

## SYNOPSIS OF THE BEMBICINI OF BOREAL AMERICA.

BY WILLIAM J. FOX.

The genera composing this Tribe may be separated as follows:—

Anterior ocellus linear, transversely arcuate.

Maxillary palpi six-jointed, labial palpi four-jointed. Middle segment excavated posteriorly, compressed laterally; last ventral segment ( $\delta$ ) with three spines; mandibles dentate

. . . . . BEMBIDULA Burm.

Maxillary palpi four-jointed, labial palpi two-jointed; metathorax flat or convex behind, not compressed laterally; last ventral segment ( $\delta$ ) with a single spine; mandibles dentate . BEMBEX Fabr.

Maxillary palpi, three-jointed, labial palpi one-jointed; metathorax and last ventral segment ( $\delta$ ) as in *Bembex*; mandibles not dentate . . . . . MICROBEMBEX Patt.

Anterior ocellus elliptic, round or reniform.

Maxillary palpi six-jointed, labial palpi four-jointed; anterior ocellus round or reniform; maxillæ short . . . . . MONEDULA Latr.

Maxillary palpi three-jointed, labial palpi one-jointed; anterior ocellus longitudinally elliptic; maxillæ long, reaching the hind coxæ . . . . . STENTOLIA Say.

In the above table I have considered *Microbembex* as a genus, notwithstanding my former views. In the respective three-and one-jointed palpi it differs from *Bembex* about as much as that genus does from *Monedula*.

## BEMBIDULA Burm.

*Bembex* Olivier (in pt.), Encycl. méthod., IV, p. 288, 1789.

*Bembidula* Burmeister, Bol. Acad. Cordova. I, p. 122, 1874.

*Monedula* Cresson (in pt.), Synopsis, p. 116, 1857.

## FEMALES.

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|--|------------------|
| Posterior coxæ unarmed . . . . .   | 2                |
| Posterior coxæ strongly dentate beneath (wings smoky) . . . . .  | <i>fodiens</i> . |
| 2. Last dorsal abdominal segment without a strongly marked pygidial area, the lateral ridge feeble, if present; wings scarcely smoky . . . . . | 3                |
| Last dorsal abdominal segment with a strongly marked pygidial area, the lateral ridges strong . . . . .  | 4                |
| 3. Last dorsal segment of abdomen with the lateral ridge present, but weak and short . . . . .   | 5                |
| Last dorsal segment of abdomen without any trace of ridges . . . . .   | 6                |

4. Legs ferruginous ; wings tolerably smoky ; abdominal marks not very broad and widely separated internally ; mesopleuræ black . . . . . *capnoptera*.  
 Legs yellow ; wings scarcely smoky ; abdominal marks broad, forming bands ; mesopleuræ more or less yellow . . . . . *parata*.
5. Two lines on dorsulum, scutellum anteriorly, metanotum (postscutellum), curved line on middle-segment above, and a broad line on each side of all the dorsal abdominal segments, yellowish ; hind tibiæ striped with black above ; wings clear . . . *variegata*.  
 The dorsulum, scutellum, metanotum, and middle segment (except latero-posterior angles) black, in rare cases only are these parts spotted, and then only in a slight degree ; fifth and sixth dorsal abdominal segments black, the former sometimes spotted in which case the spots are widely separated ; hind tibiæ not striped with black ; wings dusky, paler at base and apex . . . *quadrifasciata*.
6. Legs, antennæ in part, labrum and tip of abdomen ferruginous ; clypeus yellow . . . . . *insidiatrix*.  
 Legs black and yellow, the tibiæ in part and the tarsi ferruginous ; antennæ, labrum and the tip of abdomen not at all ferruginous ; clypeus black entirely, or with the base more or less whitish . . . . . *ventralis*.

## MALES.

1. Posterior coxæ unarmed . . . . . 2  
 "Posterior coxæ armed with a tooth beneath." . . . . *fodiens*.
2. Intermediate femora beneath at the base drawn out into a prominent tooth . . . . . 3  
 Intermediate femora not dentate beneath at base, at the most angular . . . . . 5
3. Joints seven to ten of antennæ strongly rounded out beneath . . 4  
 "Joints seven to ten of antennæ not rounded out beneath (legs ferruginous)" . . . . . *insidiatrix*.
4. Clypeus entirely, dorsulum laterally, greater part of femora, the tibiæ and tarsi entirely, bright yellow ; markings of abdomen sometimes united within, broader than in *ventralis* ; wings clear . . . . . *parata*.  
 Clypeus black, or whitish at base only ; dorsulum not yellowish laterally, the greater part of femora and the tibiæ in part, black ; fasciæ of abdomen always separated internally, those on first segment variable in size ; wings a little infuscated . . . *ventralis*.
5. Legs not ferruginous in part ; wings, if dusky, but slightly so ; medial femora beneath not distinctly keeled, or angular at base . 6  
 Legs ferruginous and yellow, wings dusky ; medial femora beneath distinctly keeled and angulate at base . . . . . *capnoptera*.
6. Greater part of clypeus, two lines on dorsulum (rarely absent), scutellum anteriorly, metanotum, curved line on middle segment above, and a broad line on each side of all the dorsal abdomi-

nal segments, yellowish; hind tibiae striped with black above; wings clear . . . . . *variegata*.  
 Clypeus (rarely maculated), dorsulum, scutellum, metanotum and middle-segment (except latero-posterior angles) black, in rare cases only are these parts spotted, and then only to a slight degree; last two or three dorsal abdominal segments black, sometimes the fifth, or fifth and sixth spotted, in which case the spots are widely separated; hind tarsi not striped with black, wings a little dusky, paler at base and apex . . . . . *quadrifasciata*.

1. *Bembidula variegata* Oliv.

*Bembex variegata* Olivier, *Encycl. Méthod.*, IV, p. 292.

*Monedula dissecta* Dahlbom, *Hym. Eur.*, I, p. 186.

*Monedula sericea* Spinola (in pt.), *Gay's Hist. Chile*, VI, p. 315.

*Bembidula variegata* Handlirsch, *Sitz., Akad. Wissen, Wien, Math.-naturw. Classe*, XCVIII, Abth. I, p. 488.

Lower California; Albuquerque, New Mexico (Coll. Ashmead); found also in Brazil.

2. *Bembidula quadrifasciata* Say.

*Monedula 4-fasciata* Say, *Exped. St. Peter's River*, II, p. 336, ♂ ♀

*Monedula Sallei*, Guérin, *Icon. du Règne Anim.*, III, 437.

*Bembidula quadrifasciata* Handlirsch, l. c., p. 492.

Occurs from Pennsylvania to Florida, westward to Texas.

3. *Bembidula insidiatrix* Hdl.

?*Monedula ventralis* Cresson (in pt.), *Tr. Am. Ent. Soc.*, IV, p. 220.

*Bembidula insidiatrix* Handlirsch, l. c., p. 494, ♀ ♂

Texas and Kentucky (Handlirsch). I have received a ♀ from the Rev. G. Birkman, of Lee County, Texas. The ♂ I have not seen. Handlirsch is probably right in assuming that Cresson confused *ventralis*, *insidiatrix* and *capnoptera*, in his "Hymenoptera Texana."

4. *Bembidula parata* Prov.

*Monedula parata* Provancher, *Add. Hym. Quebec*, p. 416.

California (Provancher): Los Angeles (Coquillett); Utah; Nevada. The maculation of this species is a much richer yellow than in *ventralis*, and the ♀, which has been heretofore unnoticed, is very much like the ♂, and has a well developed pygidium.

5. *Bembidula ventralis* Say.

*Monedula ventralis* Say, l. c., p. 336, ♂.

*Monedula ventralis* Cresson (in pt.), l. c., p. 220.

*Monedula ventralis* Provancher, *Faun. Ent. Can.*, p. 629, ♀ ♂.

*Bembidula ventralis* Handlirsch, l. c., p. 495.

Our most abundant and widely distributed species. It is reported from Canada (Provancher), and I have before me specimens from Massachusetts, New Jersey, Pennsylvania, Virginia, Georgia, Texas, Colorado, California, Oregon and other localities.

6. *Bembidula capnoptera* Hdl.

? *Monedula ventralis* Cresson (in pt.), l. c., p. 220.

*Bembidula capnoptera* Handlirsch, l. c., p. 497, Pl. II, f. 7, 12. ♀ ♂.

Georgia, Kentucky and Texas (Handlirsch). Specimens in collection from Georgia and Texas. The Rev. G. Birkman has sent specimens from Lee county, Texas.

7. *Bembidula fodiens* Hdl.

*Bembidula fodiens* Handlirsch, l. c., p. 497, Pl. II, f. 14. ♂ ♀.

Georgia and Texas (Handlirsch): Lee county (Birkman). I have not seen the ♂.

## BEMBEX Fabr.

*Bembex* Fabricius, Syst. Ent., p. 361, 1775.

*Bembex* Olivier, Ency. méthod., IV, p. 288, 1789.

*Bembex* Handlirsch, Sitzb. Akad. Wissen., Wien, Math-naturw. Classe, CII, Abth. 1, p. 659, 1893. \*

## FEMALES.

- Labrum basally with a distinct transverse impression; sixth dorsal segment coarsely wrinkled longitudinally . . . . . 2
- Labrum not impressed basally; sixth dorsal segment more or less punctured, rarely wrinkled . . . . . 3
2. Mandibles, tubercles and fore part of second dorsal segment not yellow . . . . . *Belfragei*.  
Mandibles medially, spot on tubercles and anterior portion of second dorsal segment, yellow . . . . . *insignis*.
3. Wings distinctly infuscated medially . . . . . 4  
Wings clear throughout . . . . . 5
4. Greater part of pro- and mesopleuræ and sides of middle segment, clypeus entirely, sides of dorsulum, scutellum and metanotum in part and semicircular line on upper surface of middle segment, bright yellow; markings of abdomen dorsally, broad, all united internally and covering the greater portion of dorsal surface; wings very strongly infumated medially . . . . . *nubilipennis*.  
Mesopleuræ and sides of middle segment black in greater part; base of clypeus with two black spots; no yellow on dorsulum, metanotum, or middle segment above, the scutellum with a dot on each side only; markings of abdomen narrow, strongly sinuous and more or less separated, particularly those on first segment; wings not strongly infumated . . . . . *texana*.
5. Middle segment above not at all yellow. . . . . 6  
Middle segment above with a semi-circular yellow line . . . . . 13
6. Thorax above entirely black, except perhaps a line on pronotum or a very small lateral spot on scutellum . . . . . 7  
Thorax above distinctly spotted with yellow . . . . . 11

7. Thorax entirely black, including the sides; abdominal spots small, widely separated, the fifth and sixth segments not spotted.  
 . . . . . *cinerea*.  
 Thorax more or less yellow on the sides . . . . . 8
8. Mesopleuræ spotted . . . . . 9  
 Mesopleuræ not spotted . . . . . *Spinolæ*.
9. Clypeus entirely yellow; form elongate . . . . . 10  
 Clypeus with two black spots basally; form shorter and more robust . . . . . *texana*.
10. Markings of abdomen narrow, separated within; mesopleuræ with two small spots. . . . . *amoena*.  
 Markings of abdomen broad, united within; mesopleuræ with a large spot covering about half its area. . . . . *convexus*.
11. Thorax at the most clothed with a thin, pale pubescence, more or less yellow on the sides . . . . . 12  
 Thorax densely pruinose, not spotted on sides; markings of abdomen broad, united internally, greenish-white . . . *pruinosa*.
12. Dorsulum and abdomen densely clothed with pale pubescence, that on abdomen shortest . . . . . *troglydytes*.  
 Dorsulum clothed with pubescence on anterior portion only, that on abdomen not dense, but rather indistinct. . . . . *similans*.
13. Clypeus with two black spots basally . . . . . *texana*<sup>1</sup>  
 Clypeus entirely yellowish . . . . . 14
14. Yellow on dorsulum forming a U, as in *Monedula formosa*; sixth dorsal segment somewhat wrinkled . . . . . *U-scripta*.  
 Yellow on dorsulum, if present, in the shape of short, parallel lines or spots; sixth dorsal segment punctured . . . . . 15
15. Markings of ventral abdominal segments forming broad, non-interrupted bands; eyes strongly diverging beneath.  
 . . . . . *occidentalis*.  
 Markings of ventral abdominal segments small, widely interrupted, or connected by a narrow apical line . . . . . 16
16. Thorax densely pruinose, not spotted on the sides; markings of abdomen broad, united internally, greenish white . *pruinosa*.  
 Thorax at the most clothed with a thin, pale pubescence, more or less yellow on the sides. . . . . 17
17. Fore coxæ and greater part of sides of thorax, black,  
 . . . . . *troglydytes*.  
 Fore coxæ and greater part of sides of thorax, yellow . . . *Sayi*.<sup>2</sup>

<sup>1</sup> This form of *texana*, having the middle segment maculated above is unknown to me.

<sup>2</sup> According to Handirsch's description, the dorsulum of *troglydytes* is spotted medially. The specimens before me do not show this character, differing in that respect from *Sayi*, which has two central and a posterior yellow spot.

## MALES.

- Labrum basally with a distinct, transverse impression . . . . . 2  
 Labrum not impressed basally . . . . . 3
2. Clypeus entirely or in greater part black; sixth dorsal segment spotted . . . . . *Belfragei*.  
 Clypeus entirely yellow; sixth dorsal segment rarely spotted.  
 . . . . . *insignis*
3. Intermediate tarsi short, not longer than their tibiae; thorax entirely black; dorsal segments 1-3 with a small lateral spot only.  
 . . . . . *cinerea*.  
 Intermediate tarsi longer than their tibiae; thorax more or less yellow; abdomen usually with prominent maculations . . . . . 4
4. Seventh ventral segment apically produced into a spine (intermediate tibiae not serrate) . . . . . 5  
 Seventh ventral segment otherwise formed . . . . . 6
5. Markings bright yellow, those on ventral segments of abdomen broad, continuous; spine of seventh ventral segment pointed at apex . . . . . *occidentalis*.  
 Markings greenish-white those on ventral abdominal segments broad at the sides only, connected by a narrow apical line; spine of seventh ventral segment bifurcate at apex . . . . . *pruinosa*.
6. Antennal joints not dentate or spinose beneath . . . . . 7  
 Antennal joints more or less dentate or spinose . . . . . 8
7. Intermediate femora serrate beneath; middle-segment never yellow above; mesopleurae with a small yellowish spot; abdomen tolerably hairy . . . . . *texana*.  
 Intermediate femora unarmed; middle-segment usually with a semicircular yellow line above, and the mesopleurae generally with a large spot; abdomen very hairy . . . . . *trogodytes*.
8. Prominence of sixth ventral segment bifid; stipes of genitalia very broad, broadly truncate at apex . . . . . *amoena*.  
 Prominence of sixth ventral segment simple; stipes of genitalia otherwise formed . . . . . 9
9. Dorsulum spotted medially . . . . . 10  
 Dorsulum not spotted medially . . . . . 11
10. Dorsulum with two spots anteriorly in the middle; second and seventh ventral segments with a large prominence medially; stipes of genitalia as in Plate XIV, fig. 4; first joint of medial tarsi normal . . . . . *Sayi*.  
 Dorsulum with the yellow forming a U; second ventral segment smooth, the seventh bearing two converging ridges; stipes of genitalia as in Plate XIV, fig. 5; first joint of medial tarsi strongly curved . . . . . *U-scripta*.
11. Second ventral segment with a huge prominence in the middle . 12  
 Second ventral segment at the most with a ridge in the middle.  
 . . . . . 13

12. Thorax rather densely clothed with long cinereous pubescence; femora about equally black and yellow; markings of abdomen usually greenish-white or pale yellow . . . . . *Spinolæ*.  
 Thorax not densely clothed with pubescence; femora entirely yellow, more rarely black at extreme base; markings bright yellow (markings of thorax variable) . . . . . *nubilipennis*.
13. Flagellum entirely black; form large and robust . . . *nubilipennis*.  
 Flagellum pale beneath; form smaller and less robust; stipes of genitalia as in fig. 1, Plate XIV . . . . . *similans*.

1. *Bembex amœna* Hdl.

*Bembex amœna* Handlirsch, Sitz. Akad. Wien., Math.-naturw. Classe, Abth. I, CII, p. 769. ♂ ♀, Pl. I, f. 32; Pl. VI, f. 31.

Illinois (Handlirsch); Colorado; British Columbia (Handlirsch); California; Nevada; Utah and Lower California.

This species is the *luce* of Cresson, which was never described. The abdominal markings are extremely variable, in some specimens being almost entirely wanting.

2. *Bembex Belfragei* Cress.

*Bembex Belfragei* Cresson, (in pt.), Pr. Am. Ent. Soc., IV, p. 220, ♂.

*Bembex Cressonis* Handlirsch, l. c., p. 792, ♂ ♀, Pl. V, f. 6.

Texas. Cresson confused two species in his description of this species and Handlirsch, unable to decide from it which form should be called *Belfragei*, gives them both a new name. I have Cresson's types before me and find that the specimen on the original label to be *Cressonis* Handlirsch. Judging from this and from the fact that all the *Cressonis* are from Texas, while on the contrary the other form is from Georgia and Florida, I would place *Cressonis* as a synonym of *Belfragei*. There is, of course some doubt whether this is the proper course to pursue in the matter, but I think the facts cited above are sufficient to justify this action.

3. *Bembex insignis* Hdl.

*Bembex Belfragei* Cresson (in pt.), l. c., p. 220, ♂.

*Bembex insignis* Handlirsch, l. c., p. 793, ♂ ♀, Pl. II, f. 7; Pl. VI, f. 32.

Georgia, Florida (C. W. Johnson).

4. *Bembex Spinolæ* St. Farg.

♀ *Bembex fasciata* Fabricius, Syst. Piez., 224, 1804.

*Bembex Spinolæ* Lepeletier, de St. Fargeau, Hym., III, 277.

*Bembex fasciata* Dählbom, Hym. Eur., I, 487, ♀.

*Bembex Spinolæ* Handlirsch, l. c., p. 825.

Occurs throughout the United States and has been known to American students as *fasciata* Fabr., but as Handlirsch points out Fabricius' description applies equally well to other species of the

genus and therefore it is impossible to identify the true *fasciata*, without comparison with the type. Cresson's *texana* fits Fabricius' description as well as does *Spinola*. As I have pointed out elsewhere, it would have been better to have retained our common species, for years known to American students as *fasciata*, as that species than to have changed it at so late a date. This, of course, is only a matter of opinion, and some day the name will be set right, provided the type of Fabricius' species is in existence; otherwise we will have another name to add to the list of unidentified species.

The amount of yellow on the prothorax varies in *Spinola*. I have seen no ♂'s (in a series of specimens) having the stipes of genitalia as figured by Handlirsch. While the form varies, as is stated by that author, it is, as a rule, but little different from that shown in fig. 2, Plate XIV. The description of *fasciata* Fabr., is as follows:

"*B. clypeus integro*, abdomine atro fasciis glaucis lunatis. Hab. in Carolina, Mus. Dom. Bosc.

Summa affinitas *B. rostrata*. Antennæ nigrae, primo articulo subtus flavo. Caput nigrum, cinereo villosum, clypeo conico, flavo, integro. Thorax niger, cinereo tomentosus margine antico tenuissime, puncto sub alis alioque pone alas glaucis. Abdomen atrum segmento primo fascia interrupta, reliquis fascia e lunulis duabus connatis glaucis. Pedes flavi femoribus basi nigris."

5. *Bembex similans* n. sp. Plate XIV, f. 1.

♀.—Black; head, thorax, dorsulum and scutellum excepted, and abdomen with cinereous pubescence, shortest on the abdomen; inner and posterior orbits, clypeus, labrum, mandibles except apex, spot between the antennæ drawn out into a narrow line which reaches the fore ocellus and may be interrupted medially, scape beneath, spot on first joint of flagellum beneath, prothorax particularly on the sides, tubercles, line at each side of dorsulum, tegulae in part, spot on scutellum laterally, greater part of meso- and metapleuræ, sides of middle-segment almost entirely, spot on anterior and medial coxæ, femora except base and a line above on fore and hind pairs, tibia except line on fore pair within, tarsi except claws, two large spots on first dorsal segment separated internally and a strongly sinuous, non-interrupted band on segments 2-5, and a spot at each side of ventrals 2-4, yellow; flagellum yellowish-testaceous beneath; sculptured as in *Spinola*, but the upper surface of middle segment

more strongly punctured; wings hyaline, nervures pale testaceous. Length 14 mm.

♂.—Colored and marked as in the ♀; joints 5-8 of flagellum dentate beneath; medial femora serrate beneath; second ventral segment carinated down the middle, the sixth armed with a strong tooth; stipes of genitalia as in fig. 1, Pl. XIV. Length 14 mm.

Las Cruces, New Mexico (Cockerell) August 14. Resembles *Spinola* but differs in the thoracic markings, not hairy dorsulum, etc.

6. *Bembex Sayi* Cress. Plate XIV, f. 4.

*Bembex Sayi* Cresson, Proc. Ent. Soc., Phila. IV, p. 467, ♀; Handlirsch, l. c., p. 877.

Colorado; Kansas (Snow); Cypress Mills, Texas (Ashmead); Illinois. Resembles *texana* but differs by having the dorsulum and middle-segment above maculated and by clearer wings. The ♂ is as follows: ♂.—Inner and posterior orbits, clypeus, labrum, spot between antennæ, and another before the anterior ocellus, scape beneath, mandibles except apex, prothorax particularly on the sides, large irregular spot on mesopleuræ and another on the metapleuræ and sides of middle-segment, two short parallel spots on dorsulum anteriorly, a line at the sides near the tegulæ, sometimes a lateral spot on the scutellum, spot on fore and medial coxæ, femora except at base and a line on hind pair, tibiæ except a line on anterior pair, tarsi except claws, two spots, widely separated on first dorsal segment, broader spots, narrowly separated and sometimes each including a black spot on second, strongly sinuated, narrowly separated marks on segments 3-6, spot on seventh, large lateral spots on second ventral sometimes united into a band, and smaller spots on the remaining segments, yellow; flagellum yellowish testaceous beneath; head, thorax, and abdomen with cinereous pubescence, short and rather sparse on abdomen; wings hyaline, nervures pale testaceous; joints 6-8, or 9, of flagellum dentate beneath; middle femora beneath serrate; middle segment strongly impressed down the middle; second ventral segment with a large, strongly curved tooth or hook; sixth ventral with a strong tooth; stipes of genitalia as in fig. 4, Pl. XIV. Length, 13 mm. The three males before me have no yellow on the upper surface of middle segment and a female from the same locality has but a slight trace of yellow on the part mentioned.

7. *Bembex texana* Cress.*Bembex texana* Cresson, Trans. Amer. Ent. Soc., IV, p. 219, ♀*Bembex texana* Handlirsch, l. c., p. 730, Pl. II, f. 30, Pl. VII, f. 21, ♀ ♂

Texas; Georgia; Florida; Carolina and Kentucky (Handlirsch).

8. *Bembex troglodytes* Hdl.*Bembex troglodytes* Handlirsch, l. c., p. 829, Pl. II, f. 29, ♀ ♂

Mexico (Handlirsch); Texas; Jacksonville, Florida (Ashmead).

The ♂ of this species resembles that of the *Saji* to some extent, but abdomen is more hairy and the antennæ not dentate. In his description of this species Handlirsch states that the antennæ are not dentate, while in the synoptic table at the end of his work they are stated to be just the contrary.

9. *Bembex connexus* n. sp. Plate XIV, f. 3.

♀.—Black; head and thorax with cinereous pubescence, that on dorsulum short; with exception of the first dorsal segment the abdomen is almost naked, being very sparsely clothed with a short pubescence; inner and posterior orbits, spot between antennæ and another before the anterior ocellus, clypeus, labrum, mandibles except apex, scape and flagellum beneath, sides of prothorax, large spot on mesopleuræ anteriorly, metapleuræ, greater part of sides of middle segment, tegulæ more or less, spot on fore and medial coxæ, femora except a line above, tibiæ except small spot within on anteriors, tarsi except claws, large spots on first segment, interrupted internally, broad bands or segments 2-5, whose anterior margin is strongly sinuated, that on segment 5 slightly interrupted medially, spot on segment 6, large spot on each side of ventrals 2-5, which spots are connected by a narrow transverse line, this being enlarged medially, and two longitudinal spots on sixth segment, yellowish; wings hyaline, nervures dark testaceous; punctures of second ventral segment strongly and sparsely punctured medially. Length 20 mm.

♂.—Marked and colored like the ♀, except in the following points: line on pronotum, a spot on each side of scutellum, line on metanotum yellow; the yellow on sides of thorax is more extended, while the spots on ventral abdominal segments are not connected; no black line on medial femora above, and that on the fore and hind femora is less than in the ♀; joints 6-8, or 9 of flagellum dentate; medial femora beneath serrate; second ventral segment armed with a large tooth, and the sixth with a smaller one which is strongly furrowed

on apical portion; stipes of genitalia as in fig. 3, Plate XIV. Length 16 mm.

Utah. Its large size, thoracic markings, and broad markings of abdomen serve to distinguish this species. The stipes of the ♂ genitalia is different from that of the other species.

10. *Bembex cinerea* Hdl.

*Bembex cinerea* Handlirsch, l. c. p. 837, Pl. II, f. 34, Pl. III, f. 29, ♀ ♂.

I have only seen this species from Georgia, the type locality. When viewed from above the males appear to have the abdomen entirely black, but when held a little on the side the small lateral spots are seen.

11. *Bembex nubilipennis* Cress.

*Bembex nubilipennis* Cresson, Trans. Am. Ent. Soc. IV, p. 218, ♂ ♀; Handlirsch, l. c., Pl. II, f. 38, Pl. VII, f. 25.

Texas; Louisiana; Illinois, and Missouri (Handlirsch); Kansas; Nebraska; Colorado.

10. *Bembex pruinosa* n. sp. Plate XIV, f. 6.

♀.—Black, the head, thorax and first segment of abdomen densely clothed with a pale grayish pubescence, the abdomen with a thin, appressed pubescence; inner and posterior orbits, spot between antennæ, scape and flagellum beneath, clypeus, labrum, mandibles except apex, narrow line on pro- and metanotum, line on hind margin of scutellum, sometimes wanting or represented by a lateral spot only, curved line on upper surface, and a spot on sides of middle segment, either of which or both may be absent, sides of prothorax, in part, rarely, femora except heavy line above and sometimes the base beneath, tibiæ entirely or with a dark spot internally, and tarsi yellowish; dorsal segments 1-5 of abdomen with a broad, uninterrupted band, and a spot at each side of ventrals 2-5, greenish-white; wings hyaline; eyes diverging beneath. Length 17-18 mm.

♂.—Similar in coloration to the ♀, except that the last dorsal segment is spotted; joints 6 and 7 of flagellum slightly dentate; medial femora not serrate, entire; second ventral segment not dentate or tuberculate, the seventh with two short, somewhat parallel carinæ, eighth produced into a bifurcated spine at apex; stipes of genitalia as in fig. 6, Plate XIV. Length 17-18 mm.

Oregon; Kansas; Texas; Camden county, New Jersey (July 22). This is easily distinguished by its markings and male characters.

13. *Bembex occidentalis* Fox.

*Bembex occidentalis* Fox, Proc. Cal. Acad. Sci. (2), IV, p. 10, ♀ ♂ ; Handlirsch, l. c., p. 868, pl. III, f. 13; pl. VII, f. 38.

Lower California ; California, Nevada, Las Cruces, New Mexico (Cockerell). The ventral abdominal segments in this species are broadly banded with yellow.

14. *Bembex U-scripta* n. sp. Plate XIV, f. 5, 9.

♀. Black ; head and thorax clothed with a tolerably dense, long, yellowish pubescence ; abdomen with a short, sparse pubescence ; inner and posterior orbits broadly, spot between antennæ, scape and flagellum beneath, clypeus except a large central spot, labrum mandibles except apex, prothorax, meso- and metapleuræ and sides of middle-segment entirely, large U-shaped mark and lateral line on dorsulum, line on scutellum and metanotum, curved line on middle-segment, posterior face of the latter toward the sides, all the coxæ more or less, femora except a stripe above, tibiæ except an internal spot tarsi, two large sinuated spots on dorsal segments 1-4, almost united within, three spots on segment 5, segment 6, and all the ventral abdominal segments more or less, the spots on segments 3-5 smallest, yellow ; wings hyaline, nervures and stigma dark testaceous ; eyes diverging a little beneath ; second ventral segment finely and closely punctured throughout ; first transverso-cubital nervure but slightly bent. Length 18 mm.

♂.—Colored and marked like the ♀ except that the front of the head, thorax except above, legs and the first four ventral abdominal segment are almost entirely yellow ; scape of antennæ short and broad, the flagellum with the joints rather flattened, the sixth to tenth being more or less dentate, the apical joint rather strongly curved ; medial femora margined beneath with unusually long teeth or spines ; apex of medial tibiæ drawn out into a prominence ; first joint of medial tarsi strongly curved ; second ventral segment smooth, not dentate or tuberculate ; the seventh with two carinæ which diverge basally ; eighth ventral produced into a spine at apex ; stipes of genitalia, as in fig. 5, plate XIV. Length 18-19 mm.

California ; Tucson, Arizona (coll. Ashmead). Remarkable for its male characters. The shape of the medial first tarsal joint in ♂ is very like that of *Monedula formosa*, and the markings are very similar to that species.

## MICROBEMBEX Patton.

*Microbembex* Patton, Bull. U. S. Geol. Survey, V, 364, 1879.

*Bembex* (in pt.) Handlirsch, l. c. p. 660, 1893; Fox, Proc. A. N. S. Phila. 1894, p. 303.

*Microbembex monodonta* Say.

*Bembex monodonta* Say, Exp. St. Peter's River, Appendix, p. 335.

*Bembex ciliata* Lapeletier de St. Fargeau, Hym., III, 279, ♂.

*Bembex argentifrons* Cresson, Proc. Ent. Soc., Phila., IV, p. 141, ♀ ♂.

*Microbembex monodonta* Patton, l. c., p. 364.

*Bembex monodonta* Handlirsch, l. c., p. 882.

Occurs throughout the United States and extends' to Guatemala. In the ♂ the markings of the abdomen are extremely variable; and I have a specimen before me in which the abdomen is entirely yellow.

## MONEDULA Latreille.

*Monedula* Latreille, Hist. Nat. des Insects, III, 345. 1802.

*Stictia* Illiger, Faun. Etrusca, Ed. 2, 285, 1806.

*Monedula* Handlirsch, Sitz. d. k. Akad. Wissensch. Wien. Math.-naturw. Classe, XCIX, Abth. I, 77. 1890.

## FEMALES.

- Second ventral abdominal segment a little prominent and truncate basally; anterior ocellus round, not placed in a pit . . . . . 2
- Second ventral abdominal segment not prominent, flat; anterior ocellus reniform, placed in a strong pit . . . . . 3
2. Sides of thorax almost entirely, four longitudinal stripes on dorsulum, line on scutellum and metanotum and a curved one on middle segment, yellowish; femora yellow with a dark stripe above . . . . . *signata*.
- Sides of thorax except tubercles and lateral angles of middle segment, black; dorsulum with a yellow spot near the tegulae only, the scutellum with a small lateral spot; middle segment with or without a curved yellow line . . . . . *carolina*.
3. Dorsulum with a U-shaped yellow mark (pulvilli large and distinct) . . . . . 4
- Dorsulum at the most with two longitudinal yellow marks . . . 5
4. Length 16-22 mm.; eyes converging above; abdomen about equally yellow and black . . . . . *spcciosa*.
- Length 10 mm.; eyes not converging above; abdomen almost entirely yellow . . . . . *scitula*.
5. Pulvilli large and distinct . . . . . 6
- Pulvilli small, indistinct . . . . . 10
6. Head small, narrower than thorax (head and thorax more hairy than usual; no marks on dorsulum or mesopleuræ; markings pale yellow . . . . . *emarginata*.
- Head as usual, as wide as thorax . . . . . 7

7. Anterior wings reaching beyond the third abdominal segment . 8  
 Anterior wings not reaching beyond the third abdominal segment . . . . . 9
8. Thorax on sides and beneath almost entirely yellow, the greater part of abdomen of that color; median and hind tarsi as usual; thorax not much narrowed posteriorly. Length 18 mm.  
 . . . . . *tenuicornis*.  
 Thorax on sides and beneath more or less black; the segments of abdomen about equally yellow and black; median and hind tarsi somewhat flattened, the last joint larger than usual; thorax distinctly narrowed posteriorly. Length 11-12 mm.  
 . . . . . *pulla*.
9. Length 12-15 mm.; mesosternum in greater part black; front and vertex clothed with long, pale grayish hair; punctuation of dorsulum very dense, almost granular; fasciæ of abdomen deeply emarginate anteriorly . . . . . *pictifrons*.  
 Length 9 mm.; mesosternum almost entirely yellow; front and vertex with sparse, rather short, pale hair; punctuation of dorsulum distinct; fasciæ of abdomen, the first excepted, scarcely emarginate . . . . . *exigua*.
10. No yellow on dorsulum medially or on middle segment; first dorsal abdominal segment with a lateral spot, the fasciæ on the following segments interrupted medially; wings fusco-hyaline.  
 . . . . . *serrata*.  
 Dorsulum medially and middle segment above spotted; all the dorsal abdominal segments (except the last in one species) with a continuous fascia; wings hyaline . . . . . 11
11. Clypeus entirely and a large spot on mesopleuræ as well as greater part of femora, the tibiæ and tarsi entirely and a fascia on all the ventral segments and apex of last dorsal, yellow.  
 . . . . . *pulchella*.  
 Clypeus basally, mesopleuræ, femora, except apically, tibiæ within, black; tarsi dark testaceous; at the most the second ventral with a small lateral spot; last dorsal entirely black . . *usitata*.

#### MALES.

- Seventh dorsal segment with a distinct lateral spine; eighth ventral terminating in one spine . . . . . 2  
 Seventh dorsal segment not spinose; eighth ventral with three spines . . . . . 3
2. Lateral spine of seventh dorsal segment acuminate at tip; thorax maculated; maculation of first dorsal segment in form of **C D** that on the following segments not broken into spots . *signata*.  
 Lateral spine of seventh dorsal segment truncate or obtuse at apex; maculation of first dorsal segment consisting of two large spots, that on third segment of four spots . . . . . *carolina*.

3. First joint of medial tarsi curved . . . . . 4  
 First joint of medial tarsi not curved . . . . . 12
4. Medial femora serrate or carinate beneath, or broadly emarginate 5  
 Medial femora smooth beneath . . . . . 11
5. Eighth ventral, with a discal spine . . . . . 6  
 Eighth ventral, without a discal spine . . . . . 8
6. Apical joint of fore tarsi greatly enlarged; fore femora flattened  
 (second ventral segment unarmed) . . . . . *speciosa*.  
 Apical joint of fore tarsi not enlarged; fore femora not flat-  
 tened . . . . . 7
7. "Second ventral segment flat and unarmed; pulvilli scarcely dis-  
 cernible." . . . . . *scrata*.  
 Second ventral segment with two approximate tubercles near  
 posterior margin; pulvilli distinct . . . . . *emarginata*.\*
8. Second ventral segment tuberculate . . . . . 9  
 Second ventral flat, not tuberculate (mesopleuræ and middle-seg-  
 ment not at all yellow) . . . . . *plana*.
9. Intermediate and posterior femora broadly emarginate or strongly  
 incurved (second ventral segment bituberculate; pulvilli dis-  
 tinct) . . . . . *femorata*.  
 Intermediate and hind femoræ not emarginate or incurved . 10
10. Second ventral segment with two small tubercles; femora above  
 black at base only; pulvilli small, indistinct . . . . . *putchella*.  
 Second ventral segment with a single large tubercle; femora above  
 with a black stripe; pulvilli distinct . . . . . *tuberculata*.
11. Second ventral segment flat, not tuberculate; antennæ as usual,  
 not long. Length, 12-13 mm. . . . . *pictifrons*.  
 Second ventral segment with two large acute tubercles; antennæ  
 unusually long and slender. Length 18 mm. . . . . *tenuicornis*.
12. Fore legs with the tarsal comb but feebly developed; second ven-  
 tal segment bituberculate . . . . . 13  
 Fore legs with an extremely long and distinct tarsal comb; second  
 ventral segment flat, not tuberculate; front narrow . . . . . *pulla*.
13. Head and thorax rather densely clothed with long hair; dorsulum  
 with two central yellow spots . . . . . *villosa*.  
 Head and thorax not densely pubescent, sparsely so; dorsulum  
 without central yellow spots . . . . . *usitata*.

1. *Monedula signata* Linné.

*Vespa signata* Linné, Systema Nat., Ed. X, Vol. I, p. 574.

*Bembex signata* Fabricius, Syst. Ent., p. 361.

*Apis vespiformis* De Geer, Mémoires, III, p. 570, Pl. 28, f. 3.

*Bembex vespiformis* Olivier, Encycl. Méth., IV, p. 290, Pl. 106, f. 18.

*Vespa diadema* Christ. Naturg. d. Ins., p. 223, Pl. 19, f. 7.

*Monedula signata* Lepeletier de St. Fargean, Hym. III, p. 283.

This is the commonest tropical species and is recorded from Mex-

\**M. mamillata* Handl., which I have not seen, may be identical with *emarginata*.

ico and the West Indies as far south as the Argentine Republic. I have a specimen before me, the property of the U. S. National Museum, from Napa County, California, collected by D. W. Coquillett.

2. *Monedula carolina* Fabr.

*Bembex carolina* Fabricius, Ent. Syst., II, p. 249.

*Monedula carolina* Latreille, Hist. Nat., XIII, Pl. 102, f. 3.

Occurs from Pennsylvania and New Jersey to Florida and Texas; Illinois.

3. *Monedula speciosa* Cress.

*Monedula speciosa* Cresson, Proc. Ent. Soc., Philadelphia, IV, p. 470, ♀.

*Monedula formosa* Cresson, Trans. Am. Ent. Soc., IV, p. 221, ♂ ♀.

*Monedula speciosa* Patton, Bull. U. S. Geol. Survey, V, p. 361.

Colorado; Kansas; Texas.

4. *Monedula serrata* Hdl.

*Monedula serrata* Handlirsch, Sitzb. Akad. Wissen, Wien, Math.-naturw. Classe, Abth. 1, XCIX, p. 143, ♂.

Georgia. I have not seen the ♂, the sex described by Handlirsch, but a ♀ specimen before me evidently belongs to this species. It agrees with the description of the ♂, except of course lacking the ♂ sexual characters, and the base of clypeus is black. This latter character may vary, however.

5. *Monedula pulchella* Cress.

*Monedula pulchella* Cresson, Proc. Ent. Soc., Phila., IV, p. 471, ♂ ♀.

*Monedula minutula* Handlirsch, l. c., p. 148, ♀.

Colorado; Texas; Kansas; Utah; California. A slenderer species than *pictifrons* which it resembles but the wings longer. Judging from the description, *minutula* is identical with *pulchella*.

6. *Monedula tuberculata* n. sp. Plate XIV, f. 8.

♂.—Similar to *pulchella*. Black; inner and posterior orbits, inferior portion of front, clypeus except narrow line at base, labrum, mandibles except apex, line on pronotum including the tubercles, sides of prothorax, spot on mesopleuræ, postero-lateral angles of dorsulum, large spot on each side of scutellum narrowed internally, metanotum, middle segment above and on sides more or less, legs, the coxæ, trochanters and femora variegated with black, however, large spot on each side of the first dorsal segment, a band on the remaining dorsals, that on the second broadest and deeply emarginate anteriorly in the middle, the others rather sinuated, and all the ventrals with

a band, bright yellow; head and thorax more hirsute than in *pulchella*; wings hyaline, nearly twice the length of thorax. Antennæ black, the scape and following three or four joints beneath, yellow, apical joints of flagellum somewhat curved, particularly the last; eyes, if anything, diverging above; dorsulum and scutellum closely and confluent punctured, the middle segment above and behind somewhat more coarsely; last joint of fore tarsi broadly dilated; pulvilli small, though discernible; medial femora serrate beneath; first joint of medial tarsi strongly curved, and within near base with four stout spines; second ventral segment with a single, large, prominence, which is hirsute; sixth and seventh segments somewhat carinated down the middle; eighth ventral without a discal spine; last dorsal shaped as in fig. 8, Plate XIV. Length 14 mm.

Nevada. Easily distinguished by the armature of second ventral and shape of last dorsal segment.

7. *Monedula plana* n. sp. Plate XIV, f. 7.

♂.—Black; inner and posterior orbits, spot before anterior ocellus, inferior portion of front, clypeus, labrum mandibles except apex, scape and following two joints beneath, narrow line on pronotum, tubercles, spot on each side of scutellum, metanotum, legs, the coxæ, trochanters, and femora variegated with black, however, spot on each side of first dorsal segment, a band on the following dorsals except the last which is spotted, that on segment 2 broadest and all emarginate anteriorly in the middle, the second most deeply, and a spot on each side of ventral segment 2, yellowish; flagellum pale testaceous beneath; head and thorax sparsely hirsute; wings hyaline, less than twice longer than the thorax. Apical antennal joints more or less curved but not as strongly as in *tuberculata*; eyes, if anything diverging above; dorsulum and scutellum coriaceous, subtilely and indistinctly punctured, the middle segment more strongly; last joint of fore tarsi not broadly dilated; pulvilli indistinct; medial femora strongly serrate beneath; first joint of medial tarsi curved, with several strong spines within near the base; second ventral segment flat, unarmed; sixth and seventh not armed; eighth without a discal spine; last dorsal as in fig. 7, Plate XIV. Length, 14 mm.

Custer, South Dakota (Aldrich).

8. *Monedula emarginata* Cress.

*Monedula emarginata* Cresson, Proc. Ent. Soc., Phila., IV, p. 468, ♂ ♀

Colorado. The head in this species is small, narrower than the thorax, while in the other species it is usually somewhat broader than the thorax. In the ♂ the medial femora has a sharp carina beneath, which is sometimes more or less serrate.

9. *Monedula femorata* n. sp. Plate XIV, fig. 10.

♂.—Black; inner and posterior orbits, spot before anterior ocellus, inferior portion of the front, clypeus, labrum, mandibles except apex, scape in front, line on pronotum, tubercles, small spot near tegulae on dorsulum, lateral spot on scutellum, metanotum, irregular spot on mesopleurae extending on the sternum, postero-lateral angles of middle-segment, legs, the coxae, trochanters and femora variegated with black, however, a fascia, narrowly interrupted, on dorsal abdominal segments 1-6, the seventh at apex, and a fascia on ventrals 1-6, yellowish; flagellum, except basal joints which are yellowish testaceous beneath, above black, wings hyaline, not more than one-third longer than the thorax. Eyes diverging a little above; dorsulum, scutellum and base of middle segment with even, distinct punctures, those beyond base of middle segment coarser; pulvilli distinct; medial and hind femora strongly emarginate beneath (see fig.) particularly the former; first joint of medial tarsi curved, much broader than usual, not spinose basally; second ventral abdominal segment bituberculate. Length, 12 mm.

Jacksonville, Florida (coll. Ashmead).

10. *Monedula pictifrons* Sm.

*Monedula pictifrons* Smith, Cat. Hym. B. M., IV, p. 335, ♀

*Monedula inermis* Handlirsch, l. c., p. 144, ♂

Virginia; North Carolina; Texas; Missouri; Illinois; Lower California (Handlirsch). I consider Handlirsch's *inermis* to be the ♂ of this species.

11. *Monedula tenuicornis* n. sp.

♀.—Resembles *speciosa*, but without the U-shaped mark on dorsulum and the wings nearly one-third longer than in that species. Black; inner and posterior orbits, inferior portion of front, spot before anterior ocellus, clypeus, labrum, mandibles except apex, scape entirely, and the following six or seven joints beneath, prothorax almost entirely, tubercles, thorax on sides and beneath, two parallel, longitudinal spots and a transverse one, posteriorly on

dorsulum, line on scutellum, metanotum and on middle-segment above, legs except a small spot on trochanters and a short line on femora, a broad band on dorsal segments of abdomen 1-5 that on first segment strongly emarginate anteriorly in the middle, those on second and third enclosing two approximate black spots, those on fourth and fifth with four emarginations anteriorly, the posterior margin of all these bands is more or less sinuate, sixth segment yellow apically, ventrals 1-3 entirely and 4-6 with a band, bright yellow; head and thorax with short, pale pubescence; wings hyaline, not twice the length of the thorax. Eyes slightly converging above; dorsulum with shallow, confluent punctures, those of the middle segment coarser. Length, 18 mm.

♂.—Colored like the ♀, but has a greater extent of black on trochanters and femora and thorax, only a lateral spot on dorsulum, the scutellum with two spots, the marks of abdomen separated internally on dorsals 1-6, and those on 1-3 broken into four spots the outer of which are the larger. Antennæ long, setaceous, much longer than in any of the other species, the apical joints, especially the last somewhat curved; apical joint of fore tarsi not broadly dilated; pulvilli distinct; intermediate femora smooth beneath; first joint of intermediate tarsi curved, but not spinose within near the base; second ventral segment with two approximate, elongate tubercles near posterior margin; eighth ventral with a discal spine; last dorsal emarginate at apex. Length 17 mm.

San Bernardino County, California (Coquillett). Both specimens belong to the U. S. National Museum. The species is remarkable for the long antennæ of the male.

12. *Monedula scitula* n. sp.

♀.—Entirely yellow except as follows: a transverse black stripe above and beneath the ocelli; three longitudinal stripes on dorsulum, the inner of which broadest, largest apically (the dorsulum may be described as having a U-shaped, yellow spot), a dark stripe on scutellum anteriorly, one on the middle segment anteriorly and in the middle, and a dark spot anteriorly in the middle on the first and second dorsal abdominal segments, the size of which is variable, that on the second segment being most transverse; antennæ (except scape) testaceous above; wings hyaline, long, reaching beyond apex of abdomen; head and thorax with tolerably sparse, pale

hair. Inner eye margins almost parallel; dorsulum and scutellum rather strongly punctured, the punctures separated; punctuation of middle segment closer and confluent; pulvilli large and distinct. Length 10 mm.

Tucson, Arizona (coll. Ashmead). Three specimens, two of which lack heads. The coloration, size and length of wings will distinguish this species. In shape it reminds one of the bee-genus *Epeolus*, being short and robust.

13. *Monedula exigua* n. sp.

♀.—Black; inner and posterior orbits, that on the latter extending across the vertex, semicircular spot before anterior ocellus, inferior portion of front, clypeus, labrum, mandibles except apex, scape entirely, the following three or four joints beneath, line on pronotum, sides of prothorax more or less, tubercles, a lateral line and two medial longitudinal-parallel lines on dorsulum, irregular spot posteriorly on same, line on scutellum posteriorly, broadest at sides, line on metanotum, another on middle segment, mesopleuræ and sternum almost entirely, spot on metapleuræ, another larger one at postero-lateral angles of middle segment, legs, except spot above on coxæ, trochanters and base of femora, a broad band on dorsal abdominal segments 1-5, the first deeply emarginate anteriorly in middle, the others much less deeply, but more broadly, last segment apically, and all the ventrals more or less, the third entirely, the second nearly so, bright yellow; head and thorax sparsely pubescent, wings hyaline, very short, not one-third longer than thorax; flagellum testaceous above. Eyes slightly diverging above; vertex with the depressions less marked than usual; dorsulum and scutellum rather closely, though distinctly punctured, the middle segment more strongly; pulvilli distinct. Length 9 mm.

Montana.

14. *Monedula villosa* n. sp.

*Monedula mamillata* Fox (non Handlirsch), Proc. Calif. Acad. Sci. (2) IV, p. 10.

♂.—Head and thorax with very dense and shaggy, pale pubescence; first dorsal and ventrals 1 and 2 with similar but sparser pubescence, the remaining abdominal segments with short semi-erect pubescence. Black; inner and posterior orbits, spot on each side of fore ocellus, clypeus, labrum, mandibles except apex, scape beneath, line on pronotum, sides of prothorax in part, tubercles, two spots,

diverging posteriorly on dorsulum and another near tegulæ, lateral spot on scutellum, line on metanotum, spot on mesopleuræ, attenuated beneath and extending in the form of a narrow line on the anterior part of the mesosternum, then extending down the medial furrow to the medial coxæ, spot on metapleuræ and sides of middle segment, legs except spot on coxæ and trochanters, a stripe above on femora and an internal spot on fore and medial tibiæ, a band on dorsal segments 1-5, narrow medially and greatly expanded at sides, last segment except a narrow, longitudinal, central line, and the ventrals entirely, yellow; flagellum black, testaceous beneath, the first joint yellow basally; wings hyaline, about twice the length of the thorax. Inner eye-margins parallel; apical antennal joints not curved; dorsulum and scutellum rather strongly punctured, the middle segment more coarsely; first joint of fore tarsi a little dilated, but not so much as in *speciosa* and *tuberculata*; pulvilli distinct; medial femora not serrate or dentate beneath; first joint of medial tarsi not at all curved; second ventral segment with two rather large, approximate tubercles near posterior margin, seventh apparently smooth; eighth with a discal spine. Length 11 mm.

Lower Purissima, Lower California (Chas. D. Haines), April, 1889. This is the species doubtfully referred by me to *mamillata* Hdl., in my first paper on Lower California Hymenoptera. There are besides the specimen before me, two others in the collection of the California Academy of Sciences.

15. *Monedula usitata* n. sp.

♀.—Black; inner and posterior orbits, inferior portion of front, spot before anterior ocellus, clypeus except basal half, labrum, mandibles except apex, scape and following two joints beneath, line on pronotum, tubercles in part, two small longitudinal central spots and a line near tegulæ on dorsulum, lateral spots on scutellum almost united internally, line on pronotum and a curved one sometimes interrupted on middle segment, postero-lateral angles of middle segment and sometimes a spot on sides, femora except apically and tibiæ except within and a fascia on dorsal abdominal segments 1-5, yellowish, the fasciæ on first three segments broadest and deeply emarginate anteriorly in the middle, the others sinuated, second ventral sometimes with a small lateral spot; last dorsal entirely black; antennæ dark testaceous above; head and thorax

very sparsely hirsute, the latter almost nude; wings subhyaline about twice the length of thorax. Inner eye-margins almost parallel; thorax and scutellum coriaceous, indistinctly punctured, the middle segment distinctly though not very strongly so; pulvilli indistinct. Length 12 mm.

♂.—Similar to ♀ but slenderer and differing in the following points as to coloration: clypeus except narrow anterior margin, black; front rarely spotted before the anterior ocellus; the first five or six joints of flagellum yellowish beneath; yellow of the orbits less prominent; no central spots on dorsulum and no line on middle segment; a narrow yellow spot on the mesopleuræ; the coxæ and trochanters are more or less yellow, the tarsi entirely so; all the ventral segments are fasciated, and the last dorsal has an apical spot. Apical antennal joints not curved; dorsulum and scutellum strongly and closely punctured, the middle segment a little more strongly; pulvilli large and distinct; medial femora smooth beneath; first joint of medial tarsi not at all curved; second ventral segment with two approximate tubercles near posterior margin, seventh smooth; eighth with a discal spine. Length 10-12 mm.

Montana; Nevada; Southern California (O. B. Johnson and D. W. Coquillett). Resembles very much the ♀ of *Bembex monodonta*.

**16. *Monedula pulla* Hdl.**

*Monedula pulla* Handlirsch, l. c., p. 149, ♀.

Southern California (O. B. Johnson and D. W. Coquillett). Whereas *usitata* resembles the ♀ of *Bembex monodonta*, this species is peculiar for its striking superficial resemblance to the ♂ of that species.

The ♂ of *pulla* is smaller than the ♀ (length 10 mm.); apical antennal joints not at all curved; fore legs with a long tarsal comb as in the ♀; pulvilli large and prominent; medial femora smooth beneath; first joint of medial tarsi not curved; second ventral segment smooth; not tuberculate; seventh and eighth segments—?

This species is remarkable for the narrow front, and long tarsal comb of ♂. The type of this species has, according to Handlirsch, the clypeus black basally; in the five specimens before me none presents this characteristic, the clypeus being entirely yellow. One specimen is labelled Georgia, probably erroneously.<sup>1</sup>

<sup>1</sup> *M. mamillata* Hdl., which I have not seen, has been inadvertently omitted from this paper. It seems to be near *emarginata*.

## STENIOLIA Say.

*Steniolia* Say, Boston Journ. Nat. Hist., I, p. 366. 1837.

*Monedula* Cresson (in pt.), Proc. Ent. Soc., Phila., IV, p. 469. 1865.

*Steniolia* Patton, Bull. U. S. Geol. Survey, V, p. 364. 1879.

## FEMALES.

- Middle tibiæ dilated . . . . . 2  
 Middle tibiæ not dilated (markings luteous) . . . . . *duplicata*.  
 2. Markings of body whitish . . . . . *obliqua*.  
 "Markings of body luteous." . . . . . *tibialis*.

## MALES.

- Tibia and first joint of tarsi of medial legs not dilated (markings luteous) . . . . . *duplicata*.  
 Tibia and first joint of tarsi of medial legs distinctly dilated . . . 2  
 3. Markings of body whitish as is also the pubescence of dorsulum and vertex . . . . . *obliqua*.  
 Markings of body luteous, the pubescence of dorsulum and vertex brownish . . . . . *tibialis*.

1. *Steniolia duplicata* Prov.

*Steniolia duplicata* Provancher, Add. Hym. Quebec, p. 414, ♀ ♂.

*Steniolia scolopacea* Handlirsch, Sitzb. Akad. Wissen., Wien., Math.-naturw. Classe, Bd. XCVIII, Abth. I, p. 510, ♀ ♂.

*Steniolia duplicata* Fox, Entom. News, II, p. 195.

This is, perhaps, our commonest and most variable species. New Mexico (Cockerell); Nevada; Utah; California; Oregon; and Lower California. The spots on the dorsulum may be absent, or enlarged, the curved line on upper surface of middle often broken into spots, or absent entirely; there is frequently a small spot on dorsulum just anterior to the scutellum and the extent of black on femora is variable. The markings of the abdomen are tolerably constant, but are subject to some variation and the flagellum varies by having the basal joint beneath only, or all the joints yellowish.

From Lower California are three males and one female which are on the whole larger than usual and the eyes slightly though distinctly converge to the top; otherwise they agree exactly with *scolopacea*. They may represent a distinct species.

2. *Steniolia obliqua* Cress.

*Monedula obliqua* Cresson, Proc. Ent. Soc., Phila., IV, p. 469, ♀.

*Steniolia obliqua* Cresson, Synopsis, p. 278; Handlirsch, l. c., p. 511, Pl. I, f. 16, ♂ ♀.

Colorado; British Columbia (Handlirsch).

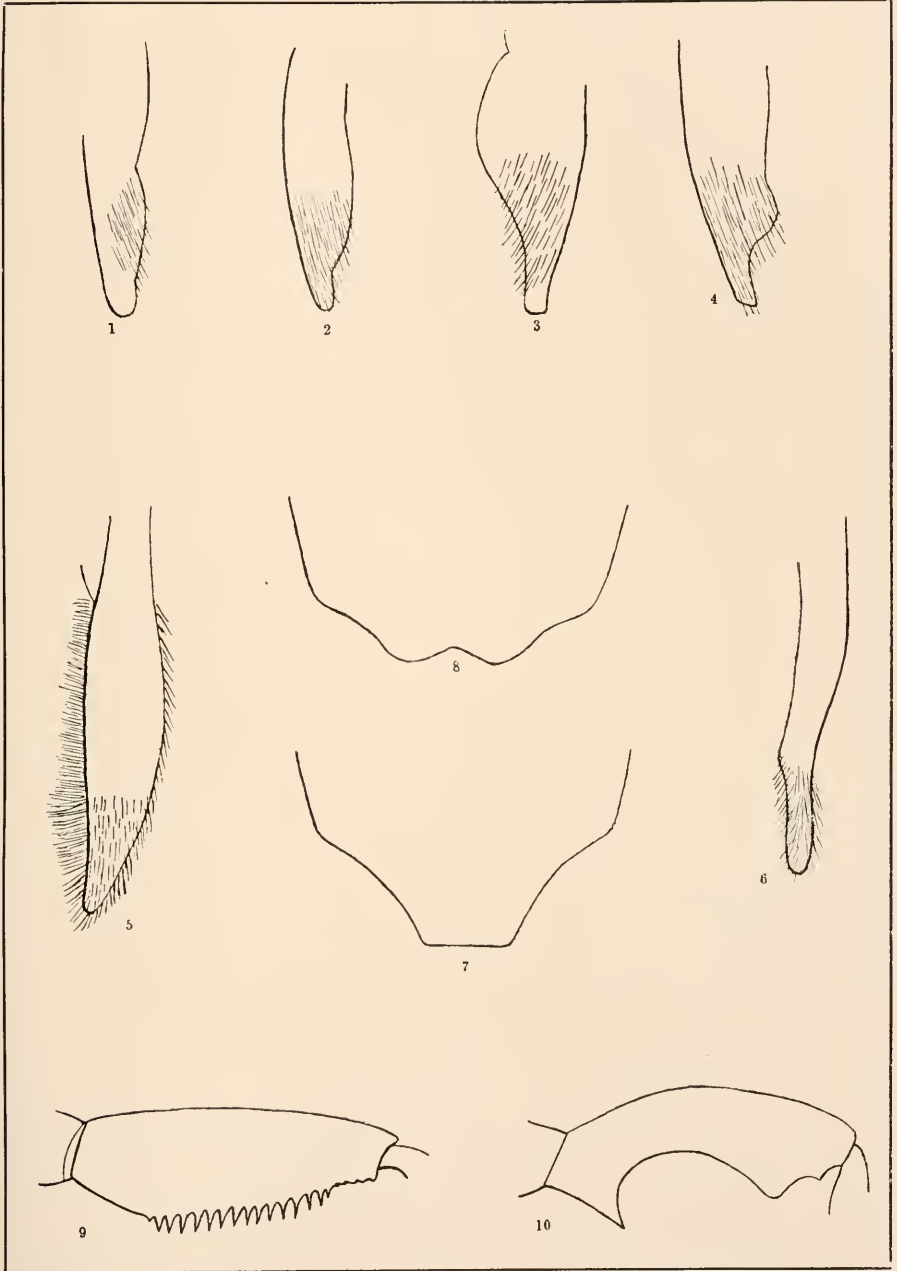
3. *Steniolia tibialis* Hdl.

*Steniolia tibialis* Handlirsch, l. c., p. 513, Pl. II, f. 1, ♂ ♀.

Nevada; California (Handlirsch). I have not seen the female, but three males from Nevada are before me.

## EXPLANATION OF PLATE XIV.

- Fig. 1. Stipes of Genitalia, *Bembex similans*, ♂.  
 " 2. " " " *Bembex Spinolæ*, ♂.  
 " 3. " " " *Bembex connexus*, ♂.  
 " 4. " " " *Bembex Sayi*, ♂.  
 " 5. " " " *Bembex U-scripta*, ♂.  
 " 6. " " " *Bembex pruinosa*, ♂.  
 " 7. Last dorsal segment, *Monedula plana*, ♂.  
 " 8. " " " *Monedula tuberculata*, ♂.  
 " 9. Intermediate femora, *Bembex U-scripta*, ♂.  
 " 10. " " " *Monedula femoratu*, ♂.



FOX ON BEMBICINI.