

NOTES ON *CENCHREA* WESTWOOD AND *CEDUSA*  
FOWLER IN AMERICA (HOMOPTERA:  
FULGOROIDEA).

By W. L. MCATEE.

While the genera *Cenchrea* and *Cedusa* (*Lamenia* of authors, not of Stal) have been more or less confused, they are not very closely related. The antennal trough, that reflector-like structure which forms a guard for the highly sensorial antennæ and which appears to be an organ of importance, is an appendage of the pronotum in *Cenchrea* and of the head in *Cedusa*. Such a structural difference must be given considerable weight in classification and when the Fulgoroidea are revised throughout on the basis of structure, these two genera will not stand together as the catalogs now have them. However, they agree in having no prominent, longitudinal carina on the frons, and in possessing a low, rounded one on clypeus, which with the slightly prominent sides gives that member a moderately tricarinate appearance.

The bulk of the material upon which this paper is based was collected by the writer, but the National Museum collection, of which he is Acting Custodian, also has been used. Dr. E. D. Ball very generously loaned his material, including the types of species described by him, and Mr. J. R. Malloch has kindly collected and contributed numerous specimens. Dr. Ball also furnished notes on the genital characters of Fitch's species, *vulgaris*. Mr. F. Muir has written me about important characters of these and other genera of the Derbidæ, submitted to me before publication a manuscript on this subject, and sent me a specimen of *caliginea*, the genotype of *Lamenia*, all of which aid has been greatly appreciated. Dr. Z. P. Metcalf kindly forwarded for examination males of his species, *Herpis australis* and *H. incisa*.

Genus *Cenchrea* Westwood.

*Cenchrea* Westwood, J. O., Observations on the genus Derbe of Fabricius. Trans. Linn. Soc. Lond. 19, 1845, p. 15, Pl. 2, Fig. 8. [Monobasic, *C. dorsalis* n. sp. genotype, St. Vincent Id.]

*Herpis* Stal, C., Bidrag till Rio Janeiro-Traktens Hemipter-Fauna, K. Vet.-Akad. Handl. 3, No. 6, 1861, p. 8. [Five species included; type by subsequent designation, *H. fuscovittata* Stal, Brazil.]

*Syntames* Fowler, Canon., *Biologia Centrali-Americana*, Rhynchota, Homoptera, 1, pp. 138-139, Pl. 13, Fig. 21, March, 1905. (Monobasic, *S. delicatus* n. sp. genotype. Guatemala, Panama.)

*Neocenchrea* Metcalf, Z. P., A key to the Fulgoridæ of Eastern North America with descriptions of new species. Journ. Elisha Mitchell Sci. Soc., 38, May, 1923, pp. 193-194. [*Cenchrea heidemanni* Ball, named as type.]

Ranged above are the names of all the proposed American genera known to the writer, that have the pronotum foveate (Stal), with an auriculate cavity (Van Duzee), that possess well-developed shoulder keels (Muir), or that have what the present writer calls the antennal trough as an appendage of the pronotum. All of these expressions are intended to describe the same thing, and it is an important character of a group\* which may be called a genus, tribe, or subfamily according to taste. The writer prefers to treat the assemblage as one genus and although there are venational distinctions upon which subgenera can well be founded, these characters are not well enough known for all of the groups above listed to enable the names to be applied with precision. For the same reason, the proposal of new names is inadvisable; there may be a name available for each subgenus when their proper application is understood.

Apparently distinctive characters of the genus *Cenchrea* drawn from the six (a seventh damaged) species seen are: Lower margin of pronotum with an upcurved lamina forming lower border of antennal trough, genal ridge prominent but not produced; margins of vertex and frons elevated and granulate; face distinctly inwardly angulate at junction of frons and clypeus; pronotum angulate-emarginate posteriorly; veins of tegmen tending to be granulate, the subcostal vein usually and the claval veins always distinctly so; claval veins uniting at or behind middle of commissure; margin of tegmen serrulate apically. Venation has been figured by Westwood, Kirkaldy, and Metcalf in papers cited in generic synonymy. All of the species have the carinæ of head more or less fuscous-edged.

The genotype, *C. dorsalis* is a species quite closely related to *C. uhleri*, from which it would appear to differ in color in having two dark spots instead of one, and in lacking red veins, in apex of fore-wing.

---

\* At least five other described cenchreine genera from other parts of the world have the same character.

## KEY TO THE SPECIES.

1. Subcosta, medius, and cubitus of forewing each with a long fork and with but few interconnecting veins before extreme apex of tegmen; no distinct series of anteapical cells; tegmina whitish..... 2
- Subcosta, medius, and cubitus of forewing with shorter forks, more freely connected by cross-veins and anastomosing so that there is a distinct series of anteapical cells; tegmina not whitish..... 4
2. Vertex less than twice as wide behind as in front, angularly emarginate posteriorly, eyes only slightly overlapping pronotum, the latter angulate anteriorly, corresponding to the emargination of head; juncture of vertex and frons distinctly angulate as seen from side; eye less emarginate than in alternative group; tegmen lacking dark spots in apical cells..... 3
- Vertex more than twice as wide behind as in front, broadly emarginate posteriorly, eyes overlapping pronotum for nearly half their length, the latter squarishly produced anteriorly corresponding to emargination of head; juncture of vertex and frons barely angulate as seen from side; emargination of eye including geometrical center of that organ; tegmen with dark spots in apical cells..... *bakeri*, new species
3. Superior border of antennal trough merely a ridge, scarcely laminate-elevated..... *heidemanni* Ball
- Superior border of antennal trough distinctly laminate-elevated, *lineata* Fabricius
4. Subcostal vein forking before middle of tegmen; cells immediately behind juncture of medius and cubitus with nearly straight sides..... 5
- Subcostal vein forking behind middle of tegmen; cells immediately behind juncture of medius and cubitus with distinctly curved sides; tegmen with three conspicuous black spots along claval suture.... *exquisita* Uhler
5. Mesonotum and tegmina uniform fuscous..... *brunnea* new species
- Mesonotum fulvous; tegmina testaceous with more or less dark markings along costa, and spots and veins at apex red..... *uhleri* Ball

## DESCRIPTIONS OF THE SPECIES.

**C. bakeri** new species. General color pale testaceous, the wings with more or less snowy pruinosity, and the membrane whitish, a few dusky dots in apical cells; fuscous margin of carina of head more prominent, especially above eyes, than in the other species; mesothorax in one specimen (probably a male) castaneous except on disk; lateral carinae of vertex and frons high, the transverse carina inconspicuous, frons long and narrow widening slightly from base; serrulation of tegmen extending from point on costa about two-thirds from base nearly to inner apical angle. Length about 6-7 mm. Holotype ♀ and another specimen (sex uncertain), Mexico, C. F. Baker (No. 2154). (U. S. N. M.)

**C. heidemanni** Ball, E. D. Can. Ent. 34, No. 10, Oct., 1902, p. 261 [Kans., D. C.]. Head and thorax pale orange-yellow, remainder whitish with more or less snowy pruinescence. Vertex and frons with high lateral carinae, frons parallel-sided on upper two-thirds then abruptly flaring. Tegmen serrulate from middle of costal margin nearly to inner apical angle. Outer claspers of male slightly separated at base, the inner margins then approaching each other, and together enclosing a distinctly square opening, a diagonal of which is the median line of the genitalia. Length 6.5-8 mm. Localities: Plummers Id., Md., July 26, Aug. 2, 16, 1914, Dalecarlia Reservoir, D. C., Aug. 22, 1915, W. L.

McAtee; Glen Echo, Md., Aug. 21, 1921, Aug. 22, 1922, Chain Bridge, Va., Aug. 20, Sept. 17, 1922; Chesapeake Beach, Md., Aug. 16, 1923, J. R. Malloch.

**C. lineata** Fabricius. *Cicada lineata* Fabricius, J. C. Syst. Rhyng., 1803, p. 66 [Middle America].

In general appearance almost a duplicate of *C. heidemanni*, the most important character separating them (on the basis of specimens examined which include no males of this species) being the difference in antennal trough mentioned in key. The vertex and frons have high lateral carinæ, and the frons widens gradually almost from the upper end. Serrulation of tegmen about as in *C. heidemanni*. Length 7 mm. Locality: St. Vincent Id., W. I., H. H. Smith. (U. S. N. M.)

**C. exquisita** Uhler, P. R. Proc. Zool. Soc. Lond., 1895, pp. 69-70 [St. Vincent]. Head and body pale testaceous, cheeks each with a dusky streak, and clypeus with 3 triangular dark spots; tegmen whitish hyaline with snowy pruinosity along costa and on corium near clavus; a reddish-orange patch in base of clavus and another on inner apical angle of wing extending to juncture of medius and cubitus; narrow dusky markings as follows; a dash on medius before fork, a dot in costal cell, an oblique band from costa beginning just anterior to the notch, one band across apical and one across ante-apical cells, and a series of 3 bold rounded black spots on corium next to clavus, adjacent to the basal one of which; is a trapezoidal black spot on middle of clavus. Lateral carinæ of vertex and frons rather high, transverse carina prominent, vertex about as wide behind as long, frons broad, almost parallel-sided. Tegmen serrulate around entire apical margin. Outer claspers of male much narrowed near base resulting in their enclosing a considerable elliptical space into which projects a blunt tooth from either clasper, the apices of claspers a little curved inward and bluntly pointed. Length 4 mm. Locality St. Vincent Id., H. H. Smith (U. S. N. M.)

**C. brunnea** new species. General color fuscous, pronotum, most of head, and legs stramineous. Vertex about as in *C. uhleri*, frons narrower but widening gradually from upper end. Tegmen serrulate between inner and outer apical angles the extreme apex narrowly red. Claspers of male similar to those of *C. uhleri* (Fig. 1), but straighter on inner side more widely separated, and apical hook smaller. Length 3.5-4 mm. Localities: Chagres River, Canal Zone, Oct. 9, 1917, H. Morrison (holotype, ♂); Cayuga, Guatemala, October, 1915, Wm. Schaus; Mexico, C. F. Baker (Nos. 1785, 2154). (U. S. N. M.)

**C. uhleri** Ball, E. D. Can. Ent. 34, No. 10, Oct. 1902, p. 261 [D. C., Md., Kans.]

Head and thorax testaceous, tegmen stramineous, usually with the following dark markings: dusky on apical third, the clavus with a narrow and the costa with a broader, dusky to black marginal streak, outer apical angle with a dense black spot, apical margin and more or less of the veins near it red. Vertex about as long as wide at base, lateral carinæ moderate, transverse carina distinct, frons broad, widening gradually from upper end. Tegmen serrulate between inner and

outer apical angles. Clasper of male as in Fig. 1. Length 4.-5.5 mm. Localities: Various localities in Maryland and Virginia near the District of Columbia where it is a common insect; Bluemont, Va.; Raleigh, N. C. Recorded also from New Jersey.

DESCRIBED NORTH AMERICAN SPECIES NOT SEEN.

**C. dorsalis** Westwood. Genotype. Bibliographic reference same as for the genus.

**C. delicatus** Fowler. See synonymy of genus.

**C. fulva** Van Duzee, E. P. Bull. Buffalo Soc. Nat. Sci. 9, No. 2, 1909, p. 195 [Florida.]

Genus **Cedusa** Fowler.

*Cedusa* Fowler, Canon. Biologia Centrali Americana, Homoptera 1, p. 112, Nov. 1904. [With two included species, *C. funesta* and *C. venosa*, of which the former has been selected as the genotype. Mexico.]

Characters of value in distinguishing this genus (and especially in contrasting it with *Cenchrea*) are: Lower margin of pronotum without up-curved lamina, the lower part of antennal trough being formed by a more or less scoop-shaped process of the genal ridge; margins of vertex and frons but slightly elevated and lacking granulations; face merely depressed, not distinctly inwardly angulate at junction of front and clypeus; pronotum rounded, scarcely angulate-emarginate posteriorly; veins of tegmen lacking granulations, all veins of corium running together at base of wings, forking posteriorly and connected by cross-veins so that there is a distinct series of ante apical cells; about 3 of the apical cells are formed by secondary forking of the longitudinal veins; claval veins joining at about middle of clavus, tegmen not serrulate apically. Venation has been figured by Metcalf (Ann. Ent. Soc. Amer. 6, 1913, Pl. 35, Fig. 41.)

In color most of the species are fumose to black, more or less covered with bluish-gray pruinosity; all of the species agree in having the transverse veinlets cutting off apical cells more or less whitish; in the dark species the lower surface, especially the venter is often marked with red. The only reliable characters found for separation of the species are the details of the male genitalia. Besides the characters illustrated it may be mentioned that the apical sternite is rounded-angulate in *C. flavida*, *C. inflata*, and *C. bedusa* (Figs. 4, 8, 12) and straight or slightly convex in the other species. Without reference to internal genital characters which were not studied, it must be said that the genitalia of the females are very uniform in structure. *C. maculata* is distinguished by the broad, terminal process of the apical sternite (See Fig. 3), but in the other species this sternite varies only in being a little more, or a little less angulate, differences in appearance as illustrated in Figs. 7 and 14a, being due merely to varying positions of the sclerites concerned. The shape of the frons is described for most of the species but it must be noted that variations occur due to the degree of maturity of the specimens at time of death.

Assignment of *Paciloptera* (?) *vulgaris* Fitch and related species to *Lamenia* Stal dates from Uhler, 1889 (Standard Natural History, II, p. 233) and confusion as to the application of a number of generic names for the atypical Derbidae has been great. These matters are discussed in a recent paper by F. Muir, Notes on some genera of Derbidae (Proc. Ent. Soc. Wash.\*) and the writer notes here only a few characters not mentioned in Mr. Muir's article. The lateral carinae of vertex and frons are thicker and more elevated in *Lamenia* than in *Cedusa* and together with the costa, and claval veins, are conspicuously granulate. In *Lamenia* the pronotum is angulate-emarginate behind and has a distinct elevated median carina, characters not possessed by *Cedusa*. The venation of the former genus, details of which are described by Mr. Muir, is much simpler than that of the latter.

## KEY TO THE SPECIES.

1. Genal ridge forming a high carina between antennal trough and lateral carina of frons joining latter on its own level; transverse carina between vertex and frons nearly obsolete. . . . . 2
  - Genal ridge low, distinctly depressed between antennal trough and lateral carina of frons; transverse carina between vertex and frons evident, usually distinct. . . . . 3
  2. General color stramineous with numerous fuscous spots and stripes; last sternite of male nearly transverse (Fig. 2), of female, produced as a broad process which is slightly emarginate medianly, (Fig. 3); length, 4.5-5.5 mm. . . . . *maculata* Van Duzee
  - General color pale yellowish, mesonotum pale orange, lacking fuscous spots and stripes; last sternite of male slightly rounded-angulate medianly, (Fig. 4); length, 4 mm. . . . . *flavida* Van Duzee
  3. Mesonotum and parts anterior chiefly fulvous, tegmina more or less dusky apically, fulvous basally; low longitudinal carina of frons fairly distinct; outer clasper of male as in Fig. 5. . . . . *edentula* Van Duzee
  - Mesonotum (in mature specimens) always, and parts anterior usually, dusky to black; tegmina dusky. . . . . 4
  4. Low, broadly rounded longitudinal carina on frons fairly distinct; † head always, and pronotum usually with more pale coloration than in the contrasted group. See figures of genitalia and descriptive notes to identify the species.
 

<i>californica</i> Van Duzee, Fig. 14a.	<i>bedusa</i> new species, Fig. 12.
<i>praecox</i> Van Duzee, Fig. 10.	<i>cedusa</i> new species, Fig. 23.
- Frontal carina indistinct or lacking; pronotum never pale and head with no more than the raised margins of frons, the antennae, and antennal troughs, pale. See figures of genitalia and descriptive notes to identify the species.
- |                                     |  |
|-------------------------------------|--|
| <i>incisa</i> Metcalf, Fig. 17.     | <i>ledusa</i> new species, Fig. 15.      |
| <i>funesta</i> Fowler, Fig. 21.     | <i>mallochi</i> new species, Fig. 22.    |
| <i>obscura</i> Ball, Fig. 11.       | <i>nedusa</i> new species, Fig. 20.      |
| <i>inflata</i> Ball, Fig. 8.        | <i>pedusa</i> new species, Fig. 19.      |
| <i>vulgaris</i> Fitch, Fig. 13.     | <i>redusa</i> new species, Figs. 13, 23, |
| <i>gedusa</i> new species, Fig. 6.  | (See text).                              |
| <i>gedusa</i> new species, Fig. 18. | <i>redusa</i> new species, Fig. 14.      |
| <i>hedusa</i> new species, Fig. 9.  | <i>vedusa</i> new species, Fig. 16.      |
| <i>kedusa</i> new species, Fig. 24. |  |

\* 26 No. 1, Jan. 1924, pp. 15-19.

† This is more a matter of appearance due to color than to structural difference, and the other color characters noted are cited in the key more for a certain degree of convenience they may afford rather than on account of definite value in separating species. The only safe criteria to species are the genital characters.

**C. maculata** Van Duzee, **Lamenia maculata** Van Duzee, E. P. Bul. Buffalo Soc. Nat. Sci. 10, 1912, pp. 503-504. [Ontario]. Our largest and only spotted species, agreeing with *C. flavida* in having the transition from vertex to front more rounded than in most of the other species and in having similarly shaped male claspers (Fig. 2). Female genital segment as in Fig. 3. Lower third of front abruptly expanded. Length, 4.5-5.5 mm. Common in the vicinity of Washington, D. C., from August to October. Recorded also from Ontario and North Carolina.

**C. flavida**, Van Duzee, **Lamenia flavida**, Van Duzee, E. P. Bull. Buffalo Soc. Nat. Sci. 8, 1907, p. 36. [Jamaica]. The most uniformly yellowish species seen, agreeing with *C. maculata* in several important characters as noted in key and description of that species. The tegmen is extensively clouded with dusky apically. The front expands gradually from vertex to juncture with genal ridges. Outer clasper of male, ventral view as in Fig. 4, lateral view much as in Fig. 10. Male paratype, Mandeville, Jamaica, April, 1906, E. P. Van Duzee (U. S. N. M.)

**C. edentula**, Van Duzee, **Lamenia edentula**, Van Duzee, E. P. Bul. Buffalo Soc. Nat. Sci., 10, 1912, p. 503. [Georgia]. A strongly fulvous species easily separable from the others. Front gradually widened almost to apex. Ventral view of male clasper as in Fig. 5; lateral lobe as seen from side much as in *C. incisa* (Fig. 17); apical hook nearly obsolete. Length, 3.75-4.5 mm. Common about Washington, D. C., in July and August. Recorded also from New Jersey and North Carolina.

**C. californica**, Van Duzee, **Lamenia californica**, Van Duzee, E. P. Can. Ent., 23, No. 8, August, 1891, p. 169. [California]. Tegulae, pronotum and head distinctly yellow in strong contrast to the blackish mesonotum and tegmina. Frons widest just below the middle, more gradually narrowed below than above that point. Ventral view of outer clasper of male as in Fig. 14a; lateral lobe as seen from side somewhat as in *C. obscura* (Fig. 11) but more rounded. Last sternite of female as in Fig. 14a. Length, 4-5 mm. Localities: Los Angeles, Calif., D. W. Coquillett; Arizona, C. F. Baker, and Cornell University Expedition; Colorado, C. F. Baker. (U. S. N. M.); Phoenix, Ariz., May, 1897, Ft. Collins, Colo., July 2, 7, 1898, Palisade, Colo., July 8, 1901, E. D. Ball (Ball.)

**C. praecox**, Van Duzee, **Lamenia praecox**, Van Duzee, E. P. Bul. Buffalo Soc. Nat. Sci. 10, 1912, pp. 502-3, [Huachuca Mts., Ariz.]; *Herpis australis* Metcalf, Z. P., Journ. Elisha Mitchell Sci. Soc., 38, 196-197, May, 1923 [Texas.] Coloration as in *C. californica* the paler areas, especially the pronotum, showing a greater tendency to be obscured by dusky. Frons widest at a point about three-fourths its length from vertex, the sides somewhat incurved above, and slightly outcurved below. Ventral and lateral views of outer clasper of male as in Fig. 10, apical hook may be curved either upward or downward. Length, 4-4.5 mm. Localities: Las Vegas, Hot Springs, N. Mex.; Aug. 2, H. S. Barber; Brownsville, Tex., George Dorner, [type material

of *H. incisa* Metcalf]; Devil's River, Tex., F. C. Bishopp and F. C. Pratt (U. S. N. M.); Bransom, Mo., Aug. 18, 1916, on red cedar, E. H. Gibson (Gibson).

**C. bedusa** new species. While this species and the next have the pronotum somewhat paler than it usually is in the dark species of the genus, only rarely is it clear yellow as in *C. californica*; the head, however, has much more pale markings than normally occur in the other group. Frons widest at a point about two-thirds its length from vertex, the sides a little concave above that point, straight and gradually convergent below. Ventral view of outer clasper of male as in Fig. 12; lateral lobe as seen from side, much the shape of that of *C. incisa* (Fig. 17) but not quite so broad; apical hook nearly obsolete. Length, 4.75 mm. Holotype, ♂, Glencarlynn to mouth of Four-mile Run, Va., June 17, 1914, W. L. McAtee.

**C. cedusa** new species. Remarks on color under preceding species apply here. Frons also as in *C. bedusa*, but widest at three-fourths its length from vertex. Ventral view of outer clasper of male as in Fig. 23; lateral lobe as seen from side somewhat as in Fig. 13, but higher and more broadly rounded; apical hook broad as viewed from below, abruptly pointed and upcurved as seen from behind, (Fig. 23). Length, 4.25-5 mm. Holotype and paratypes, ♂'s, Plummers Island, Md., August 25, 1904, R. P. Currie; paratype ♂'s, Uhler Collection (U. S. N. M.), and Dunn Loring, Va., August 30, 1916, W. L. McAtee; Glen Echo, Md., July 19 (Ball).

**C. incisa** Metcalf. **Herpis incisa** Metcalf, Z. P. Journ. Elisha Mitchell Sci. Soc., 38, pp. 195-196, May, 1923, [Conn.]. Frons broadest about two-thirds its length from vertex, the sides above that point a little incurved, below it more strongly outcurved. Ventral and lateral views of outer clasper of male as in Fig. 17, apical hook rather prominent, upcurved. Length, 3.75-4.5 mm. Localities: New Haven, Conn., July 2, 1920, B. H. Walden, type material (Z. P. Metcalf); New York, 5272, Fitch; New York, 2334, C. F. Baker; Princeton, Uhler Collection; Agr. College, Mich., 243, C. F. Baker, (U. S. N. M.); Delaware Water Gap, N. J., July 12; Ames, Iowa, July, August (Ball).

**C. funesta** Fowler. **Cedusa funesta** Fowler, Canon. Biol. Centr. Amer. Homop. 1, p. 112, Nov. 1904, [Mexico, Guatemala]. Frons broadest about two-thirds of its length from vertex, only slightly narrower above and below that point, the sides a little incurved. Ventral view of outer clasper of male as in Fig. 21, lateral view somewhat as Fig. 14, the lobe narrower apically, apical hook small. Length, 4-4.5 mm. Locality: Teapa, Tabasco, Mexico, H. H. Smith. A male and a female paratype, (U. S. N. M.).

**C. obscura** Ball, **Lamenia obscura** Ball, E. D. Can. Ent. 34, No. 10, Oct., 1902, p. 262. [Colorado, Florida]. Frons widest about three-fourths of its length from vertex, the sides notably incurved above, especially between eyes, slightly convex and but little convergent below widest point. Ventral view of outer clasper of male as in Fig. 11, lateral lobe much as in Fig. 14, but more rounded, apical hook of moderate



size, thin, pointed, varying somewhat in width, (Fig. 11). Length, 3-4 mm. Localities: Greeley, Colo., August 5, 1901, E. D. Ball (Ball), the type material; Colorado, 1918, C. F. Baker, (U. S. N. M.). Van Duzee's reference (Bul. Buffalo Soc. Nat. Sci. 10, No. 2, 1912, p. 502) to this species, evidently is confused, as two types of male genitalia are attributed to it. Since most of the localities given are eastern it is possible this author did not have *L. obscura* at all at the time. *C. bedusa* with similar genitalia (Fig. 12) to those of *C. obscura* and some other form may have been represented.

**C. inflata** Ball, *Lamenia inflata* Ball, E. D. Can. Ent. 34, No. 10, Oct., 1902, pp. 262-3, [Haiti]. Frons broadest about three-fourths of its length from vertex, the sides above nearly straight and only slightly converging, rather strongly out-curved below. Ventral view of outer clasper of male as in Fig. 8, lateral lobe somewhat as in Fig. 14, but more pointed, apical hook broad basally, directed straight inward, attenuate and very finely pointed apically. Length, 3.5-4 mm. Localities: Port au Prince, Haiti, December, January, February, R. J. Crew (Ball), the type material; Romana, Dominica, April 9, 1913, W. V. Tower, (U. S. N. M.).

**C. vulgaris** Fitch. **P[ocilioptera] (?) vulgaris** Fitch, Asa. Ins. State Cabinet Nat. Hist., Fourth Ann. Rep. Regents Univ., N. Y., 1851, p. 47. Frons widest about four-fifths of its length from vertex, the sides above slightly incurved and gradually convergent, straight and convergent below. Ventral and lateral views of male clasper as in Fig. 13, apical hook rather long, slender and moderately curved anteriorly. Length, 3.5-4.5 mm. Localities: Forest Glen, Md., June 13, 1915; Plummers Island, Md., June 17, 1906, June 8, 1913, W. L. McAtee; Glen Echo, Md., June 10, 17, 1923, J. R. Malloch; Mt. Vernon, Va., June 6, 1915, W. L. McAtee. Recorded from a range with Quebec, Ontario, Kansas, Texas, and Georgia at its extremes; many of the records, however, are doubtless misidentifications.

Dr. E. D. Ball has kindly furnished me with a copy of his notes and sketch of the genitalia of Fitch's types, which are the basis for the present application of the name *vulgaris*.

**C. fedusa** new species. Frons perceptibly narrowed between eyes, but broadening gradually below that point almost to clypeus, the sides faintly incurved above and outcurved below. Ventral view of outer clasper of male as in Fig. 6, lateral lobe somewhat as in Fig. 14, but more rounded, apical hook well developed, both anteriorly and upwardly curved. Length, 3.75 mm. Holotype male and three rather teneral females, Eastern Branch, near Benning, D. C., Sept. 7, 1913, W. L. McAtee. Teneral male, St. Agnes, Sept. 2, on oak, Uhler Collection, (U. S. N. M.).

**C. gedusa** new species. Frons widest just below middle, the sides except for narrowing between eyes, almost evenly though slightly outcurved. Ventral view of outer clasper of male as in Fig. 18, lateral lobe similar to Fig. 13, but more rounded; apical hook, short, broad, acute, distinctly anteriorly and a little inferiorly curved. Length,

3.75 mm. Holotype male, Beltsville, Md., June 14, 1914, and four females, same locality, June 15, 1913, W. L. McAtee.

**C. hedusa** new species. Frons widest about two-thirds its length from vertex, the sides above that point a little incurved, below nearly straight. Ventral view of outer clasper of male as in Fig. 9, lateral lobe much as in *C. incisa* (Fig. 17), apical hook, small, short acute, directed inwardly, little curved. (Fig. 9). Length: 3-3.5 mm. Holotype and two paratype males, Beltsville, Md., May 17, 1914; other paratypes, same locality, May 28, 1916, on *Pinus virginiana*; Corner Conduit and Potomac Roads, Va., June 8, 1913, on *Pinus virginiana*, W. L. McAtee (McAtee); teneral male, St. Agnes, Sept. 22, Uhler Collection (U. S. N. M.).

**C. kedusa** new species. Frons rather wide, the greatest width about two-thirds its length from vertex, the sides smoothly incurved above and outcurved below this point. Ventral view of outer clasper of male as in Fig. 24, lateral lobe much like that of *C. incisa* (Fig. 17) but a little deeper and more narrowly rounded; apical hook stout, usually appearing dark and heavily chitinized, strongly curved both anteriorly and upwardly. Length: 4-5 mm. Holotype male, Forest Glen, Md., July 6, 1913, on *Morus rubra*, W. L. McAtee; paratypes: same data, and Odenton, Md., July 4, 1913; near Chevy Chase Lake, Md., July 6, 1913; Plummers Id., Md., July 19, 1914, W. L. McAtee; Glen Echo Md., June 17, July 1, 8, 1923, J. R. Malloch; Vietch to Torrison, Va., July 18, 1915; near Dead Run Swamp, Va., July 5, 1914; Virginia near Plummers Id., June 17, 1913, Mt. Vernon, Va., June 27, 1915, on *Salix babylonica*, W. L. McAtee. Also two specimens from the Uhler Collection, one labelled S. Ill. (U. S. N. M.); Lakehurst, N. J., July 26, H. B. Weiss, Ames, Iowa, July 1, 1894, St. Croix Fall, Wis., July 20, 1917, E. D. Ball (Ball).

**C. ledusa** new species. Frons of about same shape as in *C. kedusa*. Ventral view of outer clasper of male as in Fig. 15, lateral lobe much as in *C. vulgaris* (Fig. 13), apical hook small, incurved, acute. Length: 4-4.5 mm. Holotype male and paratypes, Manaos, Brazil, Miss H. B. Merrill (U. S. N. M.).

**C. mallochi** new species. Frons nearly of uniform width, widening slightly from vertex to a point three-fourths its length below, then slightly constricted before joining clypeus. Ventral and lateral views of outer clasper of male as in Fig. 22, apical hook long, directed nearly straight inwardly but slightly curved anteriorly. Length: 4-5.5 mm. Holotype male Glen Echo, Md., Aug. 10, 1923, J. R. Malloch; paratypes; same data; also Loui (Louisiana?) 2265, C. F. Baker (U. S. N. M.).

**C. medusa** new species. Frons narrowed between eyes the sides below almost evenly though slightly outcurved, widest about two-thirds length of front from vertex. Ventral view of outer clasper of male as in Fig. 20, lateral lobe much as in *C. vulgaris* (Fig. 13), apical hook, continuing the contour of the clasper, gradually narrowing, curved a little both inwardly and anteriorly, and pointed. Length: 4-4.5 mm.

Holotype male, La Ceiba, Honduras, F. J. Dyer; paratypes same locality and collector, Feb., March, April, 1916; Tegucigalpa, Honduras, April 5, 1917, F. J. Dyer; San Rafael, Vera Cruz, March, F. W. Goding (U. S. N. M.).

**C. pedusa** new species. Frons widest about two-thirds its length from vertex, rather straight-sided both above and below that point. Ventral view of outer clasper of male as in Fig. 19 the notch on inner side sometimes more open, lateral lobe much as in *C. incisa* (Fig. 17), apical hook arising wholly from inferior lamella of clasper, directed abruptly upwardly, and a little inwardly, and very sharp pointed. Length: 3.5 mm. Holotype male, Mexico 2154, C. F. Baker; paratypes, same data, and La Ceiba, Honduras, Feb. 19, 1916, F. J. Dyer (U. S. N. M.).

**C. redusa** new species. Frons widest about two-thirds of its length from vertex, the sides slightly incurved above that point, nearly straight and gradually convergent below. Ventral and lateral views of outer clasper of male about as in *C. vulgaris* (Fig. 13), apical hook as in *C. cedusa* (Fig. 23). Length: 4-5 mm. Holotype male and two females, Glen Echo, Md., Aug. 21, 1923, paratype males, same locality, July 30, 1922, J. R. Malloch; Dunn-Loring, Va., Aug. 30, 1916, W. L. McAtee.

**C. tedusa** new species. Frons widest about four-fifths its length from vertex, the sides well incurved above that point and nearly straight and convergent below. Ventral view of outer clasper of male as in Fig. 14; this aspect and the apical hook considerably like *C. vulgaris* (Fig. 13), but the lateral lobe broad and blunt instead of angulate. Length: 4-4.75 mm. Holotype male and two females, Hot Springs, Ark., 5. 9. 1916, E. H. Gibson. (Gibson).

**C. vedusa** new species. Frons widest about two-thirds its length from vertex, the sides gently incurved above and outcurved below that point. Ventral view of outer clasper of male as in Fig. 16, lateral lobe much as in *C. incisa* (Fig. 17) but not so high, apical hook slender, acute, strongly inwardly and downwardly curved. Length 4 mm. Holotype male, numbered 651, thought to be from Mexico (Ball.).

DESCRIBED SPECIES NOT SEEN.

**Cedusa venosa** Fowler, Canon. Biol. Centr. Amer. Homop. 1, p. 112, Nov. 1904 [Mexico.]

## EXPLANATION OF PLATE XXI.

The illustration of genitalia usually shown is a ventral view of right outer clasper of male and near each is a rear view of the apical hook of clasper. No further explanation is given unless there is a departure from this plan. The Figures are arranged in six series: 1, the only illustration of *Cenchræa*; 2-4, the *maculata* group; 5, *edentula*; 6-10, according to degree of angulation of inner margin; 11-23, according to the degree of emargination of the inner margin; and 24, the single representation of a distinct type of clasper.

Mr. J. R. Malloch has kindly redrawn the Figures from the writer's originals.

- |   |  |
|---|--|
| Fig. 1. <i>Cenchræa uhleri</i> .  | Fig. 13. <i>Cedusa vulgaris</i> ; lateral view at right.             |
| Fig. 2. <i>Cedusa maculata</i> .  | Fig. 14. <i>Cedusa tedusa</i> ; lateral view at right.               |
| Fig. 3. <i>Cedusa maculata</i> , apical sternite of ♀.  | Fig. 14a. <i>Cedusa californica</i> ; apical sternite of ♀ at right. |
| Fig. 4. <i>Cedusa flavida</i> .   | Fig. 15. <i>Cedusa ledusa</i> ; lateral view at right.               |
| Fig. 5. <i>Cedusa edentula</i> .  | Fig. 16. <i>Cedusa vedusa</i> .                                      |
| Fig. 6. <i>Cedusa fedusa</i> .  | Fig. 17. <i>Cedusa incisa</i> , lateral view at right.               |
| Fig. 7. <i>Cedusa fedusa</i> , apical sternite of ♀.  | Fig. 18. <i>Cedusa gedusa</i> .                                      |
| Fig. 8. <i>Cedusa inflata</i> .   | Fig. 19. <i>Cedusa pedusa</i> .                                      |
| Fig. 9. <i>Cedusa hedusa</i> .  | Fig. 20. <i>Cedusa medusa</i> .                                      |
| Fig. 10. <i>Cedusa praecox</i> ; two shapes of apical hook shown, and at right a lateral view of clasper. | Fig. 21. <i>Cedusa funesta</i> .                                     |
| Fig. 11. <i>Cedusa obscura</i> ; two shapes of apical hook shown, and at right a lateral view of clasper. | Fig. 22. <i>Cedusa mallochi</i> ; lateral view at right.             |
| Fig. 12. <i>Cedusa bedusa</i> .   | Fig. 23. <i>Cedusa cedusa</i> .                                      |
|   | Fig. 24. <i>Cedusa kedusa</i> .                                      |

