

A REVISION OF THE NORTH AMERICAN ICHNEUMON-FLIES OF THE GENUS MESOSTENUS AND RELATED GENERA

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Ashmead's tribe Mesostenini was separated off from the Crytini on the basis of the small alar areolet (fig. 6) of its members and an indefinable general appearance or habitus. As I have heretofore pointed out¹ I cannot agree with Ashmead and those who follow him that these differences are of sufficient strength to justify the separation. Certain of the genera, which, because of the small areolet, must be placed in the Mesostenini if that tribe is maintained are much less closely related to *Mesostenus* than to other genera in which the areolet is large. For example, the new genus, *Agonocryptus*, described beyond, is very closely related to *Echthrus* Gravenhorst and to certain Oriental genera (for example, *Megacryptus* Szepligeti, and *Torbda* Cameron) in clypeal, tibial, and abdominal characters, whereas only its small areolet allies it to *Mesostenus*.

The insects here treated constitute the North American representatives of the tribe Mesostenini of Ashmead.

KEY TO GENERA TREATED

1. Spiracles of first segment before middle; front tibia in female inflated and basally constricted; seventh tergite in female much longer than sixth, eighth long and scoop-shaped; head narrowed behind eyes, the temples narrow, cheeks swollen and much broader than temples; clypeus broadly truncate, not medially dentate; mandible with lower tooth larger and longer than upper; propodeum long, with two transverse carinae; first tergite in female short and stout, hind tibia nearly or quite a half longer than femur, longer calcarium not reaching middle of basitarsus; tarsus shorter than tibia, apical joint hardly as long as second; ovipositor much shorter than abdomen (figs. 2a, 3b, 6a, 7) ----- **Agonocryptus**, new genus.
- Spiracles of first segment at or behind middle; not agreeing entirely otherwise with above ----- 2

¹ Journ. Wash. Acad. Sci., vol. 15, 1925, p. 389.

2. Spiracles of first segment at or not far behind middle (fig. 2*b-d*), the segment in female either narrow throughout or subclavate; propodeum with more or less distinct basal carina, but with apical carina wanting or at most faintly indicated laterally (fig. 3*c* and *l*)----- 3
- Spiracles of first segment far behind middle (fig. 2*e-h*)----- 4
3. Clypeus broadly truncate without an apical tooth; first segment sublinear, curved, the spiracle at or slightly behind middle (fig. 2*b*); propodeum (fig. 3*c*) shining, posteriorly evenly transversely striate; longer hind calcarium reaching beyond middle of basitarsus (fig. 7).

Messatoporus, new genus.

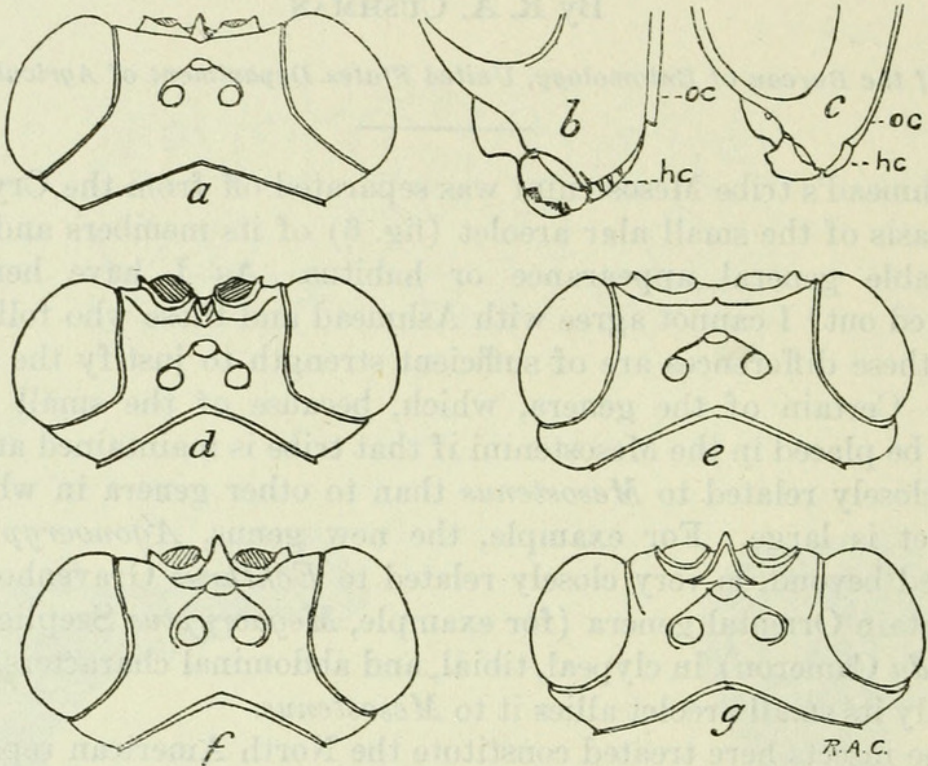


FIG. 1.—HEAD OF: *a*. *LISTROGNATHUS ALBOMACULATUS* (CRESSON), DORSAL VIEW; *b*. SAME, LATERAL VIEW OF LOWER PART TO SHOW OCCIPITAL CARINA (*oc*) AND HYPOSTOMAL CARINA (*hc*); *c*. *LISTROGNATHUS AGNATUS* CUSHMAN, LATERAL VIEW OF LOWER PART; *d*. *POLYAENUS SPINARIUS* (BRULLÉ), DORSAL VIEW; *e*. *MESOSTENUS LEUCOPUS* ASHMEAD, DORSAL VIEW; *f*. *POLYCYRTUS NEGLECTUS* CUSHMAN, DORSAL VIEW; *g*. *POLYCYRTIDEA LIMITIS* CUSHMAN, DORSAL VIEW

Clypeus medially angulate or toothed; first segment subclavate, straight, the spiracles slightly behind middle (fig. 2*c-d*); propodeum (fig. 3*l*) very long, posteriorly opaque rugoso-punctate; longer hind calcarium not or barely reaching middle or basitarsus----- *Mallochia* Viereck.

4. Propodeum not completely areolated, nearly or quite without longitudinal carinae, rarely with areola more or less defined----- 5
- Propodeum nearly completely areolated (fig. 3*m*)--- *Polistiphaga* Cushman.
5. Postpetiole in female broad, the sternite not or barely reaching the spiracles (fig. 2*e-f*), in male sternite rarely reaching beyond spiracles and then only slightly beyond----- 6
- Postpetiole in female narrow, the sternite reaching distinctly beyond the spiracles (fig. 2*g-h*), in male far beyond, if not so the areolet is very long and narrow----- 9

6. Frons with a single stout horn, rarely indistinct (fig. 1a), abdomen strongly and coarsely punctate-----*Listrognathus* Tschek.
 Frons unarmed or with two minute horns or with a more or less prominent median carina; abdomen very finely coriaceous and not or very weakly punctate----- 7

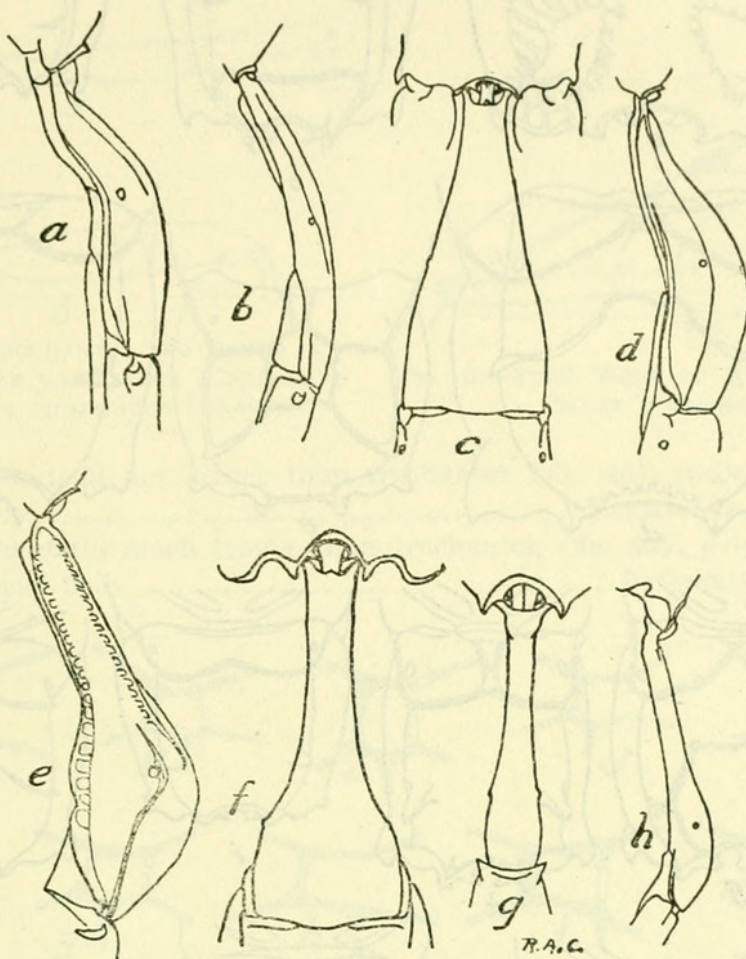


FIG. 2.—FIRST ABDOMINAL SEGMENT OF FEMALE: *a.* AGONOCRYPTUS DISCOIDALOIDES (VIERECK), LATERAL VIEW; *b.* MESSATOPORUS DISCOIDALIS (CRESSON), LATERAL VIEW; *c.* MALLOCHIA AGENIOIDES VIERECK, DORSAL VIEW; *d.* SAME, LATERAL VIEW; *e.* LISTROGNATHUS ALBOMACULATUS, LATERAL VIEW; *f.* CRYPTUROPIS AUDAX (CRESSON), DORSAL VIEW; *g.* MESOSTENUS LEUCOPUS ASHMEAD, DORSAL VIEW; *h.* SAME, LATERAL VIEW

7. Areolet pentagonal in position, intercubiti convergent, open at apex, the cubitus bent forward at recurrent and backward at second intercubitus (or its normal position), sometimes subobsolete beyond recurrent, recurrent at or before middle of areolet (fig. 6f and g) *Diapetimorpha* Viereck.
 Areolet elongate or quadrate, intercubiti parallel (sometimes open at apex), recurrent usually much closer to second intercubitus (or its normal position) than to first, cubitus beyond recurrent straight or nearly so (fig. 6h and i)----- 8
8. Frons mutic----- *Crypturopsis* Ashmead.
 Frons bicornute (fig. 1d)----- *Polyaenus* Cresson.
9. Second discoidal cell neither pointed nor strongly narrowed at base----- 10
 Second discoidal cell pointed or very narrow at base (fig. 5)----- 12

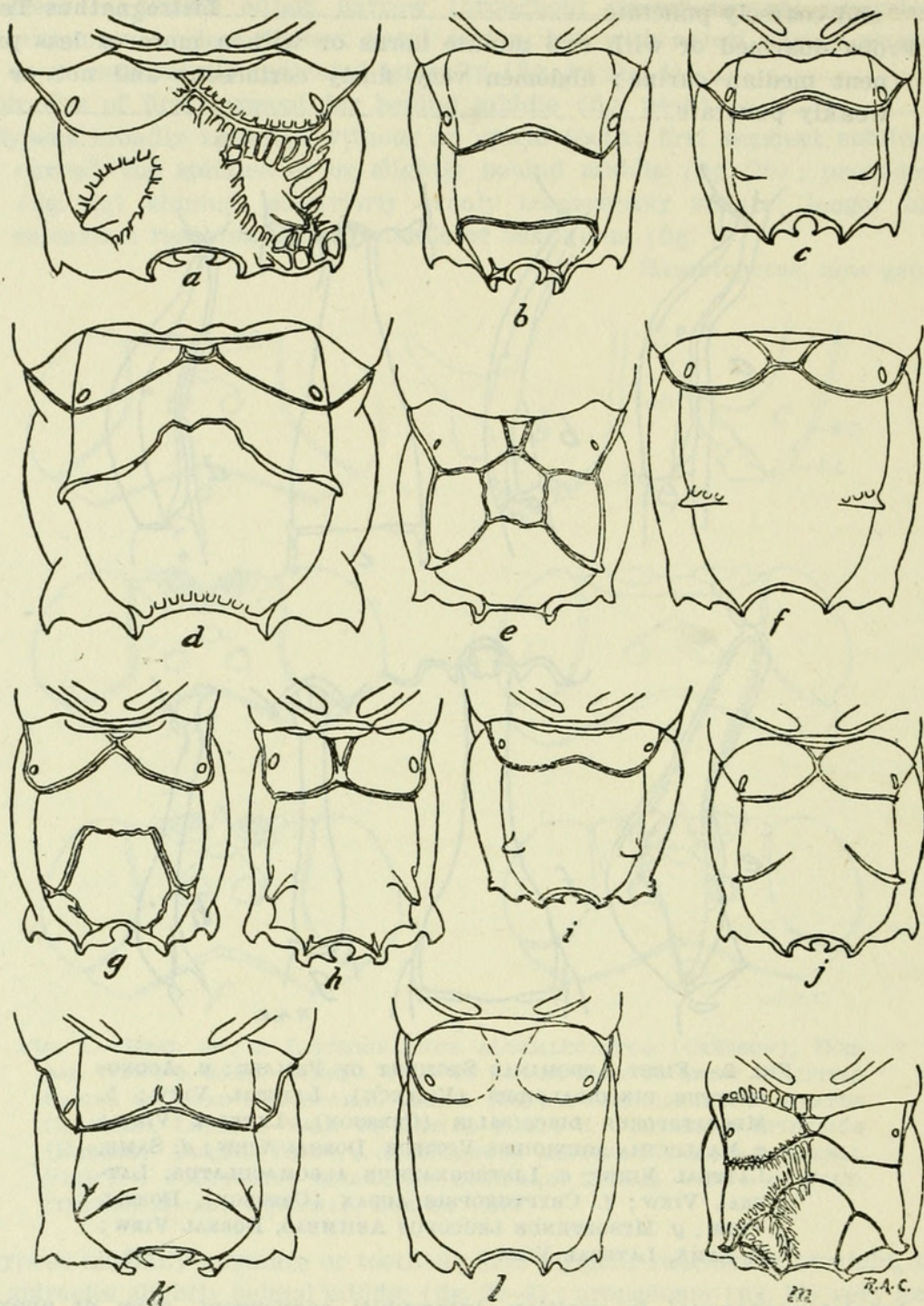


FIG. 3.—PROPODEUM OF FEMALE: *a*. *CRYPTUOPSIS ABDOMINALIS* CUSHMAN; *b*. *AGONOCRYPTUS DISCOIDALOIDES* (VIERECK); *c*. *MESSATOPORUS DISCOIDALIS* (CRESSON); *d*. *LISTROGNATHUS ALBOMACULATUS* (CRESSON); *e*. *LISTROGNATHUS AGNATUS* CUSHMAN; *f*. *DIAPETIMORPHA INTROITA* (CRESSON); *g*. *DEROCENTRUS MACILENTUS* (CRESSON); *h*. *POLYCYRTUS NEGLECTUS* CUSHMAN; *i*. *ACERASTER PERTINAX* (CRESSON); *j*. *MESOSTENUS THORACICUS* (CRESSON); *k*. *POLYAENUS SPINARIUS* (BRULLÉ); *l*. *MALLOCHIA AGENIOIDES* VIERECK; *m*. *POLISTIPHAGA ZONATA* CUSHMAN

10. Frons unarmed, but frequently with a median carina that, seen from above, may appear as a small horn (fig. 1e), propodeum without distinct apophyses though frequently with apical carina high (fig. 3 g and j)-- 11 Frons with a stout horn (fig. 1f), propodeum with strong apophyses (fig. 3h).
Polycyrtus Spinola.

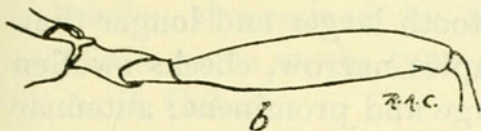
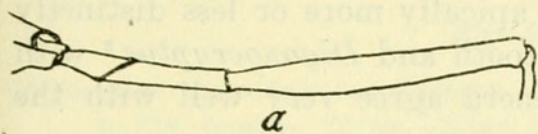


FIG. 4.—HIND TROCHANTER AND FEMUR OF:
a. DEROCENTRUS MACILENTUS (CRESSON);
b. MESOSTENUS THORACICUS CRESSON

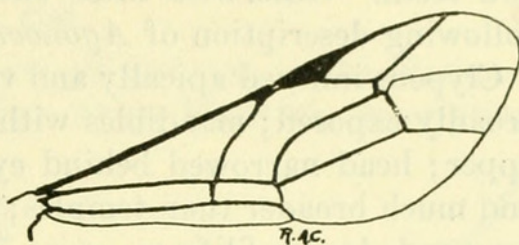


FIG. 5.—FORE WING OF ACERASTES PERTINAX (CRESSON)

11. Hind trochantella not longer than trochanter (fig. 4b), ovipositor shorter than body----- Mesostenus Gravenhorst.
Hind trochantella much longer than trochanter (fig. 4a), ovipositor much longer than body----- Derocentrus Cushman.

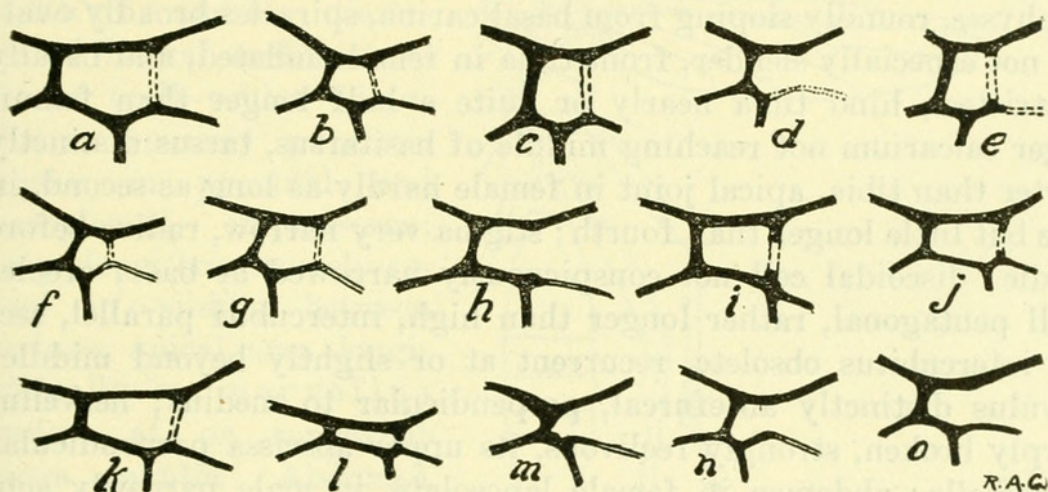


FIG. 6.—THE AREOLET OF: a. AGONOCRYPTUS DISCOIDALOIDES (VIERECK); b. MESSATOPORUS DISCOIDALIS (CRESSON); c. MESSATOPORUS MAJOR CUSHMAN; d. MALLOCHIA AGENIOIDES VIERECK; e. LISTROGNATHUS ALBOMACULATUS (CRESSON); f. DIAPETIMORPHA ORBA (SAY); g. DIAPETIMORPHA INTROITA (CRESSON); h. CRYPTUOPSIS TEXANUS (ASHMEAD); i. POLYAENUS SPINARIUS (BRULLE); j. MESOSTENUS THORACICUS CRESSON; k. POLYCYRTUS NEGLECTUS CUSHMAN; l. DEROCENTRUS MACILENTUS (CRESSON); m. POLYCYRTIDEA LIMITIS CUSHMAN; n. ACERASTES PERTINAX (CRESSON); o. POLISTIPHAGA FULVA (CRESSON)

12. Frons (fig. 1g) with a stout horn; areolet (fig. 6m) not defined, second intercubitus missing, radius, first intercubitus and recurrent very close together, nervellus inclivous----- Polycyrtidea Viereck.
Frons mutic; areolet (fig. 6n) pentagonal in position, second intercubitus missing, cubitus subobsolete beyond recurrent; nervellus reclivous.
Acerastes, new genus.

AGONOCRYPTUS, new genus²

Closely related to the Neotropical *Monogonocryptus* Viereck and *Digonocryptus* Viereck, but both of those genera have the spiracle of the first abdominal segment behind the middle, the nervulus nearly or quite interstitial, and the clypeus apically more or less distinctly dentate, *Monogonocryptus* with one tooth and *Digonocryptus*³ with two teeth. Otherwise these two genera agree very well with the following description of *Agonocryptus*.

Clypeus inflexed apically and very broadly truncate, mutic; labrum broadly exposed; mandibles with lower tooth larger and longer than upper; head narrowed behind eyes, temples narrow, cheeks swollen and much broader than temples; eyes large and prominent; antennae long and slender filiform, scape deeply, obliquely truncate; flagellum in female slightly flattened in about the basal half, basal joints very long, others successively shorter, apical joint truncate at apex; thorax subcylindrical; notauli deep anteriorly, disappearing in a roughly sculptured area in middle of mesocutum; scutellum weakly convex, not margined; sternauli distinct, propodeum long, with two transverse carinae widely separated, without longitudinal carinae or apophyses, roundly sloping from basal carina, spiracles broadly oval; legs not especially slender, front tibia in female inflated, and basally constricted; hind tibia nearly or quite a half longer than femur, longer calcarium not reaching middle of basitarsus, tarsus distinctly shorter than tibia, apical joint in female hardly as long as second, in male but little longer than fourth; stigma very narrow, radius before middle; discoidal cell not conspicuously narrowed at base; areolet small pentagonal, rather longer than high, intercubiti parallel, second intercubitus obsolete, recurrent at or slightly beyond middle; nervulus distinctly antefurcal, perpendicular to medius; nervellus sharply broken, strongly reclivous, its upper abscissa perpendicular to mediella; abdomen in female lanceolate, in male narrowly subclavate and not apically compressed, spiracles of first segment before middle; in female, first segment stout, decurved, with a blunt tooth on either side below near base, seventh tergite fully as long as third; eighth prominent and scoop-shaped; hypopygium far before apex; ovipositor much shorter than abdomen, deep and bladelike.

Genotype.—*Mesostenus discoidaloides* Viereck. To this genus also belong the following Neotropical species:

² α-γωγία=without angle, referring to the lack of a tooth on margin of clypeus, by which it is distinguished from some of its closest relatives.

³ To this genus, in addition to the genotype, belong the following Neotropical species:

(*Mesostenus*) *Digonocryptus tarsatus* (Cresson) (new combination).

(*Mesostenus*) *Digonocryptus grenadensis* (Ashmead) (new combination).

(*Mesostenus insularis* Ashmead, not *insularis* [Cresson] Ashmead) = (*Mesostenus*) *Digonocryptus cressonii* (Ashmead) (new combination).

(*Mesostenus*) *Agonocryptus chichimecus* (Cresson) (new combination).

(*Cryptus*) *Agonocryptus heathi* (Brues) (new combination).

AGONOCRYPTUS DISCOIDALOIDES (Viereck) (new combination)

Figs. 2a, 3b, 6a, 7

Mesostenus discoidaloides VIERECK, Trans. Kansas Acad. Sci., vol. 19, 1905, p. 319, female. Type.—Kans. Univ. Coll.

Discussion based on seven specimens of each sex in the National Collection determined by the author from Viereck's description and from notes on the type by A. B. Gahan.

Female.—Face very slightly narrower than frons, two-thirds as long as broad, usually more or less obliquely rugulose on each side above; malar space three-fourths basal width of mandible; diameter of lateral ocellus two-thirds ocell-ocular line. Thorax coarsely punctate, rugose in pronotal and mesopleural impressions; propodeum transversely rugose in middle between carinae, apical area longitudinally so; nervellus broken at or somewhat above middle. Abdomen coarsely and rather densely punctate, more finely and sparsely so at apex; first tergite sparsely so, polished at base and apex, two-thirds as broad at apex as

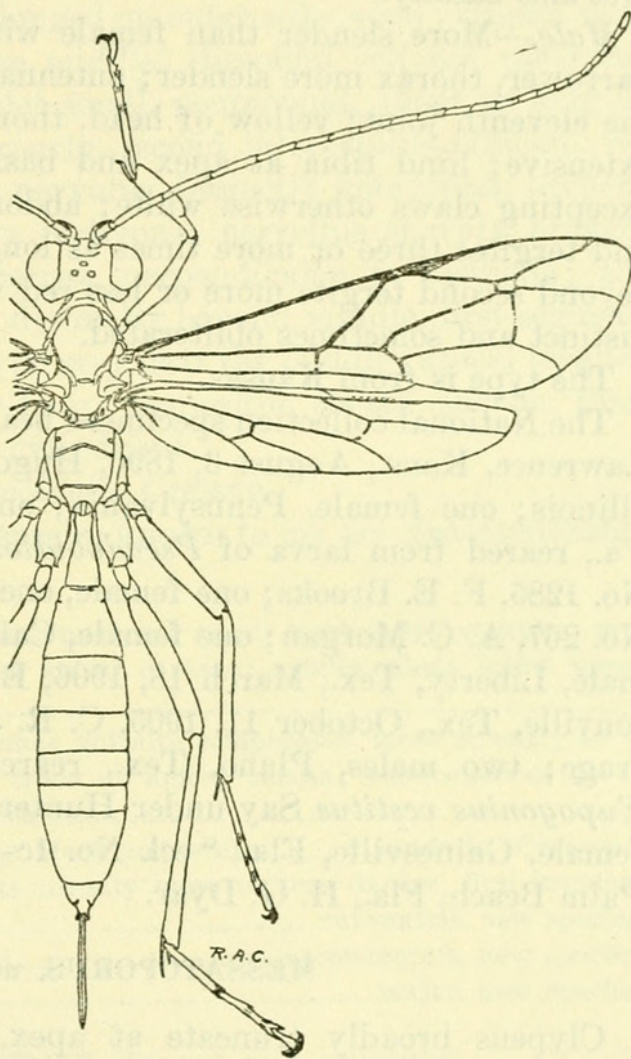


FIG. 7.—AGONOCRYPTUS DISCOIDALOIDES (VIERECK)

long; second tergite distinctly longer than broad at base; ovipositor sheath half as long as abdomen.

Black with profuse yellow markings; head yellow except mandibles at apex, spot in malar space extending up to clypeal foveae, middle of frons and vertex, and occiput which are black or blackish; antenna black with a small spot on scape and a broad annulus centering at about the eighth joint yellow; thorax yellow as follows: Pronotum dorsally and ventrally, propleurum, round or oval median

spot on mesoscutum, scutellum and postscutellum, subalar tubercle, spot below hind wing, lower part of mesopleurum only partially separated from sternum by a black streak along sternaulus (prepectus black); upper and lower divisions of metapleurum largely, and a trifoliate spot covering entire apical slope and position of areola on propodeum; coxae and basal joint of trochanters yellow and black; legs otherwise pale testaceous except hind tarsi, which are yellow with extreme base testaceous and apical two joints blackish; wings hyaline, faintly infumate at apex, venation blackish, stigma reddish; all tergites broadly yellow laterally and all but last apically, first also basally.

Male.—More slender than female with malar space shorter, face narrower, thorax more slender; antennal annulus centering on about the eleventh joint; yellow of head, thorax, and legs somewhat more extensive; hind tibia at apex and basitarsus at base black, tarsus excepting claws otherwise white; abdomen narrower, first and second tergites three or more times as long as broad at their junction, beyond second tergite more or less red with apical yellow bands less distinct and sometimes obliterated.

The type is from Kansas.

The National collection specimens bear data as follows: One female, Lawrence, Kans., August 3, 1896, Hugo Kahl; one female, northern Illinois; one female, Pennsylvania; one female, French Creek, W. Va., reared from larva of *Pseudobidion unicolor* under Quaintance No. 1285, F. E. Brooks; one female, one male, Victoria, Tex., Hunter No. 267, A. C. Morgan; one female, Calvert, Tex., G. H. Harris; one male, Liberty, Tex., March 18, 1906, E. S. Tucker; one male, Jacksonville, Tex., October 11, 1905, C. R. Jones; one male, Texas, Bel-frage; two males, Plano, Tex., reared December 12, 1908, from *Eupogonius vestitus* Say under Hunter No. 1698, E. S. Tucker; one female, Gainesville, Fla., "ecl. No. 1c-5c," H. L. Dozier; one male, Palm Beach, Fla., H. G. Dyar.

MESSATOPORUS, new genus⁴

Clypeus broadly truncate at apex, mutic; labrum prominent; mandibles long and apically very narrow, upper tooth larger and longer than lower; head strongly narrowed behind eyes, cheeks not swollen; eyes large and prominent, malar space very short; antennae as long as body, slender, scape deeply obliquely truncate, flagellum with basal joints long and slender, others gradually shorter toward apex, flagellum apically sometimes flattened; especially in female; thorax much deeper than broad, notauli deep, nearly parallel for most of their length but curving sharply posteriorly and meeting in

⁴ From μέσσος=quite in the middle, and πορος=opening, referring to the location of the spiracles of the first abdominal segment.

a deep depression at about the posterior third of the mesoscutum; scutellum convex, not margined; sternauli deep, complete; propodeum rather long, with the basal carina strong and nearly straight and apical carina absent or slightly indicated laterally, without longitudinal carinae, basad of basal carina polished, strongly transversely striate beyond, spiracles elongate; legs slender, hind coxae large, front tibia in female slightly inflated and weakly constricted basally, hind tibia not nearly a half longer than femur, longer calcarium reaching far beyond middle of basitarsus, tarsus subequal in length to tibia, apical joint in female hardly as long as third, in male little longer than fourth; fourth joint of all tarsi, especially in female and especially on front tarsus prolonged on outer side below; stigma very narrow, radius slightly before middle; discoidal cell not conspicuously narrowed at base; areolet small, pentagonal, about as long as high, intercubiti parallel or nearly, second intercubitus obsolete, recurrent at or beyond middle; nervulus distinctly antefurcal, perpendicular to medius or slightly inclivous; nervellus sharply broken, strongly reclivous, upper abscissa perpendicular to mediella; abdomen in both sexes broadest distinctly beyond middle, first segment slender, decurved, spiracles at or very near the middle; apical tergites in female not conspicuously long; ovipositor sheath shorter than abdomen, ovipositor slender cylindrical.

Genotype.—*Mesostenus discoidalis* Cresson.

The four North American species known to me are distinguishable by the following key:

1. Clypeus not apically inflexed; antennae not at all compressed apically; propodeum with lateral traces of apical carinae; subdiscoideus below upper third of postnervulus..... 2
- Clypeus apically inflexed; antennae apically compressed, more strongly so in female; propodeum without trace of apical carina; subdiscoideus at or above upper third of postnervulus..... 3
2. Abdomen with alternate bands of black and white..... *discoidalis* (Cresson).
Abdomen red, bases of segments usually more or less darker, first segment whitish at base and apex..... *rufiventris*, new species.
3. Eyes distinctly convergent below..... *compressicornis*, new species.
Eyes hardly convergent below..... *major*, new species.

MESSATOPORUS DISCOIDALIS (Cresson) (new combination)

Figs. 2*b*, 3*c*, 6*b*, 8.

Mesostenus discoidalis CRESSON, Trans. Amer. Ent. Soc., vol. 4, 1872, p. 162, female. *Type*.—Cat. No. 1575, U.S.N.M.

Mesostenus jocosus PROVANCHER, Nat. Can., vol. 6, 1874, p. 300, female; Nat. Can., vol. 11, 1879, p. 112, female; Faune Ent. Can. Hymn., 1883, p. 346, female. *Type*.—Public Mus. Quebec (new synonymy).

Discussion based on type and 10 other females and 8 males, all in the National collection.

Length, 8–9 mm.

Temples nearly flat; occipital carina not very prominent; vertex behind ocelli only slightly higher than at posterior ocelli; frons weakly impressed in middle; eyes convergent below in about the ratio 5:4; combined face and clypeus very slightly longer than broad, face rather densely finely punctate with a distinct longitudinal im-

pression on each side of middle; clypeus nearly half as long as interfoveal line, sloping toward apex but not distinctly inflexed, broadly truncate at apex; antennae as long as body; flagellum cylindrical throughout, slightly thicker toward apex. Thorax shining but not polished, rather densely finely punctate, foveolate along the lateral sutures and sternauli, pronotal and subalar impressions striate; scutellum weakly convex; apical carina of propodeum more or less distinct laterally; subdiscoideus below upper third of postnerculus; coxae opaque, densely and finely punctate. Abdomen, except first tergite, subopaque, very finely coriaceous; ovipositor sheath as long as abdomen exclusive of first tergite.

Black with profuse pale yellow or white markings as follows: Broad uninterrupted orbits, face, clypeus, mandibles at base, scape in front, broad annulus on flagellum centering on joints 10-11, up-

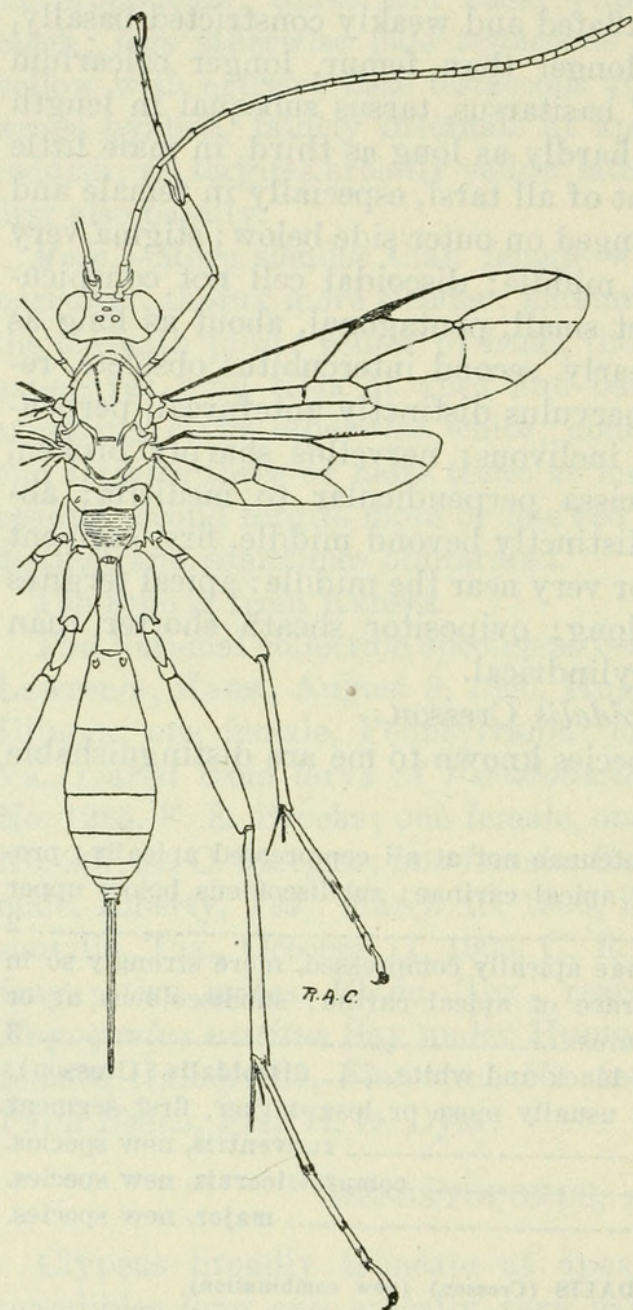


FIG. 8.—*MESSATOPORUS DISCOIDALIS* (CRESSON)

per and anterior margins of pronotum, propleura largely, spot on disk of mesoscutum sometimes prolonged toward the front along notauli, scutellum and its basal carinae, pleura and mesopleurum and meta- and mesosternum except more or less broadly along sutures and usually sternauli, metasternum entirely, upper division of meta-pleurum confluent with a median spot behind postscutellum, propodeum behind carina except oval median apical spot, base of first

segment, broad apices of tergites 1-7 and 8 except in middle above; front leg stramineous with more or less distinct darker streaks on upper surface of trochanter and femur and flexor surface of tibia, and frequently on upper surface of coxa; middle leg more testaceous with dark markings faint or absent; hind leg testaceous, coxa with upper surface yellowish and flanked on outer side toward base by a dark streak, tibia near base more or less distinctly pale, at apex and basitarsus at base black, tarsus otherwise white, calcaria apically more or less, usually largely, white; wings hyaline, veins dark, stigma pale.

Male.—Smaller and more slender, and less distinctly sculptured and more polished than female; face narrower and eyes less strongly convergent; annulus centering on flagellar joints 13-14; front and middle legs and hind coxae paler; hind tibia white at base, black at apex, and only obscurely red in middle; tergites more or less red between basal black and apical white.

The National collection specimens bear the following data: Type and three other specimens, Texas, Belfrage; Victoria, Tex., two specimens, J. D. Mitchell, one reared March 23, 1909, "from mud-wasp," and one reared January 10, 1916, under Hunter No. 3748-1 from *Agencia petiolata* (Cresson); one, Dallas, Tex., April 24, 1907, F. C. Bishopp; one, Kansas; one, Riley County, Kans., May 25, F. Marlatt; one, Boulder, Colo., September, Cockerell; one, Rockford, Ill., reared December 17, 1920, from *Ceropales fraterna*; one, Plummer Island, Md., June 25, 1920, H. S. Barber; one Cabin John, Md., September 13, 1917, R. M. Fouts; one, Georgetown, D. C., H. H. Smith; one, Carlisle Junction, Pa., August 28, 1909, W. S. Fisher; one, Durham, N. H., Weed and Fiske; and two without locality, reared, one on April 24, 1884, from *Agencia bombycisa* by T. Pergande, and one from old nest of *Sceliphron caementarium* inhabited by *Pseudagenzia mellipes*.

MESSATOPORUS RUFIVENTRIS, new species

Structurally I can see no difference between this and *discoidalis* (Cresson), and am inclined to think it merely a color variation. But in the absence of a good variation series I deem it wiser to describe it as distinct. One of the specimens was compared by S. A. Rohwer with the type of *Mesostenus jocusus* Provancher and determined by him as that species in spite of the difference in abdominal coloration.

Female.—Length, 8 mm.

Differs from *discoidalis* practically only in color of abdomen, which is red with tergites more or less darker at base, the first yellow at base and apex.

Type-locality.—Cabin John, Md.

Type.—Cat. No. 40579, U.S.N.M.

Nine females showing about the same distribution as *discoidalis*. Type taken August 5, 1917, by R. M. Fouts; two, Glen Echo, R. M. Fouts; one, Glencarlyn, Va., August 18, 1912, J. R. Malloch; one Langdale, Ala., H. H. Smith; one, Texas, Belfrage; one, Boulder County, Colo., May 9, 1926, Charles H. Hicks, under his No. 150; one, Quebec Province, Canada; and one without data.

MESSATOPORUS COMPRESSICORNIS, new species

This and the following species are very easily distinguishable from the other two species by the characters used in the key, especially in their distinctly compressed antennae.

Female.—Length, 9 mm.

Temples rather strongly convex; occipital carina high; vertex behind ocelli distinctly higher than at posterior ocelli; frons with a deep median groove; eyes convergent below in the ratio 5:4; combined face and clypeus barely as long as broad, face distinctly shagreened and very sparsely punctate; clypeus barely a third as long as interfoveal line, distinctly inflexed from middle and with a distinct reflexed margin, apex very broadly and slightly concavely truncate; antennae as long as body, flagellum very slender at base, strongly flattened toward apex. Thorax polished, at most very sparsely punctate, sternauli and prepectal suture not foveolate, mesopleural groove foveolate, pronotal impression striate, subalar impression smooth; scutellum strongly convex; apical carina entirely wanting; subdiscoideus above upper third of postnervulus; coxae polished, sparsely and coarsely punctate. Abdomen subpolished; sheath as long as abdomen beyond first tergite.

Color and color pattern much as in *discoidalis*, but differing as follows: Scape not pale in front; antennal annulus centering on seventh flagellar joint; several of the sutures of flagellum beyond the annulus with a small white spot on outer side below; post-scutellum pale; all coxae pale yellow with larger or smaller black markings above and below; front and middle trochanters and basal joint of hind trochanter yellow, the middle and hind ones black at base; front and middle femora testaceous; front and middle tibiae and tarsi stramineous; hind tibia testaceous, paler at base and black at apex; hind tarsus white, extreme base black; calcaria black, apically reddish.

Male.—More slender than female; face narrower; flagellum less strongly compressed at apex; scape pale in front; annulus centering on flagellar joint 10; front and middle legs paler and practically without black markings; apical joint of hind trochanter largely black, tibia black and white.

Type-locality.—Inglenook, Pa.

Allotype-locality.—Speeceville, Pa.

Type.—Cat. No. 40580, U.S.N.M.

Five females and one male as follows: Type taken in August by J. N. Knull; allotype July 8, 1909, by P. R. Myers; District of Columbia, July and August; Thomasville, Alabama, April 20, 1910, W. D. Pierce.

MESSATOPORUS MAJOR, new species

Fig. 6c

Very closely related to *compressicornis* and perhaps only a large specimen of that species differing slightly in structure of head and color of legs as follows:

Female.—Length, 13 mm.

Eyes only very slightly convergent below; front and middle tibiae testaceous, middle tarsi fusco-testaceous; sheath very nearly as long as abdomen.

Type-locality.—Orlando, Fla.

Type.—Cat. No. 40581, U.S.N.M.

One female, October 13, 1925, O. C. McBride.

Genus MALLOCHIA Viereck

Mallochia VIERECK, Proc. U. S. Nat. Mus., vol. 43, 1912, p. 591. *Genotype*.—*Mallochia ageniodes* Viereck.

Head transverse, temples convexly narrowed; clypeus small, arcuately truncate and medially more or less distinctly toothed at apex; eyes large, somewhat bulging; frons unarmed; mandibles short, upper tooth slightly larger and longer than lower; scape obliquely truncate; flagellum filiform, in female somewhat thickened toward apex. Thorax long subcylindrical, propodeum very long with basal carina obsolete to distinct, other carinae absent, spiracles small circular; notauli distinct anteriorly but not deep; sternauli obsolete; scutellum nearly flat; wings narrow, stigma small, radius slightly before middle, radial cell short, areolet small pentagonal, cubitus beyond second recurrent and second intercubitus weak, nervulus antefurcal, subdiscoideus far above middle of postnervulus, nervellus strongly reclivous, its upper abscissa perpendicular to cubitella; legs long and slender, longer hind calcarium not or barely half as long as basitarsus, front tibia in female neither inflated nor basally constricted. Abdomen long fusiform in female, very narrow and subclavate in male; first segment short, straight, gradually widened toward apex, spiracles slightly behind middle; apical tergites in female short; ovipositor sheath much shorter than abdomen; thin, sagittate at apex.

The two North American species are distinguishable as follows:

1. Head behind eyes much narrower than at eyes; front wings bifasciate;
female only----- *agenioides* Viereck.
Head behind eyes nearly as broad as at eyes; wings hyaline throughout;
male only----- *strigosa* (Cresson).

MALLOCHIA AGENIOIDES Viereck

Figs. 2c-d, 3l, 6d

Mallochia agenioides VIERECK, Proc. U. S. Nat. Mus., vol. 43, 1912, p. 591, female.

Type.—Cat. No. 15036, U.S.N.M.

Observations based on type and one other female.

Female.—Temples much narrower than eyes, their cephalo-caudad length little more than a third the shortest diameter of eye; occipital carina joining hypostomal carina some distance behind mandible; cheeks much broader than temples; vertex, frons, face, and clypeus basally closely and finely punctate; clypeus half as long as interfoveal line; malar space three-fourths basal width of mandible; antennae two-thirds as long as body, first four flagellar joints elongate and successively gradually shorter, fifth abruptly shorter, subapical joints about as long as thick. Thorax twice as long as deep, finely and closely punctate, pronotal depression striate, scutellum polished; propodeum rather steeply sloping apically, opaque, finely rugulose punctate, basal carina obsolete. Abdomen finely punctate-opaque, first tergite nearly polished, very faintly shagreened; first tergite two and a half times as long as broad at apex, postpetiole slightly longer than broad; second tergite twice as long as broad at base; ovipositor sheath half as long as abdomen.

Ferruginous with orbits, face, clypeus, mandibles basally, propleura, front legs, and scutellum paler; mandibles apically, ovipositor sheath, and apical joint of hind tarsus blackish; flagellum beyond middle of first joint blackish with an incomplete white annulus centering on joint 7; wings hyaline with transverse clouds in front wing opposite apex of costa and apex of radius.

The second specimen was captured May 27, 1911, at Anacostia, D. C., by P. R. Myers.

MALLOCHIA STRIGOSA (Cresson) (new combination)

Mesoleptus ? strigosus CRESSON, Trans. Amer. Ent. Soc., vol. 4, 1872, p. 167, male. *Type*.—Cat. No. 1604, U.S.N.M.

Gausocontrus ? strigosus (Cresson) DAVIS, Trans. Amer. Ent. Soc., vol. 24, 1897, p. 311, male.

Nematopodius longicaudus ASHMEAD, Proc. Wash. Acad. Sci., vol. 4, 1902, p. 201, male (not female).

The unique type from Texas is the only known specimen of this species.

Except for its broader temples and hyaline wings it differs from *agenioides* Viereck markedly only in its much more slender body and I suspect it is the male of that species. The temples are about half as long as shortest diameter of eye; the thorax about three times as long as deep with the propodeum sloping very gradually to apex; the first tergite is fully three times and the second nearly four times as long as broad at their junction; the hind coxae are very long and slender; and the antennae without a white annulus.

Genus LISTROGNATHUS Tschek

Listrognathus TSCHÉK, Verh. Zool.-bot. Ges. Wien, vol. 20, 1870, p. 153. *Genotype*.—*Listrognathus cornutus* Tschek.

Mesostenoides ASHMEAD, Proc. U. S. Nat. Mus., vol. 23, 1900, p. 45. *Genotype*.—*Mesostenus albomaculatus* Cresson.

Listrognathus (Tschek) CUSHMAN, Journ. Wash. Acad. Sci., vol. 15, 1925, p. 390.

Viereck's synonymizing of *Mesostenoides* with *Polycyrtus* Spinola is obviously incorrect, as I have previously pointed out.

As I have shown in the reference cited above the type of *Mesostenoides* will not run to that genus in Ashmead's key because of the frontal horn.

Quite as characteristic of this genus as the frontal horn is the coarse, dense abdominal punctuation.

Temples strongly, obliquely narrowed; frons usually with a distinct horn, rarely with only the trace of such a horn; eyes parallel within or nearly so, clypeus convex, usually very strongly elevated, at base, transversely impressed at apex; malar space long; occipital carina usually very prominent behind cheeks; hypostomal carina very high; antennae long, slender, flagellum in female slightly thickened and flattened below toward apex, first joint much longer than second, which is slightly longer than third, fourth much shorter than third, in male flagellum tapering beyond middle, joints gradually shorter from base. Thorax stout, about twice as long as deep and slightly deeper than broad, densely and coarsely punctate with propodeum usually more or less rugose; upper margins of pronotum swollen and anteriorly carinately angled by the epomia; notauli distinct and complete, scutellum margined only at extreme base, convex, polished and at most sparsely punctate; sternauli deep anteriorly, obsolete posteriorly; propodeum with both transverse carinae and frequently with median carinae more or less indicated between the transverse carinae, apical carina sometimes obsolete medially, apophyses well developed or indicated by strong elevations in apical carina, spiracles elongate or oval; areolet subquadrate or subpentagonal, closed, recurrent near apex; nervulus antefurcal; postnervulus broken below

middle; nervellus broken below middle, its upper abscissa nearly or quite perpendicular to cubitella; legs slender, front tibia in female not inflated. Abdomen fusiform, narrower in male, coarsely punctate, first tergite bent, postpetiole broad, usually with a prominent flange-like carina on lower margin; sheath much shorter than abdomen.

The North American species may be distinguished by the following key:

1. Occipital carina prominently toothed a short distance before reaching hypostomal carina⁵ (fig. 1b); abdomen black, the tergites conspicuously banded with white apically----- **albomaculatus** (Cresson).
Occipital carina not prominently toothed (fig. 1c); abdomen red on black with at most the apical tergites narrowly white apically-----2
2. Apical carina obsolete medially or much weaker than at apophyses; areola wanting; apical tergites margined with white----- **multicolor**, new species.
Apical carina of propodeum distinct throughout, apophyses not much stronger than middle; areola more or less defined (fig. 3e); apical tergites not margined with white-----3
3. Frontal horn black----- **agnatus**, new species.
Frontal horn white----- **paludatus** (Cresson).

LISTROGNATHUS ALBOMACULATUS (Cresson)

Synonymy and description under varietal heading.

A very variable species that is divisible on the basis of specimens studied, into five more or less distinct varieties, recognizable by the following key:

1. Lower division of metapleurum partly white----- 2
Lower division of metapleurum entirely black-----3
2. Hind tibia and basitarsus red----- **rufitibialis**, new variety.
Hind tibia black or blackish with a subbasal yellow annulus, basitarsus yellow----- **multimaculatus**, new variety.
3. Hind coxae red and white; fore wing in female with a distinct cloud below stigma----- variety **nubilipennis** (Cresson).
Hind coxae black or black and white-----4
4. White bands of abdomen in female, at least on tergites 2 and 3 interrupted at sides; mesoscutum immaculate, mesopleurum nearly or quite so; face in female medially immaculate; antenna in male without white annulus.
----- variety **sagax** (Provancher).
White abdominal bands entire; mesoscutum and mesopleurum with white spots; face in female usually more or less white medially; antenna in male with white annulus----- variety **albomaculatus** (Cresson).

LISTROGNATHUS ALBOMACULATUS variety ALBOMACULATUS (Cresson)

Figs. 1a-b, 2e, 3d, 6e

Mesostenus albomaculatus CRESSON, Proc. Ent. Soc. Philadelphia, vol. 3, 1864, p. 313, female.—ASHMEAD, Smith; Ins. of N. J., (1899) 1900, p. 570.
Type.—No. 1108, Acad. Nat. Sci. Phila.

⁵ The carina running backward from the ventral articulation of the mandible along the outer side of maxilla.

- Mesostenus leucocoxus* ASHMEAD, Proc. U. S. Nat. Mus., vol. 12, 1890, p. 407, male. *Type*.—Cat No. 2019, U.S.N.M.
- Mesostenoides albomaculatus* (Cresson) ASHMEAD, Proc. U. S. Nat. Mus., vol. 23, 1900, p. 45.
- Polycyrtus albomaculatus* (Cresson) VIERECK, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 644.
- Mesostenidea* (*Polycyrtus*) *albomaculata* (Cresson) VIERECK, Hym. Conn., (1916) 1917, pp. 329 and 330.
- Listrognathus albomaculatus* (Cresson) CUSHMAN, Journ. Wash. Acad. Sci., vol. 15, 1925, p. 391.
- Listrognathus leucocoxus* (Ashmead) CUSHMAN, Journ. Wash. Acad. Sci., vol. 15, 1925, p. 391.

Discussion based on type, a specimen compared with the type by the writer, type of *leucocoxus*, and nine other females and two other males.

Female.—Length, 8–12 mm.

Temples and vertex behind ocelli sharply sloping, densely and coarsely punctate; frons medially irregularly rugose; face medially rugose punctate; inner orbits and malar space finely coriaceous and sparsely punctate; eyes parallel; malar space about three-fourths as long as basal width of mandible, occipital carina very prominent below; clypeus very prominent; antennae nearly as long as body, fourth flagellar joint three-fourths as long as third. Thorax coarsely, mostly confluent punctate, pronotum laterally and mesopleurum above striately rugose; scutellum subpolished, sparsely punctate; propodeum reticulate rugose; apical carina obsolete medially, apophyses prominent. Basal tergites punctate, postpetiole coarsely and rather sparsely so, second coarsely and confluent so; apical tergite polished, impunctate; sheath hardly half as long as abdomen; ovipositor stout, compressed, depressed beyond dorsal angle.

Black with whitish markings as follows: Orbits except behind top of eyes; usually two small spots on middle of face, sometimes wanting and sometimes confluent; clypeus basally; spot on upper margin of mandible; broad, ventrally incomplete, annulus, centering about on joint 8 or 9 of flagellum and usually a spot on under side of scape; anterior and humeral margins of pronotum, median spot on mesoscutum; scutellum largely and postcutellum; tegulae; subalar tubercle; a large mark below on mesopleurum; upper division of metapleurum; a large longitudinal mark on each side of posterior face of propodeum including the apophyses; and apical bands on tergites 1–6, those on 2 and 3 not interrupted laterally, extreme apex of 2 narrowly black; wings yellowish hyaline, sometimes with a faint trace of a cloud below stigma, venation dark brown; legs testaceous; front and middle coxae largely whitish, more or less black at base and sometimes at apex above; hind coxa black with a whitish spot above, hind knees black, tibia blackish, pale subbasally;

tarsus white, basitarsus with a more or less distinct dark subbasal annulus, apical joint red.

Male.—Much like female but antennae slightly longer than body and with annulus centering about on flagellar joint 14 or 15 and scape entirely white below; face entirely, clypeus and mandibles except apex whitish; seventh tergite also white at apex.

The type is from Pennsylvania and that of *leucocoxus* from Missouri. The other United States National Museum specimens are as follows: A female, Castle Rock, Pa., September 7, 1901; a male, Lyme, Conn., May 18, 1918, W. S. Fisher; five females, Cabin John, Md., July 1–August 21, R. M. Fouts; a female, Glen Echo, Md., September 17, 1918, R. M. Fouts; a female, Virginia, August 5, 1883, T. Pergande; a female, Wooster, Ohio, June 1, 1897; one male, Urbana, Ill., July 15, 1893, Hugo Kahl; and a female, Cadet, Mo., J. G. Barlow.

LISTROGNATHUS ALBOMACULATUS RUFITIBIALIS, new variety

Female and male.—A southern variety extending as far north on the Atlantic Coast as New Jersey. Differing from all other varieties in its red hind tibia and basitarsus and from all but *multimaculatus* in the white maculate lower division of metapleurum. The yellow markings are somewhat more extensive than in the typical form; in the female the median facial spot is usually confluent with the orbital ring.

Type-locality.—Plummer Island, Md.

Allotype-locality.—Heckton Mills, Pa.

Type.—Cat. No. 40582, U.S.N.M.

Described from three females and seven males, the type taken July 21, 1920, by H. S. Barber and the allotype June 6, 1909, by W. S. Fisher; a male with same data as allotype except May 21, 1909; a female, Lucaston, N. J., August 27, 1905; a male, Pyziton, Ala., H. H. Smith; two males, Dallas, Tex., April 8, 1906, F. C. Bishopp, and March 6, 1907, R. A. Cushman; two males, Plano, Tex., October and November, E. S. Tucker; and one female, Lawrence, Kans., Hugo Kahl.

LISTROGNATHUS ALBOMACULATUS MULTIMACULATUS, new variety

Female.—Differs from the typical form in the possession of a large white spot on lower division of metapleurum; in the generally somewhat larger spots, especially noticeable on the face, where the median spot is usually confluent with the orbital markings; orbital ring sometimes complete; hind tibia black at apex, this color grading off to fuscous red toward base; hind basitarsus entirely white.

Type-locality.—Carlisle Junction, Pennsylvania.

Type.—Cat. No. 40583, U.S.N.M.

Three females, the type captured August 28, 1909, by W. S. Fisher; one from New York; and one from Riley County, Kans., November, Marlatt.

LISTROGNATHUS ALBOMACULATUS variety NUBILIPENNIS (Cresson)

Mesostenus nubilipennis CRESSON, Can. Ent., vol. 10, 1878, p. 205. *Type*.—No. 1184, Acad. Nat. Sci. Phila.

Discussion based on type.

Differs from typical form in having the hind coxae largely red and in having a distinct, though not deeply infumate, cloud in the front wing.

Cresson says "frons unarmed", but the structure of the frons is the same as in specimens with the horn. There is great variation in the size of the horn, and the reduction in size is apparently carried to the extreme in this specimen.

A male from Vienna, Va., April 22, 1915 (R. A. Cushman), which I have somewhat doubtfully determined as this variety has a distinct frontal horn, lacks the alar cloud, and has the hind coxae red and only slightly paler above.

The type is from Georgia.

LISTROGNATHUS ALBOMACULATUS variety SAGAX (Provancher)

Mesostenus sagax PROVANCHER, Nat. Can., vol. 11, 1879, p. 112, fig. 2e, female; Faune Ent. Can. Hym., 1883, p. 345, fig. 35e, female. *Type*.—Public Museum, Quebec.

Discussion based on notes by S. A. Rohwer on type and three females and one male in the National collection determined by the writer.

According to Rohwer's notes the type will run in Ashmead's key to *Mesostenoides*, which would indicate that the frons is unarmed, but one of the females in the National collection agrees so nearly perfectly with Provancher's description and with the additional characters in Rohwer's notes that the determination appears correct.

So identified this form is probably nothing but a more or less melanic variation of the species hardly worthy of varietal rank.

In its extreme form as represented by the type the head is entirely without white markings; on the thorax only the scutellum and apophyses are white marked; and the coxae are entirely black.

In the National Museum specimen that approaches closest to the type in coloration the frontal orbits are narrowly white; there are small white spots on dorsal margin of pronotum, base of tegula, subalar tubercle, and upper side of middle coxa. In the most highly ornamented specimen these markings are larger, the orbital mark extends to the sides of the face, and there are additional white markings on cheeks, clypeus, mandibles, lower corner of pronotum,

lower margin of mesopleurum, postscutellum, upper division of metapleurum and all coxae.

The only characters in which all agree and in which they differ from the typical variety are the interrupted apical bands of tergites 2 and 3 and the medially immaculate face.

In the male the orbits are more broadly white from frons around to cheeks, the face is medially white, clypeus and mandibles partly white, scape white below, flagellum entirely black; tegulae, humeral margin of pronotum, subalar tubercle, postscutellum, front and middle coxae and trochanters beneath white; front and middle coxae and trochanters above, hind coxa and basal joint of trochanter entirely, apex of femur, basal and apical joints of tarsus black; second joint of hind tarsus dusky; apical bands of tergites 2 and 3 not interrupted; seventh tergite apically white.

The type is from Cap Rouge, Quebec; the most nearly typical female of the National collection and the male from Edmonton, Alberta, April 5, 1924, George Salt; and the two other females from Canada (C. F. Baker collection); and Lyme, Conn., June 15, 1918, W. Middleton.

LISTROGNATHUS MULTICOLOR, new species

Female.—Length 8 mm.

Temples strongly sloping, straight, distinctly, though not densely, punctate; frons medially rugose above, polished below, horn large; face finely alutaceous, coarsely punctate; clypeus moderately elevated; malar space subequal to basal width of mandible; occipital carina not prominent below; antennae nearly as long as body. Thorax densely and coarsely punctate, pronotum laterally, mesopleurum and metapleurum partly, rugoso-striate; propodeum with apical carina obsolete medially, apophyses low carinate, obliquely striate rugose between the carinae, posterior face reticulate rugose; nervulus distinctly antefurcal; nervellus perpendicular to cubitella. Abdomen densely, rather coarsely punctate on tergites 2–3, postpetiole sparsely punctate; sheath hardly half as long as abdomen; ovipositor as in *albomaculatus*.

Head and thorax black with the following white markings; anterior orbits, very narrow on face; a spot on cheek; middle of clypeus; spot on mandible; upper side of ninth flagellar joint; small spots on humeral margin of pronotum, tegula, subalar tubercle, and scutellum; and a spot on each side of posterior face of propodeum, including apophyses; wings yellowish hyaline; legs testaceous; front and middle coxae more or less whitish above; hind tibia dusky red, blackish at base and apex, with an indefinite yellowish subbasal annulus; tarsus dusky, basal and apical joints nearly black, joints 1–4 pale at

base; abdomen ferruginous, apical tergites more or less black, tergites 4-7 with narrow white margins.

Type-locality.—California.

Type.—Cat. No. 40584, U.S.N.M.

Two females, the paratype from Kaslo, British Columbia (R. P. Currie).

The paratype is smaller than the type. It lacks the orbital markings on sides of face and on cheeks; clypeus is only faintly maculate and the mandibles entirely black; the antennal annulus occupies joints 9-11; the spots on the thorax are smaller, and those on the subalar tubercles and propodeum are wanting; and the fourth tergite lacks the apical white band.

LISTROGNATHUS AGNATUS, new species

Figs. 1c, 3e

Female.—Length, 8 mm.

Head rather thick antero-posteriorly, the temples convexly oblique, strongly punctate; frons polished, almost without sculpture, horn fairly large; face slightly widening below, coriaceous, medially rather densely punctate; clypeus convex basally, but not especially prominent; malar space about three-fourths basal width of mandible; occipital carina not prominent below; antennae (broken). Thorax rather more finely sculptured than usual for the genus; propodeum with both basal and apical carinae distinct throughout and with the areola obsoletely defined laterally, about as long as broad with costulae near base, apophyses low carinate, apical slope flat; nervulus strongly antefurcal; nervellus slightly inclivous, its upper abscissa oblique to cubitella. Abdominal sculpture rather finer than usual; postpetiole shining, punctate only around margins and these sparsely so; sheath little more than a third as long as abdomen; ovipositor rather slender, slightly compressed, dorsal margin beyond angle straight.

Black; narrow frontal orbits and sometimes narrower facial orbits, humeral margins of pronotum, tegulae, subalar tubercles, spot on scutellum, sometimes a spot on each side of posterior face of propodeum and joints 2-4 of hind tarsus white; hind femur at apex, tibia, and basitarsus black, the tibia indefinitely paler subbasally; wings hyaline, venation brown, stigma paler; abdomen black, first tergite very dark reddish piceous, second and third very narrowly margined with pale reddish.

Type-locality.—Southern Illinois.

Type.—Cat. No. 40585, U.S.N.M.

Three females, none entire.

These bear an Ashmead manuscript name indicating an association with the lepidopterous genus *Orgyia*.

LISTROGNATHUS PALUDATUS (Cresson)

Mesostenus paludatus CRESSON, Trans. Amer. Ent. Soc., vol. 4, 1872, p. 162, male.

Type.—No. 1185, Acad. Nat. Sci. Phila.

Discussion based on the unique male type and a female in the National Collection somewhat doubtfully determined by the writer as this species.

Immediately recognizable by its white frontal horn.

Male.—The type differs from the female of *agnatus* in having the head longer behind the eyes with the temples more strongly convex; eyes widely divergent below.

Head and thorax black; frontal horn, anterior and lower posterior orbits, face, mouth parts, scape in front, collar, humeral margins of pronotum, median spot on mesoscutum, scutellum, tegulae, subalar tubercle, and a spot near lower margin of mesopleurum white; flagellum black above, reddish beneath; propodeum ferruginous, stained with black basally and in apical middle, with a white mark on each side of apical face; legs testaceous, front and middle coxae, front trochanters, and joints 2–4 of hind tarsi white; hind femur and tibia apically and basal and apical joints of tarsus black; abdomen ferruginous, tergites beyond fifth black.

The female mentioned above, which is without locality label, is of the same form and structure and abdominal coloration as that of *agnatus* but is somewhat larger (10 mm.) with more white markings. From the type of *paludatus* it differs structurally in the same way as does *agnatus*. In color it differs as follows: face except a small median spot above, black; orbits, interrupted in malar space; anterior margin of pronotum and mesoscutum immaculate; propodeum black, the apical face white with a large median black spot, the edges of the black more or less reddish as is also the apex of the metapleurum; front and middle legs entirely testaceous except for dorsal whitish spots on coxae; abdomen black with only the first, and to a lesser extent the second tergite reddish piceous, second and third narrowly pale reddish at apex.

Genus CRYPTUOPSIS Ashmead

Crypturus ASHMEAD, Proc. U. S. Nat. Mus., vol. 12, 1890, p. 413, (not Graverhorst).

Cryptuopsis ASHMEAD, Proc. U. S. Nat. Mus., vol. 23, 1900, p. 45. *Genotype*.—*Crypturus texanus* Ashmead.

Head strongly narrowed behind, temples short; occipital carina strongly sinuate and prominent behind cheeks, joining the hypostomal carina far back of mandible; frons unarmed but with a more

or less distinct median carina, medially impressed or flattened immediately before front ocellus; malar space rather long; clypeus truncate, convex with a rather broad reflexed margin; labrum exposed; upper tooth of mandible larger and longer than lower; antennae of moderate length, rather stout, in female slightly thicker and flattened below toward apex, first three flagellar joints long, fourth abruptly shorter, in male tapering, flagellar joints gradually shorter from base toward apex. Thorax stout, strongly sculptured; upper margin of pronotum swollen on each side of middle; notauli usually distinct anteriorly, sometimes obsolete; scutellum flat or weakly convex without distinct lateral carinae, lateral areas coarsely striate; prepectal carina and sternauli complete, the latter foveolate; propodeum short, precipitate behind, basal carina distinct, apophyses rounded, spiracles large, oval; hind legs long, stout; stigma narrow, radius before middle; areolet quadrate in position open behind, cubitus nearly straight beyond recurrent; nervulus nearly or quite interstitial; postnervulus broken at or slightly above the middle; nervellus broken near the bottom. Abdomen in female broad fusiform, in male very small and apically more or less distinctly compressed; postpetiole, especially in female, broad, spiracles far beyond middle of segment; sheath much shorter than abdomen; ovipositor stout, compressed, subsagittate and serrate both above and below at apex.

Seven North American species are known, distinguishable by the following key:

1. Hind coxae red or red and yellow----- 2
 Hind coxae black and yellow or black, red, and yellow----- 5
2. Notauli obsolete; first tergite pale with a black spot on postpetiole.
 texanus (Ashmead).
 Notauli distinct; first tergite red with or without yellow apical band----- 3
3. Anterior and posterior orbits broadly yellow, thorax profusely marked with yellow, mesopleurum largely yellow----- *audax* (Cresson).
 Orbits at most narrowly yellow; thorax with only small yellow spots, mesopleurum very largely or entirely black----- 4
4. Orbits narrowly yellow; metapleurum immaculate; second tergite red at apex.
 saundersi (Cresson).
 Orbits immaculate; metapleurum marked with yellow, second tergite yellow at apex----- *?armatus* (Provancher).
5. Abdomen black and white----- 6
 Abdomen red----- *abdominalis*, new species.
6. Mesosternum with only a small yellow spot on each side near sternauli; diameter of ocelli in male little more than half ocell-ocular line.
 candidus (Cresson)
 Mesosternum in female with a large yellow spot on each side of middle, the two forming a jew's-harp-shaped figure, in male largely yellow; diameter of ocelli in the male fully three-fourths ocell-ocular line--- *fortis* (Cresson).

CRYPTUOPSIS TEXANUS (Ashmead)

Fig. 6h

Crypturus texanus ASHMEAD, Proc. U. S. Nat. Mus., vol. 12, 1890, p. 413, male.
Type.—Cat. No. 2034, U.S.N.M.

Crypturus dyari ASHMEAD, Can. Ent., vol. 29, 1897, p. 113, female, male.—
DYAR, Journ. N. Y. Ent. Soc., vol. 5, 1897, p. 126. Type.—Cat. No. 3649,
U.S.N.M. (new synonymy).

Cryptuopsis texanus ASHMEAD, Proc. U. S. Nat. Mus., vol. 23, 1900, p. 45—
DALLA TORRE, Cat. Hym., 1901–1902, p. 536.

(*Cryptuopsis*) *dyari* ASHMEAD, Proc. U. S. Nat. Mus., vol. 23, 1900, p. 45.

Cryptuopsis dyari (ASHMEAD) DALLA TORRE, Cat. Hym., 1901–1902, p. 536.

Differs from all other North American species by its obsolete notauli, these being indicated anteriorly by coarser sculpture.

Discussion based on types of both names, allotype and two female paratypes of *dyari*, another male from the same source as the type of *dyari*, and five other specimens of each sex.

The female *dyari* bearing the name label in Ashmead's hand is hereby designated the lectotype of that name.

The color difference between the males noted by Ashmead is more apparent than real, the reddish markings of *texanus* being due to staining. The slight differences in the color of the hind legs are variational.

Female.—Length 7–12 mm.

Eyes nearly parallel within, slightly sinuate opposite antennae, face slightly broadening below; head subtly shagreened; frontal orbits, postvertex, temples and cheeks sparsely punctate; vertex and frons rugose, frons above regularly transversely so, scrobes arcuately rugose; face, clypeus and malar space densely punctate, middle of face somewhat rugulose; malar space subequal to basal width of mandible; antennae two-thirds as long as body, first flagellar joint slightly longer than second, third subequal to second, fourth a little more than half as long as third. Pronotum above punctate, the swollen area nearly smooth, impression and along lateral margin coarsely striate; mesoscutum punctate, the interspaces shagreened, positions of notauli and prescutellar area rugose; scutellum polished with scattered punctures; mesopleurum shining; rugulose above, punctate below, speculum polished, striate anteriorly; sternum densely punctate; sternauli coarsely foveolate; upper division of metapleurum punctate, its lower division and the propodeum irregularly rugose, basal areas partly shagreened; apophyses polished; postnervulus broken distinctly above middle. Abdomen opaque, very finely coriaceous, first tergite polished; sheath nearly as long as abdomen exclusive of first tergite.

Black with whitish markings as follows: Broad orbits interrupted on temples; middle of face (sometimes entire face); convex portion of clypeus; occasionally base of mandible; annulus on flagellum

beginning on fourth joint and centering on about seventh or eighth; anterior margin of pronotum and dorsal swellings; two lines on mesocutum; scutellum and basal carinae; postscutellum; subalar tubercle and a large mark below speculum; tegulae; large spots on upper and lower divisions of metapleurum; apophyses and usually a spot on each side of basal middle of propodeum; first tergite except a spot on disk of postpetiole, and broad apical bands on all other tergites except last; legs testaceous, hind tarsi stramineous, black at apex; wings hyaline, venation blackish, stigma stramineous.

Male.—Except sexually essentially like female, but without antennal annulus, eyes convergent below, front legs paler, and hind legs except coxae darker; hind trochanters more or less, upper surface of femur frequently, tibia except base, which is whitish, and tarsus piceous to black.

The most noteworthy variation is in the comparative width of the female abdomen; in the types of *dyari*, which were parasitic in the short oval cocoons of *Alarodia slossoniae* (Packard), the abdomen is especially broad.

The type of *texanus* is from Texas (Belfrage) and those of *dyari* from Florida, reared by Dr. H. G. Dyar, as was also one other male. The other National Museum specimens are as follows: Florida—Gainesville, September 13, 1923, T. H. Hubbell (one specimen); Miccosukee, April 27, 1924, T. H. Hubbell (one specimen); Biscayne Bay (one specimen); one specimen labelled simply Florida. Louisiana—Crowley, August 29, 1911, E. S. Tucker (one specimen). Alabama—Pysiton, Clay County, H. H. Smith (two specimens). Texas—Plano, October, E. S. Tucker (two specimens); Victoria, April 28, 1904, W. E. Hinds (one specimen).

CRYPTUOPSIS AUDAX (Cresson) (new combination)

Fig. 2f

Mesostenus audax CRESSON, Can. Ent., vol. 10, 1878, p. 207, female. *Type*.—No. 1172, Acad. Nat. Sci. Phila.

Mesostenus exaptus CRESSON, Can. Ent., vol. 10, 1878, p. 208, female. *Type*.—No. 1176, Acad. Nat. Sci. Phila.

Mesostenidea exapta (Cresson) VIERECK, Hym. Conn. (1916) 1917, p. 329.

Discussion based on types of both names, a specimen in the National collection compared with both types by the writer, and seven other females.

The two types differ apparently only in size and coarseness of sculpture and exhibit minor differences in extent of color. The specimen compared with the types is intermediate in these respects between the two.

Female.—Length 7–14 mm.

Differs from *texanus* essentially as follows. Face slightly narrower than frons, barely widening below, eyes hardly at all sinuate opposite

antennae; frons irregularly rugose above, scrobes with striae radiating from antennal foramina; face less densely punctate, clypeus and malar space sparsely so; antennae about three-fourths as long as body, fourth flagellar joint two-thirds as long as third. Notauli distinct anteriorly; inner margins of lateral lobes polished and almost impunctate; lower division of metapleurum coarsely punctate but not rugose; propodeum reticulate rugose; apophyses compressed; postnervulus broken very nearly at middle.

Head and thorax colored as in *texanus* except that there is a whitish spot on mesosternum along sternaulus, the spots on scutellar carinae are usually and those at base of propodeum apparently always lacking, and the spots covering the apophyses are much larger; abdomen as in *texanus* except first tergite red with apex whitish; black and whitish on second tergite separated by an irregular reddish streak; hind coxa red, whitish below and at base above, tarsus red apically.

The male is unknown, unless, as I suspect, it is *candidus* (Cresson).

The type of *audax* is from Georgia, that of *exaptus* from Massachusetts. The National Museum material is as follows: Lucaston, N. J., October 10, 1902 (one specimen compared with types), Pennsylvania—Carlisle Junction, August 28, 1909, W. S. Fisher; Inglebrook, September 10, 1909, A. B. Champlain. Maryland—Baltimore; Cabin John, September 7, 1917, R. M. Fouts; Plummer Island, October 12, 1906, A. K. Fisher. Virginia—Great Falls, September 12, 1912, A. N. Caudell. Alabama—Pyziton, Clay County, H. H. Smith.

None of the National Museum specimens is quite so large as the type of *audax* nor quite so small as that of *exaptus*, but they form a good variation series between the two.

CRYPTUOPSIS SAUNDERSI (Cresson) (new combination)

Mesostenus saundersi CRESSON, Can. Ent., vol. 10, 1878, p. 208, female. Type.—No. 1187, Acad. Nat. Sci. Phila.

Much like *audax* but head and thorax much less extensively marked with whitish and first tergite entirely and second apically red.

Known only from the unique type, which is from "Canada West."

CRYPTUOPSIS? ARMATUS (Provancher) (new combination)

Mesostenus armatus PROVANCHER, Addit. Faune Ent. Can. Hym., 1889, p. 76, female.

Otacustes armatus (Provancher) DAVIS, Can. Ent., vol. 27, 1895, p. 288. Type.—Coll. W. H. Harrington.

The transfer of this species to *Cryptoropsis* is on the strength of a note on the type by S. A. Rohwer, which says that it runs in Ashmead's key very satisfactorily to this genus. The species assigned

in the present paper to *Diapetimorpha* also run in Ashmead to *Crypturopsis*, and it may be that *armatus* should be assigned there. Rohwer's notes do not mention the form of the areolet, nor does the original description. The form of the propodeal apophyses appears from the description to be more like that of *Diapetimorpha*. Because of this doubt I have keyed the species out under both genera.

The following is a rearranged translation of Provancher's description with additions from Rohwer's notes:

Female.—Length, 10 mm.

Robust; antennae stout; notauli well defined in anterior fourth; sternauli foveolate; scutellar fovea foveolate, scutellum shining, impunctate; propodeum rugose posteriorly, apophyses thornlike; areolet small, second intercubitus obsolete; abdomen short oval; postpetiole broad; ovipositor shorter than abdomen.

Black with the following white markings: Clypeus, spot on mandible, palpi, annulus beyond middle of antenna, spots on anterior angles of pronotum, tegulae, subalar tubercles, a small spot above middle coxae, scutellum, postscutellum, spots on upper and lower divisions of metapleurum, apophyses, and apical margins of all tergites; first tergite, except apex, and a line on second between the black and white red; antennae, except annulus, black; legs, including coxae and trochanters, red.

Known only from the type, which is from Ottawa, Ontario.

CRYPTUOPSIS CANDIDUS (Cresson)

Mesostenus candidus CRESSON, Can. Ent., vol. 10, 1878, p. 206, male. *Type*.—No. 1173 Acad. Nat. Sci. Phila.

Crypturus albomaculatus ASHMEAD, Proc. U. S. Nat. Mus., vol. 12, 1890, p. 414, male. *Type*.—Cat. No. 2035, U.S.N.M.

(*Crypturopsis*) *albomaculatus* ASHMEAD, Proc. U. S. Nat. Mus., vol. 23, 1900, p. 45.

Endurus albomaculatus (ASHMEAD) DALLA TORRE, Cat. Hym., 1901–1902, p. 528.

Mesostenidea candida (Cresson) VIERECK, Hym. Conn., (1916) 1917, p. 329.

Crypturopsis candidus (Cresson) CUSHMAN, Journ. Wash. Acad. Sci., vol. 15, 1925, p. 390.

Discussion based on type, a specimen compared with the type, the type and paratype of *albomaculatus* and one other specimen.

Known only in the male, unless, as seems likely, it is the male of *audax*.

Differs from the male of *texanus* as follows: Mesoscutum very densely punctate, notauli distinct anteriorly; white of posterior orbits at most narrowly interrupted above; malar space frequently black; a white spot on each side of mesosternum close to sternauli; apophyses somewhat more prominent and less smoothly rounded, the yellow spots extending farther from their bases; all coxae and

hind trochanters black and white; hind tarsus, except base and apex, white.

The type of *candidus* is from New York and those of *albomaculatus* from Michigan. The other two specimens in the National collection are from Malden, Mass., September 9, 1879; and Florida.

Except for slight differences in size and in extent of white markings, all specimens are very much alike.

CRYPTUOPSIS FORTIS (Cresson)

Mesostenus fortis CRESSON, Can. Ent., vol. 10, 1878, p. 206, female. Type.—No. 1177, Acad. Nat. Sci. Phila.

Mesostenidea fortis (Cresson) VIERECK, Hym. Conn., (1916) 1917, p. 329.

Cryptuopsis fortis (Cresson) CUSHMAN, Journ. Wash. Acad. Sci., vol. 15, 1925, p. 390.

As suggested by Cresson this may possibly be the female of *candidus*, but the greater extent of white markings in the female is very unusual. Moreover, there is in the National Collection a male which agrees in this respect with *fortis* and is apparently distinct from *candidus* and which I take to be the male of *fortis*.

This male differs from *candidus* as follows: Face distinctly less than half as long as broad, malar space much shorter than the basal width of mandible; diameter of ocelli fully three-fourths as long as basal width of mandible; propleura apically white; mesosternum and hind tarsus entirely white.

The female type has the mesosternal marking reduced to two large spots so shaped that together they form a jew's-harp-shaped mark.

The type from New York and the male described above, which is from Highspire, Pa., July 30, 1910, W. S. Fisher, appear to be the only known specimens of this species.

CRYPTUOPSIS ABDOMINALIS, new species

Fig. 3a

Very distinct from all the other species in its largely red abdomen.

Female.—Length, 12 mm.; antennae, 9 mm.; ovipositor, 3 mm.

In stature and structure nearly identical with *audax* but malar space fully as long as basal width of mandible and sculpture of head and thorax somewhat coarser and denser, with scrobes arcuately striate and metapleurum punctuate-rugose; white markings as in *audax* but somewhat less extensive on thorax; white orbits rarely interrupted behind top of eyes; antennal annulus incomplete below; scutellar carinae always white marked; coxae black and white, hind coxa more or less red especially at apex on inner side; front and middle trochanters white; legs otherwise testaceous, the tarsi slightly paler; abdomen ferruginous, base of first and apices of first and second tergites indefinitely yellowish.

Type locality.—Put in Bay, Ohio.

Type.—Cat. No. 40586, U.S.N.M.

Described from eight females, six collected during June and July, 1924, at the type locality and received from Prof. C. H. Kennedy, Ohio State University; one from New Haven, Conn., June 17, 1911, A. B. Champlain; and one from Chevy Chase, Md., D. G. Fairchild.

Genus *DIAPETIMORPHA* Viereck

Diapetimorpha VIERECK, Proc. U. S. Nat. Mus., vol. 44, 1913, p. 565. *Genotype*.—(*Cryptus armatus* Ashmead) = *Diapetimorpha introitus* (Cresson).

Very closely related to *Crypturopsis* Ashmead but at once distinguishable by the form of the areolet, which appears to be the only constant difference. The flagellar joints are more slender but bear the same relation to each other; the scutellum is usually somewhat more convex with the lateral carinae stronger; the apical carina of the propodeum is usually more distinct, especially in the male; the apophyses in the female are more distinctly compressed and usually distinctly carinate, in the male they are not developed; the occipital carina is not or only weakly sinuate behind the cheeks; and the nervellus is broken at or near the middle with its upper abscissa usually nearly or quite perpendicular to the cubitella.

Apparently bears very little relationship to *Diapetus* Cameron, with which Viereck originally compared it, and which appears, from the description, to be similar to *Earrana* Cameron.

The species here assigned to this genus form a rather heterogeneous group, which should perhaps be separated into several genera.

The seven North American species known to me may be distinguished by the following key:

Crypturopsis? *armatus* (Provancher), which perhaps belongs to this genus, is included.

1. First tergite red, others black and white.

Crypturopsis? *armatus* (Provancher).

Abdomen otherwise colored..... 2

2. Nervellus broken far below middle and strongly inclivous; apical carina in female entirely wanting between apophyses; abdomen black and white, tergites 3 and 4 in male sometimes pale reddish..... 3

Nervellus broken at or not far below middle, reclivous, upper abscissa perpendicular to cubitella; apical carina in female more or less distinctly indicated between apophyses; abdomen red, rarely in male black and yellow..... 4

3. Mesoscutum with two small spots or lines on disk; petiole basally white; hind coxa in female red and white..... *orba* (Say).

Mesoscutum with a single median spot; petiole basally black; hind coxa in female black and white..... *cinctiventris*, new name.

4. Clypeus weakly convex, without a distinct reflexed margin; mesoscutum with two small spots or lines on disk (sometimes indistinct); head in both sexes black and white, the pale orbits not interrupted at top of eyes; male antenna without pale annulus..... 5

- Clypeus rather strongly convex, with a distinct reflexed margin; mesoscutum immaculate or with a single median spot; head in female unicolorous, in male black and yellow, pale orbits interrupted at top of eye; male antenna with a pale annulus----- 7
5. Thorax not at all red----- *rufigaster*, new species.
Thorax partly or entirely red----- 6
6. Pronotum and mesoscutum black and white----- *confederata*, new species.
Pronotum and mesoscutum largely red----- *alabama*, new species.
7. Thorax in female red, in male red and yellow; a small species.
acadia, new species.
Thorax in female black, in male black and yellow; a large species.
introita (Cresson).

DIAPETIMORPHA ORBA (Say) (new combination)

Fig. 6f

- Cryptus orbus* SAY, Boston Journ. Nat. Hist., vol. 1, 1835, p. 231 (LeConte ed., vol. 2, p. 688). *Type*.—Lost; neotype in U.S.N.M.
- Hemiteles orbus* (Say) WALSH, Can. Ent., vol. 2, 1869, p. 9.—CRESSON, Synop. Hym. No. Amer., 1887, p. 199.
- Mesostenus diligens* CRESSON, Can. Ent., vol. 10, 1878, p. 207, female. *Type*.—No. 1175, Acad. Nat. Sci. Phila.
- Lyneon annulicornis* ASHMEAD, Ins. Life, vol. 7, 1894, p. 243, female. *Type*.—Cat. No. 1462, U.S.N.M.
- Crypturopsis annulicornis* (Ashmead) CUSHMAN, Proc. U. S. Nat. Mus., vol. 55, 1919, p. 521. (Possibly synonymous with *diligens*.)
- Crypturopsis orbus* (Say) CUSHMAN and GAHAN, Proc. Ent. Soc. Wash., vol. 23, 1921, p. 162.

Has very much the appearance of a species of *Crypturopsis* but with areolet distinctly pentagonal.

Discussion based on neotype of *orbus*, type and homotype (Viereck) of *diligens*, type of *annulicornis*, and 13 other females and 6 other males, all except the type of *diligens* in the United States National Museum.

Female.—Length, 5–9 mm.

Head very finely coriaceous, temples and cheeks subpolished, frons and vertex medially rugulose; face sparsely punctate and somewhat rugulose just below antennae, with a shallow impression on each side of middle just above clypeus. Temples very narrow and nearly flat; cheeks swollen; occipital carina slightly sinuate below; clypeus strongly convex with a distinct reflexed margin; malar space two-thirds basal width of mandible; upper tooth of mandible larger and longer than lower; flagellum slender, neither thickened nor flattened below toward apex, joint 1 about six times as long as thick, 2 and 3 somewhat shorter and subequal, 4 a little more than half as long as 3, others successively shorter. Thorax shining; pronotal impression striate; mesoscutum opaque coriaceous, middle of disk irregularly longitudinally striate, prescutum sparsely punctate, notauli foveolate; scutellum polished, not margined; mesopleurum partly and all

of metapleurum more or less distinctly obliquely striate, propodeum reticulate-rugose, striately so in middle posteriorly, apophyses thick, subtuberculate, apical carina otherwise entirely lacking, spiracles small oval; areolet somewhat shorter than high; nervulus antefurcal; postnervulus broken above middle; nervellus distinctly inclivous, broken far below middle; legs slender, front tibia subinflated. Abdomen broadly fusiform, finely opaque coriaceous, first tergite polished, petiole broad, depressed, second tergite densely finely punctate; sheath less than half as long as abdomen, ovipositor stout, compressed, apex subsagittate.

Black with very profuse white markings as follows: Head (except occiput, a median band on vertex and frons, apices of mandibles and clypeus, and sometimes the clypeal suture); antennal annulus centering on flagellar joint 7; propleura below; broad humeral margins and collar of pronotum; two lines on mesoscutum; scutellum and its basal carinae; postscutellum; tegulae; mesopleurum and sternum except along sutures and impressions; both upper and lower divisions of metapleurum; a broad band on each side of propodeum from basal carina to apex and enclosing the apophyses; base and apex of first tergite and broad apices of others; wings hyaline; legs testaceous, front coxae and trochanters, middle coxae, dorsal spot on hind coxa, and hind tarsus except blackish apical joint whitish.

Male.—More slender than female, subpolished, the sculpture much weaker throughout; temples broader and more strongly convex; apical carina more or less distinct throughout and without apophyses; abdomen very narrowly fusiform.

Clypeus entirely white; antennae without annulus; hind coxa white with a black stripe above; trochanter largely black; tibia fuscous with a paler dorsal streak, which sometimes encircles the tibia; tarsus black at extreme base and apex, otherwise white; apex of third and entire fourth tergite reddish.

The normal host for this species is apparently the egg-sacs of spiders, many of the specimens examined having been reared from the egg-sacs of Drassidae; but there are two specimens said to have been reared from lepidoptera, one from *Laspeyresia molesta* Busck and one from a case-bearer on smartweed.

The type of *orbis* was from Indiana; that of *diligens* from Illinois; and that of *annulicornis* from Mississippi. The other specimens studied are as follows: Four females and two males, including the neotype of *orbis* and the homotype of *diligens*, Twining, Md., April, 1898, ex-egg-sacs of (*Prosthesima*) = *Zelotes* sp., A. Busck; two females and one male from the same or a similar host, without locality label but reared by Theodore Pergande probably from near Washington; one female, Glen Echo, Md., July, 1923, R. M. Fouts;

one male, Washington, D. C., 1917, parasite of *Laspeyresia molesta*, Quaintance No. 1345, E. R. Selkregg; one female, Chain Bridge, Va., June 14, S. A. Rohwer; one female, Dead Run, Va., September 29, 1912, H. L. Viereck; one male, Virginia, July 16, 1880, T. Pergande; one female, Pyziton, Ala., H. H. Smith; one female, St. Catherine's Island, Ga.; one male, Forbing, La., March 24, 1908, R. A. Cushman; one female, Dallas, Tex., April 17, 1906, W. W. Yothers; one female, Victoria, Tex., April 22, 1907, R. A. Cushman; one male, St. Louis, Mo., ex-case-bearer on smartweed, June 23, 1876 (Riley collection); and one female without data.

DIAPETIMORPHA CINCTIVENTRIS, new name

Mesostenus laticinotus CRESSON, Can. Ent., vol. 10, 1878, p. 208, female (not Walker). *Type*.—No. 1181, Acad. Nat. Sci. Phila.

Mesostenus cressonii DALLA TORRE, Cat. Hym., 1901, p. 539 (not Ashmead).

Ashmead used the combination *Mesostenus cressonii* in 1900 for the preoccupied *Mesostenus insularis* (Cresson). Cresson never described a Mesostenine under the name *insularis*, and the only possible inference is that Ashmead misread *Mesoleptus insularis* Cresson as *Mesostenus insularis*. *Mesoleptus insularis* Cresson is certainly not a Mesostenine, but Ashmead's use of the combination *Mesostenus cressonii* antedates that of Dalla Torre and renders a new name for the present species necessary.

Discussion based on type and a specimen compared with the type by Cushman.

Female.—Length, 9 mm.

Distinct from *orba*, which it superficially resembles rather closely, by single median mesothoracic spot and by the following characters:

Face densely punctate, cheeks and temples sparsely so; teeth of mandible equal; flagellum distinctly thickened and flattened below beyond middle and tapering toward apex, the basal joints hardly as slender; mesoscutum densely, finely punctate, opaque, mesopleurum densely, finely punctate, striate only in impressions; metapleurum more coarsely punctate, propodeum finely reticulate rugose without any striation apically, apophyses small, acute; front tibia not at all inflated. Abdomen narrower, especially the first tergite, the petiole slender cylindrical; second tergite impunctate.

Clypeus entirely white, mesoscutum with a single median spot, first tergite white only at apex; hind coxa white, black below at base and at apex above; joints 1 and 4 of hind tarsus red, 2 and 3 white, 5 black.

The type is from Louisiana and the United States National Museum specimen from Easley, S. C., J. O. Pepper, collector.

DIAPETIMORPHA RUFIGASTER, new species

Female.—Length, 8 mm.

Temples very strongly narrowed and nearly flat, subpolished; cheeks subpolished convex, not swollen, lower end of occipital carina not at all sinuate or prominent; frons finely coriaceous; face very slightly narrower than frons, densely finely punctate, almost flat without distinct impressions; clypeus not strongly convex, without a reflexed margin, apex rounded; malar space two-thirds as long as basal width of mandible, teeth of mandible subequal; antennae as long as body; flagellum very slender, slightly thickened in middle, joint 1 longest, 2 slightly longer than 3, 4 two-thirds as long as 3, others successively gradually shorter. Thorax anteriorly and dorsally shining, laterally and posteriorly opaque; pronotum striate in impressions, polished along margins; mesoscutum with fine, separated punctures, notauli fine anteriorly, soon becoming obsolete; scutellum polished, margined laterally in basal half; mesopleurum and sternum densely finely punctate, metapleurum somewhat more coarsely so, mesopleurum somewhat striate above, speculum polished; propodeum with basal carina strong, apical weak but distinct, apophyses long, compressed, basal areas finely rugulose, middle areas reticulate rugose, apical areas transversely rugulose, spiracles small oval; cubitus obsolete beyond second recurrent; nervulus interstitial; postnervulus broken above middle; nervellus reclivous, broken at middle, its upper abscissa perpendicular to cubitella; legs slender, front tibia not at all inflated. Abdomen only a little longer than head and thorax, subclavate; first tergite slender, polished, postpetiole gradually widening toward apex; second tergite twice as long as broad at base and nearly twice as wide at apex, this and following tergites finely coriaceous; sheath as long as abdomen exclusive of first tergite; ovipositor slender, compressed, sagittate at apex.

Head and thorax black and yellowish white, legs and abdomen largely red; orbits except narrow interruption on malar space, middle of face, clypeus largely, incomplete annulus on flagellum centering on seventh joint, humeral margin and collar of pronotum, two lines on middle of mesoscutum and a small spot near each lateral margin, tegulae, subalar tubercle, a spot above speculum, a large spot covering lower part of mesopleurum and side of sternum and partially divided by sternaulus, scutellum, postscutellum, both upper and lower divisions of metapleurum, a small spot on each side of propodeum near base and a broad stripe on each side from basal carina to apex enclosing the apophyses, front coxae and trochanters, middle coxae, apex of first tergite and of seventh tergite yellowish white;

apices of second and third tergites indefinitely pale; antennae black, piceous at base; wings hyaline, veins brown, stigma stramineous.

Type-locality.—Potomac Creek, Va.

Type.—Cat. No. 40587, U.S.N.M.

One specimen, taken May 22, 1896.

DIAPETIMORPHA CONFEDERATA, new species

Related to *rufigaster*, from the above description of which it differs as follows:

Female.—Length, 10 mm.

Joint 4 of flagellum little more than half as long as 3; thorax opaque throughout; mesoscutum finely coriaceous with some striations along notauli and in posterior middle; scutellum margined nearly to apex; mesopleurum finely rugulose-punctate, metapleurum more coarsely so; venation as in *rufigaster* except that nervulus is slightly antefurcal and nervellus broken below middle; abdomen fusiform, postpetiole and base of second tergite broader, the latter less than twice as long as broad at base; ovipositor stout.

Head and thorax anteriorly black and white, thorax below and posteriorly and propodeum, abdomen and legs red; head as in *rufigaster* except that face is not medially white; pronotum, mesoscutum, scutellum, and postscutellum as in *rufigaster* except lateral spots on mesoscutum are lacking, prepectus black; mesopleurum, mesoscutum, upper division of metapleurum, and apophyses paler reddish or yellowish; abdomen as in *rufigaster* with apical tergites somewhat darker; legs entirely red, the front and middle coxae slightly paler; front wing with a pale cloud or band below stigma.

Type-locality.—Dallas, Tex.

Type.—Cat. No. 40588, U.S.N.M.

Two females, the type captured October 20, 1906, by W. D. Pierce, and the paratype, in which the right hind leg and both antennae are missing, from Biscayne Bay, Fla., where it was probably taken by Annie T. Slosson.

The red of the paratype is much darker than that of the type.

DIAPETIMORPHA ALABAMA, new species

In structure and sculpture very much like *confederata*, but thorax without black except along sutures of prothorax and mesonotum; wings immaculate. May be a pale variety of *confederata*.

Female.—Length, 6–8 mm.; type, 8 mm.

Head and antennae black and white, the pattern as in *rufigaster*, scape pale reddish; thorax with same yellow pattern as *confederata*; legs and abdomen as in *rufigaster*; wings immaculate.

Male.—Smaller and more slender than female with sculpture largely erased; propodeum without apophyses, but apical carina

very distinct; head white with only occiput and middle of vertex and frons and teeth of mandibles black; scape white, flagellum pale reddish, fuscous above toward base; thorax pale testaceous with the white pattern less distinct than in female, some of the markings usually absent; legs paler with most of front and middle legs and hind tarsus stramineous; tergites 2 and 3 blackish at base.

Type-locality.—Pyziton, Clay County, Ala.

Type.—Cat. No. 40589, U.S.N.M.

Five females and ten males, all but three collected by H. H. Smith at Pyziton, Coleta, and Langdale, Ala.; one male from Cabin John, Md., August 6, 1917, R. M. Fouts; one male, Chevy Chase, Md., H. H. Smith; one female, Rockaway Beach, Long Island, F. H. Chittenden.

The New York specimen has the black of the head and thorax more extensive, the malar space and a line on each side of middle of face blackish red.

DIAPETIMORPHA ACADIA, new species

In spite of its small size and red color this is of all the species most closely related to the genotype in general form and structure and also in the strong color antigeny between the sexes.

Female.—Length, 7–8 mm.; type, 7.5 mm.

Head very finely and weakly punctuate coriaceous, face densely finely punctate opaque; frons with a median carina; temples convexly sloping, not nearly perpendicular to body axis; cheeks convex, occipital carina not sinuate nor prominent below; eyes very slightly convergent below, not at all sinuate within; malar space nearly as long as basal width of mandible; teeth of mandibles subequal; antennae nearly as long as body, first three joints of flagellum long and slender, successively shorter, fourth a little more than half as long as third, others very gradually shorter. Thorax dorsally and ventrally shining, finely and rather sparsely punctate, laterally confluent punctate; pronotum striate in impression; notauli shortly distinct; scutellum margined only at base, subpolished; propodeum bicarinate, the apophyses not high, basal areas shining, sparsely punctate, middle and apical areas reticulate rugose, spiracles small oval; areolet fully as long as high; cubitus obsolete beyond recurrent; nervulus interstitial or nearly; nervellus reclivous, broken at about the middle; legs slender, front tibia not inflated. Abdomen fusiform, tergites 2 to 6 very broad and strongly folded, their spiracles very far from lateral margin; first tergite polished, postpetiole rather broad but merging gradually into the petiole; tergites 2–6 opaque coriaceous, apical tergites polished; sheath as long as abdomen exclusive of first tergite; ovipositor rather stout, compressed, sagittate at apex.

Ferruginous; mouthparts, scutellum, upper division of metapleurum and region around apophyses more or less distinctly paler; antennae with an incomplete white annulus centering on seventh flagellar joint, red basad of annulus, black beyond; front wing with an infumate band below stigma; legs testaceous, front ones paler; apex of postpetiole indefinitely paler; seventh tergite white above.

Male.—Sculpture less dense throughout; apical carina entirely without apophyses; abdomen narrow, spiracles close to margins of tergites; head black and white, orbits except interruption at vertex, face, clypeus, mouthparts and scape beneath white; antennae black with a whitish annulus centering on flagellar joint 11, joints gradually shorter from base, the fourth not abruptly shorter; thorax, especially laterally, and legs paler; wings hyaline; abdomen, except the stramineous petiole, ferruginous.

Type-locality.—Louisiana.

Type.—Cat. No 40590, U.S.N.M.

Nine females and eight males as follows: Four females and three males, including the type and allotype, from Louisiana (C. F. Baker collection); one female, Opelousas, La., G. R. Pilate; one female, Plano, Tex., October, 1907, E. S. Tucker; one male, Paris, Tex.; one male, Lolita, Tex., J. D. Mitchell; one female, Victoria, Tex., April 11, 1911, J. D. Mitchell; one female, San Antonio, Tex., May 4, 1905, W. D. Pierce (Hunter No. 112); one male, Alabama (C. F. Baker collection); one male, Lexington, Ky.; one female, Raleigh, N. C., April 10, 1927, C. S. Brimley; one male, Washington, D. C., July 14, 1915, W. A. Donnell.

DIAPETIMORPHA INTROITA (Cresson) (new combination)

Figs. 3f, 6g

Mesostenus introitus CRESSON, Trans. Amer. Ent. Soc., vol. 4, 1872, p. 162, male.

Type.—Cat. No. 1577, U.S.N.M.

Mesostenus dejectus CRESSON, Trans. Amer. Ent. Soc., vol. 4, 1872, p. 163, female. *Type*.—No. 1174, Acad. Nat. Sci. Phila. (new synonymy).

Cryptus armatus ASHMEAD, Proc. U. S. Nat. Mus., vol. 12, 1890, p. 411, female, (not Lucas). *Type*.—Cat. No. 2026, U.S.N.M. (new synonymy).

Cryptus ashmeadii DALLA TORRE, Cat. Hym., 1901–1902, p. 562 (new synonymy).

Diapetimorpha armatus (Ashmead) VIERECK, Proc. U. S. Nat. Mus., vol. 44, 1913, p. 565.

In spite of the marked color antigeny between the sexes I have no doubt of the correctness of the above synonymy.

Discussion based on the types of all names, a homotype (R. A. Cushman) of *dejectus* and three additional specimens of each sex.

Female.—Length, 10–12 mm.

Head behind eyes shining and sparsely punctate, otherwise minutely densely punctate opaque; temples convexly sloping, cheeks

convex, occipital carina not sinuate nor prominent below; eyes slightly convergent below; clypeus convex with a narrow reflexed margin; malar space nearly as long as basal width of mandible; mandibles with teeth subequal; antennae considerably shorter than body, first three flagellar joints elongate, first longest, 2 and 3 subequal, 4 a little more than half as long as 3. Thorax opaque, finely confluent punctate laterally, less densely so dorsally and ventrally; notauli distinct about half way; pronotum in impressions and mesopleurum above speculum striate; apophyses strong, apical carina obsolete; propodeum punctate before basal carina, reticulate rugose behind, spiracle short oval; areolet longer than high, recurrent far before middle, cubitus obsolete beyond recurrent; nervulus interstitial or nearly; postnervulus broken at or below middle; nervellus reclivous, upper abscissa perpendicular to cubitella, broken below middle; legs slender, front tibia not inflated. Abdomen except first segment opaque coriaceous; tergites 2-6 very broad and strongly folded with spiracles far from lateral margins; sheath barely half as long as abdomen; ovipositor stout, compressed, subsagittate at apex.

Head and thorax black, clypeus, mandibles, collar, and scutellum more or less reddish, apophyses whitish; antennae piceous at base with an incomplete white annulus centering on flagellar joint 7. black beyond; wings uniformly infumate; legs and abdomen ferruginous, front legs paler, hind tarsus fuscous.

Male.—More sparsely punctate and shining; apical carino of propodeum more distinct but apophyses hardly developed; abdomen narrow with spiracles close to margin of tergites.

Black with yellow markings as follows: Orbits except narrow interruptions above and below eyes; face, clypeus and mouth parts; incomplete annulus centering on flagellar joint 11; collar, tergulae median spot on mesosternum, scutellum, postscutellum, four small or two large spots on mesoscutum, sometimes a small spot on mesopleurum below, upper division of metapleurum, propodeum beyond basal carina and usually more or less before; apices of all tergites and base of first; wings hyaline; legs testaceous, front legs largely and middle coxae yellow; hind coxae above yellow, trochanter at base, tibia at apex, and basal and apical joints of tarsus black, middle three joints of tarsus yellow.

The types of all three names are from Texas as are also two of the additional females and one of the males. The other female and two males are from Louisiana, one of each sex having been collected at Opelousas by G. R. Pilate.

Genus POLYAENUS Cresson

Polyaenus CRESSON, Proc. Acad. Nat. Sci. Phila., 1873, p. 570. *Genotype*.—*Polyaenus ectypus* Cresson.

A tropical genus represented in our fauna by a single species largely southern in its range but extending on the Atlantic seaboard as far north as Long Island and southern Connecticut.

Closely related to *Crypturopsis* Ashmead, from which it is distinguishable by the bicornute frons, the small convex scutellum, the longer and more spinelike apophyses, siltlike propodeal spiracles, and the closed areolet, which is, however, of the same form as that of *Crypturopsis*, antefurcal nervulus, the usually longer sheath, and the form of the ovipositor, which is stout, strongly compressed, deeper toward apex than at base and more swordlike than sagittate at apex.

The two frontal horns are sometimes placed on a common base so that they form really a single double pointed horn; and the areolet varies considerably in relative length and breadth with the recurrent interstitial or more or less antefurcal.

POLYAENUS SPINARIUS (Brullé)

Figs. 1*d*, 3*k*, 6*i*

Mesostenus spinarius BRULLÉ, Hist. Nat. Ins. Hym., vol. 4, 1846, p. 227, female.

Mesostenus albopictus CRESSON, Proc. Ent. Soc. Phila., vol. 3, 1864, p. 312 (not Smith), male.

Mesostenus delawarensis DALLA TORRE, Cat. Hym., 1901–1902, p. 540.

Polyaenus spinarius SCHMIEDEKNECHT, Gen. Ins., fasc. 75, 1908, p. 68.

Mesostenus spinarius VIERECK in Smith: Insects of N. J., 1910, p. 630.

Mesostenidea (*Polyaenus*) *spinaria* VIERECK, Hym. Conn. (1916), 1917, p. 329.

Polyaenus spinarius CUSHMAN, Journ. Wash. Acad. Sci., vol. 15, 1925, p. 391.

Discussion based on Brullé's description, type, and homotype (Cushman) of *albopictus*, and 9 females and 12 other males in the National collection.

Female.—Length, 11–15 mm.

Head subpolished behind and along anterior orbits; frons medially obliquely striate, with a median carina, frontal horns small; face with a median rounded and sparsely punctate area, the impression on each side rugose; temples sharply sloping, nearly flat; cheeks broader than temples, convex, lower end of occipital carina sinuate and slightly prominent; eyes subparallel within; malar space three-fourths as long as basal width of mandible; antennae about three-fourths as long as body; flagellar joint 1 distinctly longer than 2, which is slightly longer than 3; 4 two-thirds as long as 3. Thorax shining, coarsely sculptured; pronotum rugose except along anterior margin, dorsal lateral margins swollen, epomia reaching nearly to dorsal margin; mesoscutum coarsely punctate, notauli complete, deep,

foveolate; scutellum sparsely punctate; mesopleurum striate above, punctate below, speculum polished, sternum punctate, sternauli foveolate; metapleurum punctate, rugosely so below; propodeum basad of carina polished and sparsely punctate, middle area punctate medially, reticulate rugose laterally, apical slope transversely rugose with a narrow median polished area, apophyses long; areolet longer than high, wider at apex than at base, recurrent interstitial or nearly; legs slender, front tibia slightly swollen; abdomen finely coriaceous, first tergite polished, with a prominent flange on lower margin at base of postpetiole; sheath as long as abdomen exclusive of first tergite.

Black with whitish markings as follows: Orbits with narrow interruptions behind top of eye and sometimes in malar space, middle of face and clypeus, mandibles basally, annulus centering about on the eighth flagellar joint, anterior and dorso-lateral margins of pronotum, rounded median spot on mesoscutum sometimes flanked on either side by a narrow line; scutellar carinae and scutellum except in basal middle, postscutellum, and apical margins of their lateral areas; subalar tubercle, a large oblique mark on mesopleurum a branch of which runs forward on sternum; upper division of metapleurum and upper part of lower division; a broad mark on each side of apical slope of propodeum including the apophyses and extending forward narrowly to the basal carina; apices of all tergites except last; petiole reddish; wings hyaline, veins black, stigma brown; legs testaceous, front coxa and trochanter, middle ones largely, dorsal spot on hind coxa, and hind tarsus except apex yellow; hind tibia yellow, testaceous at apex.

Male.—Like female but malar space a little narrower; flagellar joints gradually successively shorter; apical carina of propodeum more or less distinct throughout, apophyses short, space covered by anterior extension of yellow spots in the form of strong welts; first tergite without prominent flange below; antennal annulus centering about on joint 13 of flagellum; petiole and apical tergites largely yellow; front and middle legs yellow, only the femora red, the coxae sometimes black below at base; hind coxa black with a yellow streak above and more or less piceous below, trochanter and base of femur piceous red; femur black with apex narrowly pale; tibia yellow, extreme base red, apex broadly black; tarsus yellow.

The type was from Carolina and that of *albopictus* from Delaware, and the species has been recorded by Viereck from as far north as Stonington, Conn. The specimens in the United States National Museum are from Texas (Belfrage, Fouts); San Antonio, Tex., F. C. Pratt; Plano, Tex., E. S. Tucker; Calvert, Tex., F. C. Bishopp; Pyziton, Ala., H. H. Smith; Paradise Key, Fla., C. A. Mozier; Falls Church, Va., S. A. Rohwer; Difficult Run, Va., W. L. McAtee;

MESOSTENUS THORACICUS Cresson

Fig. 3j, 4b, 6f

Mesostenus thoracicus CRESSON, Proc. Ent. Soc. Phila., vol. 3, 1864, p. 314, female, male.—PROVANCHER, Nat. Can., vol. 7, 1875, p. 266; Nat. Can., vol. 11, 1879, p. 113, fig. 2h; Faune Ent. Can. Hym., 1883, p. 346, fig. 35h.—VIERECK, Smith, Ins. of N. J., 1910, p. 630.

Mesostenus erythrogaster ASHMEAD, Proc. U. S. Nat. Mus., vol. 12, 1890, p. 406, male. *Type*.—Cat. No. 2017, U.S.N.M. (new synonymy).

Mesostenidea (Mesostenidea) thoracica (Cresson) VIERECK, Hym. Conn. (1916), 1917, p. 329.

Within its range the most abundant Mesostenine.

Discussion based on type and homotype (Cushman), the type of *erythrogaster* and many other specimens in the National Collection.

Female.—Length, 8–13 mm.

Slender; temples strongly, obliquely narrowed, nearly flat, polished and sparsely punctate; vertex and frons medially rugulose; eyes parallel, practically straight within; face medially somewhat elevated and densely punctate, orbits coriaceous and sparsely punctate; clypeus strongly convex, with a narrow reflexed margin, shining and sparsely punctate; malar space two-thirds basal width of mandible; mandible stout, teeth subequal; basal joints of flagellum slender, successively slightly shorter, fourth three-fourths as long as third, others successively gradually shorter. Thorax nearly twice as long as deep and distinctly deeper than broad, densely punctate with some striation in pronotal and mesopleural impressions, and scutellum polished and impunctate; notauli finely foveolate, meeting in a median impression; propodeum more or less rugose on posterior face, apical carina broadly interrupted medially, high on angles. Abdomen less than a half longer than head and thorax, finely, coriaceous, postpetiole polished with scattered punctures, suture between tergite and sternite obsolete; second tergite much longer than broad at base rather densely punctate, third more finely and sparsely punctate; sheath nearly as long as abdomen; ovipositor in profile stout, deeper at apex than at base.

Head black with orbits (usually interrupted behind top of eye), face medially (sometimes entirely), clypeus at base, mandibles partly, and an annulus centering on flagellar joint 8 whitish. Prothorax and dorsum of mesothorax and metathorax and sometimes the anterior portion of mesopleurum, sternum and propodeum black with whitish markings as follows: Collar and humeral margin of pronotum, tegulae, subalar tubercles, median spot on mesoscutum, scutellum laterally and apically and its basal carinae, and postscutellum; thorax and propodeum otherwise ferruginous with upper part of prepectus and apical slope of propodeum sometimes paler; legs testaceous, front coxa and trochanter, spot on upper side of middle coxa, and hind

tarsi stramineous; wings hyaline, veins brown, stigma paler. Abdomen ferruginous, apical tergites sometimes blackish.

Male.—Head thicker, temples less strongly sloping; antennae nearly as long as body, tapering toward apex; propodeum more coarsely rugose, apical carina complete and strong throughout, not more so at angles; abdomen very slender, second tergite three or more times as long as broad at base.

Entire face and clypeus, mandibles except teeth, scape below white; antennal annulus centering on flagellar joint 13, lower part of propleura, mesosternum, more or less of lower part of mesopleurum, a sutural spot below hind wing, and apex of metapleurum more or less distinctly white; front and middle coxae and trochanters largely or entirely and hind tarsus entirely white, hind coxa more or less white below, hind tibia fuscous to black at base and apex, as is rarely also base of basitarsus.

Distributed throughout southeastern Canada and the eastern half of the United States.

The type is from Delaware and that of *erythrogaster* from Wisconsin. The specimens in the national collection are as follows: Canada—(C. F. Baker collection), two females. Massachusetts—(Baker collection), one male. Connecticut—East River, ex *Acrobasis* on hickory, C. R. Ely, one female, one male; Lyme, June 16, 1918, W. Middleton, one female. New York—one female; Ithaca, F. H. Chittenden, one female, one male; Oswego, June 1, 1896, one male. Pennsylvania—West Fairview, July 31, 1909, and July 22, 1911, W. S. Fisher, two females; Rockville, May 15, 1910, W. S. Fisher, one female; Camphill, August 13, 1910, W. S. Fisher, one female; Heckton Mills, June 22, 1910, W. S. Fisher, one female; Harrisburg, May 7, 1910, W. S. Fisher, one female; North Cumberland, May 30, 1908, P. R. Myers, one female; Inglenook, June and September, W. S. Fisher, three females; June 20, 1909, P. R. Myers, one female; Highspire, W. S. Fisher, two females. Ohio—Wooster, October 15, 1896, one female; Bono, November 20, 1924, ex *Pyrausta futilalis*, C. R. Neiswander, one male. Maryland—College Park, October 8, 1924, R. M. Fouts, three females; Beltsville, May 24, 1917, W. L. McAtee, one female; Glen Echo, R. M. Fouts, one female, three males; Cabin John, R. M. Fouts, one female; Plummer Island, one male; W. Middleton, one female. District of Columbia—three females, one male. Virginia, one female; Chain Bridge, October 2, 1921, J. R. Malloch, one female; Pimmit Run, October 1, 1919, R. A. Cushman, one female; Difficult Run, October 28, 1917, W. L. McAtee, one female; Great Falls, R. P. Currie, S. A. Rohwer, H. L. Viereck, three females; Falls Church, September 9, 1912, C. T. Greene, one female; July 8, 1913, W. Middleton, one female; Hern-

don, August 21–28, 1912, ex *Phlyctaenia extricalis*, J. F. Strauss, four females, four males. Alabama—Pyziton, one female, one male, Langdale, one male, H. H. Smith. Louisiana—one female (Baker collection); Lake Charles, November 13, J. C. Crawford. Missouri—Kirkwood, ex *Nephopteryx pergratiella*, November 11, 1882, Mary E. Murtfeldt, one female. Arkansas—Bentonville, ex *Mineola*, June 21, Quaintance No. 20733, one male; July 18, one male, D. Isely. Texas—Dallas, May 23, 1906, F. C. Bishopp, one male. Kansas—Onaga, Crevecoeur, one male; Lawrence, August 20, 1896. Hugo Kahl. Colorado—one male, determined by Cresson.

MESOSTENUS GRACILIS Cresson

Mesostenus gracilis CRESSON, Proc. Ent. Soc. Phila., vol. 3, 1864, p. 315, male.

Type.—No. 1180, Acad. Nat. Sci. Phila.

Nematopodius orbitalis ASHMEAD, Bull. Colo. Biol. Assn., vol. 1, 1890, p. 21, female. *Type*.—Cat. No. 24081, U.S.N.M. (new synonymy).

Mesostenus gracilis (Cresson) VIERECK, Smith: Insects of N. J., 1910, p. 630.

Discussion based on type, that of *orbitalis* and 20 other males and 30 other females in the National collection.

The type of *orbitalis* is in very bad condition with abdomen and many of the appendages missing, but I have no doubt of the correctness of the synonymy.

Female.—Length 6–12 mm.

Not at all like *Nematopodius*, to which genus Ashmead referred it, but a typical *Mesostenus* very closely allied to *thoracicus* Cresson, from which it differs as follows:

More slender, the thorax hardly half as deep as long; temples distinctly convex; malar space nearly as long as basal width of mandible; mesopleural impressions not at all striate; apical carina of propodeum broadly interrupted medially, not high on angles, abdomen fully a half longer than head and thorax; second tergite fully twice as long as broad at base; sheath not or barely two-thirds as long as abdomen; ovipositor much more slender, especially at apex; orbits usually continuously white, rarely interrupted at top of eyes behind; mesoscutum frequently largely reddish, with only the notauli and sutures black; front and middle coxae at most partly white, rarely partly black; hind tarsus usually entirely red, rarely with joints 2–4 whitish.

Male.—Differs from male of *thoracicus* as follows:

Temples strongly convex; propodeum finely rugose behind, apical carina usually entire, but sometimes interrupted medially, not especially higher on angles; antennae usually without annulus, rarely with a distinct annulus; hind tarsus with at most joints 2–4 white, frequently entirely black or blackish; hind coxa entirely red.

Generally distributed throughout the eastern half of the United States and extending in the South entirely across the continent and into Mexico. The type is from Virginia and that of *orbitalis* from Colorado. The specimens in the National collection are as follows: Massachusetts—Milton, July 19, 1897, S. Henshaw, one male. Connecticut—one female. New York—Ithaca, F. H. Chittenden, one female, one male. Maryland—ex *Dakruma coccidivora*, two females. District of Columbia—three females, one male. Virginia—Falls Church, July 31, 1913, W. Middleton, one female; Winchester, ex *Euzophera semifuneralis*, Quaintance No. 15403, April 23, 1919, E. B. Blakeslee, one female. Ohio—Spring Valley, September 13, 1896, one male. Illinois—Algonquin, two females, one male. Michigan—Agricultural College, two females. Wisconsin—Cranmoor, July 7, 1909, C. W. Hooker, one female. Mississippi—Biloxi, ex pupa *Laetilia coccidivora*, S. M. Tracy, one male. Louisiana—Baton Rouge, May 27, 1898, one female. Texas—Dallas, April 26, 1907, W. W. Yothers, one female; April 6, 1909, F. C. Pratt, one female; May 11, 1908, A. K. Pettit, one female; Victoria, June 2, 1906, C. R. Jones, one female; Brownsville, May, 1921, J. C. Bridwell, one male; Devils River, ex *Ozamia clarefacto*, June 1925, A. P. Dodd, one male; Uvalde, ex *Ozamia clarefacto*, May, 1925, A. P. Dodd, two females; no locality, Belfrage, one female, one male. Kansas—Riley County, October, Marlatt, one female; Manhattan, one female. Arizona—one male. New Mexico—Roswell, April 15, Cockerell, one female; Las Cruces, May 5, one female; Mesilla, October 27–30, Cockerell, two males. California—Saticoy, February 3, 1927, S. E. Flanders, one female. United States—no locality, two females, eight males. Mexico—one female from C. F. Baker collection.

MESOSTENUS LEUCOPUS Ashmead

Figs. 1e, 2g–h

Mesostenus leucopus ASHMEAD, Proc. U. S. Nat. Mus., vol. 12, 1890, p. 406, male.
Type.—Cat. No. 2018, U.S.N.M.

Discussion based on type, two other males and five females, all in the United States National Museum.

The female of this species has not been described previously.

Female.—Length, 10–12 mm.

Temples very narrow but strongly convex, sparsely punctate, polished; vertex and frons above medially rugulose; anterior orbits finely coriaceous; face medially shining and densely punctate; clypeus more sparsely punctate, strongly convex, eyes parallel; malar space barely two-thirds basal width of mandible; antennae nearly as long as body, slender, slightly thicker toward apex, basal three joints of

flagellum successively gradually shorter, fourth to sixth each about three-fourths as long as its predecessor, others very gradually shorter. Thorax shining, punctate, the punctures mostly well separated; pronotal and mesopleural impressions striate; mesoscutum more densely punctuate, notauli very deep, complete, and strongly foveolate; scutellum polished, practically impunctate; propodeum with apical carina complete and almost equally strong throughout, basal areas densely punctate, middle areas more coarsely punctate, apical face transversely rugose; legs very slender. Abdomen very narrowly fusiform, subpolished, very faintly coriaceous, first tergite slender throughout, postpetiole barely twice as wide as petiole, nearly twice as long beyond spiracles as broad, suture between sternite and tergite obliterated; second tergite nearly or quite thrice as long as broad at base; sheath nearly as long as abdomen; ovipositor slender, slightly compressed, decurved, apex in profile slightly sinuate.

Head and thorax black with white markings as follows: Broad orbital ring, broadly interrupted at top of eye and narrowly so below; center of face and clypeus; mandibles largely; incomplete annulus centering on suture between flagellar joints 7 and 8; anterior and humeral margins of pronotum; median spot on mesoscutum; scutellum; tegulae; subalar tubercle; elongate mark on lower edge of mesopleurum; upper division of metapleurum and about upper half of lower division; and posterior face of propodeum except a broad median black stripe; wings clear hyaline, venation brown, stigma paler; legs testaceous, front coxa and trochanter largely whitish, hind tibia largely and tarsus yellowish; abdomen entirely pale ferruginous.

Male.—Like female except temples broader; face entirely white antenna without annulus; propodeum with middle areas very coarsely, somewhat longitudinally rugose dorsally, transversely so laterally, apical face coarsely reticulate rugose; thoracic markings slightly smaller; basal joint of hind trochanter and femur dorsally piceous, tibia largely black, more or less reddish below and near base, tarsus yellow with apical joint and base of first joint black; abdomen very slender, compressed, black with base and apex of first tergite and broad apices of all others ferruginous.

The type is from Illinois, where it is said to have been reared by F. M. Webster as a parasite of a sawfly found on wheat. The other specimens are as follows: Lawrence, Kans., July 13, 1896, Hugo Kahl, one female; Rosslyn, Va., H. H. Smith, one male; Maryland—Glen Echo, R. M. Fouts, one female; Baltimore, one female; District of Columbia, June 15, 1914, F. Knab; and one of each sex without labels.

MESOSTENUS PROMPTUS Cresson

Mesostenus promptus CRESSON, Can. Ent., vol. 10, 1878, p. 209, male. *Type*.—No. 1186, Acad. Nat. Sci. Phila.

Mesostenus americanus CRESSON, Can. Ent., vol. 10, 1878, p. 209, female. *Type*.—No. 1170, Acad. Nat. Sci. Phila.

Exetastes brevipennis PROVANCHER, Nat. Can., vol. 11, 1879, p. 213; Faune Ent. Can., Hym., 1883, p. 386, female, male. *Type*.—See discussion.

Mesostenus promptus (Cresson) PROVANCHER, Faune Ent. Can., Hym., 1883, p. 785.

Mesostenidea americana (Cresson) VIERECK, Hym. Conn. (1916) 1917, p. 329.

Mesostenus brevipennis PROVANCHER, Faune Ent. Can., Hym., 1883, p. 794

Mesostenus promptus (Cresson) PROVANCHER, Addit. Faune Can., Hym., 1889, p. 455, index.

Discussion based on types of *promptus* and *americanus*, notes on *brevipennis* by S. A. Rohwer, and three females and two males in the National Museum.

There appears to be no reason for doubt that *promptus* and *americanus* are the sexes of the same species, and S. A. Rohwer, who examined the probable types of *brevipennis*, indicated in his notes that Provancher was correct in synonymizing his species with *promptus*. He writes that there are no specimens in the Provancher collection under the name *brevipennis*, but that the two under *promptus* appear to be properly identified.

Female.—Length, 8–12 mm.

Temples oblique, weakly convex, polished, sparsely and weakly punctate; frons and face medially densely punctate; eyes parallel within; malar space subequal to basal width of mandible; antennae distinctly shorter than body, flagellar joints successively gradually shorter from base. Thorax more than half as deep as long, dorsally polished and sparsely punctate, laterally more densely punctate and sometimes largely rugulose so, ventrally more finely and sparsely punctate; notauli fine, complete; propodeum rugose punctate, basally sparsely punctate, apical carina broadly interrupted medially; wings rather short, areolet rather shorter and broader than usual with recurrent nearly interstitial, nervulus practically interstitial, nervellus with upper abscissa perpendicular to cubitella; abdomen slender, very finely coriaceous, first tergite polished, postpetiole longer beyond spiracles than broad, second tergite fully twice as long as broad at base; sheath nearly as long as abdomen; ovipositor slender, compressed, decurved, subsagittate at apex.

Head and thorax black, abdomen ferruginous, immaculate except for a small incomplete annulus centering on flagellar joint 8 and sometimes minute white spots on frontal orbits and scutellar carinae; legs black, front and middle tibiae and tarsi and hind tarsus apically

more or less reddish, hind femur varying from black to ferruginous, in the latter case the front and middle femora also largely ferruginous in front; wings uniformly infumate.

Male.—Differs from female principally as follows: Anterior orbits white, narrowly on frons, broadly on face, clypeus, and mandibles white; antennae immaculate; collar, humeral margin of pronotum, tegulae, subalar tubercle, scutellum and its basal carinae, underside of front and middle coxae and trochanters, and joints 2-4 of hind tarsus white; propodeum more coarsely sculptured, apical carina more nearly complete, interrupted only by a narrow median foveolate groove; abdomen narrower, subcompressed toward apex; wings longer, hyaline.

The type of *promptus* is from Illinois, that of *americanus* from Maine, and that of *brevipennis* from Canada. The United States National Museum specimens are as follows: Ames, Iowa, August 13, 1925, one female; Pringle, S. D., July 15, 1924, one female; Colorado, C. F. Baker collection, one female; and two males without labels. The Colorado specimen is a homotype (Cushman) of *americanus* and one of the males has been compared by Cushman with the type of *promptus*.

MESOSTENUS MELANURUS, new species

Very distinct because of its broad temples, short, thick thorax, immaculate antennae, and polished abdomen.

Female.—Length, 7 mm.

Temples nearly as broad as eyes, very strongly convex, distinctly punctate; frons and face punctate, more densely so medially; eyes parallel; malar space very nearly as long as basal width of mandible; antennae apparently nearly as long as body (extreme apices gone), first joint of flagellum about a third longer than second, others gradually, successively shorter. Thorax but little more than a half longer than deep, dorsally and ventrally polished and rather sparsely punctate, laterally opaque and finely, very densely, almost reticulate, punctate; propodeum very short, apical carina obsoletely interrupted medially, ascending much more closely than usual to basal carina, hardly more prominent at angles, basal areas polished and sparsely punctate, middle areas obliquely rugulose, apical area reticulate rugulose; areolet elongate, recurrent antefurcal; nervulus antefurcal; abdomen polished, almost impunctate, postpetiole much shorter beyond spiracles than broad, second tergite hardly a half longer than broad at base; sheath nearly as long as abdomen; ovipositor slender, slightly compressed, decurved, elongately subsagittate at apex.

Black, postpetiole, second tergite and base of third dark ferruginous; antenna without annulus, legs black, more or less distinctly reddish beyond femora; wings infumate, front wing darker.

Type-locality.—Calgary, Alberta.

Type.—Cat. No. 40591, U.S.N.M.

One female captured May 12, 1923 by George Salt.

Genus DEROCENTRUS Cushman

Derocentrus CUSHMAN, Proc. Ent. Soc. Wash., vol. 21, 1919, p. 113. *Genotype*.—(*Coleocentrus texanus* Ashmead) = *Mesostenus macilentus* Cresson.

Very close allied to *Mesostenus*, but immediately separable by the very long apical joint of hind trochanter and in female by the very long ovipositor.

The antennae in female and the legs are excessively slender; the first tergite is straight; the second tergite is very nearly as long as the first and fully four times as long as broad at base, just behind which it is slightly constricted; the front tarsus is twice, and its basal joint nearly, as long as tibia; the apical joint of the hind trochanter is about twice as long as the basal joint and nearly half as long as the femur; the areolet is more elongate, the ovipositor is nearly or quite twice as long as the body. Otherwise agrees well with the foregoing description of *Mesostenus*.

Only one species, having several synonyms, is thus far known.

DEROCENTRUS MACILENTUS (Cresson) (new combination)

Figs. 3*g*, 4*a*, 6*l*

Mesostenus longicaudis CRESSON, Trans. Amer. Ent. Soc., vol. 4, 1872, p. 164, female. (Not Brullé). *Type*.—Cat. No. 1578, U.S.N.M.

Mesostenus macilentus CRESSON, Can. Ent., vol. 10, 1878, p. 210, male. *Type*.—No. 1183, Acad. Nat. Sci. Phila.

Mesostenus gracilipes, CRESSON, Proc. Acad. Nat. Sci. Phila., 1878, p. 365, female. *Type*.—No. 1179, Acad. Nat. Sci. Phila.

Coleocentrus texanus ASHMEAD, Proc. U. S. Nat. Mus., vol. 12, 1890, p. 444, female. *Type*.—Probably Cat. No. 1578, U.S.N.M. *Paratype*.—Cat. No. 2105, U.S.N.M.

Mesostenus macrurus DALLA TORRE, Cat. Hym., 1901–1902, p. 544.

Nematopodius longicaudus (Cresson) ASHMEAD, Proc. Wash. Acad. Sci., vol. 4, 1902, p. 206, female not male.

Nematopodius exclamans VIERECK, Trans. Kans. Acad. Sci., vol. 19, 1904, p. 318, female. *Type*.—Kansas University.

Nematopodius gracilipes (Cresson) VIERECK, Trans. Kans. Acad. Sci., vol. 19, 1904, p. 318.

Nematopodius longicaudus (Cresson) VIERECK, Trans. Kans. Acad. Sci., vol. 19, 1904, p. 318.

Nematopodius macilentus (Cresson) VIERECK, Trans. Kans. Acad. Sci., vol. 19, 1904, p. 319.

Derocentrus texanus (Ashmead) CUSHMAN, Proc. Ent. Soc. Wash., vol. 21, 1919, p. 114.

Derocentrus gracilipes (Cresson) CUSHMAN, Proc. Ent. Soc. Wash., vol. 21, 1919, p. 114.

In spite of the great difference in color between the sexes there seems to be no doubt that they belong to the same species.

Discussion based on types of *longicaudus*, *macilentus*, *texanus* (apparently the same specimen as type of *longicaudus*) and the paratype of *texanus*, a homotype (Gahan) of *exclamans*, a homotype (Cushman) of *macilentus*, a specimen compared by Cushman with the type of *gracilipes*, and 20 other females and 23 other males.

Female.—Length, 8–12 mm.

Temples convexly receding; malar space nearly as long as basal width of mandible; flagellum very slender and of uniform thickness, first joint fully eight times as long as thick. Thorax twice as long as deep, sparsely punctate dorsally and ventrally, more densely so laterally; pronotum polished, practically unsculptured except a foveolate groove along posterior margin; notauli foveolate; propodeum opaque rugulose; nervellus broken not far below middle, reclivous, upper abscissa perpendicular to cubitella. Abdomen subpolished, very faintly coriaceous; first tergite polished.

Body and legs nearly uniformly ferruginous, ventrally and about the scutellum and postscutellum more or less stained with black; antennae ferruginous at base, black beyond with a small, incomplete annulus centering on flagellar joint 8; wings uniformly pale infumate.

Male.—Temples nearly as broad as eyes and more strongly convex than in female; malar space barely two-thirds basal width of mandible; flagellum rather stout at base, tapering toward apex, first joint hardly four times as long as thick. Thorax more coarsely sculptured; lateral impression of pronotum strongly striated; abdomen linear.

Head and thorax black with whitish markings as follows: Orbits, except interruption at top of eye and usually in malar space; sometimes middle of face and clypeus; mandibles; anterior and humeral margins of pronotum; spot in middle of mesoscutum; scutellum; subalar tubercle; usually an elongate mark or two spots on lower part of mesopleurum; upper division of metapleurum and about the dorsal half of lower division, and sides of apical face of propodeum broadly; antennae black, scape rarely reddish; legs testaceous, coxae usually more or less white, sometimes more or less black at base; basal joint of hind trochanter sometimes piceous; apex of tibia and first, fourth, and fifth tarsal joints sometimes more or less blackish, joints 2 and 3 largely white; wings paler than in female; abdomen fer-

ruginous, frequently more or less stained with black ventrally and apically.

Except for the lack of black bands on the abdomen the male is very similar in color to *Mesostenus leucopus* Ashmead.

The type of *macilentus* is from Louisiana, that of *longicaudus* from Texas, that of *gracilipes* from California, that of *texanus* from Texas (paratype from South Carolina), and that of *exclamans* from Kansas. The additional specimens in the National collection are as follows: New Jersey—Bridgeton, July 16, 1924, L. A. Stearns, one female. Maryland—Dorchester County, October 2, two females; Marshall Hall, August 29, one male. District of Columbia—one female. Virginia—Falls Church, September 2, 1918, R. A. Cushman, six males; Leesburg, September 26, 1918, G. W. Underhill, one female. Ohio—no locality, C. H. Kennedy, one female; Columbus, July 21, 1920, A. E. Miller. Kansas—Riley County, May 22, F. Marlatt, one female. Colorado—no locality, C. F. Baker collection, one female, six males; Rocky Ford, April 16–24, 1921, reared but host not given, C. E. Mickel, one female, two males. Texas—Paris, October 7, 1904, A. A. Girault, one female; Chilli-cothe, August 17, 1909, T. D. Urbahns, two females; Cotulla, May 12, 1906, J. C. Crawford, one female, April 17, 1906, F. C. Pratt, one male; Victoria, April 6 and July 11–28, J. D. Mitchell, four females, two males; Corpus Christi, one male; Brownsville, July 6, one female. New Mexico—Las Cruces, T. D. A. Cockerell, three males.

Genus POLYCYRTUS Spinola

Polycyrtus SPINOLA, Ann. Soc. Ent. France, vol. 9, 1840, p. 154. *Genotype*.—*Polycyrtus histrio* Spinola.

Polycyrtimorpha VIERECK, Proc. U. S. Nat. Mus., vol. 46, 1913, p. 383. *Genotype*.—*Polycyrtimorpha amoenus* Viereck.

The single character on which Viereck founded his *Polycyrtimorpha* (the occipital carina joining the hypostomal carina) is apparently not of generic value. At the point where the occipital carina bends toward the hypostomal carina it varies greatly in height, increase in height being accompanied by reduction in strength toward the hypostomal carina sometimes to the point of virtual disappearance.

Head broadly transverse, temples sharply receding; occipital carina frequently very high, frequently very prominently angled below and not reaching hypostomal carina, latter high and flangelike; eyes more or less convergent below; frons with a stout median horn; clypeus very strongly elevated, apically inflexed and with a narrow reflexed margin; malar space long; upper tooth of mandible more or less distinctly longer than lower tooth; antennae long, slender, in female

slightly thickened in middle, tapering and flattened below toward apex, in male of nearly uniform thickness except apical taper. Thorax long, distinctly compressed, polished, at most sparsely sculptured; humeral margins of pronotum swollen and angled by epomia; notauli complete, the mesoscutal lobes very high; scutellum narrow, immargined, its basal ridges very high and thick; propodeum with only one complete transverse carina, the basal, apical carina always wanting medially and usually represented only by very long apophyses; spiracle large, oval; stigma very narrow, radius before middle; areolet elongate, wider at apex than at base, recurrent at or near apex; postnervulus broken at or near middle; nervellus reclivous, its upper abscissa perpendicular to cubitella; legs slender. Abdomen slender, usually with long sparse hairs toward apex; first sternite fused with tergite and extending beyond spiracles, postpetiole only a little wider than petiole; sheath not or barely as long as abdomen; ovipositor compressed, sagittate at apex.

This is a typically tropical genus containing only one North American species.

POLYCYRTUS NEGLECTUS Cushman

Figs. 1*f*, 3*h*, 6*k*

Polycyrtus neglectus CUSHMAN, Proc. U. S. Nat. Mus., vol. 67, art. 23, 1926, p. 5, females, males. *Type*.—Cat. No. 27683, U.S.N.M.

The original description of this species is so recent and so detailed that a full description here is unnecessary.

A few points suggested by the above generic description may be added. The occipital carina is not especially prominent nor is it toothed or interrupted below; eyes very slightly convergent; upper tooth of mandible very slightly longer than lower; antennae about three-fourths as long as body.

In addition to the 11 females and 16 males of the type series the National collection contains the following specimens: Maryland—Glen Echo, R. M. Fouts, one female, three males; Cabin John, June 23, 1917, R. M. Fouts, two females. Pennsylvania—Inglenook, June 20, 1909, P. R. Myers, one female; Marsh Run, York County, July 18, 1909, P. R. Myers, one male. Connecticut—Lyme, August 28, 1909, A. B. Champlain, two males.

The Connecticut specimens extend the known range of the species about 200 miles farther to the north.

Genus POLYCYRTIDEA Viereck

Polycyrtidea VIERECK, Proc. U. S. Nat. Mus., vol. 46, 1913, p. 382. *Genotype*.—*Polycyrtidea gracilis* Viereck.

If I interpret the very brief original description correctly *Mesostenus pusillus* Cresson and *Agrypon flavopictus* Ashmead, both from

the West Indies, belong here. The latter species, except in size, agrees rather closely with the description of the genotype, which is practically entirely of coloration.

Temples convexly receding; frons very deeply concave, horn pyramidal with a carina on each side and one below running from base to apex, the base broad; eyes slightly convergent; malar space subequal to basal width of mandible; clypeus elevated; occipital carina neither angulate nor interrupted below; upper tooth of mandible longer than lower; antennae in female about three-fourths as long as body, slender, slightly thickened beyond middle, not flattened below, tapering at apex, in male slender throughout. Thorax robust, much more than half as deep as long, compressed; humeral margins of pronotum subangularly tuberculate in front; notauli deep at least anteriorly; scutellum broader than long, strongly convex; propodeum with basal carina close to base and with more or less distinct traces of apophyses, sloping precipitously behind basal carina, spiracles small oval; stigma very narrow; areolet very small, open behind; discoidal cell pointed at base; nervulus antefurcal; nervellus inclivous, broken near bottom or not broken; legs very slender, the hind femur slender subclavate, longer calcarium fully half as long as basitarsus. Abdomen slender; first sternite extending far beyond spiracles, completely fused with tergite, postpetiole only slightly wider than petiole; second tergite fully as long as first, these two together comprising much more than half total length of abdomen; sheath not or barely as long as first tergite; ovipositor slender, compressed, elongate sagittate at apex.

The genus is apparently wholly tropical in its range, the single species occurring within the borders of the United States, being known only from the extreme southern point of Texas.

(MESOSTENUS) POLYCYRTIDEA PUSILLUS (Cresson) (new combination)

(AGRYPON) POLYCYRTIDEA FLAVOPICTUS (Ashmead) (new combination)

These two West Indian species are not known to occur on the continent and are included here only to record the generic transfers.

POLYCYRTIDEA LIMITIS, new species

Figs. 1g, 6m

Female.—Length, 9 mm.

Temples and vertex behind ocelli polished, frons medially rugulose; face, malar space, and clypeus basally opaque coriaceous, the face densely and clypeus sparsely punctuate; malar space fully as long as basal width of mandible. Thorax coarsely sculptured, pro-

notum laterally rugose, mesoscutum and scutellum sparsely punctate, mesopleurum above longitudinally striate, below sparsely punctate, sternum and metapleurum densely punctate, speculum and lower angle of upper division of metapleurum polished and unsculptured; notauli complete; propodeum polished before basal carina opaque reticulate regulose behind, apophyses represented by low rounded tubercles. Abdomen opaque, very finely coriaceous, first tergite polished, sheath distinctly shorter than first segment.

Head and thorax piceous black and yellow, the yellow more extensive than the black, embracing the following: Head except middle of frons and vertex and occiput; under side of scape; an incomplete annulus on flagellar joints 6–11 (antennae otherwise black); all of pronotum except a narrow transverse band across middle; inner posterior edges of lateral lobes of mesoscutum and the outer anterior edges of middle lobe; scutellum, its basal carinae, and postscutellum; tegulae and subalar tubercles; most of mesopleurum, sides of sternum, and both divisions of metapleurum; propodeum beyond basal carina except lateral anterior corners and a small median apical spot; prepectus and mesosternum reddish; legs testaceous; front and middle tibiae and tarsi stramineous; hind tarsus blackish at base and apex, first joint largely, second entirely, and third apically white; wings hyaline, venation blackish; abdomen ferruginous, base of petiole and second and third tergites except broad apical and lateral margins blackish.

Type-locality.—Brownsville, Tex.

Type.—Cat. No. 40592, U.S.N.M.

One specimen taken September 29, 1906, J. C. Crawford.

ACERASTES, new genus⁶

Very closely related to *Polycyrtidea* Viereck and should, perhaps, be considered merely a subgenus of that genus. But the genotype and two apparently undescribed Neotropical species differ from the three species of *Polycyrtidea* in lacking the frontal horn and in having the areolet rather large, well defined, and pentagonal, though open behind, with the recurrent before the middle and the cubitus beyond the recurrent weak and bent sharply forward at recurrent and then sharply backward at the position of the second intercubitus.

Genotype.—*Mesostenus pertinax* Cresson.

Three specimens of one of the undescribed species referred to were reared from a spider egg-sac.

Represented in the United States only by the genotype.

⁶ From α-κεραστης=without a horn, referring to the lack of a frontal horn.

ACERASTES PERTINAX (Cresson) (new combination)

Figs. 3i, 5, 6n

Mesostenus pertinax CRESSON, Trans. Amer. Ent. Soc., vol. 4, 1872, p. 163, female. *Type*.—Cat. No. 1429, U.S.N.M.

Discussion based on type and three other females, all in the National collection.

Female.—Length, 5.5 mm.

Head polished behind; frons with a weak median carina and very faintly coriaceous; face, clypeus and malar space opaque coriaceous, the face medially and clypeus basally minutely punctate; eyes slightly convergent below; malar space hardly as long as basal width of mandible; antennae very nearly as long as body, slender, barely thicker beyond middle. Thorax nearly twice as long as deep, pronotum polished, foveolate along posterior margin; mesoscutum polished, middle lobe sparsely punctate anteriorly and with a median groove posteriorly, notauli deep and complete; scutellum polished; mesopleurum striate in impression, punctate below, speculum polished, mesosternum finely punctate; metapleurum more coarsely punctate, upper division polished in lower angle; propodeum polished before basal carina, finely reticulate rugose behind, apex transversely so, apophyses represented by small tubercles; nervellus reclivous, upper abscissa perpendicular to cubitella; legs slender, but not so slender as in *Polycyrtidea limitis*, the hind femur not subclavate. Abdomen somewhat broader than in *Polycyrtidea*, very minutely coriaceous, except first tergite, which is polished, postpetiole at apex twice as broad as petiole; sheath little more than half as long as first tergite; ovipositor compressed, sagittate at apex.

Head and thorax black and yellow, more yellow than black, with base of propodeum reddish piceous to ferruginous; yellow as follows: Head, except occiput and middle of face and frons, under side of scape and first two or three flagellar joints, and a complete annulus on flagellar joints 6–9; anterior and humeral margins of pronotum, two elongate marks on disk of mesoscutum, scutellum and its basal carinae, postscutellum; subalar tubercle, speculum, and lower half of mesopleurum; sternum (sometimes reddish); both upper and lower divisions of metapleurum; and propodeum behind basal carina except in anterior angles and apical middle; wings hyaline, venation brown; legs testaceous, front coxae and trochanters and sometimes the other coxae more or less stramineous; hind tarsus reddish or fuscous, usually with second and third joints more or less white; abdomen ferruginous, petiole somewhat paler.

The type and one of the other specimens are from the Belfrage Texas collection; a third is from Plano, Tex., October, E. S. Tucker; and a fourth from Minatitlan, Mexico, February 1, 1892, Herbert Osborn.

The type has the propodeum basally red and the hind tarsus entirely red.

Genus *POLISTIPHAGA* Cushman

Polistiphaga CUSHMAN, Journ. Wash. Acad. Sci., vol. 15, 1925, p. 391. *Genotype*.—(*Mesostenus arvalis* Cresson) = *Mesostenus fulvus* Cresson

It might be argued that this genus should be relegated to the Hemitelini because of the areolation of the propodeum and the open areolet, but the general appearance and structure indicate its affinity with the Cryptini. All of the basal and apical areas are defined, while the carinae separating the areas between the transverse carinae may or may not be present, in the latter case perhaps adventitiously due to the exaggeration of certain of the rugae lying in that region.

The generic description is too recent and too detailed to require repetition here, but certain features not there mentioned may be added. Eyes slightly convergent below; frons with a median carina, but without a horn; notauli complete; areolet elongate, open, recurrent at or near position of second intercubitus; discoidal cell broad at base; nervulus antefurcal; nervellus inclivous, broken below middle; first abdominal segment decurved, sternite not or barely reaching spiracles, postpetiole abruptly widened and much wider than petiole; abdomen rather broadly fusiform, coriaceous, impunctate; sheath shorter than first segment; ovipositor compressed, sagittate at apex.

The following two species occur in the restricted region. Both are parasitic in the nests of wasps of the genus *Polistes*:

1. Thorax and abdomen largely red.....*fulva* (Cresson).
Thorax and abdomen black and yellow.....*zonata*, new species.

POLISTIPHAGA FULVA (Cresson)

Fig. 60

Mesostenus? fulvus CRESSON, Proc. Ent. Soc. Phila., vol. 3, 1864, p. 316, male.
Type.—No. 1178, Acad. Nat. Sci. Phila.

Mesostenus arvalis CRESSON, Trans. Amer. Ent. Soc., vol. 14, 1872, p. 163, female.
Type.—No. 1171, Acad. Nat. Sci. Phila.

Mesostenidea (*Christolia*) *arvalis* (Cresson) VIERECK, Hym. Conn. (1916) 1917, p. 329 and 330.

Polistiphaga arvalis (Cresson) CUSHMAN, Journ. Wash. Acad. Sci., vol. 15, 1925, p. 391.

Discussion based on types of both names, two paratypes of *arvalis*, a homotype (Cushman) of *fulva*, and 38 other females and 18 other males, all but the types in the National collection.

Female.—Length, 5–9 mm.

Head, thorax, and abdomen opaque, finely coriaceous, the head and thorax with additional coarser sculpture, the abdomen without additional sculpture; frons medially rugulose; face finely punctate;

pronotal impressions striate; mesoscutum densely, finely punctate; mesopleurum, sternum and metalpleurum finely punctate, the pleura more or less striately so; basal areas of propodeum without coarse sculpture, middle areas longitudinally, apical areas transversely rugose; areolet rather large, the lumen several times broader than the thickness of the surrounding veins.

Ferruginous; occiput and middle of vertex and frons more or less stained with black; head otherwise yellow; antennae black, scape pale below, a short white annulus centering on suture between flagellar joints 7 and 8; mesoscutum darker than rest of thorax; a band across middle of pronotum, notauli, and sutures on dorsum of thorax blackish; anterior and humeral margins of pronotum, scutellar carinae, tegulae, subalar tubercles, sternauli, sutures on sides of thorax, and apophyses yellowish; wings hyaline, venation brown, stigma pale; legs concolorous, hind tarsus with joints 2-4 yellow, 5 black; abdomen immaculate.

Male.—Differs practically only sexually from female. A little more contrastingly colored, and with antennal annulus occupying flagellar joints 9-11.

The type is from Illinois, the type series of *arvalis* from Texas. The other specimens in the National collection are as follows: Ontario—Toronto, three females, two males. New York—Long Island, one female. Illinois—Chicago, one female. Wisconsin—Milwaukee County, two males. Maryland—Glen Echo, R. M. Fouts, one male. Virginia—Near Stubblefield Falls, October 23, 1921, J. R. Malloch, one female; October 30, 1921, W. L. McAtee, one female. Charlottesville, July 10, 1922, A. M. Vance, one female. Arkansas—one female from collection of C. F. Baker. Texas—Belfrage collection, twelve females, four males; Dallas, September 26, 1905, A. J. Leister, seven females, four males, including the homotype; Rosser, ex nest of *Polistes* (Hunter No. 1123), September 25, 1905, C. R. Jones, five females, three males. Kansas—parasite of *Polistes*, 1872, C. V. Riley, three females, two males; Riley County, Marlatt, September, two females; Manhattan, August 23, 1920, R. C. Smith, one female (said to have been reared as a parasite of a noctuid larva on alfalfa). California—Huntington Beach, September 25, 1904, E. S. G. Titus, one male; Humboldt County, June 12, H. S. Barber, one female.

POLISTIPHAGA ZONATA, new species

Fig. 3m

Very distinct from *fulva* in its black and yellow color as well as in certain features of structure.

Female.—Length 7 mm.

Head finely coriaceous opaque, frons medially rugose, face very finely punctate, malar space very nearly as long as basal width of

mandible; occipital and hypostomal carinae meeting very close to ventral articulation of mandible. Thorax finely opaque coriaceous, depressions of pronotum and upper part of mesopleurum, striate; middle and posterior areas of propodeum weakly rugose, the petiolar areas subpolished; thorax otherwise at most sparsely punctate; areolet very small, the lumen hardly as broad as thickness of the surrounding veins. Abdomen finely coriaceous, opaque.

Black with profuse yellow markings as follows: Orbits, nearly meeting behind ocelli, face, mouth parts, under side of scape, and annulus occupying flagellar joints 6–11; anterior and humeral margins of pronotum, propleura, lateral margins of prescutum and inner margins of lateral lobes of mesoscutum, scutellum, postscutellum, tegulae, mesopleurum except impressions, prepectus, sternum, both upper and lower divisions of metapleurum largely, propodeum behind basal carina except middle of petiolar area and narrow marks along lateral margins; and broad apical and lateral margins of tergites; wings hyaline, veins brown, stigma pale; legs pale testaceous, coxae and trochanters paler above, hind coxa with a blackish streak above; hind tarsus with joints 2–4 white, 5 black.

Type-locality.—Victoria, Tex.

Host.—*Polistes maculata*.

Type.—Cat. No. 40593, U.S.N.M.

Five females in poor condition reared November 10, 1914, by J. D. Mitchell.

SPECIES WRONGLY REFERRED TO MESOSTENINI

The name in parentheses is that of the author of the species and the name following the parentheses is that of the authority for the transfer. The words "Rohwer notes" indicate that the transfer is made on the basis of the examination of the type by S. A. Rohwer, or confirmed by his examination.

(*Mesostenus*) *Phygadeuon albicoxus* (Provancher) Provancher. This transfer was made in "Faune Ent. Can. Hym., 1883, p. 318."

(*Mesostenus*) *Mesoleptus albifacies* (Provancher) Davis, Rohwer notes.

(*Mesostenus*) *Cratichneumon annulatus* (Provancher) Roman.

(*Mesostenus apicalis* Provancher) = *Amblyteles finitimus* (Cresson). New combination.

(*Mesostenus longicornis* Provancher) = *Mesoleptus moyeni* (Provancher, *teste* Provancher, Davis and Rohwer notes.

(*Mesostenus*) *Phygadeuon flavipes* (Provancher) Davis, Rohwer notes.

(*Mesostenus*) *Tryphonini latigaster* (Provancher), Rohwer notes.

(*Mesostenus*) *Pezoporus nigricornis* (Provancher), new combination, Rohwer notes.

(*Mesostenus nitidus* Provancher) = *Pezoporus nitidulus* (Provancher), new combination.

[(*Mesostenus*) *Phytodietus nobilis* (Provancher) Davis] = *Phytodietus distinctus* (Cresson), teste Rohwer.

(*Mesostenus pallipes* Provancher) = (*Mesoleptus*) *Thysiotorus triangularis* (Cresson), new combination.

(*Mesostenus pluricinctus* Provancher) = *Diacritus muliebris* (Cresson), teste Cushman.

(*Mesostenus ruficornis* Provancher) = *Pezoporus nitidulus* (Provancher), teste Provancher.

Mesostenus ruficornis Provancher. After its original description⁷ this species is not again mentioned by Provancher, and neither Davis nor Rohwer was able to find the type. The large areolet would exclude it from *Mesostenus*.

(*Mesostenus rufipes* Provancher) = *Diacritus muliebus* (Cresson), teste Cushman.

Mesostenus rufotinctus Provancher. The remarks above concerning *ruficornis* apply also to this species.

(*Mesostenus*) *Panargyrops sericeus* (Provancher) Cushman.

(*Mesostenus tarsatus* Provancher) = (*Cryptus americanus* Cresson, teste Provancher) = *Cryptus vinctus* (Say), teste Cushman and Gahan.

(*Nematopodius*) *Gambrus canadensis* (Provancher), new combination.

(*Nematopodius coxatus* Provancher) = (*Cryptus americanus* Cresson, teste Provancher) = *Cryptus vinctus* (Say), teste Cushman and Gahan.

⁷ Nat. Can., vol. 7, 1875, p. 266.



Cushman, R. A. 1929. "A revision of the north American Ichneumon-flies of the genus *Mesostenus* and related genera." *Proceedings of the United States National Museum* 74(2761), 1–58.

<https://doi.org/10.5479/si.00963801.74-2761.1>.

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