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Ezra Townsend Cresson
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and closely punctured; last dorsal segment not keeled, the eighth and distal segment emarginate; colored like the ♀. Length 11 mm. Colorado. This species is peculiar in having the eighth ventral plate of the ♂ emarginate, being the only one of our species of *Androtomus* possessing that character. From all the other species it may be distinguished by the robust form, deep-black color and very short antennae of ♀.

TACHETID FRAGILE.

Tachetid Frag. Krib. Rev. II, p. 126, 1906.
Tachetid Illig. Illig. Trans. Entom. vol. 2, II, p. 161, 1907.

Body generally stout, the amount of pubescence with which it is clothed variable, some of the species resembling, in a certain degree, bees; anterior femora of the ♂ beneath near the base entire or emarginate; comb on fore tarsi composed of short, thorax or spines; pygidial area large, curved with appressed pubescence, mandibles emarginate beneath; their inner margin with one or two teeth; antennae stout, shorter than in the two following genera; eyes converging towards the vertex, the space between them at that point differing in the various species; fore ocellus round; the hind pair very elongate, placed obliquely and with the upper end forming a hook or flat apical; frons not raised along the inner orbits as in *Notogaster*, etc., if anything it is depressed; sculpture of the thorax not strong; last ventral plate of ♂ with a rounded, wide emargination; marginal cell broadened, its apex slightly obtuse, the appendiculation small and often indistinct, three submarginal cells, the second of which receives both recurrent nervures; tibia and tarsi of all the legs armed with spines; spines composing comb on fore tarsi generally not longer than the second joint of the said tarsi, and are thorn-like, not at all flexible in appearance; claws not very long; metanotum shorter than the dorsulum.

Our species of this genus have been monographed previously; therefore I will simply reproduce the synoptical tables here. In the first place the genus may be divided into two sections as follows:

Fore coxae of ♂ simple, the fore femora of the same sex, beneath at base, entire; thorax of ♀ generally densely pubescent. Appearance bee-like.

SECTION I.

Fore coxae of ♂ with an elongated process, the fore femora of the same sex beneath at the base emarginate; thorax of males not densely pubescent. Appearance not bee-like.

SECTION II.

Trans. Amer. Ent. Soc., XIX, p. 234, 1902.

The females of the first section are generally short, robust insects, while those of section II are rather long and slender and never have the clypeus produced medially as in the majority of those of the first section. In some respects section II agrees with *Tachysphex*, but the spines on fore tarsi of female are not long and flexible, and the pygidium is hairy.

SECTION I.

FEMALES.

- 1-Clypeus with the anterior margin in the middle, produced into a large quadrate tooth or lobe, and with several smaller teeth laterally. 2
- Clypeus with the anterior margin not or scarcely produced into a lobe, at the most thickened in the middle. 4
- 2-Metanotum strongly subacute medially. 3
- Metanotum not strongly subacute medially. 4
- 3-Third joint of antennae about one-quarter longer than the fourth. 4
- Third joint of antennae equal to, or but little longer than the fourth. 5
- 4-Thorax densely clothed with golden yellow pubescence so that the sculpture of metanotum is hidden. Length 18-22 mm. 6
- Thorax sparsely clothed with grayish pubescence; metanotum finely granulated (four hind tibiae with a dark stripe within). Length 12-14 mm. 7
- 5-Median process of clypeus divided into two distinct lobes; space between the eyes at the top equal to the length of joints two and three of antennae, the latter joint, in length about equal to the fourth; front and thorax with golden pubescence. 8
- Median process of clypeus not bilobed, its apex simply incurved; third antennal joint slightly longer than the fourth; front and thorax clothed with silvery-gray pubescence. 9
- 6-The sulcus on metanotum very wide; scutellum scarcely impressed; pygidium with a coppery lustre. 10
- The sulcus on metanotum not wide; scutellum distinctly impressed; pygidium silvery. 11
- 7-Abdomen black. 12
- Abdomen in part red; head and thorax clothed with dense silvery pubescence. 13
- 8-Abdomen dorsally with four silvery bands; front silvery. 14
- Abdomen dorsally with but three silvery bands; longer spur of hind tibiae in length about equal to the first joint of the hind tarsi; front golden. 15
- 9-Longer spur of hind tibiae longer than the first joint of the hind tarsi; apex of femora, tibiae and tarsi, yellowish-ferruginous. 16

Don't miss the little page

Cresson, E.T.

Proc. Nat. Acad. Sci. Phila. 1893: 498-552

Hymenoptera Sphecidae - Larviforme

Longer spur of hind tibia, in length, about equal to the first joint of hind tarsi; legs black, tibiae and tarsi with silvery pile, the apical portion of the tarsi ferruginous. *pepticus*.

MALES.

- 1—Flagellum with the basal joints not or scarcely rounded out beneath, the apical joints, except in *crassus* and *pepticus*, abnormal. 8
- Flagellum with the basal joints distinctly rounded out beneath, the apical joints normal. 2
- 2—Anterior margin of clypeus, in the middle, not produced into a tooth or lobe, at the most simply thickened. 4
- Anterior margin of clypeus in the middle produced into a tooth or lobe. 3
- 3—Metanotum slightly sulcate; thorax densely pubescent; median process of clypeus not prominent, strongly impressed, having the appearance of being bituberculate. *validus*.
- Metanotum distinctly and rather strongly sulcate; thorax sparsely pubescent; median process of clypeus strong, not bituberculate. *hecticus*.
- 4—Last dorsal abdominal segment tufted laterally with dark hair; 7
- Last dorsal abdominal segment not tufted with dark hair. 5
- 5—Hind tarsi not at all spinose; lateral teeth of clypeus large and distinct. *mandibularis*.
- Hind tarsi distinctly spinose. 6
- 6—First joint of flagellum shorter than the second; space between the eyes at top narrower than usual; head and thorax densely clothed with golden pubescence. *proclator*.
- First joint of flagellum not shorter than the second.
- Space between the eyes at the top not greater than the length of antennal joints 2 and 3 united; longest spur of hind tibia longer than the first hind tarsal joint; abdomen not at all red. *calceolaris*.
- Space between the eyes at the top greater than the length of antennal joints 2 and 3 united; longest spur of hind tibia decidedly shorter than the first joint of hind tarsi; abdominal segments with a transverse band of reddish. *crassus*.
- 7—Emargination of last ventral plate very narrow; first joint of flagellum in length about equal to the second; head and thorax with golden pubescence. *herpes*.
- Emargination of last ventral plate broad and round; first joint of flagellum shorter than the second; head and thorax with silvery pubescence. *calceolaris*.
- 8—Apical joints of the antennae normal. 9
- Apical joints of the antennae abnormal. 10
- 9—Apex of femora, tibiae and tarsi, yellow-ferruginous; hind tarsi very feebly spinose. *crassus*.

- Legs, except apex of tarsi, black; hind tarsi rather strong spinose. *pepticus*. 11
- 10—Abdomen in part red. *fulvicornis* var.
- Abdomen entirely black.
- 11—Two apical joints of the antennae narrow and elongate, much narrower than joints 9-11, which are visibly broadened. *fulvicornis*.
- Two apical joints of the antennae somewhat spatulate, broader than the two preceding joints. *spatulatus*.
- 1.—*Tachytes validus* Cross.
T. validus Cross, Tr. Am. Ent. Soc. IV, p. 254, ♀ & ♂.
T. brevicornis Putt., Proc. Ent. Soc. Nat. Hist. XX, p. 302.
Texas; Illinois (*Robertson*).
- 2.—*Tachytes mandibularis* Putt.
T. mandibularis Putt., ibid., p. 304, ♀ & ♂.
Connecticut to Florida; Nebraska, Montana.
- 3.—*Tachytes hargreavesi* Putt.
T. hargreavesi Putt., ibid., p. 305, ♀ & ♂.
Vermont to New Jersey; So. Dakota.
- 4.—*Tachytes calceolaris* Fox.
T. calceolaris Fox, Tr. Amer. Ent. Soc. XIX, p. 229, ♀ & ♂.
New Jersey (in August) and Florida; Montana (?).
- 5.—*Tachytes crassus* n. sp.
- ♂.—Anterior margin of the clypeus strongly rounded out medially, with one large, blunt, lateral tooth; third joint of antennae about equal to the fourth, possibly a little longer; basal joints of flagellum tolerably well rounded-out, but not so strongly as in the ♂ of *calceolaris*; space between the eyes at the top greater than the length of antennal joints 2 and 3 united; pubescence of the front and clypeus golden; dorsum and scutellum very closely and indistinctly punctured; impressed medial line on metanotum well marked; tibiae and tarsi spinose; longer spur of hind tibia decidedly shorter than the first hind tarsal joint; emargination of eighth ventral plate small; black; scape, tegulae, legs (except coxae, trochanters and the fore and medial femora above), and a transverse band on the abdominal segments above and beneath, reddish; wings yellow, the apical margins broadly violaceous; the thorax densely clothed with grayish-golden pubescence. Length 17 mm.
- Las Cruces, N. Mexico, August 16th (T. D. A. Cockerell.)
- 6.—*Tachytes brevicornis* Cross.
T. brevicornis Cross, l. c. p. 258, ♂; Fox, l. c. p. 229, ♀ & ♂.
Texas and Massachusetts.

- 7.—*Tachytes proclator* Fox.
T. proclator Fox, l. c. p. 249, ♀ ♂.
Virginia and Texas.
- 8.—*Tachytes columbis* Fox.
T. columbis Fox, l. c. p. 241, ♀ ♂.
District of Columbia, Virginia, New Jersey.
- 9.—*Tachytes crassus* Fall.
T. crassus Fall, l. c. p. 301, ♀; Fox, l. c. p. 241, ♀ ♂.
Connecticut, New Jersey (August), So. Dakota. (Aldrich).
- 10.—*Tachytes pictus* Say.
Lyropt. pictus Say, Biol. Journ. I, p. 371, ♀ ♂.
Tachytes pictus Say, Cat. Brit. Mus. Hym. IV, p. 308.
From Illinois westward.
- 11.—*Tachytes fulviventris* Cress.
T. fulviventris Cress, Proc. Ent. Soc. Phila. IV, p. 490, ♀.
T. velich Fall., Bull. U. S., Geol. Survey, V, p. 333, ♀.
From Nebraska westward.
- 12.—*Tachytes apicalatus* Fox.
T. apicalatus Fox, l. c. p. 243, ♀.
Nevada.

SECTION II.

FEMALES.

- 1—Greater part of femora reddish 2
Greater part of femora or the legs entirely, black 3
- 2—Abdomen black, the three first dorsal abdominal segments only with silvery pile at apex *distictus*,
Abdomen, except some black blotches on dorsal segments three, four and five, entirely reddish; the first four abdominal segments with silvery pile at apex. *distictus* var.
3—First joint of fore tarsi much contracted basally, apical portion of first three abdominal segments silvery *contractus*,
First joint of fore tarsi not contracted 4
- 4—First two dorsal segments of abdomen, apically, silvery; legs, except tarsi, black, the tibiae with dense silvery pubescence; metanotum distinctly punctured *auriculatus*,
First four or five segments silvery 5
- 5—Space between eyes at top about equal to length of joints 2 and 3 of antennae united 6
Space between eyes at top greater than length of joints of the antennae 2 and 3 united 7
- 6—Abdomen reddish, or red and black; hind tibiae armed outwardly with a series of short, black, stout and blunt thorns *abdominalis*,
Abdomen black; posterior tibiae armed outwardly with a series of whitish, long and rather acute thorns *sericeus*.

- 7—Mandibles very broad and flat, with an exceedingly narrow notch; abdomen black *obscurus*,
Mandibles of the normal form, with a broad notch 8
- 8—Metanotum not at all furrowed; abdomen varying from red and black to entirely ferruginous; size also variable. *rufipes*,
Metanotum more or less furrowed 9
- 9—Space between eyes at top greater than the length of antennal joints 2 and 3 united; clypeus not dentate *obdus*,
Space between eyes at top a little less than the length of second and third antennal joints united; clypeus armed with a large prong on each side *virgatus*.

MALES.

- 1—Wings yellow, with the apical portion dark 2
Wings not yellow, hyaline or subhyaline 3
- 2—Third joint of antennae nearly one-third longer than the fourth; metanotum distinctly punctured; tibiae and tarsi black *auriculatus*,
Third joint of antennae but little longer than the fourth; metanotum not punctured; apex of femora, tibiae and tarsi yellow ferruginous *distictus*,
Abdomen and legs black *rufipes*,
4—Space between eyes at top much less than the length of antennal joints 2-4 united 5
Space between eyes at top about equal to the length of antennal joints 2-4 united; apical margins of the wings fuscous *parvus*,
5—Notch on outer edge of mandibles very narrow; body not densely silvery sericeous *obscurus*,
Notch on outer edge of mandibles as usual; body rather densely clothed with silvery sericeous pile *sericeus*.
- 12.—*T. auriculatus* Fab.
Lyropt. auriculatus Fab., Syst. Pict. p. 220.
Lyropt. auriculatus Say, Biol. Journ. I, p. 371.
Tachytes auriculatus Lep., Hym. III, p. 317.
Tachytes auriculatus Say, Catal. Brit. Mus. IV, p. 308.
Lyropt. auriculatus Fall., Bull. U. S., Geol. Survey, V, p. 303, ♀ ♂.
New Jersey (July and August) to Florida, westward, to Texas and Missouri.
- 14.—*Tachytes contractus* Fox.
T. contractus Fox, l. c. p. 243, ♀.
Georgia.

**T. minimus* has been excluded from this table as it is a species of *Tachysphex*.

15.—*Tachytes vittatus* Say.*T. vittatus* Say, Cat. Brit. Mus. Hym. IV, 367 ♀.*T. elongatus* Cress., Trans. Am. Ent. Soc. IV, p. 213, ♂.

Philadelphia (Smith) to Florida, westward to California. *T. elongatus*, is according to Mr. Charles Robertson, who has taken it in copulation with *distinctus*, the male of the latter. A ♀ specimen in the coll. of the U. S. National Museum from Arizona, has the abdomen almost entirely red and the first four dorsal abdominal segments with silvery pile at apex.

16.—*Tachytes sericeatus* Cress.*T. sericeatus* Cress., Ibid. p. 216, ♀ ♂.

Texas, Georgia.

17.—*Tachytes rufifasciatus* Cress.*T. rufifasciatus* Cress., Ibid. p. 217, ♂; Fox, L. c. p. 247, ♀ ♂.

Georgia to Texas, Nebraska, California.

18.—*T. abdominalis* Say.*Larva abdominalis* Say, West. Quart. Rep. II, p. 77, ♀.*Larva abdominalis* Cress., loc. cit. I, p. 279.*Tachytes abdominalis* Cress., loc. cit. IV, p. 217.

Arkansas (Say), Texas, Mexico.

19.—*Tachytes obscurus* Cress.*Obscurus* Cress., L. c. p. 217, ♀.*T. obscurus* Cress., Ibid. p. 217, ♂.

District of Columbia to Mexico. *T. leucurus* Cress., is the ♂ of this species.

20.—*Tachytes parvus* Fox.*T. parvus* Fox, L. c. p. 248, ♂.

New Jersey (August). May be the ♂ of either of the two following species.

21.—*Tachytes obductus* Fox.*T. obductus* Fox, L. c. p. 250, ♀.

Tennessee.

22.—*Tachytes marginatus* Fox.*T. marginatus* Fox, L. c. p. 250, ♀.

New Jersey (July).

UNIDENTIFIED.

Tachytes divers Lep.*T. divers* Lep., Hym. III, p. 247, ♀.

"Carolina. Museum of M. Serville."

TACHYSPHEX Kohl.

Larva divers Say, Cat. Brit. Mus., p. IV, p. 274, 1836.*Larva Tachytes*, Fox, Biol. Soc. Nat. Hist. XXX, p. 263, Cresson, "Synopsis,"

p. 114.

Tachysphex Kohl, Berl. Ent. Zeitschrift, XXVII, H. 1, 1883.

Form usually slender and only feebly clothed with pubescence, never bee-like as are the typical species of the genus *Tachytes*; mandibles distinctly emarginate on outer side, bidentate within, their apices simple; antennae on the average more slender than in *Tachytes*; eyes converging towards the vertex; ocelli lying on a swelling, the anterior is round and distinct, the posterior reniform and placed obliquely; front never raised along the inner eye-margins; face bithecalate behind antennae; collar not reaching the level of the dorsulum; on the last dorsal abdominal segment is a well developed pygidium in the ♀, which is scarcely developed in the ♂, and is entirely naked in both sexes; the median cell of the hind wings reaches proportionately not as far towards the apex of wing as it does in *Tachytes*; the cubital vein originates behind the apex of the submedian cell; tibiae and tarsi spinose; tarsal comb of ♀ very long and flexible; fore femora of ♂ at base distinctly emarginate; middle tibia with one spur; fore tibia on outer side spinose; last ventral plate of ♂ emarginate. Size variable.

This genus is well represented in the United States as it is also in Europe. Two of our species heretofore described have in every case been referred to the genus *Lacrus*. The form of the hind ocelli will distinguish it most effectually from *Acritocranus* and *Tachytes*.

FEMALES.

1—Space between the eyes at top less than the length of antennal joints 2 and 3 united.

Metathorax above granulated; femora and tibiae entirely black.

Length 12 mm.

Metathorax above strongly reticulated; legs almost entirely red.

Length about 9 mm.

Space between eyes at top about equal to length of antennal joints 2 and 3 united.

Space between eyes at top greater than the length of antennal joints 2 and 3 united.

2—Metathorax strongly reticulated above; abdomen entirely red.

Metathorax coarsely wrinkled above; abdomen about equally red and black.

Metathorax not strongly reticulated or wrinkled above, at the most finely granulated or striated.

3—Hind legs reddish; anterior margin of clypeus rounded out.

Pygidial area about two-and-a-half times longer than it is broad at the base; tarsi armed with spines at apex of joints only.

Pygidial area not more than twice as long as it is broad at

Apical cell.

Apical cell.

Apical cell.

Apical cell.

Apical cell.

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- the base; tarsi strongly spinose, especially the first joint of the posterior *spinosa*.
 Hind legs black 4
 4—Anterior margin of the clypeus strongly crenated . . . *crenatus*.
 Anterior margin of clypeus not crenated, at the most with two teeth laterally 5
 5—Greater part of abdomen reddish 6
 Abdomen black, or equally red and black 9
 6—Pygidium scarcely twice as long as it is broad at the base *tripetrus*.
 Pygidium decidedly more than twice longer than it is broad at base 7
 7—Antennae long, not setaceous scarcely acuminate apically . . . *endoneura*.
 Antennae as usual, acuminate apically 8
 8—Anterior margin of clypeus not or but very slightly emarginate.
 Dorsulum very closely punctured; metathorax above finely coriaceous; front finely granulated *taraxia*.
 Dorsulum shining, with the punctures separated; metathorax above finely granulated; front rather coarsely granulated . . . *semitrifu*.
 Anterior margin of clypeus distinctly emarginate; front exceedingly finely granulated *exsecta*.
 9—Longer spur of hind tibia shorter than the first joint of hind tarsi; abdomen about equally red and black 10
 Longer spur of hind tibia decidedly longer than the first joint of hind tarsi; abdomen with segments broadly testaceous, with at least four silvery bands *mundus*.
 10—Metathorax above granulated; distance between the third transverso-cubital nerve and the apex of marginal cell is usually greater than the width of the third submarginal cell at the top . . . *tricuspectus*.
 Metathorax above more or less longitudinally striated or wrinkled; distance between the third transverso-cubital nerve and the apex of the marginal cell less than the width of the third submarginal cell at the top *decurva*.
 11—Space between eyes at top equal to or greater than the length of antennal joints 3 and 4 united 12
 Space between the eyes at top less than the length of antennal joints 3 and 4 united 15
 12—Anterior margin of clypeus produced medially into a short lobe. 13
 Anterior margin of clypeus not at all produced into a lobe . . . 14
 13—Wings hyaline, iridescent; metathorax granulated above . *fume*.
 Wings, except base, fuscous; metathorax above coarsely reticulated *junipennis*.
 14—Metathorax, above, granulated; usually the last two abdominal segments red *terminatus*.

- Metathorax, above, strongly reticulated; usually the last segment only red *apicalis*.
 15—Greater part of abdomen black 16
 Greater part of abdomen red or equally red and black 18
 16—Metanotum reticulated.
 Vertex and dorsulum coarsely punctured; tarsi black . . . *acutus*.
 Vertex and dorsulum very finely punctured; tarsi reddish on apical half *nigrior*.
 Metanotum smooth or finely granulated, opaque 17
 17—With dense sericeous pile; wings subhyaline . . . *punctifrons*.
 Without sericeous pile, deep black; wings dark fuscous . *ochlopa*.
 18—Tibiae, tarsi and femora, in part, red *posterus*.
 Tibiae and femora black 19
 19—Metanotum strongly reticulated *asperatus*.
 Metanotum longitudinally striated *sculptilis*.
 Metanotum granulated or coriaceous 20
 20—Abdomen not at all compressed, depressed throughout . . . 21
 Abdomen compressed apically *montana*.
 21—Pygidium in length, but little, if anything, greater than twice its width at the base. Length 5 mm. *paucellus*.
 Pygidium in length, greater than twice its width at base; metathorax above finely granulated *costellus*.

MALES.

- 1—Space between the eyes at top about equal to the length of antennal joints 2 and 3 united 2
 Space between the eyes at top greater than the length of antennal joints 2 and 3 united 4
 2—Abdomen black; apex of femora, tibiae and tarsi entirely, reddish yellow *minimus*.
 Abdomen on basal half red; femora and tibiae not reddish . *equilis*.
 3—Abdomen entirely black, except extreme apex in some few species 10
 Abdomen red or black and red 10
 4—Metathorax above smooth or indistinctly sculptured . . . 5
 Metathorax above coarsely sculptured 6
 5—Lateral angles of produced portion of anterior margin of clypeus obtuse; metathorax above without a longitudinal, impressed line; clothed with sericeous pile *punctifrons*.
 Lateral angles of produced portion of anterior margin of clypeus acute; metathorax above with a distinct, longitudinal, impressed line; deep black, without sericeous pile *orthopa*.
 6—Space between the eyes at top decidedly less than the length of antennal joints 2-4 united, but little greater than the length of joints 2 and 3 *mundus*.
 Space between the eyes at top as great or greater than the length of antennal joints 2-4 united 7

- 7—Front, though distinctly punctured, yet not coarsely so; space between eyes at top about equal to the length of antennal joints 2-4 united. 9
- Front coarsely punctured; space between eyes at top greater than the length of antennal joints 2-4 united. 9
- 8—Thorax with silvery pubescence; front with an indistinct, medial impressed line. *oculus*
- Thorax without silvery pubescence; front with a distinct, medial, impressed line. *superior*
- 9—Abdomen ventrally rather strongly punctured; metapleuræ coarsely striated. *apicalis*
- Abdomen ventrally very finely punctured; metapleuræ finely striated. *fusca* and *terminatus*
- 10—Occiput remarkably depressed in the middle, so that the portion behind each eye is much swollen. *innatus*
- Occiput normal. 11
- 11—Metapleuræ coarsely striated.
- Antennæ elongate, the third joint fully twice longer than broad; space between the eyes at top less than the length of joints 3 and 4 united. *angulus*
- Antennæ short, stout, the third joint about as broad as long; space between eyes at top about equal to the length of antennal joints 3-5 united. *testacea*
- Metapleuræ not coarsely striated. 12
- 12—Space between eyes at top about equal to joints 3 and 4 united. 13
- Space between eyes at top less than the length of joints 3 and 4. 17
- 13—Flagellum rather short, stout, thickened medially. *spinatus*
- Flagellum long, slender, not thickened medially. 14
- 14—Metathorax above reticulated. *constricta*
- Metathorax above not reticulated, at the most finely granulated. 15
- 15—Abdomen entirely red. *luteus*
- Abdomen black apically. 16
- 16—Size small, slender; front finely granulated. Length 8 mm. *parvulus*
- Size medium, robust; front more punctured than granulated. Length 10 mm. *conspicua*
- 17—Upper surface of metathorax as long as the dorsum; form slender. *obtus*
- Upper surface of metathorax shorter than the dorsum; form stout. 18
- 18—Front coarsely and distinctly punctured. *constrictus*
- Front granulated, or else it is so very closely punctured that it appears so. 19
- 19—Upper surface of metathorax coarsely and irregularly wrinkled. *fulvipes*
- Upper surface of metathorax not wrinkled. 20

- 20—Emargination of fore femora rounded. Length 7 mm. *excutus*
- Emarginations of fore femora more or less angular. Length 10 mm. *compunctus*

1.—*Tachyphex Ashmeadi* n. sp.

♀.—Clypeus with sparse, large punctures, its fore margin rounded-out, subtruncate medially and scarcely produced into a tooth laterally; front coarsely and closely punctured; vertex finely punctured, the occiput even more so; space between the eyes at top about equal to the length of antennal joints 2 and 3 combined; first joint of the flagellum about one-fifth shorter than the second; dorsum with rather strong, close punctures, depressed medially almost its full length; scutellum convex, not impressed, punctured like the dorsum; metathorax above finely coriaceous, on the sides and posteriorly very finely striated, the posterior face with a large, triangular fovea at the top; legs ample, tolerably well armed with spines, which except at the apex of the joints, are lacking on the hind tarsi; marginal cell not truncate at apex, more or less pointed; width of the second submarginal cell at the top greater than the width of the third submarginal at the same place; abdomen about as long as the head and thorax together, seemingly impunctate; pygidial area flat, with some indistinct, large, sparse punctures, its length about two-and-a-half times greater than its width at the base. Black; clypeus anteriorly, mandibles in the middle and spot on scape at apex beneath, reddish-yellow; all the legs (except coxæ, trochanters and anterior femora above) and the abdomen entirely, bright red; upper half of clypeus, face, front and thorax, especially the mesopleuræ, with silvery pubescence; femora and abdomen with a silvery pile, which is most conspicuous on apical half of dorsal segments 1-4 when viewed from behind; tegulæ testaceous; wings subhyaline, iridescent, nervures testaceous. Length 10 mm.

San Diego, California, August 23rd, 1891 (*Dr. F. Blaisdell*). It gives me pleasure to dedicate this pretty species to Mr. Wm. H. Ashmead, as a slight recognition of the many favors which I have received from him.

2.—*Tachyphex Bellingeri* Conn.

Loricula Bellingeri C. & T. Amer. Ent. Soc. IV, 1872, p. 215. ♀.

Lavra Bellingeri Patton, l. c. p. 308.

♀.—Clypeus with large sparse punctures, its anterior margin rounded out, emarginate medially and produced into two teeth at

each extreme side; front very finely and closely punctured, appearing granulated, the punctures on the vertex are also fine but are not so close as those on the front; space between the eyes at top a little less than the length of antennal joints 2 and 3 united; first joint of the flagellum a little more than one-fifth shorter than the second; dorsulum with distinct, close punctures, its medial portion only depressed anteriorly and then not strongly; scutellum convex, not impressed, punctured like the dorsulum; metathorax above strongly reticulated, especially at the base, the sides and posteriorly finely striated, the posterior face with the fovea elongate, acute beneath and broad at the upper end; legs rather stout, well armed with spines; marginal cell truncate; space between the second and third submarginal cells at the top about equal; abdomen ————⁴. Black; spot on scape, at apex beneath, mandibles in the middle, and legs except coxae, trochanters and the fore and medial femora above, red; front, face, clypeus and the thorax more or less clothed with silvery pubescence, brightest and densest on the face, clypeus and mesopleura; wings subhyaline, iridescent, nervures testaceous; tegulae yellow. Length about 9 or 10 mm.

TEXAS. The type of this species, which seems to be very rare, is in the collection of the United States National Museum.

3.—*Tachyphex posterus* n. sp.

♀.—Clypeus with large, deep punctures, its anterior margin rounded-out, subtruncate medially, and not dentate laterally; front finely and closely punctured below the middle, but above that the punctures are strong and separated; the vertex more finely punctured; space between the eyes at the top greater than the length of antennal joints 2 and 3 united, but less than the length of joints 3 and 4; first joint of the flagellum about one-third shorter than the second; dorsulum with distinct, separated punctures (the punctures are much more distinct than in either of the two preceding species), depressed in the middle for about two-thirds its length, the punctures most compact anteriorly; scutellum convex, not impressed, punctured similarly to the posterior portion of the dorsulum; metathorax above finely

coriaceous, the sides likewise, the posterior face finely and transversely striated; legs ample, tolerably well armed with spines; abdomen above impunctate, the last two ventral segments sparsely punctured; pygidial area flat, with distinct, large, sparse punctures, its length is about two-and-a-half times longer than it is wide at the base. Black; anterior margin of the clypeus, mandibles except base, spot on scape at apex beneath, the tarsi, medial tibiae, the hind legs except coxae and trochanters, and the abdomen red; face, front, clypeus and the thorax, especially in the sutures, with silvery pubescence; the femora and abdomen with silvery pile, which is most profuse on the abdomen; tegulae and nervures testaceous; wings subhyaline, the marginal cell obliquely truncate, width of the third submarginal cell at the top greater than the width of the second at the same place. Length 12 mm.

State of Washington.

4.—*Tachyphex spinosus* n. sp.

♀.—Clypeus with large deep punctures, its fore margin rounded-out, and armed with a tooth laterally; front finely and closely punctured throughout; the vertex with the punctures finer; space between the eyes at the top about equal to the length of antennal joints 2 and 3 united; first joint of the flagellum about one-quarter shorter than the second; dorsulum with tolerably strong and very close punctures, depressed in the middle for about two-thirds its length, the punctures closest anteriorly; scutellum punctured like the dorsulum, not impressed; metathorax above finely coriaceous, the sides likewise, but shining, the posterior face transversely striated; legs strong; armed with spines, especially the first joint of the tarsi; abdomen above impunctate, the last two ventral segments with large, sparse punctures; pygidial area somewhat convex, with indistinct scattered punctures, its length is about twice or perhaps less than twice greater than its width at the base. Black; mandibles in the middle, spot on scape beneath at apex and fore tarsi reddish-testaceous; four hind legs except the coxae, trochanters and femora and base of tibiae of medial legs, and the abdomen bright red; face, clypeus and thorax more or less, with silvery pubescence; femora and abdomen with silvery pile, which is most obvious on the abdomen when viewed from behind; tegulae testaceous; wings subhyaline, iridescent, the nervures black; marginal cell subacute at apex; width of the

⁴ The abdomen of the only specimen seen by me, the type of the species, is lost. I take the following from the original description: "abdomen fulvo ferrugineus, with a very fine silvery setaceous pile, more dense at the sides and apex of the segments, the three apical segments black."

third submarginal cell at the top nearly twice greater than the width of the third at the same place. Length 11 mm.

Los Angeles County, California. (Collection U. S. National Museum.)

5.—*Tachyphes crenulatus* n. sp.

♀.—Anterior margin of the clypeus distinctly crenulated; front finely granulated throughout; vertex with very fine and close punctures; space between the eyes at top about equal to the length of antennal joints 2 and 3 united; first and second joints of the flagellum equal in length; dorsum very closely punctured, the punctures much stronger than those on the vertex; scutellum slightly impressed anteriorly; metathorax above finely granulated, the metapleuræ indistinctly striated, as is likewise the posterior face; legs stout, strongly spinose; abdomen above impunctate, the second and last ventral segments with sparse punctures; pygidial area with large, scattered punctures, depressed on apical half, its length is about twice greater than its width at the base. Black; mandibles in the middle, and indistinct spot on scape at apex beneath and the tarsi, obscure reddish; abdomen dark red; tegulae testaceous; wings subhyaline, the nervures black; marginal cell subtruncate at apex; space between the second and third submarginal cells at the top about equal. Length 11 mm.

California.

6.—*Tachyphes tarsatus* Say.

Larva tarsata Say, Western Quarterly Reporter, II, p. 78.
Larvula tarsata Cress., Proc. Ent. Soc. Phila., IV, p. 464. ♀.

♀.—Anterior margin of the clypeus either slightly emarginate in the middle or entire, armed with one tooth laterally; front finely granulated; punctures on the vertex fine; space between the eyes at the top about equal to the length of antennal joints 2 and 3 united, perhaps a little greater; first joint of the flagellum about one-third shorter than the second; dorsum more finely punctured than the front, depressed in the middle anteriorly; scutellum punctured like the dorsum, not impressed; metathorax above finely coriaceous, the metapleuræ indistinctly striated, the posterior face transversely striated, with a long, deep, longitudinal fovea in the middle; legs tolerably well armed with spines; abdomen above impunctate, the last two ventral segments sparsely punctured; pygidial area not so distinctly

defined as in the allied species, about two-and-a-half times longer than it is broad at the base, with distinct, scattered punctures. Black; mandibles in the middle and the apical joints of the tarsi obscure reddish; coloration of abdomen varying from bright red to nearly black; wings subhyaline, iridescent, the nervures black; marginal cell obliquely truncate; width of the second and third submarginals at the top variable. Length 10-11 mm.

♂.—Front coarsely granulated; vertex and clypeus with very close punctures; space between the eyes at top about equal to length of antennal joints 3 and 4 united; antennae rather stout and long, the first joint of the flagellum nearly one-half shorter than the second; dorsum with very close punctures; metathorax above and on the sides finely coriaceous, the posterior face indistinctly striated; legs feebly spinose, the emargination on fore femora large; colored like the female except that the legs are more red; the wings are clearer and more iridescent. Length 7-8 mm.

New Jersey to Florida, westward to Nevada. Although the width of the second and third submarginal cells at the top is variable, yet in the majority of specimens examined, the second is by far the broadest. *Larvula laevifrons* Smith is evidently closely related if not identical with this species.

7.—*Tachyphes texanus* Cress.

Larvula texana Cress., Trans. Amer. Soc., IV, 214. ♀ & ♂.
Larva texana Patt., l. c. p. 390.

♀.—Anterior margin of the clypeus subtruncate, the lateral angles sharp, but not dentate; front finely granulated; vertex with fine, distinct punctures; space between the eyes at the top just about equal to the length of antennal joints 2 and 3 united; first joint of the flagellum scarcely one-fourth shorter than the second, which is shorter than either the third or fourth joint; dorsum with fine, even, distinct punctures, which are closest posteriorly; scutellum a little more strongly punctured, slightly impressed; metathorax above finely reticulated, on the sides and behind strongly striated; legs rather slender, in comparison to the preceding species, strongly armed with spines; abdomen above impunctate, the last ventral segment sparsely punctured; pygidial area tolerably well defined, with sparse, distinct punctures, its length is scarcely two-and-a-half times longer than it is wide at the base. Black; mandibles in the middle, spot on scape at apex beneath and the tarsi, obscure red; abdomen

bright red; head in front and thorax very sparsely clothed with silvery pubescence; abdomen also very sparsely clothed with silvery pile; wings subhyaline, nervures black; marginal cell subtruncate; width of the second submarginal cell at the top decidedly greater than that of the third submarginal at the same place. Length 9.10 mm.

Texas; Colorado. A specimen from Georgia which I refer to this species has the dorsulum punctured similarly to *T. lucidus* Say. From California there are two specimens, which I at first believed to be distinct, that have the front punctured, the dorsulum rather sparsely punctured and the sculpture of the metanotum bordering on both reticulated and granulated. The male of this California form is as follows:

♂.—Front coarsely granulated; vertex with fine, rather sparse punctures, the clypeus with fine and close punctures; space between the eyes at top about equal to length of antennal joints 2 to 4 united; antennae short and stout, the first joint of the flagellum scarcely one-half shorter than the second; dorsulum with distinct, tolerably strong punctures; metathorax above coarsely granulated or finely strong punctures; on the sides and behind distinctly striated; legs feebly spinose; colored like the ♀; abdomen with distinct silvery pile. Length 7 mm.

8.—*Tachysphex spissatus* n. sp.

♂.—Front strongly granulated; vertex finely and closely punctured; space between the eyes at top about equal to the length of antennal joints 3 and 4 united; clypeus subtruncate, its interior half with coarse punctures; antennae rather long, distinctly thickened medially, the first joint scarcely greater than one-half the length of the second, which is a little shorter than the third; dorsulum very finely and closely punctured, the scutellum likewise, and not impressed; metathorax above coriaceous, the sides finely and indistinctly striated, the posterior face more distinctly so; legs feebly spinose, the emargination of fore femora large and sub-angular; abdomen impunctate, the last dorsal segment with distinct punctures. Black; scape beneath at apex, mandibles in the middle and apical joints of the tarsi obscure red; segments 1-3 of the abdomen bright red; tegulae testaceous; face, front, clypeus and thorax with silvery pubescence; abdomen with silvery pile; wings subhyaline, iridescent.

nervures testaceous, marginal cell subtruncate; second submarginal cell at the top about equal to, or perhaps slightly greater than the width of the third at the same place. Length 7½ mm.

California.

9.—*Tachysphex dubius* n. sp.

♂.—Front finely granulated; vertex finely and closely punctured; space between the eyes at top greater than the length of antennal joints 2 and 3 united, but less than joints 3 and 4; clypeus in the middle of anterior margin a little produced, not coarsely punctured on anterior half; antennae not or but very slightly thickened medially; the first joint of the flagellum more than one-third shorter than the second; dorsulum very finely and closely punctured; metathorax above coriaceous, the sides indistinctly striated, the hind face more distinctly so; legs feebly spinose, the emargination of fore femora rounded; last dorsal segment of abdomen finely and distinctly punctured. Black; scape beneath at apex, mandibles medially and last joint of tarsi obscure reddish; segments 1-3 of abdomen bright red; face, front, clypeus and thorax with silvery pubescence; abdomen with silvery pile; wings dark subhyaline, iridescent, nervures black; marginal cell obliquely truncate; width of the second and third submarginal cells at the top variable. Length 8.9 mm.

Cameron County, New Jersey, August 24th; Northern Illinois (*Dr. Nixon*).

10.—*Tachysphex semirufus* Cress.

Laccada semirufa Cress., Proc. Ent. Soc. Phila., IV, p. 464, ♀.
Laccra semirufa Putt., l. c. p. 308.

♀.—Anterior margin of the clypeus slightly rounded-out, armed with two distinct teeth on each extreme side; front rather coarsely granulated; vertex with fine distinct punctures; space between the eyes at top about equal to the length of antennal joints 2 and 3 united, perhaps a little greater; first joint of the flagellum scarcely one-fourth shorter than the second; dorsulum with fine, close, distinct punctures; scutellum a little more strongly punctured; metathorax above distinctly granulated, indistinctly striated on the sides, the posterior face a little more distinctly striated; legs strongly spinose; abdomen above impunctate, the last ventral segment strongly punctured; pygidial area tolerably well defined, sparsely punctured, its length nearly two and a-half times longer than it is wide at the base. Black;

scape beneath at apex, mandibles in the middle, and the tarsi except basal joint, obscure reddish; abdomen bright red; face, front, clypeus and thorax sparsely clothed with silvery pubescence; abdomen without silvery pile; wings slightly fuscous, iridescent, nervures black; marginal cell obliquely truncate; space between the second and third submarginal cells at the top about equal. Length 8.9 mm. Colorado.

11.—*Tachysphex asperatus* n. sp.

♀.—Anterior margin of the clypeus a little rounded-out, not dentate laterally; front coarsely granulated; vertex with strong punctures; space between the eyes at top greater than the length of antennal joints 2 and 3 united and less than the length of joints 3 and 4 united; first joint of flagellum but little, if anything, shorter than the second; dorsulum coarsely punctured; metathorax above strongly rugose or rugoso-reticulate, the sides and behind distinctly striated; legs feebly spinose; abdomen above impunctate, the last ventral segment more or less punctured; last dorsal segment with the pygidial area only developed at apex, and then only to a very slight degree, impunctate. Black; mandibles at apex and the tarsi more or less, obscure red; abdomen bright red; face, front, clypeus and thorax, sparsely clothed with silvery pubescence; the abdomen with a sparse silvery pile; wings subhyaline, iridescent, nervures testaceous; marginal cell obliquely truncate; the second submarginal cell at the top greater than the third at the same place. Length 8 mm.

Nevada. The coarser sculpture of the dorsulum and the poorly developed pygidial area will distinguish this species from *semitratus*, which it greatly resembles.

12.—*Tachysphex antennatus* n. sp.

♀.—Anterior margin of the clypeus truncate, armed with a tooth laterally; front finely granulated; vertex finely and closely punctured; space between the eyes at top about equal to the length of antennal joints 2 and 3 united, possibly a little greater; first joint of the flagellum is long, nearly one-fourth shorter than the second, the flagellum not setaceous; dorsulum finely and closely punctured; scutellum likewise; metathorax above finely granulated, the sides indistinctly striated, the posterior face more distinctly so; legs tolerably well armed with spines; pygidial area scarcely two-

and-a-half times longer than it is broad at the base, sparsely punctured. Black; scape beneath at apex, mandibles in the middle and apical joints of the tarsi obscure reddish; abdomen bright red, somewhat blackish towards apex; front, face, clypeus and thorax sparsely clothed with silvery pubescence; the abdomen with sparse silvery pile; wings subhyaline, iridescent, nervures black; marginal cell obliquely truncate; third submarginal cell at the top a little greater than the second at the same place. Length 7 mm. Texas.

13.—*Tachysphex equalis* n. sp.

♂.—Front very finely granulated; vertex with close and fine punctures; space between the eyes at top about equal to the length of antennal joints 2 and 3 united; anterior margin of the clypeus subtruncate, armed with a tooth laterally; antennae not thickened medially, the first joint of the flagellum about one-third shorter than the second; dorsulum very finely and closely punctured; the scutellum likewise; metathorax above coriaceous or finely granulated, the sides not or very indistinctly striated, the posterior face coarsely striated; legs feebly spinose, the emargination of fore femora broad. Black; scape beneath at apex, mandibles medially and the tarsi obscure reddish; first two segments of abdomen except base of the first, red; face and clypeus with dense silvery pubescence, that on the front golden; the thorax also tolerably well clothed with silvery pubescence; abdomen dorsally with silvery pile; wings subhyaline, iridescent, nervures testaceous; marginal cell obtuse at apex; second and third submarginal cells at the top about equal. Length 7-8 mm.

State of Washington.

14.—*Tachysphex sculptilis* n. sp.

♀.—Anterior margin of the clypeus subtruncate; front coarsely granulated; vertex with fine, distinct punctures; space between eyes at top greater than length of antennal joints 2 and 3 united, but less than joints 3 and 4 united; antennae long, the flagellum scarcely setaceous, the first joint of the latter but little shorter than the second; dorsulum with fine, distinct punctures; metathorax above with coarse, longitudinal striations, the sides and posterior face also coarsely striated; legs feebly spinose; abdomen impunctate, except last ventral segment; pygidial area well defined, sparsely punctured and

about twice as long as it is broad at the base. Black; scape beneath at apex, mandibles medially and apical joints of tarsi, obscure reddish; abdomen bright red, with a sparse silvery pile; front, face and clypeus densely and the thorax sparsely, with silvery pubescence; wings subhyaline, nervures testaceous; marginal cell truncate, second submarginal cell at the top wider than the third at the same place. Length 7 mm.

Colorado. The sculpture of metathorax will readily distinguish this species.

15.—*Tachysphex parvulus* Cross.

Larvula parvula Cr., Proc. Ent. Soc., Phila., IV, p. 463. ♂
Larva montana Patton, l. c. p. 369; Kohl, l. c. p. 246.

♂.—Front finely granulated; vertex with exceedingly fine and close punctures; space between the eyes at top decidedly greater than the length of antennal joints 2 and 3 united, about equal to joints 3 and 4 united; anterior margin of clypeus subtruncate, armed with a tooth laterally; antenna rather long, the flagellum not thickened medially, the first joint of the latter scarcely one-third shorter than the second; dorsulum very finely and closely punctured; scutellum likewise; metathorax above coriaceous or finely granulated, the sculpture of sides indistinct, though evidently finely striated, the posterior face transversely striated; legs feebly spinose, the emargination of fore femora large. Black; scape and mandibles colored as usual, the tarsi except first joint, reddish; abdomen bright red, with silvery pile; front, face and clypeus with a tolerably dense silvery pubescence, the thorax sparsely so; wings subhyaline, iridescent, nervures testaceous; marginal cell obliquely truncate; width of second and third submarginal cells at the top variable. Length 7 mm.

Colorado. This species is not the ♂ of *montana* as has been supposed by some authors.

16.—*Tachysphex fimpennis* n. sp.

♀.—Anterior margin of the clypeus slightly produced medially, not dentate laterally; front coarsely and distinctly punctured, vertex with strong punctures; the furrow which extends back on the occiput deep, giving the latter an emarginate appearance; space between the eyes at the top much greater than the length of antennal joints 2 and 3 united, about equal to the length of joints 3 and 4; first joint of the flagellum but little shorter than the second; dorsulum

with strong, separated punctures; scutellum likewise, not impressed, upper surface of metathorax very strongly reticulated, the sides coarsely striated; legs tolerably well spined; pygidium very sparsely punctured, a little more than twice longer than it is broad at the base. Black; last abdominal segment red; front, face, clypeus and thorax more or less, with silvery pubescence; abdomen with a dense silvery pile; wings fuscous, base broadly hyaline, nervures black; marginal cell obliquely truncate; second submarginal cell at the top much greater than the third at the same place. Length 10–11 mm.

Florida, in the vicinity of St. Augustine (C. W. Johnson). The dark wings and sculpture of metathorax will distinguish this species from its allies.

17.—*Tachysphex fuscus* n. sp.

♀.—Anterior margin of the clypeus slightly produced medially, not dentate laterally; front with the punctures coarser and closer than in the species just preceding; vertex strongly punctured; occiput when viewed from behind emarginate at the top; space between eyes at top much greater than the length of antennal joints 2 and 3 united about equal to joints 3 and 4 united; first joint of flagellum but little shorter than the second; dorsulum with strong separated punctures; scutellum distinctly impressed; metathorax above strongly granulated, the sides finely, though distinctly striated; legs tolerably well spined; pygidium sparsely punctured, about two and a half times longer than it is broad at the base. Black; scape beneath at apex and the mandibles in the middle reddish; tarsi reddish-testaceous; last two abdominal segments bright red; front, face and clypeus densely clothed with silvery pubescence, the thorax sparsely clothed; abdomen with a rather dense silvery pile; wings subhyaline, iridescent, nervures black; marginal cell obliquely truncate; width of the second submarginal cell at the top usually greater than the third at the same place. Length 9–10 mm.

♂.—Front with coarse, confluent punctures; vertex strongly punctured; space between eyes at top, if anything, greater than the length of antennal joints 2–4 united; anterior margin of the clypeus with the lateral angles sharp and with the medial portion very slightly produced; antenna rather long, the flagellum a little thickened medially, the first joint of the latter about one-third shorter than the second; dorsulum with strong, separated punctures; scutellum

lum impressed; upper surface of metathorax transversely rugoso-granulated, the sides rather strongly striated; abdomen if punctured ventrally, it is very finely so. Colored and ornamented like the ♀. Length 7-8 mm.

TEXAS: LAS CRUCES, N. Mexico (*T. D. A. Cockerell*); NEVADA: MONTANA. The pale wings and sculpture of metathorax will separate this species from the preceding one, while the shape of fore margin of clypeus will distinguish it from *terminatus*, which it most resembles. The ♂ differs from that of *terminatus* by the coarsely sculptured front.

19.—*Tachysphex terminatus* Smith.

Larva terminata Sm., l. c. p. 204.

Larva terminata Patton, l. c. p. 300.

Larva minor Prov., Add. Hym. Quebec, p. 208. ♂ ♂

♀.—Anterior margin of the clypeus subtruncate, not produced in the middle; front finely granulated; vertex strongly punctured; occiput when viewed from behind not, or very slightly, emarginate above; space between the eyes at top about equal to the length of antennal joints 3 and 4 united, if anything slightly less; first joint of the flagellum nearly one-third shorter than the second; dorsulum with tolerably strong and separated punctures, which become close anteriorly; scutellum very slightly impressed; upper surface of the metathorax granulated, the sides distinctly, though not strongly striated; legs not very strongly spined; pygidial area sparsely punctured, about two and a half times longer than it is broad at the base. Black; mandibles in middle and scape beneath at apex reddish; tarsi apically reddish-testaceous; last two segments of abdomen bright red; wings subhyaline, iridescent, nervures testaceous; marginal cell obliquely subtruncate; second submarginal cell at the top wider than the third. Length 9-10 mm.

♂.—This sex resembles very closely the ♂ of *fusus* but differs as follows: Space between the eyes at top distinctly greater than the length of antennal joints 2-4 united; front a little more closely and finely punctured; anterior margin of clypeus slightly rounded out, not produced medially, the lateral angles sharp, almost dentiform; dorsulum with the punctures sparser; wings more iridescent; legs less strongly spined. Length 6 mm.

Canada to District of Columbia; N. Illinois (*Nason*); Vancouver. A ♀ from Nevada which I take to be a variety of this species has

the metathorax above with coarser sculpture and the three apical segments red. *Larva minor* Prov., of which I possess a ♂ received from J. A. Guignard, is, as far as the ♂ is concerned, identical with *terminatus*.

19.—*Tachysphex apicalis* Fox.

T. apicalis Fox, Journ. N. Y. Entom. Soc. 1, p. 33. ♀ ♂

♀.—Anterior margin of the clypeus rounded out, very slightly emarginate medially, not dentate laterally; front with rather strong, separated punctures; vertex with the punctures deeper; occiput when viewed from behind slightly emarginate above; space between the eyes at top about equal to the length of antennal joints 3 and 4 united; first joint of the flagellum but little shorter than the second; dorsulum with strong, separated punctures, much sparser than those on the front; upper surface of metathorax coarsely reticulated or rugoso-reticulate, the metapleuræ coarsely striated, the posterior face roughened and with the transverse ridge at the top very prominent and sinuous; tibiae and tarsi tolerably well armed with spines; pygidial area sparsely punctured, scarcely twice as long as it is broad at the base. Black; mandibles in the middle reddish; apical abdominal segment bright red; wings slightly fuscous, iridescent, the basal third subhyaline; marginal cell obtuse at apex; second submarginal cell at the top slightly wider than the third at the same place; head and thorax with sparse silvery pubescence that on the vertex fuscous; abdomen with sparse silvery pile. Length about 9½ mm.

♂.—Front coarsely and rather closely punctured; occiput distinctly emarginate when viewed from behind; space between the eyes at top distinctly greater than the length of antennal joints 2-4 united; anterior margin of the clypeus a little produced medially; antennae much shorter than in *fusus* and *terminatus*, the first joint of flagellum not one-third shorter than the second; dorsulum with strong, separated punctures; scutellum slightly impressed; upper surface of metathorax as in the ♀, the sides not so coarsely striated; abdomen rather distinctly punctured ventrally; the silver pubescence of head and thorax more dense than in the ♀. Length 8 mm.

Southern Florida. (*Mrs. A. T. Stemon.*)

20.—*Tachysphex acuta* Patton.

Larva acuta Pat., l. c. p. 300.

♀.—Anterior margin of the clypeus rounded out, armed laterally with an indistinct tooth or else entire; front very finely granulated;

vertex with distinct punctures; occiput when viewed from behind very slightly emarginate; space between the eyes at the top distinctly less than the length of antennal joints 3 and 4 united, but still a little greater than the length of joints 2 and 3 united; first joint of the flagellum about one-third shorter than the second; dorsulum with strong, tolerably well separated punctures, the latter are however closer than in *apicalis*; upper surface of metathorax finely reticulated or reticulate-granulated, the metapleuræ rather strongly striated; tibiae and tarsi tolerably well armed with spines; pygidial area sparsely punctured, nearly three times as long as it is broad at base. Black; mandibles medially and scape beneath at apex, obscure reddish; apex of abdomen *not* red; wings subfuscous, iridescent, nervures black; marginal cell subtruncate; width of the second and third submarginal cells at the top variable, although the second is usually greatest; face, front and clypeus with silvery pubescence, that on the thorax sparser; abdomen with silvery pile. Length 9 mm.

♂.—Front even more finely punctured than in the ♀; occiput not or very indistinctly emarginate; space between the eyes at top about equal to the length of antennal joints 2-4 united, at any rate not greater; anterior margin of clypeus a little more strongly rounded out than in the ♀; antennæ tolerably long, not thickened, the first joint of the flagellum about one-third shorter than the second; scutellum not impressed; upper surface of metathorax rather coarsely granulated, the metapleuræ finely striated; abdomen closely and finely punctured ventrally; pubescence about as in the ♀; wings paler, the marginal cell more obtuse and narrower at apex. Length 6 mm.

Connecticut in August (*Putton*); Georgia; Florida (*Mrs. A. T. Sloan*); Cedar Keys, June (*Gill, A. E. S.*).

21.—*Tachysphex amplius* n. sp.

♀.—Anterior margin of clypeus rounded out, armed with a tooth laterally; front rather strongly and closely punctured becoming granulated towards insertion of antennæ; vertex with distinct, tolerably close punctures; occiput not at all emarginate, in consequence of the impressed line not being strong; space between the eyes at top about equal to the length of the third joint of antennæ; first joint of the flagellum but little shorter than the second; dorsulum with tol-

erably fine and close punctures; scutellum slightly impressed; metathorax above strongly granulated, the metapleuræ rather coarsely striated as is likewise the posterior face; tibiae and tarsi well armed with spines; pygidial area feebly and sparsely punctured, but little, if anything longer than twice its width at the base. Black; mandibles medially, scape beneath at apex and tarsi, except first joint, reddish; abdomen bright red, without silvery pile; wings subhyaline, scarcely iridescent, nervures black; marginal cell obliquely truncate; width of the second submarginal cell at the top decidedly greater than the width of the third at the same place; head and thorax very sparsely clothed with silvery pubescence. Length 14 mm.

♂.—Front coarsely granulated, on upper portion becoming punctured; vertex with distinct, rather sparse punctures, those on the clypeus very fine and close; space between the eyes at top greater than the length of antennal joints 2 and 3 united, but decidedly shorter than 3 and 4 united; antennæ similar to the ♀, the first joint of the flagellum a little more than one-quarter shorter than the second, the second, third and fourth joints about equal; anterior margin of clypeus subtruncate; dorsulum with distinct, tolerably close punctures; metathorax above granulated, on the sides and behind striated; legs feebly spinose; colored like the female. Length 10 mm.

Nevada; New Mexico. This is one of our largest species.

22.—*Tachysphex montanus* Cress.

Larvæ montana Cr., Proc. Ent. Soc. Phila. IV, p. 463, ♀.

Larvæ montana Putt., l. c. p. 300.

♀.—Anterior margin of clypeus subtruncate, with a large tooth laterally; front with rather fine and close, though distinct punctures; vertex very finely and closely punctured; space between the eyes at top less than the length of antennal joints 3 and 4 united, but greater than the length of joints 2 and 3 united; first joint of the flagellum about one-quarter shorter than the second; dorsulum with very fine and close punctures; scutellum slightly impressed; metathorax above finely coriaceous, the metapleuræ likewise, posterior face indistinctly striated; legs strongly spinose; abdomen stout, more or less compressed, especially apically; pygidial area sparsely punctured, its length a little more than twice greater than it is wide at base. Black; mandibles medially, scape beneath at apex and tarsi, except

first two joints, obscure reddish; abdominal segments 1-3 bright red; wings subhyaline, iridescent, nervures testaceous; marginal cell subtruncate; width of the second and third submarginal cells at the top about equal; head in front and the thorax sparsely clothed with silvery pubescence; abdomen without silvery pile. Length 11-12 mm.

♂.—Front and vertex a little more strongly punctured than in the ♀; anterior margin of clypeus subtruncate, not dentate laterally; space between eyes at top greater than the length of antennal joints 2 and 3 united, but less than the length of joints 3 and 4 united; antennae long, setaceous; first joint of flagellum about one-quarter shorter than the second; dorsulum with very fine and close punctures; metathorax above and on the sides finely coriaceous; legs tolerably well armed with spines; colored like the ♀, but the wings darker. Length 9-11 mm.

Colorado.

22.—*Tachysphex decorus* n. sp.

♀.—Anterior margin of clypeus subtruncate, dentate laterally; front finely granulated; vertex finely and closely punctured; space between the eyes at top about equal to the length of antennal joints 2 and 3 united; first joint of the flagellum but little shorter than the second; dorsulum very finely and closely punctured; scutellum not impressed; upper surface of metathorax with tolerably strong longitudinal, sinuous striations or folds, the metapleuræ very indistinctly striated, the posterior face more distinctly so; legs rather strongly spinose; pygidial area impunctate, very narrow on apical portion, its length about two-and-a-half times longer than it is wide at the base. Black; mandibles medially, scape beneath at apex and tarsi, except basally, reddish; abdomen without silvery pile, the first three segments bright red; wings subhyaline, iridescent, nervures testaceous; marginal cell broadly and obliquely truncate; second submarginal cell at the top greater than the third at the same place; face and clypeus with sparse silvery pubescence; thorax with a sparse silvery pile. Length 9 mm.

Dakota. Based on a specimen labelled *Lorrada dakota* Cress., which is evidently only a manuscript name.

24.—*Tachysphex incutatus* n. sp.

♂.—Front finely and closely punctured, widely channelled down

the middle, on each side of which it is protuberant; anterior margin of the clypeus subtruncate, not dentate laterally; occiput is remarkably depressed, which causes the cheeks to bulge somewhat at the top; space between eyes at the top about equal to the length of antennal joints 3 and 4 united; antennae tolerably long, strongly setaceous, the first joint of the flagellum scarcely one-quarter shorter than the second; dorsulum with fine and close punctures; scutellum, slightly impressed; metathorax above finely coriaceous, the metapleuræ indistinctly striated, the posterior face more distinctly striated. Black; mandibles medially, scape beneath at apex and tarsi more or less, reddish; abdomen without silvery pile, the first three segments bright red; wings dark subhyaline, iridescent, nervures testaceous; marginal cell obliquely subtruncate; width of second and third submarginal cells at the top about equal; front, face and clypeus with a tolerably dense, silvery pubescence. Length 9½ mm.

Colorado. The peculiar form of the head will at once distinguish this species.

25.—*Tachysphex tenuipunctus* n. sp.

♀.—Anterior margin of the clypeus subtruncate, dentate laterally; front finely granulated; vertex finely and closely punctured; space between the eyes at top about equal to the length of antennal joints 2 and 3 united; first joint of the flagellum scarcely one-quarter shorter than the second; dorsulum very finely and closely punctured; scutellum slightly though distinctly impressed; metathorax above granulated, the metapleuræ finely coriaceous, the posterior face faintly striated; pygidial area with tolerably strong, sparse punctures, not narrowed more than usual apically, and is about two-and-a-half times longer than it is wide at the base. Black; mandibles medially, scape beneath at apex and the tarsi more or less (the latter palest), reddish; abdomen without silvery pile, the first three segments, sometimes only half of the third, bright red; wings subhyaline, iridescent, nervures testaceous; marginal cell obliquely subtruncate; width of the second and third submarginal cells at the top about equal, if otherwise the second is usually widest; front, face and clypeus with sparse silvery pubescence; thorax nude. Length 9-11 mm.

Mt. Hood, Oregon; Brit. Columbia; Montana; Custer, South Dakota (Aldrich); Canada (?). Greatly resembles *decorus*, but

differs in the sculpture of metathorax and the form of pygidium. Two specimens from Colorado, I refer with some doubt to this species; they measure 14 mm.

26.—*Tachyphex exsectus* n. sp.

♀.—Anterior margin of the clypeus in the middle distinctly emarginate and armed laterally with at least two strong teeth; front very finely and closely punctured; (it is difficult to determine in some species whether the front is punctured or granulated); vertex even more finely punctured; space between the eyes at top about equal to the length of antennal joints 2 and 3 united; first joint of the flagellum fully one-third shorter than the second; dorsum very finely and closely punctured; scutellum not impressed; upper surface of metathorax finely granulated, metapleuræ finely coriaceous, the posterior face striated; legs rather strongly spinose; pygidial area strongly and sparsely punctured, its length fully two-and-a-half times greater than it is wide at the base. Black; mandibles medially, scape beneath at apex and the tarsi reddish (the tibiae are sometimes indistinctly reddish); abdomen with a sparse silvery pile, the first three segments red; wings pale subhyaline, iridescent, nervures testaceous; marginal cell obliquely subtruncate; width of the second and third submarginal cells at the top about equal; front, face, clypeus and thorax with a silvery pubescence densest and brightest on the first mentioned parts. Length 9 mm.

♂.—Space between eyes at top greater than the length of antennal joints 2 and 3 united, but less than that of joints 3 and 4 united; anterior margin of clypeus subtruncate, not emarginate or dentate; upper surface of metathorax striated at the base; colored like the ♀; marginal cell obliquely truncated. Length 7 mm.

Montana: Mt. Hood, Oregon. I am in some doubt whether what I have described as the ♂, really belongs to this species; although agreeing more closely with this, yet their locality would seem to indicate relationship to *tenipunctus*, to which species I had at first referred it.

27.—*Tachyphex constans* n. sp.

♀.—Anterior margin of clypeus subtruncate, not emarginate and not dentate laterally; front finely granulated; vertex finely and closely punctured; space between eyes at top greater than the length of antennal joints 2 and 3 united, but a little less than the combined

length of joints 3 and 4; first joint of flagellum scarcely one-quarter shorter than the second; dorsum very finely and closely punctured; metathorax above granulated, metapleuræ very finely striated; pygidial area strongly and sparsely punctured, a little more than twice longer than it is wide at the base. Black; mandibles medially, scape beneath at apex and the tarsi, except first joint, reddish; abdomen without silvery pile, the first three segments red; wings pale subhyaline, iridescent, nervures testaceous; marginal cell obliquely subtruncate; second and third submarginal cells at the top about equal, if otherwise, the third is widest; front, face and clypeus with sparse silvery pubescence; thorax on sides and beneath, with a silvery pile. Length 7 mm.

♂.—Front very finely granulated; space between the eyes at top equal to or a little greater than the length of antennal joints 3 and 4 united; antennæ tolerably long and stout, the first joint of flagellum about one-third shorter than the second; the metathorax is more coarsely sculptured than in the female, the upper surface being strongly granulated and the base striated; colored like the female; pubescence on face denser; thorax with distinct silvery pubescence; abdomen with silvery pile. Length 7-8 mm.

Montana. Greatly resembles *exsectus*, but the eyes are more widely separated at the top, etc.

28.—*Tachyphex quebecensis* Prov.

Latre quebecensis Prov., Faun. Ent. Can. II, 433, ♀ ♂.

♀.—Anterior margin of clypeus subtruncate, dentate laterally, sometimes indistinctly so; front finely granulated; vertex finely and closely punctured; space between the eyes at the top about equal to length of antennal joints 2 and 3 united; first joint of the flagellum but little shorter than the second; dorsum very finely and closely punctured; scutellum distinctly impressed; metathorax above coarsely wrinkled, the metapleuræ coarsely striated, the posterior face not so strongly striated; pygidial area strongly and sparsely punctured, nearly two and a half times longer than it is broad at the base. Black; mandibles in the middle, scape beneath at apex and the tarsi apically, reddish; abdomen more or less with silvery pile, the first two segments bright red; wings dark subhyaline, iridescent, nervures blackish; marginal cell obliquely truncate; width of the second and third submarginal cells at the top variable; head in front and thorax with a sparse, silvery pubescence. Length 10-11 mm.

Cont.

♂.—Front finely granulated; space between eyes at top greater than the length of antennal joints 2 and 3 united, but a little less than that of joints 3 and 4 united; antennae rather long and slender, the first joint of flagellum about one-third shorter than the second; anterior margin of clypeus slightly emarginate; metathorax more strongly sculptured above than in the ♀, but the striations of metapleuræ are not so strong; colored like the ♀, with the pubescence of head and thorax more profuse. Length 9 mm.

Canada (*J. A. Guignard*); Maine: Massachusetts. Remembers very much *Tachysphex punctatus*, but the sculpture of metathorax will at once distinguish it from that species.

20.—*Tachysphex compactus* n. sp.

♂.—Anterior margin of clypeus subtruncate, not dentate laterally; front with fine and close punctures, appearing somewhat granulated; vertex very finely and closely punctured; space between the eyes at top about equal to the length of antennal joints 3 and 4 united; antennae tolerably long and slender, the first joint of the flagellum scarcely one-third shorter than the second; dorsulum very finely and closely punctured; scutellum impressed; metathorax above coriaceous, the metapleuræ and posterior face finely and rather indistinctly striated; legs strongly spinose. Black; mandibles medially, scape beneath at apex and the tarsi, except basal joints, reddish; abdomen with a sparse, sericeous pile, the first three segments red; wings subhyaline, not strongly iridescent, nervures testaceous; marginal cell obliquely subtruncate; second submarginal cell a little broader at the top than the third; front, face and clypeus with silvery pubescence, the thorax sparsely so. Length 9 mm.

Vancouver; Colorado. May be the ♂ of *tenipunctus*, but I scarcely believe it possible. Its robust form will at once distinguish it.

20.—*Tachysphex triquetrus* n. sp.

♀.—Anterior margin of clypeus indistinctly emarginate medially, armed with a large tooth laterally; front very finely and closely punctured, the vertex even more finely so; space between eyes at top about equal to the length of antennal joints 2 and 3 united; first joint of flagellum but very little shorter than the second; dorsulum punctured like the front, perhaps more finely so; scutellum im-

pressed; metathorax entirely coriaceous; legs strongly spinose, more so than in any of the other species, except *athipus*; pygidial area strongly and sparsely punctured, scarcely twice as long as its width at the base, forming an almost perfect triangle. Black; mandibles medially, scape beneath at apex and the tarsi, except first joint, reddish; abdomen bright red, with exception of a few blotches dorsally and with a sparse silvery pile; wings subhyaline, not iridescent, nervures dark testaceous; marginal cell obliquely subtruncate; head and thorax absolutely without silvery pubescence. Length 14 mm.

Nevada. A very distinct species.

21.—*Tachysphex athipus* Cress.

Larvæ athipus Cress. Proc. Ent. Soc. Phila. IV, p. 465. ♀.

Larvæ athipus Patton, L. c. p. 280.

♀.—Anterior margin of clypeus subtruncate, either entire, or slightly emarginate medially and with a large tooth laterally, front very finely and closely punctured, the vertex even more so; space between eyes at top somewhat greater than the length of antennal joints 2 and 3 united, but much less than that of joints 3 and 4 united; first joint of flagellum distinctly shorter than the second; punctures of dorsulum, though finer, are more distinct than those of the front; scutellum not impressed; metathorax entirely coriaceous; legs strongly spinose; pygidial area strongly and sparsely punctured, about two-and-a-half times longer than it is wide at the base. Entirely black, except mandibles medially, scape beneath at apex and the apical joints of the tarsi, which are reddish; abdomen without silvery pile and the head and thorax destitute of silvery pubescence; wings dark fuscous, iridescent, the posteriors pale at base, nervures black; marginal cell obliquely subtruncate. Length 12-15 mm.

♂.—Anterior margin of clypeus truncate, not emarginate, the lateral angles not dentate, but strongly produced; front very finely granulated; space between eyes at top about equal to length of antennal joints 3 and 4 united; antennae long and slender, first joint of flagellum about one-third shorter than the second; scutellum slightly impressed; metathorax coriaceous, above with a distinct, medial impressed line; colored like the female; face, front and clypeus with silvery pubescence; marginal cell obtuse at tip. Length 9-10 mm.

Colorado; Nevada; State of Washington. Its entirely deep black color and dark wings will distinguish this species from any of its allies.

J. E. Bohart

32.—*Tachysphex nigrior* n. sp.

♀.—Anterior margin of clypeus subtruncate, entire, not or indistinctly dentate laterally; front very finely granulated; vertex very finely and closely punctured; space between the eyes at top greater than the length of antennal joints 2 and 3 united, but a little less than that of joints 3 and 4; antennae long and slender, first joint of flagellum nearly one-third shorter than the second; dorsulum with fine, tolerably close punctures, but neither as fine nor as close as those on the vertex; scutellum not impressed; metathorax above rather delicately reticulated, the metapleuræ and posterior face distinctly, but not strongly, striated; legs, in comparison to *tripetecus* and *albipes*, feebly spinose; pygidial area strongly and sparsely punctured, its length about two-and-a-half-times greater than it is wide at base. Entirely black, except mandibles medially, scape beneath at apex and last three joints of tarsi, which are reddish; wings subhyaline, iridescent, nervures blackish; marginal cell obliquely subtruncate; second submarginal cell at the top usually somewhat wider than the second; face and clypeus with sparse, silvery pubescence; thorax nude; abdomen sparsely pilose. Length 7-9 mm.

♂.—Anterior margin of clypeus as in the ♀, front likewise; space between the eyes at top about equal to the combined length of antennal joints 2, 3 and 4; antennae not very long, rather stout, the flagellum thickened somewhat medially, with the first joint not much shorter than the second; scutellum slightly impressed; metathorax sculptured as in the ♀, but more strongly; colored like the opposite sex. Length 6-8 mm.

State of Washington. One specimen, a female, has the basal segments of abdomen obscurely reddish, which would indicate that there may be examples with the abdomen red and black.

33.—*Tachysphex paucillus* n. sp.

♀.—Anterior margin of the clypeus subtruncate, armed with a distinct tooth laterally; front very finely granulated; vertex very finely and closely punctured; space between the eyes at top greater, but not much, than the length of antennal joints 2 and 3 united, much less than that of joints 3 and 4 united; antennae long and slender, the first joint of flagellum nearly one-third shorter than the second; dorsulum with very fine, tolerably close punctures, the latter are as fine

as those of the vertex; metathorax above granulated, the metapleuræ and posterior face distinctly, though not strongly, striated; legs feebly spinose; pygidium strongly and sparsely punctured, its length but little greater than twice its width at the base. Black; mandibles medially, scape beneath at apex and the most of tarsi, reddish; abdomen not pilose, and, excepting the last two segments bright red; wings subhyaline, nervures testaceous; marginal cell obliquely truncate; face and clypeus with sparse silvery pubescence. Length 6 mm.

California.

34.—*Tachysphex punctifrons* Fox.

Latvia punctifrons Fox. Ent. News, II, p. 191. ♀.

♀.—Anterior margin of clypeus with or without an emargination medially, armed with a tooth laterally; front finely and evenly punctured, appearing granulated; the vertex more finely punctured; space between eyes at top somewhat greater than the length of antennal joints 2 and 3 united, but much less than that of joints 3 and 4 united; dorsulum like the vertex; first joint of flagellum but little shorter than the second; scutellum slightly impressed; metathorax coriaceous, the posterior face indistinctly striated; legs strongly spinose; pygidial area sparsely and strongly punctured, its length fully two-and-a-half-times, or more, longer than it is wide at base. Entirely black, clothed with a sericeous pile; wings subhyaline, not iridescent, nervures testaceous; marginal cell obliquely subtruncate; face and clypeus without silvery pubescence; apical half of tarsi reddish. Length 12-13 mm.

♂.—Anterior margin of clypeus not emarginate, nor dentate; sides of front and face depressed; space between eyes at top about equal to the length of antennal joints 3 and 4 united; first joint of flagellum not much shorter than the second; wings iridescent; head in front with rather dense silvery pubescence. Length 11-12 mm.

New Jersey, in September; Florida (*Mrs. A. T. Sloan*); Illinois; Colorado; Montana. The dense sericeous pile, with which this insect is clothed, and the large size, will at once distinguish it from the other species of this genus.

35.—*Tachysphex mundus* n. sp.

♀.—Anterior margin of clypeus not strongly, though distinctly

emarginate medially and armed laterally with two teeth; front with exceedingly fine and close punctures; vertex with the punctures more distinct; space between the eyes at top about equal to the length of antennal joints 2 and 3; first joint of flagellum about one-quarter shorter than the second; dorsulum somewhat more coarsely punctured than the front; scutellum not impressed; metathorax coriaceous or else finely granulated, the sides smooth, the posterior face striated; tegs tolerably spinose; longer spur of hind tibiae in length greater than the first joint of the hind tarsi; pygidial area strongly and sparsely punctured, in length but little greater than twice longer than its width at the base. Black; mandibles medially and scape beneath at apex reddish; tarsi, tegulae and the apical margins of segments (more broadly than in the other species) testaceous; wings pale subhyaline, iridescent, nervures testaceous; marginal cell narrowly truncate; head in front and the thorax with dense silvery pubescence; abdomen with a dense silvery pile, which appears as four bands when viewed from behind. Length 8-9 mm.

♂.—Anterior margin of clypeus not emarginate or dentate; front rather coarsely granulated; vertex more distinctly punctured than in the ♀; space between the eyes at top greater than the length of antennal joints 2 and 3 united, but scarcely equal to that of joints 3 and 4; first joint of flagellum nearly one-third shorter than the second; dorsulum with the punctures separated; scutellum distinctly impressed; metathorax above strongly granulated, the sides coriaceous; colored like the ♀, except that the abdomen is entirely testaceous. Length 8 mm.

Illinois; Texas. This species is as densely pilose as *punctifrons*, but the pile is silvery, the sculpture different and the size much smaller.

36.—*Tachysphex minimus* Fox.

Tachysphex minimus Fox, Tr. Amer. Ent. Soc. XIX, p. 248, ♂.

♂.—Anterior margin of the clypeus subtruncate, not dentate laterally; front with exceedingly fine and close punctures; space between the eyes at top about equal to the length of antennal joints 2 and 3 united; first joint of flagellum about one-quarter shorter than the second; dorsulum with the punctures even and distinct, much stronger than those of the front; scutellum not impressed; metathorax above granulated, the metapleurae and posterior face finely, though distinctly, striated. Black; mandibles medially and scape

beneath at apex, reddish; apex of femora, and tibiae and tarsi entirely, reddish-yellow; front, face, clypeus and thorax with silvery pubescence, that on the front and dorsulum approaching to golden; abdomen with silvery pile on apical portion of segments; wings subhyaline, iridescent, nervures testaceous; marginal cell subtruncate. Length 5½-7 mm.

Camden County, New Jersey in July; Georgia; Texas; Illinois. Resembles greatly *mundus*, but may be at once distinguished by color of legs.

LYRODA Say.

Lyroda Say, Journ. Nat. Hist. 1, p. 370, 1830; Kohl, l. c. p. 290.

Mandibles distinctly notched on outer margin; antennae elongate; eyes with the inner margin, almost straight, not converging towards the vertex, nearly parallel; front and vertex without protuberances, not raised along inner eye-margins; ocelli round and distinct, including the posterior, and are placed in the form of a low triangle; top of prothorax rather angularly produced medially, on each side of the production roundly emarginate; (the top of prothorax reaches the level of the dorsulum); anterior wings with a distinctly truncated marginal cell which has an appendiculation, three submarginal cells, the second of which receives both recurrent nervures, the basal vein joins the externo-medial vein, stigma large; tibiae and tarsi spinose, but not strongly so; *spur of fore-tarsi short and feeble*; middle tibiae one-spurred; pulvilli large; last dorsal segment of ♀ with a large, pygidial area, which is covered with a short pubescence.

But few species of this genus have been described, two of which are found in Boreal America. They may be tabulated as follows:

Anterior margin of clypeus of ♀ armed with three distinct teeth laterally; wings clear, dusky at tip; form rather slender with silvery pile on abdomen; ♂ similar to ♀, but smaller, the clypeus with its fore margin strongly bilobate medially, not dentate laterally.

subula.

Anterior margin of clypeus of ♀ not at all dentate laterally; wings dark fuscous; form stout, deep black, without silvery pile on abdomen; ♂ unknown.

trilinea.

1.—*Lyroda subula* Say.

L. subula Say, Journ. Nat. Hist. 1, p. 372.

♀.—Anterior margin of clypeus truncate medially, armed laterally with three distinct teeth; front and vertex with very fine and

close punctures; first joint of flagellum about one-third longer than the second; distance between hind ocelli somewhat greater than the space between them and the nearest eye-margin; dorsulum finely and closely punctured; metathorax above with a central, longitudinal raised line, from each side of which, extend in an irregular manner coarse folds or ridges; posterior face coarsely rugose, the metapleuræ finely granulated; legs not very strongly spinose. Black, the tegulae and tarsi somewhat testaceous; clypeus densely, and thorax more or less, with silvery pubescence; legs and abdomen with a silvery pile, which is most conspicuous on apical margin of segments 1-3; wings subhyaline, apex fuscous, nervures testaceous. Length 11-13 mm.

♂.—Resembles the ♀ but is smaller; anterior margin of clypeus in the middle strongly bilobate, not dentate laterally; antennae shorter and stouter; legs teebly spinose; colored and ornated like the ♀; dorsulum with the punctures finer. Length 7-9 mm.

Canada to Florida, westward to Montana. *L. caliptera* Say is probably only a variety of this species.

2.—*Lyroda trioba* Say.

L. trioba Say, l. c. p. 372.

♀.—Anterior margin of clypeus subtruncate medially, not dentate laterally; front and vertex seemingly impunctate; first joint of flagellum a little more than one-third longer than the second; distance between the hind ocelli, if anything, a little less than the space between them and the nearest eye-margin; dorsulum indistinctly punctured; metathorax above finely rugoso-granulated, with a longitudinal medial raised line, the metapleuræ coarsely striated throughout. Deep black; tegulae and tarsi somewhat testaceous; head and thorax, especially the face and clypeus, with brownish pile; abdomen also sparsely pilose, but the pile is not silvery or conspicuous; wings dark fuscous, iridescent. Length 14-15 mm.

Canada to Texas; Illinois; Indiana (Say). The large size and dark wings will at once distinguish this species from *subula*.

DIPLOPLECTRON FOX.

Diploplectron Fox, Tr. Amer. Ent. Soc., XX, p. 38, 1883.

Head broader than the thorax; mandibles bidentate at apex, the outer tooth by far the longest, the outer margin is incurved apically, or very slightly emarginate, in the ♀ the mandibles are shorter, broader

and the outer margin seems to be entire; eyes strongly converging towards the vertex, so that the distance between them at that point is about equal to half of that at the mandibles; ocelli round, convex, and situated so as to form a rather high triangle; antennae situated very low down, the middle lobe of clypeus extending up between them, rather long, very slightly thickened medially (the thickening is more obvious in the ♂) and narrowed to apex, alike in both sexes, i. e. those of the ♂ are not forced into a spiral as in *Diactus*; prothorax large and very prominent, not emarginate above, and the anterior portion is not cut off so suddenly as in most of the allied genera; when compared with the dorsulum it is fully two-thirds as long; metathorax longer than the dorsulum, with no distinct enclosure; anterior wings with an extremely short marginal cell, which is broadly truncate at apex, and has a long and distinct appendiculate cell; these are three cubital or submarginal cells, the first of which is longer than the two others combined, the second submarginal cell is triangular; the first and second recurrent nervures are received by the first and second submarginal cells respectively, as in *Diactus*; anterior tarsi of ♀ with a comb formed of long, slender, widely separated spines; the ♂ has no tarsal comb; middle tibiae of both sexes with two spurs. Last dorsal segment of ♀ with an elongate triangular pygidium.

Diploplectron brunneipes Cross.

Lyrid (?) *brunneipes* Cross., Proc. Ent. Soc. Acad. Nat. Sci., 1883, p. 111, ♂ ♀.
Diploplectron brunneipes Fox, l. c. p. 38.

♀.—Middle lobe of clypeus convex, produced a little anteriorly, the lateral lobes depressed; front and vertex polished, seemingly impunctate; antennae long, setaceous, flagellum with joints 1-4 about equal in length; vertex with a fovea on each side of ocelli; dorsulum and scutellum polished, impunctate; scutellum convex, not impressed; upper surface of metathorax granulated, the metapleuræ coarsely striated; legs tolerably spinose; pygidial area sparsely punctured, not prominent. Black; clypeus medially, mandibles except apex, antennae, prothorax and four anterior legs, pale brown, the hind legs and abdomen castaneous; tegulae and humeral tubercles, yellowish; wings subhyaline, nervures testaceous. Length 6 mm.

♂.—Similar to the ♀; first joint of flagellum a little longer than the second; clypeus and sides of face bright yellow; prothorax and

femora, except apex, black; legs feebly spinose. Length 5½ mm.

Colorado; Nevada. Seems to be very rare.

PLEMOCLUS Fox.

Plemoculus Fox, Psyche, Nov. 1893, p. 354.

Outer margin of mandibles strongly emarginate; in the ♂ the clypeus has on each side a fringe of hairs as in Cecexis; eyes within not emarginate, distinctly converging toward the vertex; ocelli round and prominent, all three distinct, placed in the form of a triangle; antennae short and stout, originating immediately behind the clypeus, the flagellum more or less clavate; head transverse, wider than the thorax; pronotum not reaching the level of the dorsulum; metathorax shorter than the dorsulum; legs stout, the femora narrower at apex than at the base, tibiae and tarsi strongly spinose, anterior tarsi with a tubercle well-developed each; tibial spurs large, the hind tibiae with two, the four anteriors with but one; tarsal claws rather long and slender, entire, smaller in the ♂; wings with an elongate marginal cell, which is truncate at apex and with a small though distinct appendiculation, three submarginals of which the first is nearly twice as long as the other two combined, the second petiolate, the third is oblique and slightly narrowed above, first recurrent nerve received by the first submarginal cell near its apex, the second by the second submarginal cell between its middle and apex, the discoidal and basal nerves meet at a short distance from the apex of the submedian cell, this cell being therefore shorter than the median cell on the externo-medial nerve, stigma small, scarcely distinguishable from the costal nerve; last dorsal segment of ♀ with a large and distinct pygidial area.

Three species of this genus are known at present, all of which occur in the United States.

Clypeus strongly emarginate medially and dentate laterally; first joint of flagellum, if anything, shorter than the second.

On each side of the clypeal emargination there are from three to five small teeth; mandibles, except apex, and hind tibiae and tarsi usually more or less yellowish; ♂ with the clypeus, tegulae, tibiae and tarsi, yellow; abdomen black. *lucasi*.

On each side of the clypeal emargination, though widely separated from it, are two large and prominent teeth; mandibles red-dish medially; hind tibiae and tarsi not at all yellowish; ♂ unknown; abdomen black. *propinquus*.

Clypeus distinctly rounded-out, not emarginate or dentate; first joint of flagellum distinctly longer than the second; abdomen entirely red; ♂ unknown. *Cockerelli*.

1.—*Plemoculus Davidi* Fox.

P. Davidi Fox, *ibid.*, p. 354.

♀.—Anterior margin of clypeus deeply incised, armed with fine small teeth on each side, the outer and inner tooth is usually the largest, the others being sometimes indistinct; first joint of flagellum shorter than the second; dorsulum and scutellum minutely punctured, the latter strongly convex; upper surface of metathorax coriaceous or finely granulated, with a longitudinal, medial, impressed line, and at the extreme base with a transverse series of short striae; the metapleurae delicately striated; legs tolerably spinose; pygidial area strongly and sparsely punctured, triangular. Black; mandibles, except tips, tegulae, tibiae and tarsi more or less, yellowish; abdomen with the segments broadly testaceous on apical margins, the last segment reddish at tip; front, face, clypeus and thorax densely clothed with silvery pubescence; abdomen with silvery pile; wings hyaline, iridescent, nervures testaceous; distance between the first recurrent nerve and the base of second submarginal cell on the cubital nerve not greater (usually less) than the length of the petiole of the second submarginal cell. Length 5-6 mm.

♂.—Anterior margin of clypeus very strongly rounded-out, or slightly produced medially; antennae more distinctly clavate than in the ♀, the first two joints of flagellum about equal in length; ventral abdominal segments 3-6 with a transverse row of tubercles or swellings; clypeus entirely, scape beneath, tegulae, tubercles, apex of femora, the tibiae, except inner side of two anterior pair, and the tarsi, bright yellow. Length 4½-5 mm.

Agricultural College, Michigan, in June and July (G. C. Davis); Montana (*Murrian*).

2.—*Plemoculus propinquus* n. sp.

♀.—Anterior margin of clypeus very strongly incised, armed on each extreme side with two very prominent teeth, the part between these teeth and the medial incision seemingly entire; first joint of flagellum about equal to the second in length, at any rate not longer; dorsulum and scutellum finely punctured, more distinctly so

than in *Darsi*; scutellum strongly convex; upper surface of metathorax coriaceous or finely granulated, with a longitudinal, medial, impressed line, and at the extreme base with a transverse series of short striae, the metapleurae delicately striated; legs tolerably spinose; pygidial area strongly and sparsely punctured, shorter and broader than in *Darsi* (its length is about one-quarter greater than its width at the base). Black; anterior tibiae in front yellowish; mandibles medially, tegulae and tarsi reddish testaceous; segments of abdomen testaceous on apical margins; front, face, clypeus and thorax, more or less, clothed with silvery pubescence; abdomen with a sparse silvery pile; wings hyaline, iridescent, nervures testaceous; distance between the first recurrent nervure and the base of the second submarginal cell on the cubital vein greater than the length of the petiole of the second submarginal cell. Length 6-7 mm.

Colorado. Closely resembles *Darsi* but is distinct by the armature of clypeus, shape of pygidium and color of mandibles and legs.

3.—*Ptenoculus Cockerellii* n. sp.

♀.—Anterior margin of clypeus rounded-out, not emarginate or dentate; first joint of flagellum distinctly longer than the second; dorsulum and scutellum minutely punctured, the latter strongly convex; metathorax coriaceous, or finely granulated, with a longitudinal, medial, impressed line above, and without the series of transverse striae at base, metapleurae shining; legs tolerably spinose, the tarsal comb rather strongly developed; pygidial area strongly and sparsely punctured, short and broad, its lateral margins better developed than in either of the two other species. Black; abdomen entirely red; mandibles, except apex, ferruginous; tegulae, inner side of hind tibiae and base of the anterior pair, yellowish; a large spot on the four anterior femora beneath near the apex, white; hind tibia on outer side and the tarsi, reddish-testaceous; wings hyaline, iridescent, nervures testaceous; distance between the first recurrent nervure and the base of the second submarginal cell on the cubital vein less than the length of the petiole of the second submarginal cell; the third transverso-cubital nervure on its lower portion bulges out towards the apex of wing. Length 6 mm.

Las Cruces, New Mexico (*T. D. A. Cockerell*). A very pretty and distinct species, which may easily be recognized by its coloration.

ASTATUS LATR.

Astutus Latr., Précis. des Car. gén. des Ins. p. 114. 1796.

Astuta Latr., Hist. Nat. gen. et part. des Crust. et Ins., T. III, p. 326. 1805.

Astutus Kohl, Verh. zool.-bot. Gesell. Wien, XXXIV, p. 431. 1885.

Head about as broad as the thorax; mandibles without emargination on outer margin, on their inner side, not far from the apex, with a blunt tooth; eyes in the ♀ but little converging towards the vertex, in the ♂ they touch each other at that place; ocelli round and convex; antennae originating close to the clypeus, the distance between their bases is about equal to that between them and the eye-margin; prothorax much smaller than the mesothorax, the pronotum drawn down deeply under the level of dorsulum; shoulder tubercles reaching the tegulae; wings with a broadly, truncated marginal cell, the length of which varies in the different species, three submarginal and two discoidal cells; the posterior wings are remarkable by their extraordinary large and broad basal lobes; legs thickly and strongly armed; the middle tibiae are two-spurred and the ♀ with a comb on fore tarsi, composed of a few, moderately long thorns; claws entire, the pulvilli of medium-size; the last dorsal segment of both sexes with a pygidium, which in the ♀ is triangular and usually truncated at apex in the ♂, the latter sex has also in some species a tolerably long fringe of hairs.

This genus, remarkable through the eyes of the ♂ meeting on the vertex, is tolerably well represented in Boreal America. With the exception of a synoptical table our species have ever been treated in a monographic way. Nothing is known of their habits, although it is likely, that they, like the European *A. boops*, store their nests with Hemipterous larvae.

FEMALES.

- 1—Marginal cell as long or longer than the first submarginal (if shorter it is scarcely noticeable) 2
- Marginal cells always distinctly shorter than the first submarginal 7
- 2—Dorsulum strongly and closely punctured throughout 3
- Dorsulum, especially on posterior portion, sparsely punctured 6
- 3—Entirely black 4
- Abdomen red 5
- 4—Produced portion of anterior margin of clypeus subtruncate; vertex coarsely punctured; first joint of flagellum one-third or more longer than the second unicolor.

- Produced portion of anterior margin of clypeus strongly bidentate vertex with a few, large, scattered punctures; first joint of flagellum less than one-third longer than the second. *Nysp.*
- 5.—Pygidial area long, narrow, its length a little more than twice greater than its width at base; wing-stigma black or dark-red. *bicolor.*
- Pygidial area of a more triangular form, its length not more than twice greater than its base is broad; wing-stigma yellowish. *pygidialis.*
- 6.—Metanotum with a well-marked, triangular depression at apex; the length of the marginal cell fully equal to that of the first submarginal; entirely black, the pubescence of thorax white. *occidentalis.*
- Metanotum without a well-marked depression at apex (if at all present it is very indistinct); length of marginal cell a little less than that of the first submarginal; abdomen black and red, or entirely black, the pubescence of thorax usually black, though sometimes white. *nubilatus.*
- 7.—Metanotum with coarse, irregular, radiating striations; antecune and legs stout. *aculeatus.*
- Metanotum finely sculptured. 8
- 8.—Metanotum finely granulated; tegulae testaceous. 9
- Metanotum very finely striated; tegulae whitish. *elegans.*
- 9.—Produced portion of anterior margin of clypeus narrow, elongate, truncate at apex; meso- and metapleurae finely sculptured. *mutans.*
- Produced portion of anterior margin of clypeus armed with three large teeth; meso- and metapleurae very coarsely sculptured. *asper.*

MALES.

- 1.—Marginal cell as long or longer than the first submarginal (if shorter it is scarcely noticeable). 2
- Marginal always distinctly shorter than the first submarginal. 7
- 2.—Entirely black. 3
- More or less red. 5
- 3.—Pubescence of thorax black; fore-wings, except basal third, fuscous; metanotum strongly reticulated. *nubilatus* (*wingipilatus*). 4
- Pubescence of thorax white. 4
- 4.—Wings hyaline throughout; first joint of flagellum fully one-third longer than the second; metanotum not depressed. *unicolor.*
- Fore wings stained fuscous medially; first joint of flagellum about one-quarter longer than the second; metanotum more or less depressed before apex. *occidentalis.*
- 5.—Pubescence of thorax white; metanotum reticulated. 6
- Pubescence of thorax black. *nubilatus.*

- 6.—Upper surface of metathorax coarsely reticulated, with a central, longitudinal ridge; stigma of wings yellow; abdomen black apically. *bicolor.*
- Upper surface of metathorax rather finely reticulated, without a central, longitudinal ridge; stigma of wings testaceous, abdomen not black apically. *neocutis.*
- 7.—More or less red; tegulae whitish; wings subhyaline. 8
- Ceruleous; wings fuliginous. *ceruleus.*
- 8.—Metanotum very finely granulated or coriaceous. 9
- Metanotum very finely and transversely striated. *bellus.*
- 9.—Wings subhyaline throughout; mesopleurae sparsely punctured. *elegans.*
- Wings with apical third dark fuscous; mesopleurae more or less rugose. *asper.*

1.—*Astatius unicolor* Say.

Astatius unicolor Say, Long's Exp. St. Peter's River p. 338 ♀, 1823.

Astatius unicolor Kohl, l. c. p. 448.

♀.—Produced portion of anterior margin of clypeus subtruncate; front with tolerably strong close punctures, the vertex with coarse punctures; the punctation of the region enclosed by the ocelli is much closer than that on front; ocelli placed in pits, especially the anterior one; antennae tolerably long, the first joint of flagellum one-third or more, longer than the second; dorsum closely and coarsely punctured, medially the punctures are somewhat sparser; scutellum sparsely punctured medially, slightly impressed; metathorax above very coarsely reticulated, the metapleurae somewhat less strongly so; tibiae and tarsi strongly spinose, with exception of second ventral segment the abdomen is scarcely punctured; pygidial area about two-and-a-quarter times longer than it is broad at the base. Black; tarsi obscurely testaceous; head, thorax, legs and abdomen beneath, clothed with a long, whitish pubescence which is most dense on the head; wings with the apical third fuscous, the marginal cell broadly truncate. Length 11–12 mm.

♂.—Produced portion of anterior margin of clypeus subtruncate; front strongly convex, strongly impressed medially and much more closely punctured than in the ♀; joints 3–8 of flagellum rounded-out beneath, the first joint more than one-third longer than the second; dorsum with the punctures somewhat closer and finer than in ♀; scutellum but slightly impressed; metapleurae striated, on lower portion punctate; abdomen, ventrally, finely and on the second and third segments sparsely punctured; last dorsal segment coarsely

punctured; colored similar to the ♀, the pubescence denser. Length 9-12 mm.

Canada to Texas; Colorado; Illinois.

2.—*Astatus Sayi* n. sp.

♀.—Produced portion of anterior margin of clypeus strongly tridentate; front with tolerably strong, close punctures, the vertex with very sparse, strong punctures; ocelli placed in pits, especially the anterior one; antennae tolerably long, the first joint of flagellum less than one-third longer than the second; dorsum with tolerably strong and not very close punctures; scutellum sparsely punctured, very slightly impressed medially; metathorax above coarsely reticulated, the reticulum closer than in *unicolor*; the metapleuræ rugose; at the base of posterior face of metathorax, in the middle, is a triangular enclosed space, the lower half of which is smooth; tibiae and tarsi strongly spinose; abdomen very sparsely punctured, including the second ventral segment; pygidial area less than twice longer than it is broad at the base. Black; mandibles medially, tegulae and the tarsi obscurely, testaceous; head, thorax and legs tolerably clothed with pale pubescence; with exception of the first segment, the abdomen is nude; wings with the apical third fuscous, the marginal cell obliquely truncate. Length 14 mm.

Virginia. Resembles closely *unicolor*, but is easily distinguished by dentate clypeus, larger size, etc.

3.—*Astatus occidentalis* Cross.

Astatus occidentalis Cr., Kohl, Proc. Ent. Sect. Acad. Nat. Sciences, Phila., 1861, p. III, ♂.
Astatus occidentalis Kohl, l. c. p. 448.

♀.—Produced portion of anterior margin of clypeus sinuous, slightly lobate medially; front with tolerably strong and close punctures, which are, however, not so close as in the preceding species; vertex with sparse, strong punctures; ocelli placed in pits, especially the anterior one; first joint of flagellum about one-quarter longer than the second; dorsum anteriorly closely punctured, the remainder polished, almost impunctate; scutellum sculptured above like the posterior part of dorsum, with an impressed line on apical half; metathorax above coarsely reticulated and with a triangular depression at the apex in the middle; metapleuræ coarsely striated; posterior face of metathorax with a pyriform depression, situated be-

tween base and middle; tibiae and tarsi strongly spinose; abdomen very sparsely punctured, dorsal segments 2-5 with a transverse, sinuous row of punctures between middle and apex; pygidial area less than twice longer than it is broad at base. Black; mandibles medially, tegulae and tarsi obscurely, reddish-testaceous; head, thorax above and first segment of abdomen with pale pubescence, that on legs and thorax beneath, black; wings fuscous, paler basally; marginal cell obliquely subtruncate. Length 11-14 mm.

♂.—Produced portion of anterior margin of clypeus widely and angularly emarginate; front strongly convex and deeply impressed medially; joints 5-8 of flagellum a little rounded-out beneath, the first joint rather strongly bent or curved and about one-quarter longer than the second; dorsum finely punctured, very closely so anteriorly; scutellum sculptured like posterior portion of dorsum, impressed medially; metathorax above rather finely rugoso-granulated, the metapleuræ and posterior face coarsely and closely punctured; abdomen beneath rather closely punctured; apical margins of wings broadly hyaline. Length 11-13 mm.

Nevada; Montana; Washington.

4.—*Astatus subcinctus* Cross.

Astatus subcinctus Cr., Proc. Ent. Soc. Phila., IV, p. 406, ♂.
Astatus nigropilosa Cr., Proc. Ent. Section, Acad. Nat. Sciences, Phila., 1884, p. IV, ♀ (= var.).
Astatus subcinctus Kohl, l. c. p. 448.

♀.—Produced portion of anterior margin of clypeus subtruncate; front with tolerably strong and separated punctures; vertex with sparse, strong punctures; first joint of flagellum about one-quarter, or more, longer than the second; dorsum anteriorly closely punctured, on the remainder polished, almost impunctate; scutellum similar to the posterior portion of dorsum, impressed medially; metathorax above coarsely reticulated, the metapleuræ, except lower basal portion rugose; tibiae and tarsi strongly spinose; abdomen scarcely punctured; pygidial area about twice as long as it is broad at base. Black; mandibles medially, tegulae and tarsi, reddish-testaceous; abdominal segments; 1, 2 and 3 red; head, thorax and legs clothed with black pubescence; apical third of wings fuscous; marginal cell broadly truncate. Length 9 mm.

♂.—Produced portion of anterior margin of clypeus as in the ♀; first joint of flagellum nearly one-third longer than the second; dorsum finely and evenly punctured throughout, the scutellum

sparsely so medially; metathorax above more finely reticulated than in the ♀; colored like the ♀; abdomen rather densely clothed, especially ventrally, with dark pubescence; wings hyaline, fuscous medially. Length 9-10.

Var. A. ♀ ♂.—Entirely black. Length 9-13.

Var. B. ♀ ♂.—Entirely black; pubescence white; mandibles of ♂ yellow medially.

Colorado (typical form); Montana; Nevada; Calif.; Washington (var. A. *signipallens* Cr.); Montana (var. B.). Algonquin, Illinois (var. B.) taken by Dr. W. A. Nason.

8.—*Astatus bicolor* Say.

Astatu bicolor Say, Long's Exp. St. Peter's River, p. 78, 1823.

Astatu rufiventris Cr., Tr. Am. Ent. Soc. IV, p. 218, ♀.

Astatu terminata Cr., ibid., p. 218, ♂.

Astatu bicolor Kohl, l. c. p. 447.

♀.—Produced portion of anterior margin of clypeus truncate; front with tolerably strong and close punctures; the vertex with the punctures stronger and sparser than those of the front; first joint of flagellum about or nearly one-third longer than the second; dorsulum strongly punctured, the punctures on posterior portion but little sparser than those of the anterior; scutellum sparsely punctured, impressed medially; metathorax above coarsely reticulated, the metapleuræ, except lower basal portion, rugose; tibiae and tarsi strongly spinose; with exception of second ventral segment, the abdomen is impunctate; pygidial area more than twice as long as it is broad at the base. Black; abdomen entirely bright red; mandibles medially and tarsi reddish-testaceous; head, thorax, legs and abdomen beneath with long, pale pubescence; apical third of wings fuscous; marginal cell subtruncate, stigma black or testaceous. Length 11-13 mm.

♂.—Produced portion of anterior margin of clypeus truncate; first joint of flagellum about one-third longer than the second; dorsulum finely and evenly punctured throughout, the punctures finer than in *subcubus*; sculpture of metathorax above much finer than in the ♀; pubescence colored like the ♀; last two or three abdominal segments black; wings subhyaline, stigma yellowish; tarsi reddish. Length 7-9 mm.

Canada and the entire United States. The larger females are the *A. rufiventris* Cresson, while *A. terminata* Cresson, is but a slight variation of the male.

9.—*Astatu pygidialis* Fox.

Astatu pygidialis Fox, Can. Ent. p. 234, ♀, 1902.

♀.—Produced portion of anterior margin of clypeus subtruncate; front with tolerably strong punctures which become sparse medially and laterally; vertex with strong, sparse punctures; first joint of flagellum about one-quarter longer than the second; dorsulum punctured about like the front, perhaps a little more finely so; scutellum sparsely punctured, not impressed; upper surface of metathorax coarsely reticulated, with a prominent, longitudinal, medial ridge, at the apex is a strong depression, the metapleuræ and posterior face rugose; tibiae and tarsi strongly spinose; abdomen scarcely punctured; pygidial area about twice as long as it is broad at the base. Black; abdomen entirely red; mandibles in middle ferruginous; tegulae and legs testaceous; head, thorax and legs with white pubescence; wings subhyaline, the apical margins broadly fuscous; marginal cell obliquely truncate; stigma yellow. Length 8-10 mm.

New Jersey; Texas.

10.—*Astatu nevadensis* Cress.

Astatu nevadensis Cr., Proc. Ent. Soc. Acad. Nat. Sciences Phila. 1891, p. V, ♀.

Astatu nevadensis Kohl, l. c. p. 448.

♀.—Produced portion of anterior margin of clypeus subtruncate; front with deep and sparse punctures, which become closer towards the clypeus; vertex with tolerably large, sparse punctures; antennae short and stout, the first joint of flagellum scarcely one-quarter longer than the second; dorsulum very sparsely punctured, polished; scutellum likewise and not impressed; upper surface of metathorax with the reticulum tolerably coarse, but finer than in *pygidialis* or *bicolor*, depressed at the apex in the middle, and without a central, longitudinal ridge, metapleuræ coarsely striated; legs stout; tibiae and tarsi strongly spinose; abdomen almost impunctate; pygidial area possibly a little more than twice longer than it is broad at base. Black; abdomen entirely red; mandibles medially, tegulae and tarsi reddish testaceous; face, clypeus and dorsulum anteriorly with black pubescence; cheeks, occiput, thorax and legs with white pubescence; wings subfuscous, the apical third fuscous; marginal cell obtusely truncate. Length 8-9 mm.

♂.—Produced portion of anterior margin of clypeus as in the ♀; first joint of flagellum about one-third longer than the second; dorsulum anteriorly, finely and evenly punctured, sparsely so poster-

borly; scutellum sparsely punctured, not impressed; upper surface of metathorax rather finely reticulated, more so than in the ♀; colored like the ♀; no black pubescence on dorsum anteriorly nor on the face and clypeus; wings subhyaline throughout; marginal cell obliquely truncate. Length 7½-8 mm.

Nevada; New Mexico; Washington; Montana. The specimen from the last mentioned locality differs in having the front more closely and finely punctured.

8.—*Astatos montana* Cross.

Astatos montana Cr., Proc. Ent. Soc. Acad. Nat. Sciences, 1881, p. V, ♀.
Astatos montana Kohl., l. c. p. 448.

♀.—Median lamina of anterior margin of clypeus long and narrow, truncate at apex; front with a few, large, scattered punctures; vertex with large, sparse punctures; first joint of flagellum about one-quarter longer than the second; dorsum with large, scattered punctures; scutellum above impunctate, not impressed; mesopleurae sparsely punctured; metathorax above finely granulated or indistinctly reticulated, the metapleurae striated; legs tolerably spinose; abdomen almost impunctate; pygidial area about twice as long as it is broad at base. Black; abdomen entirely red; mandibles medially, tegulae and legs testaceous; head, thorax and legs very sparsely clothed with black pubescence; wings subfuscous, marginal cell obliquely truncate. Length 5½-7½ mm.

Nevada; Colorado.

9.—*Astatos asper* n. sp.

♀.—Median lamina of anterior margin of clypeus strongly tridentate; front with tolerably large and sparse punctures, which become closer towards the clypeus; vertex with a few scattered punctures; first joint of flagellum more than one-quarter longer than the second; dorsum, except anterior portion, almost impunctate; scutellum distinctly impressed; metathorax above finely granulated, the meso- and metapleurae coarsely rugose; tibiae and tarsi tolerably spinose; abdomen almost impunctate; pygidial area more than twice longer than it is broad at base. Black; abdomen red; mandibles medially, tegulae and tarsi, testaceous; cheeks and thorax with a very sparse, white pubescence, that on the femora dark; apical half of wings fuscous, the marginal cell truncate. Length 7 mm.

♂.—Median lobe of clypeus produced into a sharp tooth or spur; first joint of flagellum about one-quarter longer than the second;

metathorax above finely granulated, the metapleurae rugose; transverse mark before ocelli and tegulae, white; apical third of wings dark fuscous. Length 9 mm.

Montana. The most satisfactory way to separate the males of this species from the male variety of *elegans*, is by the color of apical third of wings and color of humeral tubercles. This species may be but a variety of *A. Kohli* Cam. from Mexico.

10.—*Astatos elegans* Cross.

Astatos elegans Cr., Proc. Ent. Soc. Acad. Nat. Sciences, Phila. 1881, p. VI, ♂.
Astatos elegans Kohl., l. c. p. 448.

♀.—Median lobe of clypeus tridentate; front with strong, sparse, irregular punctures; vertex with strong, sparse punctures, which are deeper than those of the front; first joint of flagellum more than one-quarter longer than the second; dorsum with large, scattered punctures; dorsum with scattered punctures, distinctly impressed; metathorax above rather strongly impressed down the middle, finely and irregularly striated, the metapleurae more strongly striated; mesopleurae sparsely punctured; tibiae and tarsi rather strongly spinose; abdomen almost impunctate; pygidial area more than twice longer than it is broad at base (it is broad basally, then contracting before middle and continuing narrowly to the apex). Black; abdomen entirely red; mandibles medially and legs testaceous; tegulae, shoulder tubercles and spot at top of mesopleurae, white; head thorax and legs very sparsely clothed with pale pubescence; wings subhyaline, marginal cell truncate; stigma yellow. Length 8½-9 mm.

♂.—Median lobe of clypeus produced into a sharp tooth or spur; first joint of flagellum not one-quarter longer than the second; dorsum anteriorly rather finely and closely punctured, on the posterior part sparsely so; scutellum impressed; metathorax above evidently granulated, depressed before apex, the metapleurae rugose; in addition to the white markings of the ♀, there is a large transverse mark before the ocelli, base of wings, a spot at base of anterior and middle tibiae, and a band near the apex of the first dorsal segment, which is sometimes interrupted medially, white; wings subhyaline, not darker apically. Length 7-9 mm.

Var. ♂.—No white markings on first abdominal segment.

Washington; Vancouver; Nevada; Colorado. The variety mentioned above may prove to be the male of *secundus*.

11.—*Astatus bellus* Cross.*Astata bella* Cr., *Ibid.*, p. VI, 2.*Astata bellus* Kohl., *l.c.* p. 447.

♂.—Median lobe of clypeus obtuse, or truncate at tip; front rugose; first joint of flagellum about one-quarter longer than the second; dorsum finely and closely punctured, particularly anteriorly; scutellum slightly impressed; metathorax above very finely and transversely striated, the metapleuræ coarsely so, the posterior face deeply punctured. Black; abdomen, tibiae and tarsi, red; femora testaceous; two transverse, small spots before ocelli, mandibles medially, tegulae, base of wings, spot before tegulae and another at base of fore tibiae, white; head and thorax with pale pubescence; wings hyaline, with a pale fuscous spot, which includes the marginal, second and third submarginal cells; marginal cell truncate. Length 7 mm.

San Diego, California.

12.—*Astatus caeruleus* Cross.*Astata caerulea* Cr., *Ibid.*, p. IV, 2.*Astata caeruleus* Kohl., *l.c.* p. 447.

♂.—Median lobe of clypeus produced into a short tooth or spur; front closely punctured throughout; first joint of flagellum not one-quarter longer than the second; dorsum closely punctured anteriorly, posteriorly the punctures become sparse and stronger; scutellum impressed; metathorax above rather coarsely granulated, the meso- and metapleuræ rugose. Entirely ceruleous; antennae and greater part of legs black; head and thorax with sparse, black pubescence; tegulae testaceous; wings dark fuscous; marginal cell truncate; abdomen ventrally strongly punctured. Length 8 mm. Nevada.

DIKNOPLUS gen. nov.

Similar in form to *Astatus*; head about as broad as the thorax; inner eye-margins almost parallel in both sexes; eyes beneath reaching to the base of the mandibles, which are not emarginate on outer margin; clypeus large, especially in the ♂, and transverse; the labrum is large and prominent, but not projecting; antennae situated close to the clypeus, and are separated from each other by a distance much less than that between them and the nearest eye-margin, in the ♀ short and thick, in the ♂ slender and half again as long; ocelli all distinct and prominent, forming a curve; prothorax above not

reaching the level of dorsum; shoulder tubercles separated distinctly from the tegulae; anterior wings with an elongate-lanceolate marginal cell, which has no appendiculation, and three large submarginal cells, the second of which is narrowed more than one-half to the top and receives both recurrent nervures; the third submarginal cell is nearly as large as the third discoidal and scarcely narrowed at the top; stigma tolerably distinct, more so in the ♂; cubital vein of hind-wing originates beyond the apex of the submedian cell; legs tolerably stout, the tibiae and tarsi of ♀ distinctly spinose, in the ♂ scarcely so; middle tibiae of both sexes with two spurs; anterior tarsi of ♀ have a well-developed tarsal-comb, which is entirely absent in the ♂; the hind femora are broadest between their base and middle; claws not toothed; metathorax above with a large, distinct triangular enclosure; last dorsal segment of ♀, with a distinct pygidial area, the ♂ also with a pygidial area, which is much less developed.

Dicnoplus seems to connect *Bothynodethus* more closely to the *Levrites*, being intermediate between *Astatus* and that genus, a fact which tends to more closely unite the *Loricula* with the *Nysanidae*. *Dicnoplus* is, however, not closely related to either *Astatus* or *Bothynodethus*.

Dicnoplus pictifrons n. sp.

♀.—Anterior margin of clypeus slightly but broadly incurved; front finely and closely punctured, the vertex more sparsely so; behind each hind ocelli there is a deep fovea; first joint of flagellum longer than the second; dorsum with tolerably strong and sparse punctures; scutellum not impressed; upper surface of metathorax with a large, triangular enclosure, and at the base with short, radiating striations, metapleuræ and posterior face finely striated; abdomen finely and rather sparsely punctured; pygidial area with large, sparse punctures. Black; abdomen, except a blotch on dorsal segments 4 and 5, red; mandibles medially and anterior tarsi, reddish-testaceous; scape beneath, inner orbits from the clypeus to the middle of front, anterior half of clypeus and the fore tibiae in front, yellow; wings subhyaline. Length 7½ mm.

♂.—Antennae as long as head and thorax together, the first joint of flagellum about equal to the second, the last joint as long as the two preceding united; fore margin of scutellum with a row of

strong foveae. Black; dorsal segments 1 and 3 and ventrals 2, 3 and 4, red; inner orbits below middle of front broadly, face, clypeus entirely, scape in front, four anterior tibiae in front, and a spot near the base of the hind tibiae, yellow; flagellum beneath fulvous. Length 6 mm.

State of Washington.

BOTHYNOSTETHUS Kohl.

Bothynostethus Kohl. Verh. zool.-bot. Gesell. Wien, p. 344, Taf. XVIII.
T. 3 et 6, 1882.

Body stout; head as broad as the thorax; eyes diverging towards the vertex; the eyes at the bottom touch the base of the mandibles, on the outer margin of which there is an emargination; clypeus tolerably stout; antennae placed close behind the clypeus, the distance between them being twice as great as that between them and the nearest eye-margin, and are short and stout; ocelli regularly round, convex, placed in a low triangle; top of pronotum nearly on the same level with the dorsulum, its lateral angles rounded; shoulder-tubercles not reaching to the tegulae; wing venuration agreeing very nearly with that of the genus *Nysius*; the stigma is much larger, however, and the basal vein touches a little beyond the apex of the median cell on the discoidal vein, whilst in all the known species of *Nysius* this vein touches before the apex of the above mentioned cell; radial cell broad, lanceolate, large, almost greater than the first submarginal cell, without appendiculation; the second submarginal cell receives both recurrent nervures, is triangular and distinctly petiolated; the first submarginal exceeds by far the combined length of the second and third; the cubital vein of hind wings originates tolerably far beyond the apex of the median cell; the legs, including the tarsi are stout; middle tibiae with one spine; the anterior tarsi have a very short comb, which is composed of slender spines; the remaining tarsi and tibiae appear, with exception of the spines at apex of joints, unarmed; the posterior femora reach their greatest breadth at the apex, which is very rarely the case in other hymenopterous genera; claws not toothed; last dorsal segment of ♀ with a large, triangular pygidium, which is covered with short pubescence; the ♂ is similar to the ♀, except that the pygidial area is much less developed, is short and obtuse at tip.

But one Nearctic species of this genus has been described.

***Bothynostethus distinctus* Fox.**

B. distinctus Fox, Entom. News, II, p. 31, ♀ ♂. 1901.

♀.—Anterior margin of clypeus bilobate medially and armed laterally with at least two strong teeth; front finely but not very closely punctured; vertex more sparsely so; flagellum subclavate, the first joint shorter than the second, which joint is about equal to the third; dorsulum punctured about like the front; scutellum impressed; metathorax above with a broad and deep longitudinal channel, which is connected, or nearly so, with the strong depression at the base of posterior face, a little beyond the base of the upper surface is a strongly foveolate, curved furrow, which extends from side to side, with exception of these furrows the upper surface of metathorax is smooth, or finely punctured, metapleurae strongly rugose; abdomen indistinctly punctured; pygidium large, rounded at tips. Black; line on prothorax above, tubercles, postscutellum and spot near the base of four posterior tibiae, whitish; the whole insect more or less covered with silvery pubescence, which is most dense on head in front; wings subhyaline, apical margins broadly fuscous; last ventral segment red. Length 7-8 mm.

♂.—More slender than the ♀, the anterior margin of clypeus subtruncate, or slightly sinuate; the anterior tibiae in front, and the tarsi are rufous; pygidium short, obtuse at tip, with appressed pubescence, otherwise as in the ♀. Length .30 inch.

New Jersey (July and August); Montana. With exception of being smaller, I can find no difference worth noting in the Montana specimens.

The following annual reports were read and referred to the Publication Committee:—

REPORT OF THE RECORDING SECRETARY.

The meetings of the Academy during the past twelve months have been held without intermission. The average attendance has been forty-four, fewer occasions of special interest having occurred than during the preceding year when the attendance averaged sixty-four. Verbal communications of more or less interest and importance were made at almost every meeting, among the speakers being Messrs. Cope, Chapman, Ryder, Wright, Sharpes, Goldsmith, Band, McCook, Wilcox, Lesley, Wistar, Woolman, Pilbry, Hailpin, Rothrock, Holman, Ives, Allen, Pierce, Dixon, Zaitl, Holstein, MacFarlane, Hall, Sharp, Morris, Brinton, A. P. Brown, Morsell, Thomas, Ford, U. C. Smith, Culvert, Moeller, A. E. Brown and Wingate.

Such of these communications as have been reported by their authors have been printed in the Proceedings.

Since my last report 194 pages of the Proceedings for 1892 and 376 for 1893, with eleven plates, have been issued. Seventy-two pages of an elaborately illustrated memoir on the Sand Mounds of Florida by Clarence B. Moore have also been printed as the beginning of the tenth volume of the Journal. These sheets will not be distributed until the completion of the number, which will be published in advance of the last part of the ninth volume in consequence of the character of the communications in the hands of the Publication Committee.

In addition to the matter issued at the direct expense of the Academy, the Conchological Section has continued the publication of the "Manual of Conchology" of which 580 pages and 91 plates have appeared since my last report. Numbers of the Entomological News and of the Transactions of the American Entomological Society embracing 731 pages and 91 plates have appeared under the auspices of the Entomological Section, thus making a total of 1,881 pages and 193 plates, exclusive of the portions of the quarto Journal printed but not yet distributed. The statistics of distribution remain the same as last year.

A new edition of the By-Laws and a new list of members and correspondents have also been published.