparse white hairs on the sides, the gibbosity with thin black bristles. Antennæ black. Beard white; occiput thickly white pollinose. Thorax black, moderately shining, the dorsum with a slender median stripe and lateral markings of grayish pollen; pleuræ pollinose, with a shining spot; scutellum deep shining blue-black. Abdomen bare, deep shining steel-blue, with violet and cobalt reflections; on the sides of the segments with sparse white pile. Legs deep steel-blue, with long sparse white pile and slender black bristles (on the tibiæ and tarsi). Wings clouded on the outer part, hyaline at base; first posterior cell closed, or nearly so, at the margin.

One specimen, San Domingo (Frazar).

Pogonosoma melanoptera Wied.

A single specimen from Florida (Pergande) is evidently of this species. It differs from *P. dorsata* Say in the wings being black and broader, in the face being clothed with black, and in the dorsum of the thorax being shining.

ASILINÆ.

In the following pages I give tables of the species from the United States that are known to me, together with their descriptions. This will comprise nearly all of the species now known from this region; lists of the remaining species recorded from the United States are added. It is needless to state that only specimens in a fair state of preservation can be determined from the tables and descriptions. The species are often difficult enough to distinguish with good material, hence I have forborne to de-

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- Asilinae.**—Marginal cell of the wing closed; antennæ with a terminal bristle.
- 1.—Bristle of antennæ plumose..... **Ommatius**.
Bristle not plumose.....2.
 - 2.—Terminal portion of the third vein curved forwards to meet the costa; usually two sub-marginal cells.....5.
Terminal portion of third vein curved backwards to meet the margin of the wing at or beyond the tip.....3.
 - 3.—Two sub-marginal cells..... **Asilus** (*sensu lat.*).
Three sub-marginal cells.....4.
 - 4.—Abdomen shorter than the wings; body thickly pilose, claws obtuse.
Mallophora.
Abdomen longer than the wings; body thinly pilose..... **Promachus**.
 - 5.—Oviduct cylindrical, with a terminal circlet of spines.... **Proctacanthus**.
Oviduct laterally flattened, without circlet of spines..... **Erax**.

MALLOPHORA.

Macquart, Hist. Nat. Dipt., i, 300; 1834.

- 1.—First posterior cell closed, or nearly so.....2.
First posterior cell wide open; large species.....4.
- 2.—Fourth, fifth and sixth segments of the abdomen with black pile above.
laphroides.
Abdomen without black pile.....3.
- 3.—Femora, tips of tibiæ, and the tarsi black..... **clausicella**.
Legs reddish yellow, except black spots on the femora..... **Guildiana**.
- 4.—Scutellum and abdomen wholly black pilose above..... **nigra**.
Scutellum and abdomen chiefly light pilose.....5.
- 5.—Venter black pilose; light colored pile usually bright yellow **orcina**.
Venter grayish white pilose..... **bomboides**.

M. ardens Macquart, Hist. Nat. Dipt. i, 302, 4; Dipt. Exot. i, 2, 89, 12; tab. viii, fig. 2.—N. America.

Mallophora bomboides.

Asilus bomboides Wiedemann, Dipt. Exot. i, 203, 37; Auss. Zw. Ins. i, 476, 77.

Mallophora bomboides Macquart, Hist. Nat. Dipt. i, 302, 2; Dipt. Exot. i, 2, 89, 11.

♂—Length 25–27 mm. Large, black. Face black, a little shining in the middle, somewhat pollinose on the sides; a few short, black hairs near the base of the antennæ, the sides and upper part of the face bare; in the middle, extending two-thirds of the way to the antennæ, the proboscis, and posterior orbits, with dense, long, abundant, white pile, somewhat tinged with yellow; posterior orbits on the sides thickly white pollinose. Dorsum of thorax brownish black, on the humeri

and post-alar callosities more or less reddish, opaque, nearly bare, the short sparse hair black, across the front thinly white pilose. Pleuræ along the dorso-pleural suture, in front; and on the front coxæ, and in front of the halteres, extending down on to the hind coxæ, with nearly white pile. Scutellum and first three segments of the abdomen with long, abundant, white pile, the last two abdominal segments with shorter white pile; venter wholly and abundantly long white pilose; the fourth and fifth segments above chiefly black pilose. Legs black, or more or less deep red, bristles and hair chiefly black, but more or less intermixed with white, especially on the hind pair; hind tibiæ robust, on the outer half behind with abundant white pile. Wings brown, first posterior cell broadly open.

Hab.—Georgia, Florida. Two specimens (Prof. Riley, G. F. Frazer).

Mallophora orcina.

Asilus orcinus Wiedemann, *Auss. Zwei.* i, 477, 79.

Mallophora orcina Schiner, *Ver. Z. B. Ges.* xvi, 711; Osten Sacken, *Cat. Dipt.* 77.

♂.—Length 16–22 mm. Black, black pilose. Head, thorax in front, before the halteres, and on the scutellum, and the first four segments of the abdomen above, with yellow pile.² Basal joints of antennæ and the bristle chiefly luteous. Face shining, along the orbits with yellowish dust, a little pile near the base of the antennæ, and also a few bristles on the face, black; elsewhere the pile is wholly yellow. Orbits thickly white pollinose. Thorax deep black, opaque; with yellow pile across the front border, and a thin fan-like row in front of the halteres, reaching down to the hind coxæ, also a few hairs on the post-alar callosities and in front of the root of the wings, of the same yellow color. Scutellum and dorsum of the abdomen, except the last two segments, thickly and long, yellow pilose; the tip of the abdomen and the venter with black pile. Legs pitchy black, with black pile, especially abundant on the hind tibiæ, with a patch in the middle in front of white pile, and their tarsi on the basal joints above with more sparse hairs of the same color. Wings dark brown, the first posterior cell wide open.

♀. Legs clothed wholly with black.

Hab.—Ga., D. C., Ariz., Va.

Mallophora nigra n. sp.

♂.—Length 24 mm. Deep black, but little shining, everywhere black pilose, except on head, humeri, and hind legs. Face with abundant light yellow hair, on the sides above and on the front with short black pile. Basal joints of the antennæ reddish. Occiput and proboscis wholly light yellow bushy pilose; on the sides of the thorax in front there is also some yellow pile. Dorsum of thorax opaque black, hair on the scutellum and in front of the halteres with a reddish cast. On the under side of the abdomen, near the tip, there are some yellow hairs. Legs deep red, moderately pilose, on the front side of the hind tibiæ, before the tip, with a small patch of silvery white pile, otherwise there is no light colored pile on the legs. Wings yellowish brown, with similarly colored veins; first posterior cell wide open.

Hab.—Minn. One specimen, from Mr. Eugene Keen. The pile of the abdomen and legs is not so long as in *bomboides* or *orcina*.

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Asilus laphroides Wiedemann, Auss. Zw. Ins. i, 483, 88.

Mallophora heteroptera Macquart, Dipt. Exot. i, 2, 90, 13; Tab. viii, fig. 13; Schiner, Ver. Z. B. Ges. xvii, 387.

Mallophora minuta Macquart, Hist. Nat. Dipt. i, 302, 5.

Mallophora laphroides Schiner, Ver. Z. B. Ges. xvi, 711; Osten Sacken, Cat. Dipt. 77; Williston, Trans. Am. Ent. Soc. xi, pl. 2, fig. 11.

♂ ♀.—Length 9-11 mm. Black, with white and light yellow pile. Face wholly clothed with white pile, more or less intermixed with black on the oral margin; palpi more or less black haired; front with sparse black pile; beard abundant, white. Dorsum of thorax sparsely covered with short light yellow pile, on the posterior part and above the wings with fine black bristles; scutellum with abundant and longer light yellow pile. Pleuræ thickly grayish pollinose, on the upper part with light yellowish, on the lower part and on the coxæ with white pile. Abdomen flattened above, depressed, black, but little shining; on the sides of the segments toward the base, and the posterior angles of the fourth, fifth and sixth segments with moderately abundant, light yellow pile, and which forms slender faint cross-bands on the hind margins of the segments; on the posterior portion of the third segment, and the fourth, fifth and sixth segments, except the posterior part, with short black pile, not abundant; venter wholly light yellow pilose. Legs black; tibiæ reddish yellow, a few black bristles on the outer part of the hind femora above, more or less on the outer sides of all the tibiæ and the tip of the hind pair and all the tarsi with black pile; elsewhere the pile is white, moderately abundant. Wings hyaline, with a brownish shade along the front margin; marginal cell broader than usual; first posterior cell closed.

Hab.—Ga., Pa. (Macq.), Ky. (Wied.), Brazil (Schiner). Four specimens, Georgia.

That this is Macquart's *heteroptera* does not seem at all doubtful, although he describes the front and hind tibiæ as being black at their tips and the legs clothed with yellow pile. That the species is also Wiedemann's *A. laphroides* seems evident. His description of the abdomen as having the "Seitenränder vom vierten Abschnitte an schwarzbehaart" is not readily understood without one examines the specimen directly from above, when his meaning is very apparent.

Mallophora clausicella.

Mallophora clausicella Macquart, Dipt. Exot. 4e Suppl. 79, 27; tab. vii, fig. 8.

A single male specimen from Pennsylvania, collected by my zealous young friend, Mr. E. W. Keen, though closely allied to *M. laphroides*, yet is evidently different. It agrees throughout with Macquart's description of *M. clausicella*, which he thought might be a variety of his *M. heteroptera* (= *M. laphroides*). It differs from *M. laphroides*, besides the rather larger size (12 mm.) in the abdomen being without black pile on the distal segments, in the pile of the tibiæ being much more abundant and more yellowish, in the distal end of the hind tibiæ

being broadly black and black pilose, and perhaps also in the anterior cross-vein not being opposite but distinctly beyond the base of the first sub-marginal cell.

Mallophora Guildiana n. sp.

♂ ♀.—Length 11–13 mm. Black. Head wholly white pilose, except sometimes a few black hairs on the basal joints of the antennæ. Face, as far as seen beneath the pile, white pollinose. Occiput densely white pollinose. Dorsum of thorax moderately thickly whitish pollinose and with short, thin, yellowish white pile, longer behind. Scutellum thickly white pilose. Pleuræ thickly whitish pollinose and with white pile. Abdomen depressed, lightly pollinose on the sides, wholly clothed with moderately abundant, yellowish white pile, white on the second segment, sparse, allowing the black ground-color to be readily seen on the anterior part of the segments, on the posterior part of each segment with a band of white pollen. Legs yellow, tip of femora, and the tarsi, darker or reddish; a black spot on the upper anterior part of all the femora, smallest on the front pair; pile wholly yellowish white, the hind femora on the outer side below, and above near the tip, the outer posterior border of the hind tibiæ, and the upper part of the hind tarsi, with slender black bristles; tip of all the tibiæ on the inner side and all the tarsi with short black bristles. Wings wholly hyaline; first posterior cell closed, or nearly so.

Hab.—W. Kans., Mont., N. C. Five specimens collected by my friend, Mr. E. W. Guild, to whom I am indebted for not a few specimens from Western Kansas; also one from Montana (Prof. J. H. Comstock).

I am not at all sure but that this will prove to be only a variety of *clausicella*.

PROMACHUS.

Loew. Linn. Ent. 390; 1848.

- 1.—Abdomen with a broad black spot in front of each segment, behind and on the sides densely yellowish brownish pollinose; hypopygium without silvery white pile above.....2.
- Abdomen not so marked, hypopygium with silvery white pile above.....3.
- 2.—Thorax deep reddish brown.....**vertebratus.**
- Thorax grayish.....**rufipes.**
- 3.—Abdomen uniformly grayish pilose, except the narrow incisures.....**Fitchii.**
- Abdomen not uniformly pilose.....4.
- 4.—Abdomen densely brown pollinose on the sides.....5.
- Abdomen grayish pollinose on the sides, extending across narrowly on the hind margins of the segments.....**princeps.**
- 5.—Hypopygium of male small, legs chiefly black.....**albifacies.**
- Hypopygium not small, legs chiefly yellowish red.....**Bastardii.**

Promachus Wiedemann, Dipt. Exot. i, 201, 34; Auss. Zw. Ins. i, 485, 90 (*Asilus*).—Ga.

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Promachus Fitchii.

Trupanea apivora Fitch (not Walker), Country Gentleman, vol. xxiv, p. 63, 1864; Reports, iii, 251-256; tab. 4, fig. 7.

Promachus apivorus Osten Sacken, Cat. Dipt. 78.

Promachus Fitchii Osten Sacken, Cat. Dipt., Note 121, p. 234.

♂, ♀.—Length 22-26 mm. Head rather thickly clothed with light yellowish whitish hair and pollen, the occipito-orbital bristle and the hair of the palpi sometimes black. Antennæ rather distant at their base, brownish red, the third joint black, not broad. Thorax densely gray pollinose and with nearly white pile; markings of the dorsum indistinct, clothed nearly wholly with very short black hair; bristles black. Abdomen rather broad, especially in the female, wholly clothed with moderately abundant and recumbent yellowish gray pile, narrowly bare at the incisures; hypopygium elongated, mostly reddish, clothed above with recumbent silvery white pile. Wings rather small, only lightly tinged; veins luteous. Legs red, with light colored pile and black bristles, the femora often in large part black on the under side. (The eyes of this species are of a brilliant green in life, traces of which often remain in the dried insect.)

Hab.—Neb. (Fitch), Kans., Conn.

A single specimen from Minnesota (Mr. E. Keen), too much rubbed for description, may be confounded with this. The antennæ are, however, situated close together at their base, the face is much more prominent below, the femora are black, and the tibiæ more yellow.

Promachus rufipes.

Asilus rufipes Fabricius, Syst. Ent. 794, 16; Ent. Syst. 383, 32; Wiedemann, Dipt. Exot. i, 203, 38, Auss. Zw. Ins. i. 487, 93.

Dasyopogon rufipes Fabricius, Syst. Antl. 169, 23.

Promachus rufipes Schiner, Verh. Z. B. Ges. xvi, 688; Osten Sacken, Cat. Dipt. 78; v. d. Wulp, Tijdschr. voor Ent. xxv, 107.

♂, ♀.—Length 26-30 mm. Antennæ black, with more or less short black hair on the first two joints, third joint small, not broader than the first. Front and face densely covered with light grayish yellow pollen, face bare on the sides and with only a little hair of the color of the pollen; the bristles in the middle and in the oral margin are rather strong and sparse, of a little lighter color than the face, though sometimes a little intermixed with black ones. Front with some short black hairs. Occipito-orbital bristles (in part or wholly) and the beard yellowish white. Thorax dark reddish brown, the dorsum above with two broad, darker stripes, narrowly separated and obsolete behind, in front with short black hairs, behind with sparse black pile and black bristles; pleuræ with sparse blackish pile in the middle and straw-yellow pile in front, and behind in the row in front of the halteres. Abdomen elongate, not at all convex on the sides, densely light grayish yellow pollinose on the posterior half of each segment, and on the sides and venter, on the front portion of each segment (nearly a half of the width in the anterior segments, but less behind) not extending to the sides, and rounded on the posterior angles, opaque black; the line between the black and yellow is sharply marked; the pile is recumbent not abundant, except on the sides in front and on the venter, where it is quite long; on the black it is more or less black, elsewhere like the pollen (the light pile may encroach more or less on the black

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Ins. i, 485, 90

of the anterior segments). Ovipositor and hypopygium black, the latter small and thinly black pilose. Legs black, with black and whitish pile, and black bristles; all the tibiae light red except the tip. Wings very distinctly tinged with yellowish.

Hab.—Ga., Fla. Six specimens.

A specimen from Illinois I refer, doubtfully, to this, from the darker color of the thorax; it has, however, the femora red above.

Promachus vertebratus.

Asilus vertebratus Say, J. Acad. Phil. iii, 47; Compl. Wr. ii, 62; Wiedemann, Auss. Zw. Ins. i, 485, 91.

Trupanea vertebrata Macquart, Dipt. Exot. i, 2, 103, 27.

Promachus vertebratus Schiner, Verh. Z. B. Ges. xvi, 688.

♂.—Length 25 mm. Seven specimens from Kansas I refer to this species; they resemble *P. rufipes* very much, though probably different. The third joint of the antennae is more broadly oval and shorter, as is the whole antenna; the third joint is, moreover, yellowish at the base. The front is comparatively broader, and the thorax is more grayish, not reddish brown. The color of the pollen throughout is less yellowish.

In one of these specimens the tip of the tibiae is not black, and the tarsi are yellowish. The differences between this and *rufipes* are not the most satisfactory, but the deeper brown color in *rufipes* renders this easily distinguishable to the eye.

Promachus princeps n. sp.

Promachus n. sp. Williston, Trans. Amer. Ent. Soc. xi, pl. ii, fig. 15.

♂, ♀.—Length 25-27 mm. Face covered with white pollen and white hair, the bristles rather thin and abundant on the middle, above them the hair is rather abundant, below the antennae; along the oral margin on each side there are about four rather weak black bristles; the ground-color of the face on each side is in part red. Antennae black, the first joint with white, the second with black hair, third joint broadly ovate, but little less than half as wide as long. Front thickly gray pollinose, with white hair, except some short black bristles on the sides and ocelli. Occipito-orbital bristles black; beard silky white, as is also the hair on the proboscis below, the palpi with more or less black bristly hairs. Dorsum of thorax thickly grayish pollinose, with two brownish median stripes, separated by a linear interval, and on each side with larger, less distinct brownish spots; clothed with short sparse black hair, behind and on the scutellum with long white pile, bristles black; pleurae thickly pollinose and with sparse white pile; the ground-color of the humeri, less distinctly on the post-alar callosities, and portions of the coxae, is yellowish red, the thorax elsewhere is black. Abdomen black, but little shining, with very short black hair, the sides of all the segments broadly gray pollinose, extending across on the posterior part of the segments, and with longer, but sparse white hair; seen from in front the abdomen shows a black, somewhat shining spot on each segment, very large on the front segments, so that there is only a narrow gray border behind, becoming successively smaller, so that on the last segment it

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is scarcely apparent, or only a brownish spot is present. Hypopygium densely covered above with close-lying silky-white pile. Legs black, with short white hair and black bristles; the femora on their upper surface and the base of the tibiae red. Wings elongate, pure hyaline.

Six specimens, Washington Territory.

Promachus albifacies n. sp.

♂, ♀.—Length 25–28 mm. Closely resembles *E. princeps*, but differs in the front, which is a little narrower above, in the third joint of the antennæ being more slender and spindle-shaped, in the hair of the face more abundant (sometimes slightly tinged with yellow); the dorsum of the thorax in the middle shows three slender brown stripes, separated by two narrow grayish ones; the whole thorax has a more reddish cast, and the bristles on the scutellum are more abundant and sometimes intermixed with more or less black pile. Abdomen as follows: first segment black, but little shining, with short black pile, a little longer on the sides, where there are some black bristles intermixed with long white pile; second segment black like the first, with short, not abundant, black pile, long and more abundant toward the side in front, the sides of the segment rather broadly chestnut-brown pollinose, extending further inwards behind (about a third of the width of the segment), clothed except in front with moderately long, recumbent white hair; third, fourth and fifth segments similar, the black becoming less in extent and more triangular in shape, so that on the fifth segment the brown pollinose, white-haired spots nearly touch each other at their tips; sixth segment with only a small black spot; in the female the brown pollen does not extend so far inwards on the posterior segments. Hypopygium smaller than in *P. princeps*, thickly clothed above with recumbent, silvery-white pile. Legs black, with white pile (except on the hind tarsi) and black bristles; all the femora above broadly, and the tibiae, except the tips, especially of the hind pair, red, base of the tarsal joints also red. Wings as in *P. princeps*.

Twenty-four specimens, Arizona (Prof. Comstock).

Promachus Bastardii.

Trupanea Bastardii Macquart, Dipt. Exot. i, 2, 104, 30.

Asilus laevinus Walker, List, etc., ii, 392 (Type compared by Osten Sacken).

Promachus Phœadelphicus Schiner, Verh. Z. B. Ver. xvii, 389 (Type compared by Osten Sacken).

Trupanea rubiginis Walker, Dipt. Saund., 123 (Type compared by Osten Sacken).

Asilus ultimus Walker, Dipt. Saund., 136.—U. S.

Promachus Bastardii Osten Sacken, Cat. Dipt. 78.

♂, ♀.—Length 22–26 mm. Head rather thickly clothed with light yellow pile and hair, the occipito-orbital bristles chiefly black (there are no bristles on the face). Antennæ deep brownish red, the third joint small and more or less blackish, palpi chiefly black bristly. Thorax with light grayish and brownish dust on the dorsum, the markings showing but feebly, on the pleuræ more distinctly brownish dusted; dorsum in front clothed with short black hair; behind, on the scutellum and on the pleuræ, with white long pile. Scutellum with numerous black bristles, as also on the back part of the dorsum of the thorax. Abdomen black; venter deep densely chestnut-brown pollinose, which color encroaches on the sides of the dorsal segments, forming a trapezoidal spot, becoming successively larger, and which is clothed with white hair, bushy on the anterior segments, sparser and

more recumbent behind; the first and second segments on the sides with black bristles. Hypopygium of considerable size, thickly covered above with silvery-white pile. Legs red, the femora and sometimes the tibiae with longitudinal black spots, clothed with yellowish hair and black bristles; hair on the front tarsi deeper yellow, more abundant, on the middle and hind tarsi prevailing black. Wings tinged with pale brownish.

Hab.—New England, Middle States.

Numerous specimens from New England, Pennsylvania, etc. The species is nearest allied to *albifacies*, but the hair is more yellow, the body is less slender, the hypopygium is larger, and the legs are lighter colored. I should be very much inclined to identify this species with Wiedemann's *Asilus quadratus*, were it not that Schiner was acquainted with the type of that species, and would hardly have redescribed it under the name of *Philadelphicus* were they the same.

ERAX.

Macquart, Dipt. Exot. i, 2, 107; 1838.

MALES.

- 1.—Costa distinctly thickened and dilated beyond the tip of the auxiliary vein. 2. Costa not distinctly thickened, etc (slightly thickened in *Bastardii*).....5.
- 2.—Hind tibiae on outer third angulated and fringed.....**tagax**.
Hind tibiae simple; dorsum of thorax more or less mane-like.....3.
- 3.—Hypopygium large, costa considerably thickened; scutellum with long black hair and without distinct macrochaetae.....**jubatus**.
Hypopygium of moderate size; scutellum with macrochaetae.....4.
- 4.—Third, fourth and fifth abdominal segments with long silvery-white pile.
costalis.
Third-fifth segments without such pile.....**latrunculus**.
- 5.—Abdomen with long silvery-white pile, parted in the middle and directed outward.....6.
Abdomen without such pile.....8.
- 6.—Three sub-marginal cells.....**anomalus**.
Two sub-marginal cells.....7.
- 7.—Hypopygium elongate; legs black.....**stamineus**.
Tibiae yellowish red.....**dubius**.
- 8.—Hypopygium unusually small; dorsum of thorax only gently convex longitudinally.....**lateralis**.
Hypopygium not unusually small.....9.
- 9.—Abdomen black, black pilose, the last two segments silvery; mystax straw-yellow.....**aestuans**.
Abdomen more or less light pilose and pollinose.....10.
- 10.—Second sub-marginal cell more than half of the length of the first.**varipes**.
Second sub-marginal cell not half the length of the first.....11.
- 11.—Abdomen nearly uniformly grayish pollinose.....**leucocomus**.
Abdomen conspicuously black.....12.
- 12.—The last two segments silvery.....**furax**.
The last three segments silvery.....**Bastardii**.

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FEMALES.

- 1.—Dorsum of thorax with a mane-like crest.....2.
- Dorsum of thorax without such crest.....3.
- 2.—Tibiæ and tarsi yellowish red; abdominal segments broadly pollinose on the margin.....**latrunculus**.
- Abdominal segments narrowly pollinose on the hind margins.....**jubatus**.
- 3.—Three sub-marginal cells.....**anomalus**.
- Two sub-marginal cells.....4.
- 4.—Face in profile moderately concave below the antennæ; femora in part red; abdomen black, the second and third segments with a large white spot on each side behind second sub-marginal cell long.....**lateralis**.
- Face with a short deep concavity.....5.
- 5.—Mystax straw-yellow; abdomen chiefly black; furcation of third vein before the base of second posterior cell.....**aestuans**.
- Mystax white or black.....6.
- 6.—Abdomen nearly uniformly white pollinose; furcation of third vein beyond the base of the second posterior cell; tibiæ yellow with black tip; large species.....**leucocomus**.
- Abdomen with distinct black markings.....7.
- 7.—Segments of abdomen with a median black triangle.....**similis**.
- Segments of abdomen black with a pollinose margin.....8.
- 8.—The strong facial gibbosity in large part clothed with black bristles; abdomen with the lateral borders and hind margin pollinose.....**Bastardii**.
- Head wholly clothed with white, 3-6 abdominal segments each with two large black spots.....**furax**.

Additional species from the United States:

- Erax albibarbis** Macquart, Dipt. Exot. i, 2, 118, 26.—N. Am.
- E. apicalis** Wiedemann, Dipt. Exot. i, 119, 16 (*Asilus*); Auss. Zw. Ins. i, 443, 28.—N. Am.
- E. completus** Macquart, Dipt. Exot. i, 2, 117, 23; tab. ix, fig. 9.—N. Am.
- E. macrolabis** Wiedemann, Auss. Zw. Ins. i, 458, 51 (*Asilus*).—Ky.
- E. niger** Wiedemann, Dipt. Exot. i, 196, 26; Auss. Zw. Ins. i, 460, 54 (*Asilus*).—N. Am.
- E. notabilis** Macquart, Dipt. Exot. i, 2, 110, 6; tab. ix, fig. 8.—Am.
- E. pogonias** Wiedemann, Dipt. Exot. i, 198, 29; Auss. Zw. Ins. i, 460, 54 (*Asilus*).—N. Am.
- Dasyopogon barbatus* Fabricius, System. Antl. 169, 22.
- E. vicinus** Macquart, Dipt. Exot. ler. Suppl. 85, 36.—Texas.
- E. stylatus** Fabricius, Wiedemann, Auss. Zw. Ins. i, 462, 57, and
- E. macularis** Wiedemann, l. c. i, 447, 33, South American species, are referred to North America by v. d. Wulp, Tijdschr. voor Ent. xxv, 112.

I have spared no labor in endeavoring to identify my specimens with the above species and the long list from Mexico, but with poor results.

Erax tagax n. sp.

♂.—Length 25-28 mm.—Face deeply yellowish gray pollinose, bare above and on the sides, on the gibbosity with white hair interspersed with black bristles, a row of the latter extending along the oral margin; the gibbosity arises very sharply

and prominently a little above the middle of the face. Antennæ black; the first two joints with short white hair, the third joint scarcely as long as the first. Front narrowed above, with white hair; a few black bristles on each side below, the ocelli with two conspicuous black bristles. Occipito-orbital bristles black, the beard abundant, silky-white; bristles on the palpi black. Thorax strongly convex behind, clothed with short black hairs and black bristles; in color reddish brown, with yellowish gray pollen, varying in different reflections, the two median dark brown stripes distinct, separated by a narrower pollinose stripe, in front of the scutellum in certain lights a slender brown triangle, the ground color of the central stripe and the humeri often red. Scutellum thickly dusted, with black bristles on its border. Pleuræ thickly gray pollinose, with whitish pile, except a little black on the mesopleuræ. Abdomen slender, brownish black, a little shining; first segment wholly whitish pollinose; second to the fifth segments thickly whitish pollinose on the sides, extending inwards on the posterior angles but not quite meeting in the middle; between the black and the gray on each side there is a semi-lunar spot of brown; sixth and seventh segments wholly silvery-white pollinose, except a slender brown longitudinal spot on the dorsum of the sixth; hypopygium large, black, with black pile. Legs with white hairs and black macrochaetæ, the hind tibiæ on the inner sides and their metatarsi with short orange-red pile; in color the femora on the under side, the tips of the tibiæ, and the tarsi are black, elsewhere deep red; in structure the hind tibiæ are rather slender for the basal two-thirds then dilated and on the outer side distinctly angulated, just below the knee on the outer side there are two conspicuous bristles bent downwards, and on the front side on the distal fourth with a brush of short black pile. Wings nearly hyaline, a little yellowish behind; the furcation of the third vein beyond the distal end of the discal cell, the anterior cross-vein near the outer fourth; costal vein distinctly thickened and curved outward beyond the tip of the auxiliary vein.

♀. Two rubbed females show the structure of the head and thorax as in the male, the hind tibiæ and the wings normal, not dilated.

Hab.—Arizona.

***Erax jubatus* n. sp.**

♂.—Length 18–19 mm. Black. Facial gibbosity large and protuberant. Face deep brown, covered with moderately thick grayish pollen, especially near the eyes; mystax composed of black and white hairs, long, abundant, spread out helmet-shaped. Antennæ black, the first two joints with black and white hair, the third joint small. Front clothed with rather long black hair. Beard abundant, silky-white; occipito-orbital bristles slender, mostly black. Dorsum of thorax strongly convex, deep brown with grayish yellow pollen, along the middle a moderately broad row of long, thick pile or hair, beginning in front and reaching to near the scutellum; on the posterior part, however, diffuse and longer; in front the sides of the dorsum have only diffuse sparse short pile. The bristles are short and rather thin; on the scutellum with long hair, its border with thin bristly hairs. Pleuræ thinly pollinose, and with sparse, long, pile. Abdomen black, clothed on the upper side with long silky, not abundant, mostly white pile, the third, fourth and fifth segments with a posterior, rather narrow gray pollinose border, on the sides of the segments broader and more brownish; sixth and seventh segments wholly silvery-white; hypopygium large, black, with black pile; venter with tufts of long silky-white pile. Legs black, with silky-white pile; tibiæ and

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tarsi chiefly dark red. Wings hyaline, costa beyond the tip of auxiliary vein conspicuously thickened; furcation of third vein beyond the base of second basal cell.

♀. Abdomen deep black, with a posterior, rather narrow, pollinose posterior margin to each segment; the lateral margins of the segments more broadly pollinose, costa of wings simple.

Two specimens, New Mexico (G. F. Gaumer).

***Erax latrunculus* n. sp.**

♀.—Length 15–19 mm. Facial gibbosity prominent, the concavity below the antennæ short and rather deep. Gibbosity clothed chiefly with white hair, but the oral margin and the middle of the convexity intermixed with black. Front and face on the sides thickly clothed with whitish pollen. Antennæ black, the first two joints with short white hair, and below usually with one or two black bristles. Front and occiput with white vestiture, the former only with two bristles, usually black, near the ocelli. Thorax strongly convex, somewhat compressed in front, along the middle with a rather thin row of black pile and hair, mane-like, beyond the suture it widens into a patch of longer black bristles, in the middle of which in front is continued the row of black or white pile; on the posterior part in front of the scutellum and on its dorsum there is sparser white pile. The dorsum of the thorax in front on the sides with sparse short black, the pleuræ with very thin white pile. The thoracic dorsum has brownish dust; the pleuræ rather thickly grayish dusted; bristles of the dorsum and border of the scutellum moderately stout, mostly black. Abdomen black, with white pile, not long nor abundant; second, third and fourth segments on the sides, and rather broad posterior cross-bands, white pollinose; fifth, sixth and seventh segments wholly silvery-white pollinose, except a black spot in the middle of the fifth segment in front; hypopygium of medium size, shining black, chiefly black pilose, the pile not long nor abundant. Femora black, legs elsewhere red. Wings hyaline, the costa a little dilated beyond the tip of auxiliary vein; anterior cross-vein beyond the middle of discal cell, the furcation of the third vein beyond the outer end of the discal cell.

♀. Segments of the abdomen broadly grayish pollinose on the side and behind; wings not dilated on the outer costa.

Hab.—Arizona, Montana. Twelve specimens (Professor Comstock).

***Erax furax* n. sp.**

♂.—Length 16–19 mm. Head wholly clothed with white pile and hair, very rarely a few black hairs near the ocelli. Face in profile only moderately concave, densely white pollinose; the pollen of the front a little yellowish. Thorax densely gray pollinose, the dorsum often brownish; the median stripes not distinct, confluent posteriorly; dorsum in front clothed with very short black hairs, posteriorly with sparse, slender, black, sometimes white bristles and shorter sparse white hairs. Upper surface of the scutellum with sparse white hair, its border with weak black or white bristle. Pile of the pleuræ wholly white, very thin. Dorsum of the abdomen rather thickly grayish pollinose; second segment on each side rarely immaculate, usually with a brownish or brown spot, sometimes with a black spot; the spots on the third, fourth and fifth segments successively larger, nearly always confluent on the fifth, and often confluent or nearly so on the fourth; fifth segment with a narrow silvery hind border; sixth and seventh segments wholly

silvery-white. Hypopygium deep red, of moderate size, thinly black and white pilose. The pile of the basal segments is not abundant, white, on the venter below with loose tufts. Legs black, with white pile and white and black macrochaetae; front and middle tibiae, except the tip, and hind tibiae, except the distal third or half, red or yellow. Front and middle tarsi deep red, hind tarsi usually blackish. Wings hyaline; anterior cross-vein at the middle, furcation of the third vein a very little beyond the distal end of the discal cell.

♀. Second abdominal segment usually with a brownish spot, sometimes with a blackish spot on each side; the remaining segments each with a pair of large quadrate spots, rather narrowly separate.

One male from Washington Territory, five males from California, one male and two females from Western Kansas, ten males and eight females from Arizona and two females from Connecticut.

Erax stamineus n. sp.

♂.—Length 15-17 mm. Face, beard and antennae wholly with yellowish white hair or pile, the ocellar and occipito-orbital bristles black. Face densely covered with yellowish white pollen. Dorsum of thorax black, moderately shining, not thickly covered with grayish pollen, the usual stripes narrowly separated, the short sparse pile and the bristles black. Pleurae rather thickly light pollinose, the sparse pile wholly white. Abdomen black, first two segments rather thickly gray pollinose, leaving a rather broad, more black band on the second; third to seventh segments on the dorsum silvery pollinose and rather thickly clothed with silvery-white pile, which is parted in the middle and directed outwards; this white pile is on the second segment also, but less abundantly. Hypopygium elongate, shining black, with light yellow pile. Legs wholly black, with yellowish white pile and black and white bristles. Wings short, hyaline; anterior cross-vein near the middle of the discal cell; second sub-marginal cell very long, the furcation of the third vein takes place only a little beyond the anterior cross-vein.

Two specimens, Montana (Professor Comstock).

Erax n. sp.

♂.—Is very similar to *stamineus*, but is apparently different. The tibiae and tarsi are all yellowish red except the tips of the former. The hypopygium is distinctly smaller, and the second sub-marginal cell is shorter.

Washington Territory. One specimen.

An additional specimen from Arizona agrees with the preceding except that the second sub-marginal cell is longer than in *stamineus*. Until further material is examined it will be unwise to give them a name.

Erax similis n. sp.

♀.—Length 24 mm. A single specimen with the last seems to be different, in that the head is provided with black bristles, the bristles of the thorax wholly black and the furcation of the third vein takes place opposite the end of the discal cell and not a considerable distance before it, as in the preceding. The abdomen is thickly gray pollinose with a series of black triangles in the middle of the segments, with the base in front and becoming successively less in size; the pile of the legs is short and white, with the bristles black.

Hab.—Arizona.

Erax anoi

Erax anom

♂.—Length and oral margin there is a short joint with shaft as long as the above, clothed with ocelli. Thorax dark stripes clothed only with black hair on border with a sparse segment red pile, parted distal of the first and (second segment) the but sparse, with black and white pair also, except long and abdomen hyaline; the little distance the second vein fourth posterior.

♀.—Abdomen lowish whitish segments anterior margin, in front a large but is of a broad the abundant Eight males

E. L. Keen

Erax leuco

♂ ♀.—Length, face and front of the antennae in the first. The suture close to the scutellum with stripes are slender length, not black. Pleurae dense margins of all whitish pollen

Erax anomalus

Erax anomalus Bellardi Saggio, etc., ii, 32; tab. ii, fig. 7.—Mexico.

♂.—Length 20-25 mm. Face densely light yellowish pollinose, the gibbosity and oral margin thickly clothed with yellowish white hair and bristles; in profile there is a short, deep concavity below the antennæ. Antennæ black, the first two joints with short white hairs, the third joint scarcely longer than the first; bristles as long as the antennæ, black. Front deeply excavated below the eyes, narrowed above, clothed with white hairs and bristles, except a few black bristles on the ocelli. Occipito-orbital bristles black, the beard and hair of the proboscis silky-white. Thorax black; the humeri and spots on the pleuræ reddish; the two usual dark stripes of the dorsum are apparent; in front of the suture the dorsum is clothed only with short black hairs, on the posterior part with sparser white and black hair and black bristles. Scutellum on its dorsum with white pile, along its border with about twelve black bristles. Pleuræ thickly whitish pollinose and with sparse white hair. Abdomen black, the swollen hind border of the first segment red on its sides; above wholly and thickly clothed with long silky-white pile, parted down the middle and combed outwards, nearly wanting in the middle of the first and second segment; second segment with a large oval blackish spot in front and the third segment with a smaller one, elsewhere (except the first segment) the dorsum is covered with dense white pollen. Venter also with long, but sparse, white pile. Hypopygium very large, chiefly red, thickly clothed with black and white pile. Legs deep red; front and middle femora and often the hind pair also, except the posterior surface, and the tip of hind tibiæ, black; pile white, long and abundant on the inner side of the tibiæ; macrochætæ black. Wings hyaline; three sub-marginal cells; the furcation of the third vein takes place a little distance before the distal end of the discal cell, the nervure connecting with the second vein short, scarcely longer than the cross-vein at the distal end of the fourth posterior cell.

♀.—Abdomen black, clothed with short sparse white pile. First segment yellowish whitish pollinose; the ground color red behind as in the male, the following segments broadly whitish pollinose on the sides, extending across on the posterior margin, in the middle broad, when seen obliquely from behind, seen from in front a large semi-circular black spot occupies the chief part of the segment, but is of a brownish cast behind. Ovipositor moderately long black. Tibiæ without the abundant silky pile on the inner sides.

Eight males and seven females from Arizona (Prof. J. H. Comstock, E. L. Keen).

Erax leucocornis n. sp.

♂ ♀.—Length 25 mm. Mystax and hair of the head throughout nearly white; face and front densely yellowish white pollinose; the concavity of the face below the antennæ is short and deep. Antennæ black, third joint scarcely longer than the first. Thorax black, thickly whitish, yellowish pollinose; the dorsum before the suture clothed with short, erect, black hairs, on the posterior part and on the scutellum with whitish hair and light yellow bristles; the two median longitudinal stripes are slender, brown, separated by a pollinose interval through their whole length, not broader than the stripes behind, twice or thrice as broad in front. Pleuræ densely whitish pollinose, and with white pile. Abdomen black, the hind margins of all the segments yellowish red, everywhere rather thickly covered with whitish pollen and recumbent whitish pile, an oval spot near the middle of each

segment a little brownish; ovipositor black; hypopygium large, black, with black pile. Legs black, the tibiae yellow, their tips and the tarsi reddish brown or blackish. Wings short, hyaline, the veins luteous, the furcation of the third vein takes place a little beyond the end of discal cell; anterior cross-vein a little beyond the middle of the discal cell.

Two specimens, Western Kansas (E. W. Guild, F. H. Snow).

A single ♀ specimen from N. Mexico (E. Keen) closely resembles this, but belongs to a different species. The front is rather broader above; there is scarcely a trace of the dorsal stripes; the abdomen is less thickly pollinose, showing a pair of indistinct blackish spots on the 2-5 segments. The size is also less.

***Erax lateralis*.**

Erax lateralis Macquart, Dipt. Exot. i, 2, 116, 21.

? *Erax ambiguus* Macquart, Dipt. Exot. 1 er. Suppl. 84, 34.

? *Asilus interruptus* Macquart, Hist. Nat. Dipt. 1, 310, 29.

♂, ♀.—Length 21-25 mm. First two joints of the antennæ yellowish red, with short black pile; third joint black, nearly as long as the first two together, only a little shorter than the bristle. Face densely covered with yellowish white pollen, the mystax not very abundant, leaving a bare space on the sides and above, yellowish white; on its upper part with a number of more perfect black bristles. Front a little more yellowish, without any black hairs or bristles. Occipito-orbital bristles black, beard abundant, white. Dorsum of thorax clad with short black hairs, longer toward the scutellum; on the sides, beginning from in front of the wing, with four moderately long black macrochætæ, on the post-alar callosities as many more, and on the posterior part of the dorsum with two short rows of weaker ones. Sides of the dorsum and the pleuræ densely yellowish white pollinose, on the middle of the dorsum there are two distinct blackish brown stripes, contiguous posteriorly, and separated by a linear interval from a lateral less distinct stripe. Pile of pleuræ and coxæ white, except a little black pile on the mesopleuræ. Scutellum yellowish pollinose and white pilose above; along its margin with a row of not very strong black macrochætæ. Abdomen opaque black, and with very short black hairs, except as follows: first segment wholly thickly whitish pollinose and with white pile, except narrowly in the middle, on the lateral margins with a few black bristles; second and third segments, except on their middle portion, with loose white pile, slender in the ♀; when seen from behind their lateral margins and a broad posterior cross-band, broadly interrupted, densely white pollinose; when seen from above often there is only a large black spot in the middle and a smaller one on each side in front; in the male the fourth segment with narrow lateral margins, a little dilated at the hind angles of the fourth and continued across as a narrow smooth hind band on the fifth, likewise white pollinose; in the female there are slender crossbands on the hind margins of the fourth and fifth segments in addition to the lateral margins, in the fourth the band is interrupted, in the fifth entire, or nearly so; in the male the sixth and seventh segments are densely whitish yellowish pollinose, except a small black triangle in the middle above; in the female the yellowish white pollinose sixth segment has a large black triangle, the base of which lies on the slender yellow hind margin, and its tip on the front margin, the seventh segment similar, but the triangle larger. Hypopygium unusually small, reddish, with white pile, except a small

tuft of black pile
and black macrochætæ
and at the tip of the
black. Wings short,
forward, about the
middle of the discal cell.

This description
from Georgia
very little variation
it is Macquart's
of the triangulate
abdomen in the
probable, the
Macquart was
E. ambiguus
specimens from
ence from the
femora are
pleuræ and

***Erax variabilis*.**

♂.—Length 21-25 mm.
pollinose. Antennæ
thorax grayish
separated from the
suture; clothed with
more or less
wholly white
colored pile,
segments, when
faintly divided
the two follow
and white pile
inner side of
black, pile white
abundant white
discal cell, the

Two specimens

The legs

***Erax basalis*.**

? *Asilus* *ae-*

ricius, S.

? *Asilus* *m-*

Erax *femo-*

Erax *incis-*

Erax *bas-*

Erax *tibia-*

tuft of black pile at the base below; ovipositor short, black. Legs with white pile and black macrochætæ; femora black on the under surface, yellowish red above and at the tips; tibiæ yellowish red, the hind pair at the end and all the tarsi black. Wings yellowish hyaline; the furcation of the third vein unusually far forward, about opposite the middle of the penultimate section of the fourth vein.

This description is drawn from fifteen male and ten female specimens from Georgia, North Carolina (from Prof. Comstock), which show but very little variation, and three males and one female from Florida. That it is Macquart's *E. lateralis* is scarcely at all doubtful, although he speaks of the triangular black spots on the sixth and seventh segment of the abdomen in the male as being large; that it is also *E. ambiguus* seems probable, though there are discrepancies, scarcely greater, however, than Macquart was prone to make. The synonymy of *E. interruptus* with *E. ambiguus* is given on Osten Sacken's authority. Two male specimens from Arizona (from Prof. Comstock) show no appreciable difference from the Carolina ones. In three of the Florida specimens the femora are wholly black. In some specimens the ground color of the pleuræ and sides of the abdomen is in large part red.

***Erax varipes* n. sp.**

♂.—Length 24-25 mm. Head wholly clothed with white, and densely white pollinose. Antennæ black, the third joint not longer than the first. Dorsum of thorax grayish brownish pollinose, the brownish black median stripes distinctly separated through their whole length, only reaching a little ways beyond the suture; clothed with short, sparse black hairs, behind with white hair and bristles more or less intermixed with black. Pleuræ thickly grayish white pollinose and wholly white pilose. Abdomen black, grayish whitish pollinose and with similar colored pile, the latter not abundant nor long; the second, third, and fourth segments, when seen from behind, with a large transverse spot more shining in front, faintly divided in the middle by brownish pollen; posterior part of the fifth, and the two following segments bright silvery-white. Hypopygium black, with black and white pile. Legs red; the under side of all the femora, broadly, and the inner side of the tibiæ black, the tarsi darker red or blackish; bristles chiefly black, pile white, the inner side of the tibiæ, especially of the front pair with long abundant white hair. Wings hyaline, anterior cross-vein near the middle of the discal cell, the furcation of the third vein only a little beyond it.

Two specimens, Arizona (Prof. Comstock), Western Kansas (Guild).

The legs will probably vary in coloration.

***Erax Bastardii*.**

! *Asilus aestuans* Linne, Syst. Nat. ii, 1007, 5; Amoen. Acad. vi, 413, 95; Fabricius, Syst. Ent. iv, 379, 8.

! *Asilus macrolabis* Wiedemann, Auss. Zw. Ins. i, 438, 51.

Erax femoratus Macquart, Dipt. Exot. i, 2, 115, 20.

Erax incisuralis Macquart, Dipt. Exot. i, 2, 117, 24.

Erax Bastardii Macquart, Dipt. Exot. i, 2, 117, 25; tab. 9, fig. 7; Riley, 2d Rep. 124.

Erax tibialis Macquart, Dipt. Exot. i, 2, 118, 27.

♂, ♀.—Length 20 mm. Face and front with yellowish gray dust; facial gibbosity strong, nearly hemispherical, covered with thin black and white bristle and hair; the short hair on the first two joints of the black antennæ is black and yellowish white; hair of the front chiefly black; occipito-orbital bristles not very stout, black; beard abundant, silky-white. Dorsum of thorax with two well-marked black stripes, of nearly equal width, distinctly separated by a pollinose linear stripe, abruptly ending a little distance beyond the suture; on each side, in front and behind the suture, two large, somewhat shining spots; in front of the scutellum a triangular spot; the pollen of thorax is gray with a slightly brownish cast; hair black, moderately long in front, on the dorsum of the scutellum white; bristles, thin, black. Abdomen black, a little shining; the venter and rather broad lateral margins of each segment and a rather narrow hind margin of each thickly gray pollinose; in the male the fifth, sixth and seventh segments silvery-white; hypopygium large, black, with black hair. Legs black; tibiæ, except the tip, yellowish red; bristles black, hair chiefly white, tip of hind tibiæ and first two joints of the hind tarsi with golden yellow pile. Wings hyaline, costal vein in the male a little thickened beyond the tip of auxiliary; furcation of third vein a little distance beyond the base of the second posterior cell.

Hab.—Atlantic and Central States.

Erax aestuans.

Asilus aestuans Wiedemann, Dipt. Exot. i, 200, 32; Auss. Zw. Ins. i, 467, 63.

Erax aestuans Macquart, Dipt. Exot. i, 2, 115, 19; Bigot, Ramon de la Sagra, etc., 791.

Erax rufibarbis Macquart, Dipt. Exot. i, 2, 116, 22.

♂, ♀.—Length 15 mm. Facial gibbosity thickly covered with light yellowish red hair extending nearly to the antennæ, along the oral margin with a row of black bristles. Antennæ black, the first two joints with short black hair. Front on the sides with black hair and on the ocellar tubercle with long black bristles. Occipito-orbital bristles black; the silky beard and the hair of the front coxæ abundant, light yellowish white. Thorax black, rather thickly covered with brown pollen, the dorsal stripes not well defined; bristles and hair black, the latter more abundant and longer along the middle of the dorsum. Abdomen black, moderately shining, with rather long black hair; the venter and lateral margins of the segments rather thickly brown pollinose, in the male the sixth and seventh segments silvery-white; hypopygium large, black, with luteous or black pile; ovipositor shining, short. Legs black; tibiæ, except the distal part, obscurely yellowish red; hair yellowish white, on the inner side of the hind tibiæ and on the hind tarsi black; bristles black. Wings hyaline, tinged with brownish on the outer end; small cross-vein near the middle of discal cell, furcation of the third vein a little distance before the outer end of the discal cell.

Hab.—Eastern States.

It seems evident that this species cannot be the same as *Asilus aestuans* of Linné, as the description, "cinereus, abdominis ultimis tribus segmentis albis" can in no wise be applied. I do not think it expedient or desirable to change the name of this, as the true *aestuans* may be either of several of our species, and hence the name must be given up, permitting *E. aestuans* Wied. to remain.

Of the synonymy of *E. rufibarbis* I have no doubt whatever.

1.—Segments

- Abdomen
- 2.—Abdomen
- The group
- 3.—Abdomen
- Abdomen
- 4.—Abdomen

Abdomin

P. fulviven

(The leng

P. longus

Macqu

Georgi

P. micans

P. nigriver

pennis

P. virginis

Proctacal

Asilus brev

oor Ent

♂, ♀.—Le

white dust.

Beard white,

brown when

less red. Do

blackish brow

Pleure thick

specimens wl

brownish, bu

nose, with or

red, the fem

rowly cloude

Hab.—G

Six speci

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broader and

size.

PROCTACANTHUS.

- 1.—Segments of the abdomen pilose on the sides; very large species; femora red.
heros.
Abdomen nearly bare throughout.....2.
- 2.—Abdomen except the base, red, lightly pollinose; femora red.....**rufus.**
The ground-color of abdomen chiefly black; conspicuously pollinose.3.
- 3.—Abdomen nearly uniformly dark brownish pollinose....**philadelphicus.**
Abdomen not uniformly dark brownish pollinose.....4.
- 4.—Abdomen thickly nearly white pollinose, large species (30-35 mm.).

Milbertii.

Abdominal segments distinctly brownish above, smaller species (20-22 mm.).

brevipennis.*Additonal species from the United States.*

P. fulviventris Macquart, Dipt. Exot. 4e. Suppl. 88, 12.—Fla.

(The length evidently should be 14 lines instead of 4.)

P. longus Wiedemann, Dipt. Exot. i, 183, 1; Auss. Zw. Ins. i, 426, 3 (*Asilus*);
Macquart, Dipt. Exot. i, 2, 123, 6; Schiner, Verh. Zool. Bot. Ver. 1866, 682.—
Georgia.

P. micans Schiner, Verh. Zool. Bot. Ver. 1867, 397.

P. nigriiventris Macquart, Dipt. Exot. i, 2, 124, 9.—Penna., Carolina (= *P. brevipennis*?)

P. virginianus v. d. Wulp, Tijdschr. voor Entom. xxv, 109.—Va.

Proctacanthus brevipennis.

Asilus brevipennis Wiedemann, Auss. Zw. Ins. i, 431, 10; v. d. Wulp, Tijdschr. voor Entom. xxv, 108.

♂, ♀.—Length 20-23 mm. Face and front thickly covered with yellowish white dust. Mystax sparse, white, composed chiefly of bristles. Antennæ lack. Beard white, not very abundant, occipital-orbital bristles black. Thorax blackish brown when rubbed, with portions of the dorsum and pleuræ showing more or less red. Dorsum brownish yellowish dusted, showing two median rather broad blackish brownish stripes, indistinctly separated by a linear brown pollinose stripe. Pleuræ thickly yellowish gray pollinose. Abdomen black, in well-preserved specimens wholly covered with rather dense gray pollen, in the middle broadly brownish, but in most specimens the abdomen is evenly and rather thinly pollinose, with only a trace of the brownish pollen above. Hypopygium red. Legs red, the femora on their outer sides broadly black. Wings hyaline, the veins narrowly clouded with yellowish.

Hab.—Ga., Fla., Ky.

Six specimens (Morrison). Is similar in coloration to *P. Milbertii*, but the pollen of the abdomen has a much more distinct brownish coloration, the confluent or narrowly separated median thoracic stripes are broader and much more conspicuous. There is also a great difference in size.

Proctacanthus Milbertii.

Proctacanthus Milbertii Macquart, Dipt. Exot. i, 2, 124, 8.

? *Asilus agrion* Jaennicke, Neue Exot. Dipt. 57.

Asilus missouriensis Riley, 2d Report, 122, fig. 89.

♂, ♀. Length 30-35 mm. Face more or less red in ground color, but densely covered with gray pollen, the rather sparse white mystax composed chiefly of bristles. Antennæ black; the tip of the second joint and the third joint sometimes red. Beard moderately abundant, white. Dorsum of thorax covered with nearly white pollen, the ground color in large part red, leaving the black as two median stripes and two large spots on each side, the one before, the other behind the suture, but obscured by the pollen. At other times the dorsum is almost wholly black in ground color with the humeri and post-alar callosities red; bristles mostly white; pleuræ thickly pollinose with whitish. Abdomen black, but densely, wholly, and evenly covered with nearly white pollen, or at times with a faint shade of brownish. Oviduct shining. At times the ground-color on the posterior margins of the segments may be red and the oviduct may be shining red; hypopygium red. Legs usually dark red with the femora broadly black in front but somewhat variable, the tarsi often blackish.

Hab.—Mo., Kans.

A very common species on the Kansas Plains in July and August, where I collected about 40 specimens. Its large size and white pollinose abdomen will enable it to be recognized.

Proctacanthus rufus n. sp.

♀.—Length 30 mm. Front above scarcely narrowed, not much narrower than the distance between the eyes below, clothed with black hair and bristles throughout. Antennæ wholly red, broadly separated at the base, the basal joints with black hair. Ground color of front and face light red, the latter clothed wholly with nearly white hair. Pile of beard soft, nearly white, occipito-orbital bristles black and light yellow. Thorax deep red, the dorsum rich opaque reddish brown on the lateral margin slightly ochraceous pollinose, clothed in front with short black hairs, behind and on the scutellum with not very abundant black bristles the fan-like row of bristles in front of the scutellum black. Abdomen light opaque yellowish red, a little darker and shining on the terminal segments; first segment and narrow base of second black; wholly clothed with very short, sparse white pile, black hairs, and on the sides yellowish. Venter with long but sparse white pile. Front and middle coxæ with not abundant white hair. Legs deep red with black hair and bristles, the row of bristles below the front femora long. Wings rather strongly tinged with brownish, veins nearly black.

Hab.—N. Carolina, Massachusetts.

Proctacanthus heros.

Asilus heros Wiedemann, Auss. Zw. Ins. i, 427, 3.

Proctacanthus heros Schiner, Vehr. Zool. Bot. Ver. xvi, 682; id. *ibid.*, xvii, 396.

♀.—Length 38 mm. Front and face red, but chiefly concealed beneath yellowish gray pollen, mystax, hair of the front and the beard tinged with yellow, without intermixture of black. Face in profile below the antennæ rather strongly concave, on the lower half perpendicular and straight. First two joints of the

antennæ yellowish
that the distance
between the
with very slender
black hair at
row of bristles
becoming more
black haired
yellowish hairs
less in extent
fifth segment
wholly with
remainder of
little blackish
posterior margin
red with
dant light yellow
and yellowish
side of the face
tinctly tinged

Hab.—E

Proctacanthus

Proctacanthus

♂, ♀.—L

the distance
concave below
with rather very
yellowish pollen
hair; front very
white; occipito-
dorsum in front
moderately slender
teres black.
dense grayish
minal segments
with numerous
shorter ones,
of the smooth
mostly confirmed
and yellowish
red with slender
coxæ with long
part black; first
of the front
along the vein

Hab.—N

The ground color
the middle
so; this explains

antennæ yellowish red, third joint reddish brown. Eyes convergent above, so that the distance between the upper angles is scarcely more than half of that between the lower angles. Thorax reddish brown, clothed on the dorsum in front with very short black hairs, behind and on the scutellum with rather abundant black hair and bristles. The very sparse pile of the pleuræ yellowish, the fan-like row of bristles in front of the halteres black. Base of the abdomen reddish black, becoming more reddish on the fourth and fifth segments; first segment wholly black haired, except on the posterior angles where it is brownish pollinose and yellowish haired; third and fourth segments similar, but the black hair successively less in extent and shorter, and the yellowish on the hind angles more extensive; fifth segment with the hair quite short and chiefly yellowish; sixth segment wholly with short yellow hair, the dust on the hind angles more whitish and the remainder of the segment reddish, except in the middle in front where it is a little blackish; seventh segment wholly white pollinose, except on the smooth posterior margins (broader in their middle) where it is light yellow. Hypopygium red with yellow hair. Venter wholly opaque ochraceous with rather abundant light yellow pile. Legs wholly yellowish red with black hair on the femora and yellowish on tibiæ, and rather short black bristles: the bristles on the under side of the front femora quite short and spine-like. Wings hyaline, very distinctly tinged with yellow along the veins. Veins yellowish red.

Hab.—Florida, Carolina. One specimen, Florida (Frazar).

Proctacanthus philadelphicus.

Proctacanthus philadelphicus Macquart, Dipt. Exot., 1, 2, 123, 7.

♂, ♀.—Length 26-29 mm. Front narrowed above, scarcely half as wide as the distance between the lower angles of the eyes. Face in profile moderately concave below the antennæ, not abruptly convex below the concavity, clothed with rather weak light yellow bristles, along the oral margin black; densely light yellowish pollinose. Antennæ black, the basal joints with short black and yellow hair; front with a few short black bristles on the ocelli; beard light yellowish white; occipito-orbital bristles in part black. Thorax reddish brown, opaque, dorsum in front clothed with short black hairs, behind and on the scutellum with moderately strong black bristles, the fan-like row of bristles in front of the halteres black. Abdomen black, not very broad at the base in the male, clothed with dense grayish ochraceous pollen, on the seventh segment more whitish, the terminal segments in the female shining black; on the sides of the second segment with numerous rather long black bristles; on the sides of the third with fewer and shorter ones, the strongest ones extending in a row inwards immediately in front of the smooth hind border; on the remaining segments fewer and shorter, and mostly confined to the row, as in the third; the hair is short, sparse, recumbent and yellowish white; hypopygium red with yellowish hair. Venter brownish red with short and abundant black and light colored pile. Front and middle coxæ with long hair in front like the beard. Legs red, the femora above in large part black; hair throughout yellowish white, the bristles black, on the under side of the front femora moderately long. Wing distinctly tinged with yellowish along the veins, the veins red.

Hab.—New England.

The ground color of the abdomen when wetted is distinctly red across the middle of the anterior segments, and the posterior segments wholly so; this explains Macquart's description.

OMMATIUS.***Ommatius tibialis.***

Ommatius tibialis Say, J. Acad. Phil. iii, 49; Compl. Wr. ii, 63; Wiedemann,

Auss. Zw. Ins. i, 422, 6; Williston, Trans. Amer. Ent. Soc. vol. xi, pl. 2, fig. 12.

♂.—Length 16 mm. Black. Eyes in life green. Face thickly covered with yellowish white pollen, the yellowish white mystax composed of hair, reaching thinly nearly to the antennæ. Antennæ black. Dorsum of thorax smooth, bare except the sparse and rather weak white bristles, with a broad black median stripe, separated by a line on each side from two large spots, the one in front, the other behind the suture; pleuræ densely, nearly white pollinose. Abdomen black, lightly pollinose on the sides and posterior parts of the segments, moderately contracted on the sides in the middle. Halteres light yellow. Wings hyaline, lightly blackish tinged on the outer part, on the exterior anterior part with a distinct yellowish tinge; costa strongly thickened and bent forwards beyond the tip of the auxiliary vein. Legs chiefly yellow, but variable, the femora more or less black, the hind pair most so, sometimes almost wholly black, the front pair least so, sometimes almost wholly yellow, tips of the tibiæ, most especially the hind pair, which may be only yellow at the base; tarsi black, the front and middle pairs yellow at the base. In the female the costa of the wings is simple, not thickened or curved, otherwise as in the male.

Hab.—Penna, Conn., Mass.

Four specimens from New England. A greasy female from Georgia that I can not otherwise separate, has the legs, except the tip of the hind tarsi, wholly light yellowish red.